

The Dutch Disease Phenomenon and Lessons for Guyana: Trinidad and Tobago's Experience

Mark Wenner
Elton Bollers
Roger Hosein

Country Department Caribbean
Group

TECHNICAL
NOTE N°
IDB-TN-1470

The Dutch Disease Phenomenon and Lessons for Guyana: Trinidad and Tobago's Experience

Mark Wenner
Elton Bollers
Roger Hosein*

Inter-American Development Bank

*The University of the West Indies, St. Augustine Campus

July 2018



Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library
Wenner, Mark D.

The Dutch disease phenomenon and lessons for Guyana: Trinidad and Tobago's
experience / Mark Wenner, Elton Bollers, Roger Hosein.

p. cm. — (IDB Technical Note ; 1470)

Includes bibliographic references.

1. Natural resources-Economic aspects-Guyana. 2. Natural resources-Economic
aspects-Trinidad and Tobago. 3. Economic development-Guyana. 4. Economic
development-Trinidad and Tobago. 5. Fiscal policy-Guyana. 6. Fiscal policy-Trinidad
and Tobago. 7. Guyana-Economic policy. 8. Trinidad and Tobago-Economic policy. I.
Bollers, Elton. II. Hosein, R. (Roger). III. Inter-American Development Bank. Country
Department Caribbean Group. IV. Title. V. Series.

IDB-TN-1470

<http://www.iadb.org>

Copyright © 2018 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



CET@iadb.org

Abstract

The relationship between natural resource endowments and economic growth and development has attracted much attention. Specifically, the Dutch disease phenomenon, which has crippled several economies, has been studied extensively. It is urgent to prevent the Guyanese economy from gravitating toward the negative tendencies associated with the disease. This paper reviews Trinidad and Tobago's experience in managing and coping with the Dutch disease phenomenon and outlines lessons that Guyana can learn from its experience. Additionally, the paper presents Dutch disease theory and sovereign wealth fund theory and practice, stressing how the likely shocks to the Guyanese economy can be prevented or mitigated, using Trinidad's experience as the benchmark.

Keywords: natural resources, economic growth, Dutch disease, economic development

JEL Codes: O10, F43, Q30

Table of Contents

Table of Tables.....	4
Table of Figures.....	5
Chapter 1 : A Basic Outline of the Dutch Disease.....	6
1: Introduction.....	6
1.1: The Theoretical Context.....	8
1.2: Effect on Output and Prices in Commodity Markets.....	10
1.3: Long-run Effects of a Boom.....	11
1.4: Conclusion.....	13
Chapter 2: Sovereign Wealth Funds: Theory and Practice.....	13
Introduction.....	13
2.1: Macroeconomic Role of SWFs.....	14
2.1.1: Wealth Substitution Motive.....	14
2.1.2: Counter-cyclical Motive.....	15
2.2: Harnessing Windfall Revenues.....	15
2.2.1: Understanding consumption and investment decisions in a small capital starved but resource abundant economy.....	16
2.3: Experience of stabilization funds in oil producing economies.....	20
2.3.1: Timor Leste.....	20
2.3.2: Norway.....	22
2.3.3: Botswana's Pula Fund.....	23
2.4: Conclusion.....	25
Chapter 3: Trinidad and Tobago's Experience in Managing and Coping with Dutch Disease.....	26
3.0: Introduction.....	26
3.1: Fiscal, Monetary, Exchange Rate Policies.....	26
3.2: Heritage and Stabilization Fund (SWF): Example of Imprudent Borrowing to Save.....	33
3.3: Upstream/Downstream Investments in the Hydrocarbon Sector.....	35
3.4: Labor Market and Human Capital Policies: Example Unintended Effect of Stimulating Relatively Unproductive Service Sector as opposed to Manufacturing or Agriculture.....	37
3.5: Government Assistance for Tuition Expenses (GATE): Example of Wasteful Untargeted Subsidy.....	40
3.6: Industrial and Agricultural Promotion Policies.....	42

3.7: Manufacturing and ETeCK Parks.....	43
3.8: Conclusion.....	44
Chapter 4 - Lessons for Guyana.....	45
4.0: Introduction.....	45
4.1: Boosting the Economy’s Non-Booming Tradable sector.....	46
4.2: Do Not Increase Transfers and Subsidies at the Expense of Capital Investment	49
4.3: Civil Society	49
4.4: Strategic CSR.....	50
4.5: Managing the Size of the NT Sector	52
4.6: Petroleum Subsidy and the HSF	53
4.7: Avoid Borrowing to Save.....	55
4.8: Avoid Procyclical Tendencies	55
4.9: External Competitiveness	55
4.10: Guyana Petroleum Policy.....	56
4.11: Local Content Policy	56
4.12: Oil Spills.....	58
4.13: Joint Venturing and/or Partnering.....	58
4.14: Some Final Closing Rules for Guyana to Consider	58
References.....	60
Appendix 1: Mechanics of the Dutch Disease.....	65

Table of Tables

TABLE 1.1: PROVEN RESERVES (BILLION BBLs)	6
TABLE 1.2: SUMMARY OF GUYANA'S UPSTREAM OIL AND GAS HISTORY	6
TABLE 1.3: BLOCKS AND COMPANIES.....	7
TABLE 1.5: LABOR MARKET CHANGES IN THE THREE MAIN SECTORS OF A PETROLEUM BASED ECONOMY.	10
TABLE 1.6: SUMMARY OF DUTCH DISEASE EFFECTS ON OUTPUT AND PRICES, BY SECTORS.....	11
TABLE 2.1: GUYANA VS LATIN AMERICA & CARIBBEAN PER CAPITA GDP	18
TABLE 2.2: TIMOR-LESTE: SELECTED ECONOMIC AND FINANCIAL INDICATORS	21
TABLE 2.3: OIL RENTS AND NATURAL GAS, NORWAY	22
TABLE 2.4: NORWAY: SELECTED ECONOMIC AND SOCIAL INDICATORS.....	23
TABLE 2.5: KEY ECONOMIC INDICATORS, BOTSWANA	25
TABLE 3.1: TRENDS IN KEY VARIABLES ASSOCIATED WITH THE PETROLEUM SECTOR.....	27
TABLE 3.2: GOVERNMENT EXPENDITURE AND THE NON-ENERGY FISCAL BALANCE, TT\$MN, 1999–2000 TO 2015–2016....	24
TABLE 3.3: GOVERNMENT ENERGY REVENUE AND EXPENDITURE ON TRANSFERS AND SUBSIDIES, TT\$MN 1999–2000 TO 2015–2016.....	29
TABLE 3.4: BASIC EXTERNAL ACCOUNT DATA FOR THE TT ECONOMY, 1990–2015.....	32
TABLE 3.5: T&T FISCAL BALANCE AND ALLOCATIONS TO THE HSF (TT \$MN).....	34
TABLE 3.6: HERITAGE AND STABILIZATION FUND PORTFOLIO VALUATION (US\$)	35
TABLE 3.7: MAJOR FOREIGN DIRECT INVESTMENT IN THE ENERGY SECTOR, 1959–2010.....	36
TABLE 3.8: KEY LABOR MARKET INDICATORS, 1991–2015.....	38
TABLE 3.9: CEPEP BUDGETARY ALLOCATION (TT\$MN).....	39
TABLE 3.10: AGGREGATE EMPLOYMENT IN VARIOUS SECTORS OF THE ECONOMY 2001–2015	39
TABLE 3.11: REAL VALUE ADDED AND EMPLOYMENT IN AGRICULTURE, 1999–2015	42
TABLE 3.12: MANUFACTURING VALUE ADDED (CONSTANT PRICES TT\$MN) AND MANUFACTURING EMPLOYMENT, 1999–2015	43
TABLE 4.1: SELECTED MACROECONOMIC INDICATORS FOR GUYANA 2005-2017.....	47
TABLE 4.2: SOME INDICATORS OF COMPETITIVENESS FOR SELECTED CARICOM ECONOMIES.....	48
TABLE 4.3: GUYANA'S PERFORMANCE ON THE WORLD GOVERNANCE INDICATORS.....	48
TABLE 4.4: FDI INFLOWS, INCOME AND REMITTANCES ABROAD US\$MN, 1990–2011	51
TABLE 4.5: OUTPUT PER WORKER AND THE DISTRIBUTION OF EMPLOYMENT, 1999 TO 2015.....	53
TABLE 4.6: SUBSIDY CLAIMS, NEW VEHICLES SOLD, HSF DEPOSITS AND THE FISCAL BALANCE AS A % OF GDP IN T&T T&T 2000–2015.....	54

Table of Figures

FIGURE 1.1 THE LONG RUN GROWTH POTENTIAL OF AN ECONOMY WITH A RESOURCE BOOM.....	12
FIGURE 2.1: CONSUMPTION OF NATURAL RESOURCE RENTS*	16
FIGURE 3.1: TRENDS IN THE NON-CYCLICAL COMPONENTS OF ECONOMIC RENTS FROM THE PETROLEUM SECTOR AND GOVERNMENT TRANSFERS AND SUBSIDIES	29
FIGURE 3.2: EFFECT OF "OIL WINDFALL" GATE ON INCOME OF HOUSEHOLDS PURSUING TLE.....	41
FIGURE 0.1: ILLUSTRATION OF THE R^M EFFECT ALONE ON EMPLOYMENT IN THE BT, NBT AND NT SECTORS.	65
FIGURE 0.2: AN ILLUSTRATION OF THE SPENDING EFFECT (ALONE) OF THE DUTCH DISEASE.	67
FIGURE 0.3: THE CHANGE IN THE LABOUR MARKET ON ACCOUNT OF THE COMPOUND EFFECTS OF THE R^M AND S^E	68

Chapter 1. A Basic Outline of the Dutch Disease

1.0: Introduction

For many years, investors have looked upon Guyana with great interest because of the significant hydrocarbon discoveries in countries close to Guyana, including Trinidad and Tobago (T&T) and Venezuela. In Suriname, for example, oil was first discovered in the late 1920s near the border of Guyana in the District of Nickerie. However, exploration in Guyana, both onshore and offshore, began in the mid-to-late 1960s, when another discovery was made in the District of Saramacca. In 1980, Staatsolie, the state oil company, was established, and the first commercially produced oil was from an onshore field near Paramaribo. The capacity of the field is 700 mn bbls. As Table 1.1 shows, other countries near Guyana have proven deposits of crude oil. Venezuela, for example, has as much as 298.35 billion bbls in reserves and Brazil has 15.59 billion bbls in proven reserves. These trends heightened the probability that Guyana should have significant undiscovered reserves.

Table 0.1: Proven Reserves (Billion bbls)

	Brazil	Colombia	Ecuador	Peru	Trinidad & Tobago	Venezuela
2013	15.59	2.38	8.19	1.42	0.83	298.35
Source: British Petroleum (2015).						

In the past, exploration for hydrocarbons in Guyana was typically unsuccessful, but as one study noted, “The momentum of oil activity in Guyana has changed over the years. There was heightened activity particularly in periods of high oil prices and also in the 10-year period between 1985 and 1995 despite the fact that oil prices were relatively low” (Ministry of Natural Resources, 2015: 7). Nevertheless, in 2016, the Minister of Natural Resources indicated that “the time has never been as propitious for petroleum exploration, as the low prices have led to a high availability, at good prices, of specialized skills, exploratory rigs, and equipment, all of which make exploration very encouraging.” (Merco Press, 2016). Table 1.2 provides an historical overview of upstream activities in Guyana.

Table 1.2: Summary of Guyana’s Upstream Oil and Gas History

	Milestone
1910s	First well drilled onshore coastal section of the Takatu Basin in 1916
1950s	Emergence of offshore exploration
1960s	Peaking of drilling activity
1970s	Tapering off of drilling activity in mid 1970s
1975	Shell’s Abary-1 well (now Repsol YPF’s Georgetown Licence) finds oil and gas shows and flows 37o API light oil
1990	Total drills offshore Arapaima #1 well, proves uncommercial
Mid 2000s	CGX Energy attempts to spud a well on its Eagle prospect, but run off location by Surinamese gunboats

2005	CGX drills its Horseshoe West prospect in the Corentyne Block, fails to encounter commercial quantities of oil or gas
2007	CGX drilled 3 onshore wells on Berbice Block
2013	Border dispute between Guyana and Suriname is settled
2017	Currently five companies doing exploration work: Century Guyana, CGX Energy, ExxonMobil, Repsol YPF, Eco Atlantic and Tullow Oil.
Source: Guyana Office for Investment 2016.	

On May 15, 2015, the ExxonMobil operator found oil at a depth of 18,730 feet (5,700 feet of water), 120 miles off the coast of Guyana. The well, named Liza 1, has since been followed by other discoveries: Liza 2, Liza 3, Liza 4, Liza Deep, Snoek-1, Payara-1, Payara-2, Turbot 1, and Ranger 1. The only unsuccessful well drilled was Skipjack. The total recoverable gross resources for the block as of January 2018 is estimated to be 3.2 billion barrels of oil equivalent. All the wells successfully drilled to date contain high-quality or “sweet” crude, which fetches a premium because it is easier and less costly to refine.

Exxon estimates that the Liza-1 and Liza-2 wells hold more than 1.4 billion barrels of oil.¹ Both wells are in the 6.6 million-acre Stabroek block, an estimated 120 miles offshore Guyana. Exxon Mobil has already committed approximately US\$4.4 billion for the development of Liza Phase 1. Table 1.3 shows the existing blocks, mainly offshore Guyana, where a number of foreign companies are involved.

Table 1.3: Blocks and Companies

	Georgetown	Takutu Block	Corentyne	Corentyne Annex	Pomeroon	Starbroek
Area Km2	6,880	7,800	6,070	4,047	11,331	>60,000
Details	Offshore, Signed with Repsol	Onshore contains the Karanambo discovery made by Home Oil in 1982	Offshore, Expiry June 2013	Offshore, Part of the Corentyne license- together a total area of 11,331 km ² (including 1,214 km ² onshore)		Dispute with Venezuela
Companies						
Tullow	30%					
Canacol		90% (originally 65%)				
CGX	25% (farming out of 5% to Repsol Exploration awaiting approval)					
Repsol Exploration SA	15% (operator)		100%	100%	100%	
YPF Guyana Limited	30%					

¹ See Exxon’s website: <http://corporate.exxonmobil.com/en/company/worldwide-operations/locations/guyana/about-us/project-overview>

Table 1.3: Blocks and Companies

Georgetown	Takutu Block	Corentyne	Corentyne Annex	Pomeroon	Starbroek
Groundstar Resources	10% (originally operator, but operatorship transferred to Canacol in September 2012)				
ExxonMobil					75%
Northern Petroleum					
Sagress Energy	Originally 25% but farmed out to Canacol in April 2012				
Shell					25%

Source: Ministry of Natural Resources (2015).

This paper outlines how Guyana can plan to avoid some of the errors commonly made by mineral producers. This chapter lays out the theory of Dutch disease. Chapter 2 discusses the theory of sovereign wealth funds and their relevance to Guyana. It also reviews the experience of Botswana, Norway, and Timor Leste with respect to sovereign wealth funds. Chapter 3 reviews the Trinidad and Tobago economy’s experience in the period 1999–2015, when it experienced a natural gas boom, and Chapter 4 offers various policy suggestions for Guyana, based on the experience of the Trinidad and Tobago economy and other economies.

1.1: Theoretical Context

The contribution of natural resources to economic development has received considerable attention in the economic development literature. This literature, specifically concerning oil, became more voluminous after the price surges of the 1970s stimulated enormous economic rents in oil-exporting economies (Pinto, 1987). Natural resource rents can provide the impetus for economic development via the generation of economic rents. Smith argued that trade allows an economy to bring into productive deployment resources that would otherwise have been unemployed or underemployed. Indeed, Smith noted that foreign trade “carries out that surplus part of the produce of their land and labour for which there is no demand among them and brings back in return for it something else for which there is a demand” (Smith, 1776: 342).

The vent-for-surplus theory formulated by Adam Smith, pertaining to natural resources, indicates that engaging international trade allows economies to monetize their natural resources and stimulate their export levels and in so doing to foster economic growth. Smith explained that when a country produces more than it consumes, the surplus remains underutilized. This essentially results in a movement to a point inside the country’s production possibility frontier. International trade benefits the

country by allowing it to export or “vent” its surplus production to other countries where demand exists and import other commodities for which domestic supply is insufficient, thereby bringing it to a point on the production possibility frontier in terms of production and on a higher welfare plane in terms of utility (Kurz, 1992).²

Innis (1950) developed and refined the staple theory of economic development in relation to the coal, cod fish, and fur trades in Canada. Innis argued that these natural resources provided the financial resources for the development of the sector itself as well as other related sectors. However, as time passed, some economists challenged the idea of dependence on natural resources as a medium for economic development. Singer (1950) noted that world income elasticity of demand for primary products is inelastic so that, as income increases, there is a less than proportional increase in demand for primary products. Mitra (1994) observed that natural resource booms tend to support a perception of optimism, which provides a basis for a higher level of government spending.

In a detailed empirical study, Sachs and Warner (1995) illustrated that resource-rich countries tended to grow slower than those considered to be resource poor during the period 1970–1990. They began with a simple regression model with GDP growth as their dependent variable and share of primary exports to GDP in 1970 (proxy for resource abundance) and log of initial GDP as their independent variables. The results of this model showed a negative relationship between GDP growth and share of primary exports to GDP in 1970. Specifically, Sachs and Warner found, “A higher share of primary exports in 1970 is associated with lower growth in the next two decades.....” (1995: 1) (see Table 1.4). They also found that this initial result implied that a unit increase in standard deviation of the share in primary exports in 1970 is associated with a fall in annual GDP growth of 1.51 percent. To show that this result was not spurious, Sachs and Warner (1995) expanded the model to include other relevant variables, including a variable for outward orientation and variables to control for capital accumulation, institutional quality, and global commodity shocks.

A boom in a tradable natural resource such as oil can lead to the appreciation of an economy’s real exchange rate. Consequently, it is possible that the economy’s non-booming tradable export sector performance can worsen. The Dutch disease, which refers to the negative effect on the economy of the resource boom, was coined by *The Economist* (1977) to describe the effect of natural gas discoveries on The Netherlands’ manufacturing sector. This discovery led to a large increase in export earnings, which inevitably led to an appreciation of the economy’s real exchange rate. Corden and Neary later formalized the Dutch disease model in 1982. Basically, the Dutch disease model assumes that there are three sectors in an economy: the booming tradable (BT), the non-booming tradable (NBT), and the non-

²https://static.uni-graz.at/fileadmin/sowi-zentren/Schumpeter-Centre/Download/Paper/Kurz/1992_Adam_Smith_on_Foreign_Trade_in_Economica_.pdf

tradable (NT). A boom in the BT motivated by an increase in price or a natural resource discovery leads to an expansion in the size of the BT sector, assuming that labour is the only available factor of production and that each sector uses a specific factor of production. In this way, the boom in the BT sector triggers two substantive changes in the economy: a resource movement effect and a spending effect.

The resource movement effect occurs because the natural resource discovery leads to an increase in the marginal product of labour in the BT sector, which in turn facilitates a wage increase in that sector. As the economy is assumed to start from full employment, wages also rise in both the NBT and the NT sectors. When the state, which is the main conduit between the offshore sector and the onshore sector, spends these energy resources and workers from the BT sector do the same, there is an expansion in the demand for NT goods. This pushes up the price of NT goods even further, and the economy’s real effective exchange rate appreciates. At the same time, the NBT sector contracts as it loses workers to the NT sector. The appreciation of the economy’s real exchange rate compromises the growth performance of the NBT sector in the long run as well. (See Appendix 1 for the mechanics of the Dutch disease.)

In a Dutch-diseased environment, employment in the NT sector increases, employment in the BT sector falls. These labour market changes are illustrated in Table 1.5.

Table 1.5: Labor Market Changes in the Three Main Sectors of a Petroleum-based Economy

	L	L ^R	L ^S	L ^{DD} - L	Overall
	NBT ₀	NBT ₁	NBT ₂	NBT ₂ - NBT ₀	-
NBT					
	BT ₀	BT ₁	BT ₂	BT ₂ - BT ₀	+
BT					
	NT ₀	NT ₁	NT ₂	NT ₂ - NT ₀	+
NT					
Source: own derivation.					

1.2: Effect on Output and Prices in Commodity Markets

Table 1.6 below provides a summary of the changes that will take place in output and prices in the BT, NBT, and the NT sectors on account of the R^e and S^e. Output in the BT sector with an inflow of workers on account of the R^e will increase. With the spending effect, there will be a negligible contraction in the size of the BT sector’s output, but overall, compared to the initial conditions, the combined R^e and S^e will lead to an expansion in the volume of output from the BT sector.

In the NBT sector, output contracts with both the R^e and the S^e. The contraction in output on account of the R^e is known as direct deindustrialization and in terms of the S^e is known as indirect deindustrialization. In the NT sector, the R^e leads to a fall in the size of the NT sector, but when the S^e

is considered, there is likely to be an overall increase in output, as the income elasticity of demand for services tends to be in excess of unity. In terms of prices, the increase in the size of the NT sector pushes the price level in the sector upwards, whilst the price levels in the NBT and the BT sectors are determined by the external sector and so remain exogenously determined.

Table 1.6: Summary of Dutch Disease Effects on Output and Prices, by Sectors

	Output	Price
Resource Movement Effect		
Booming Tradable (Oil sector)	+	Given
Non-Booming Tradable (Manufacturing Sector, Tourism and Export Agriculture)	-	Given
Non-tradable (Services sector)	-	+
Spending Effect		
Booming Tradable (Oil sector)	-	Given
Non-Booming Tradable (Manufacturing Sector, Tourism and Export Agriculture)	-	Given
Non-tradable (Services sector)	+	+
Combined Effect		
Booming Tradable (Oil sector)	Indeterminate but likely to rise	Given
Non-Booming Tradable (Manufacturing Sector, Tourism and Export Agriculture)	-	Given
Non-tradable (Services sector)	Indeterminate but likely to rise if the income elasticity of demand is greater than unity)	+

Source: Authors' derivation.

1.3: Long-run Effects of a Boom

Natural resource booms generally result in a contraction of the NBT sector, i.e., manufacturing. This tends to have lasting effects, as established by Lewis (1954). Lewis noted that the manufacturing sector fuels economic growth. Manufactured goods generally have more stable prices than primary products, so that countries with a strong manufacturing export sector tend to experience greater macroeconomic stability and benefit from a more diversified economy. There are other benefits for an economy through learning by doing and economies of scale. (Corden and Neary, 1982).

Lewis (1954) argued that the British West Indies should develop and expand its manufacturing sector, since there was only very limited absorptive potential (in terms of employment) in the agricultural and natural resource sectors. He added that since expenses associated with setting up and running manufacturing plants are particularly high, Caribbean economies should industrialize by invitation, that is, they should allow foreign firms to set up shop in the region.

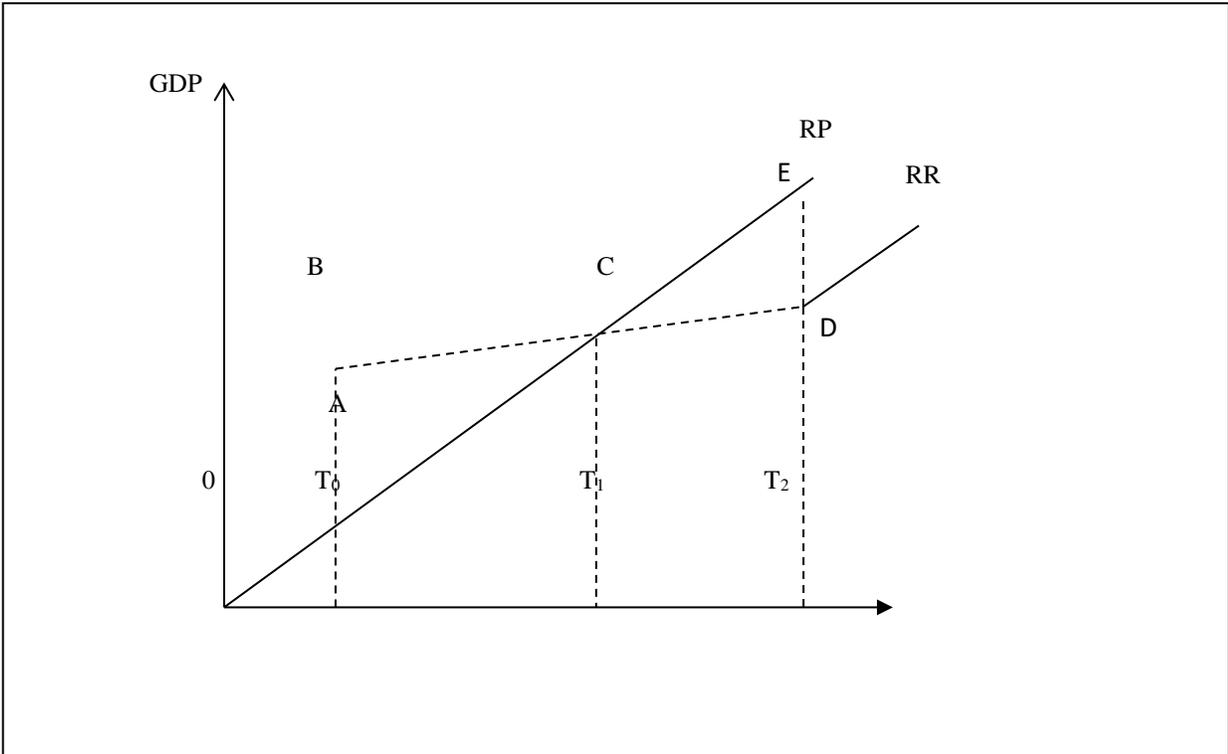
Lewis posited that manufacturing increases total factor productivity (TFP) in an economy. Moreover, as manufacturing exports increase, TFP gains increase (Kavoussi 1984). In economies where manufacturing exports as a percentage of total exports are relatively high, the effect on TFP can be pronounced. Katz and Summers (1989) have noted that manufacturing tends to enhance productivity,

profitability, and wages in an economy. The services sector is dependent on the manufacturing sector, and a slowdown in manufacturing can likely slow down the services sector.

From an endogenous growth perspective, manufacturing offers many benefits to an economy, as it facilitates technological innovations. In their models of endogenous growth theory, Romer (1986) and Lucas (1988) treated physical capital as the engine of long-run economic growth in the economy. An important observation is that producing the same volume of manufactured export activity has a greater effect on economic growth than a similar value of agricultural export activity (Matthee and Naude, 2008). This suggests that there are some benefits to manufactured exports compared to agricultural exports.

To illustrate the long-run effect of mineral rents on an economy, Figure 1.4 shows two economies: a resource-poor economy (RP) and a resource-rich economy (RR). At the point in time T_0 , assume the RR starts to produce oil so that its stock of wealth immediately increases from A at T_0 to B. The cumulative effects of rent-seeking and fiscal mismanagement can slow the growth of the economy, so that by T_2 , the level of GDP in the RR economy can be at D, whilst in the RP country it can be at E.

Figure 0.1 The Long-run Growth Potential of an Economy with a Resource Boom



Source: Sachs and Warner (1995) and authors' calculations.

The length of the gap T_0 to T_2 depends on the value and the duration of the resource boom. The quality of institutions in the economy will also play a key role in conditioning the extent of the resource curse effect.

1.4: Conclusion

This chapter sketched the basic outlines of the Dutch disease model and its implications for employment, output, and prices in a small economy experiencing a boom. The chapter also reviewed the possible long-run implications for the growth performance of a Dutch-diseased economy. The resource movement effect contracts the NBT and NT sectors whilst the spending effect contracts the NBT sector but stimulates the NT sector. The long-run effects are associated with a contracted NBT sector but an expanded NT sector. Employment trends follow in the same direction as output for the NBT and NT sector. Although the BT sector's output expands, employment in that sector increases only marginally.

Chapter 2: Sovereign Wealth Funds: Theory and Practice

2.0 Introduction

Sovereign wealth funds (SWF) have grown considerably during the last few years and continue to attract attention. In 2016, total assets of SWF were US\$6.51tn, more than twice their capital level in 2008. One interpretational understanding of SWFs is that they are dedicated, government-owned investment vehicles that are driven by foreign exchange surpluses. These investment vehicles are managed separately from the stock of international reserves. The performance of SWFs is linked closely to the behavior of public finances, monetary policy (via liquidity conditions), and external accounts (through exchange rate variations). SWFs are not new. Kuwait, for example, started a SWF in 1953, and in the 1970s several Middle Eastern countries followed suit. SWFs are usually distinguished based on their stated policy objectives. Using the IMF and Santiago Principles Taxonomy, several types of SWFs can be identified, and are briefly defined below.³

Stabilization Funds: These are set up to help insulate an economy from commodity price volatility and from external shocks. An important part of the purpose of stabilization funds is that they can help facilitate consistent levels of government revenues as commodity prices fluctuate. Putting resources away in a stabilization fund also helps insulate an economy from a rapid buildup of inflation.

³ The Santiago Principles are 24 voluntary guidelines which assign best practice for the way in which SWFs should be reported. The principles were the joint effort of the IMF and the International Working Group on Sovereign Wealth Funds.

Savings Funds: Savings funds are intended to be permanent funds which are typically associated with non-renewable natural resources. These funds create a store of wealth for future generations so that the economy can benefit from the extracted resource after it has been extracted.

Development Funds: These funds are established for allocating resources for key social and economic infrastructure projects. Two good examples are the Mabadala Fund in the United Arab Emirates and the National Development Fund in Iran.

Other purposes for which SWFs may be used are pension resource funds and reserve investment corporations. Pension resource funds are designed to help meet target outflows in the future, associated with pensions. The investment decision and portfolio allocation of sovereign wealth funds are linked to their governance structure and their stated investment objectives.

2.1: Macroeconomic Role of SWFs

The growth of SWFs in mineral-producing economies is part of a larger strategy of accumulating foreign assets used by developing countries during years of rapid mineral rent accumulation. A significant feature of the global financial system has been the buildup of foreign exchange reserves by developing countries.⁴ In recent years, SWFs have become even more important as several commodity-exporting countries, to avoid replicating the wastage of 1970s, set up these funds to preserve a portion of their wealth base for future generations. Four motives behind the formation of stabilization funds are the wealth substitution motive, the resilient surplus motive, the counter cyclical motive, and the self-insurance motive. The two that are relevant to this study are the wealth substitution motive and the countercyclical motive. They are discussed below.

2.1.1: Wealth Substitution Motive

The wealth substitution motive exists when the mineral-exporting economy has a surplus on its current account due to the windfall from its non-renewable resource. This may be referred to as a process of transforming the illiquid exploitable asset into a liquid asset. One option available to a natural resource economy is to leave the natural resource below the ground. The resource can be extracted and invested, and this makes sense if the returns to the investment exceed the expected appreciation in the value of the asset. If the resource is to be consumed, how long will the period of consumption last? Increases in consumption must be carefully managed, as consumption patterns have a built-in inertia that is difficult to reverse. Indeed, Duesenberry (1948) observed that, "The strength of any individual's desire to increase

⁴ Bollers and Khemraj (2016) found that foreign exchange shocks positively affect economic growth in small, very open economies.

his consumption expenditure is a function of the ratio of his expenditure to some weighted average of the expenditure of others with whom he comes into contact” (Duesenberry 1948, pp. 64), and secondly and more to the point here, “The fundamental psychological postulates underlying our argument is that it is harder for a family to reduce its expenditure from a higher level than for a family to refrain from making high expenditure in the first place.” (Duesenberry 1948, p.68).

Political economy pressures can lead to overconsumption of the natural resource for immediate consumption or investment decisions, with few marginal social benefits. Moreover, it is important that countries benefitting from significant current account surpluses try to avoid the Dutch disease.

The decision to invest, versus the decision to consume, depends heavily on the economy’s level of income (Sachs, 2007). More, with respect to the design of stabilization funds, complications arise, in that it is sometimes difficult to distinguish a long-term improvement from a cyclical upsurge. Consequently, many governments see price increases as a trend and act accordingly with booms followed by crises.

2.1.2: Counter-cyclical Motive

The economic literature is clear that procyclical tendencies, by exacerbating the level of output volatility, can dampen the level of economic growth in an economy. Fatas and Mihov (2003) show that the aggressive use of discretionary fiscal policy adds to the level of economic volatility in an economy and lowers economic growth. Large swings in commodity prices can be transmitted to the economy via large swings in expenditure. From a Dutch disease perspective, the rapid increase in government expenditure appreciates the economy’s real effective exchange rate (REER) to the detriment of the NBT sector, which tends to contract.

2.2: Harnessing Windfall Revenues

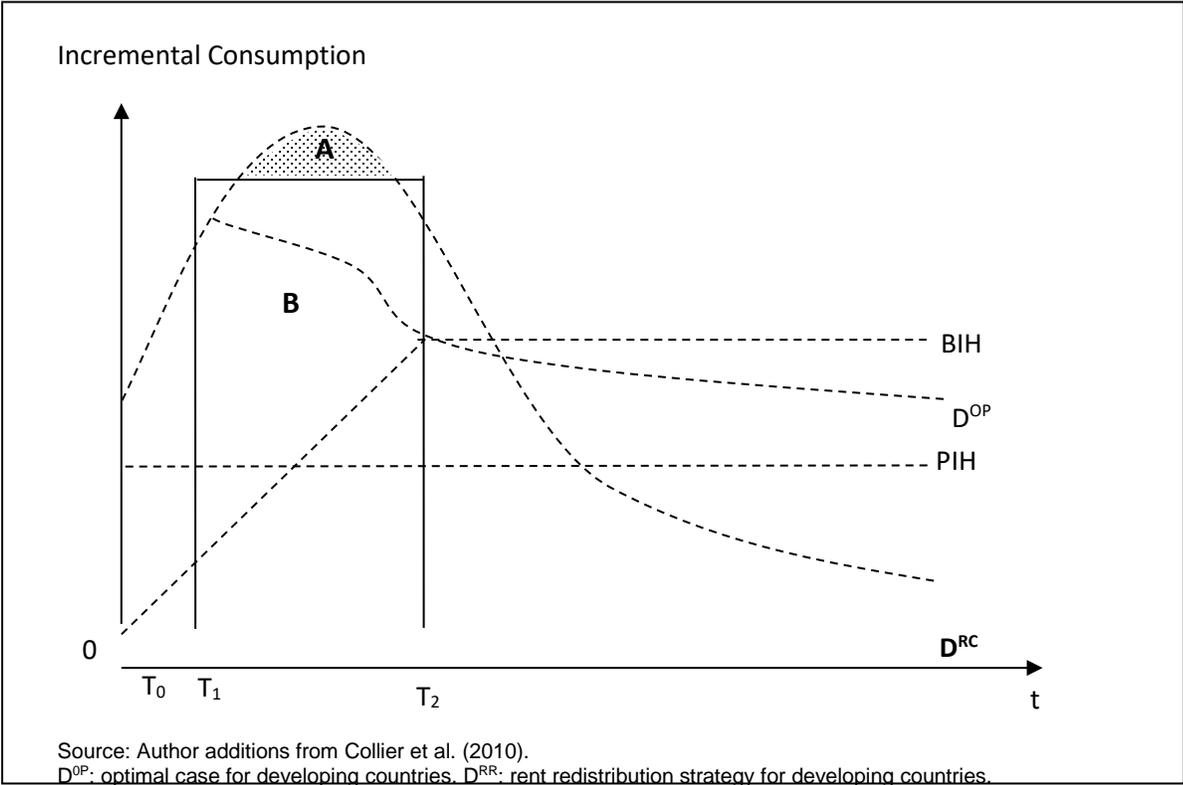
This section assumes, for simplicity, that matters of geology are certain and that the flow of natural resource revenues can be determined with a high degree of confidence. These are strong assumptions, but even in this setting, countries benefitting from a resource boom face a number of key decision-making challenges revolving around the following: (i) how should the time path for spending and saving from the revenue flow be determined, and (ii) what types of assets should the country acquire in order for increases in consumption to be sustainable over time?

2.2.1: Understanding Consumption and Investment Decisions in a Small Capital-Starved but Resource-abundant Economy

In a small, capital-starved but resource-rich developing country, the state will have to make important decisions regarding both consumption and investment. With respect to investment, if the benefitting economy forms a SWF and is investing its money abroad, the relevant interest rate is the world interest rate r^w . Let the return to domestic investment in infrastructure be r^d . In capital-starved, low-income countries, r^d can be quite high, and in cases where $r^d > r^w$, there is some logic in investing in domestic infrastructure and other such projects.

The generalized volatility of oil revenues means that the state will have to make special efforts to smooth out these revenues, whilst the exhaustibility of these resources means that it must consider saving part of the resource rents for the future. Figure 2.1 below relates to various consumption paths out of resource revenues available to a resource-abundant developing economy. Note, A represents expenditure that for a period of time supersedes the revenues collected as natural resource rents (B).

Figure 2.1: Consumption of Natural Resource Rents*



* Definition of resource rents: **rent** is a surplus value after all extraction costs and normal returns have been accounted. Rent is not equivalent to the gross value of the resource or the government derived rent.

(a) Permanent Income Hypothesis

The permanent income hypothesis (PIH) introduced by Friedman in 1957 solves the problem of optimal consumption in the context of maximizing a social welfare function in an environment characterized by uncertainty. The literature on the revenue management of nonrenewable natural resources recommends that the state smooth expenditure overtime. However, the challenge with smoothing is that the state will need to determine the long-run value of the resources from the commodity, which in turn involves forecasting both long-run extraction costs and long-term pricing. This can be very difficult, as oil prices are subject to a multiplicity of influences and tend to fluctuate.

The PIH line regarding consumption is flat, indicating that the change in consumption is constant. The change in consumption at T_0 is equal to the interest income that the “stock of resource wealth” valued at T_0 using the world interest rate, would fetch. The challenge with the PIH is that it involves borrowing in the period T_0 to T_1 , when the economy receives no income from the resource wealth, and repaying in the period T_1 to T_2 , when the resource wealth forms a stock of savings. The size of the savings fund and level of consumption increment at all dates are such that interest payments on the fund (once resource revenue has ended) exactly finance the consumption increment.

The policy prescription from the PIH thus helps the economy with:

- a) stabilization and saving some of the wealth for future generations
- b) avoiding procyclical tendencies.

The obvious challenge with the PIH approach is the uncertainty over the size of the permanent income.

(b) Bird in Hand

A more conservative strategy is the bird-in-hand (BIH) approach. With this approach, no resources are borrowed, and consumption is only slowly built up between T_1 and T_2 so that the incremental asset base peaks at T_2 when the resource is exhausted. With this strategy, consumption benefits are pushed into the future (Bjerkholt, 2002). With the BIH approach, all the resources are placed in the SWF and consumption is then conditioned by the interest earned on the asset.⁵ Once the revenues to be collected have been exhausted, the BIH collapses into the PIH. Although the BIH is more conservative up front, it allows a higher level of consumption in the future. The major disadvantage of this approach is that consumption is displaced into the future. In a poor economy, this may not be politically practical. In common, the BIH and PIH convert the resources into a financial asset and then streamline consumption

⁵ Once the oil revenues have dried up, there should be enough money in the cumulative stock of assets so that the non-oil deficit can be sustained, even though all the oil has been extracted.

from the financial asset to the benefit of the future generation. This is especially so with the BIH approach (Segal, 2012). As reserves decline, the amount of uncertainty is reduced, and a meaningful understanding of the stock of wealth ascertained (the amount of oil in the ground consequently becomes less of an issue). The BIH approach is the underlying strategy used by Norway to manage its oil revenues with all the net costs from extracting crude oil placed in the government pension fund.

The BIH approach has several advantages over the PIH, including the following:

- a) It facilitates increasing expenditure overtime, and this may be politically appealing.
- b) It provides more effective stabilization to expenditures in the economy, as it is based on predictable levels of revenue flows.

If the country wants a lower level of poverty and expects higher per capita income in the future, then it makes sense to spend today to alleviate poverty. The BIH may not be the best strategy for such a setting.

c) Optimal Strategy (D^{OP})

In small, developing economies (such as Guyana and Trinidad and Tobago), there are many gaps in the economic development process, as per capita GDP lags that of the developed world. Table 2.1 compares the per capita GDP of Guyana to that of the Latin American and Caribbean (LAC) region. It is clear that Guyana's per capita GDP falls behind the regional average.

Year	Guyana	Latin America & Caribbean	Guyana as a % of LAC
1960	\$301.68	\$367.63	82.06%
1970	\$385.01	\$611.53	62.96%
1980	\$766.83	\$2,120.88	36.16%
1990	\$550.59	\$2,615.02	21.05%
2000	\$960.19	\$4,301.30	22.32%
2001	\$936.92	\$4,132.52	22.67%
2002	\$972.22	\$3,654.17	26.61%
2003	\$999.18	\$3,714.57	26.90%
2004	\$1,058.96	\$4,261.92	24.85%
2005	\$1,110.96	\$5,092.56	21.82%
2006	\$1,961.06	\$5,902.98	33.22%
2007	\$2,334.02	\$6,887.46	33.89%
2008	\$2,569.99	\$7,901.17	32.53%
2009	\$2,698.06	\$7,342.71	36.74%
2010	\$2,998.94	\$8,971.94	33.43%
2011	\$3,408.73	\$10,049.84	33.92%
2012	\$3,759.38	\$10,070.35	37.33%
2013	\$3,928.88	\$10,227.51	38.41%
2014	\$4,028.16	\$9,975.19	40.38%
2015	\$4,127.35	\$8,133.26	50.75%

Source: World Development Indicators online and own derivations.

Due to the need for developing countries to improve the standard of living of its population with some urgency, some commentators believe that oil revenue-based expenses should be front-loaded. Several researchers have found that the PIH without a clear strategy for investment may result in suboptimal investment outcomes, as the PIH and even the BIH, to a large extent, did not focus on the capacity of policymakers to scale up investment projects.

Takizawa, Gardner, and Ueda (2004) have argued that if the quality of investment is adequately high, then the optimal short-run level of investment in a capital-starved economy will be above what the prescription from the PIH implies. They examined two fiscal policy rules, namely the hand-to-mouth rule and the annuity rule (PIH), in countries endowed with exhaustible natural resources. Under the hand-to-mouth rule, the government spends the bulk of the revenues generated by the natural resources as they accrue, whilst under the annuity rule, the government maintains a constant level of real spending by investing the wealth generated by natural resources into financial assets. The authors implement a variant of a neo-classical growth model to analyze how these two alternative fiscal policy rules affect welfare, under five assumptions about initial conditions of the economy as well as the consumption and investment context of government spending. The main findings are that the annuity rule is validated when the economy grows along a steady-state, balanced path, as this rule yields higher welfare than the hand-to-mouth rule. However, the hand-to-mouth rule is preferred over the annuity rule when the economy is on a transition path due to low levels of initial capital stocks, which is the case in most developing countries.

Arezki, Dupuy, and Gelb (2012) showed that weak administrative capacity undermines increases in optimal public capital spending following a resource boom. Spending on relevant capital goods yields a superior long-term economic outcome.⁶

In a country like Guyana, where consumption and income are currently low, poverty rates (36 percent as of 2006) and unemployment rates are relatively high (11-12 percent in 2014). As capital expenditures on infrastructure improve, there can be a crowding-in of private capital. In this regard, Collier et al. (2010) address the issues associated with efficiently managing natural resource revenues in developing countries with a low level of capital. They break rank with theories such as the PIH and argue that capital- stunted economies should place priority on domestic investment. These researchers refer to their expenditure strategy on upfront capital investments as the “optimal approach.” They conclude by noting that, the message from the socially optimal path is therefore an intuitive one. Immediate consumption for the current relatively poor generation is optimal, but so is investment to put consumption

⁶ The challenge in part is how to strengthen the capacity of the state to undertake these various public-sector investments.

on a steeply rising path. The best way to achieve this is by investment in the domestic economy, which essentially brings forward the economy's growth trajectory, benefiting all generations.

d) D^{RC} Option

There is another permutation which must be considered, and which must be avoided by countries like Guyana at all costs: this is the D^{RC} option. It occurs when the resource curse sets in, that is, the relationship between expenditure and revenues moves out of sync so that debt mounts and consumption overshadows investment.

2.3: Experience of Stabilization Funds in Oil-producing Economies

2.3.1: Timor Leste

The Democratic Republic of Timor Leste is located in Southeast Asia. The Republic includes the eastern part of the island of Timor and the nearby islands of Atauro, Jalo, and Oecusse. The country is relatively poor but generates a significant amount of revenue from its energy sector.

In 2015, the population of Timor Leste was 1,167,242, and in 2012, per capita GDP was US\$9,500. In this economy, oil accounted for 80 percent of GDP in 2014. The second largest exported commodity is coffee, purchased mainly by Starbucks. According to the IMF (2016c), the economy of Timor Leste contracted sharply by 13.9 percent in 2013 and by 15.8 percent in 2014. For the period 2015 to 2021, the IMF forecasts that real GDP growth in Timor Leste will be negative. Real non-oil GDP is expected to show some buoyancy, according to the IMF projections (see Table 2.2). Revenues from the petroleum sector (including interest from the Petroleum Fund) are expected to decline every year after 2013, as forecasted oil prices show distinct signs of dampening. Furthermore, the current account balance in Timor Leste, which was US\$2,736mn in 2012, was projected to decline to US\$41mn by 2016, with emergent deficits every year thereafter to 2021, as petroleum export revenues decrease (IMF 2016c).

Table 2.2: Timor-Leste: Selected Economic and Financial Indicators

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
			Est.	Prel.			Proj.			
Real Total GDP	5.3	-13.9	-15.8	-0.6	-8.8	-12.9	-3.9	-9.4	-9.2	-8.8
Real non-oil GDP	6.4	2.8	5.5	4.3	5.0	5.5	6.0	6.5	5.5	5.5
Revenue	61.1	66.1	63.2	61.5	63.1	52.6	49.0	46.0	42.7	40.0
Petroleum revenue (incl. PF interest)	55.5	58.7	53.2	48.9	48.3	41.1	37.7	34.8	31.5	28.7
Expenditure	22.0	24.0	37.4	57.3	73.5	73.1	69.1	67.2	65.0	58.5
Recurrent expenditure	10.4	13.1	20.9	39.1	49.3	45.8	43.8	43.1	42.2	40.9
Capital Expenditure	7.9	6.3	10.2	11.7	17.4	23.3	21.3	20.1	18.8	13.6
Current Account balance	2736	2391	1096	431	41	-281	-315	-334	-359	-241
Petroleum Revenues	3775	3286	2319	1281	1041	972	976	955	925	889
GDP at current prices	6807	5595	4361	2620	2100	2368	2589	2746	2933	3094
Non-oil GDP	1295	1319	1371	1412	1480	1782	2037	2323	2647	2948
Oil GDP	5512	4276	2990	1207	620	587	552	423	286	147
Petroleum Fund Balance (in mns of US\$)	11775	14952	16539	16218	16106	15795	15489	15144	14769	14359
Petroleum Fund balance (in percentage of non-oil GDP)	909	1134	1206	1148	1088	887	760	652	558	487
Source: IMF (2016c).										

History and Objectives of the Timor Leste Petroleum Fund

Oil and gas account for more than 95 percent of government revenues collected by Timor Leste and around 85 percent of its GDP (Palatino, 2014). The Timor Leste Petroleum Fund (TLPF) was established in August 2005, mandated by the Petroleum Fund Law. The objective of the TLPF is to contribute to the current and future generations of Timor Leste. It is part of the government's fiscal policy.

The fund currently has US\$17bn. Because it accounts for around 90 percent of the state budget, however, this amount is subject to change over time. Timor Leste needs to closely monitor the fund because, by 2023, the Kitan and Bayu-Undan oil and gas reserves are projected to run out (IMF, 2016c). More than three quarters of the commercially viable oil and gas in these two fields have already been extracted (La'o Hamutuk, 2015). Some experts have forecasted that the TLPF can only last until 2025 (IMF, 2016c).

Managing the Fund

The operational manager of the TLPF provides a quarterly report to the Ministry of Finance. The fund is governed by a Consultative Council which includes members of the church and high-profile members of civil society. By law, no more than half of the TLPF can be held in equities.

Investment Strategies of the TLPF

In the years of fiscal abundance, the government of Timor Leste placed a considerable amount of its assets into the TLPF to assist the economy to prepare for those years when its oil and gas reserves would be depleted. At the end of 2014, the TLPF had investments in more than 14 countries, with stocks in 1,981 companies. In early 2016, the balance in the fund was US\$16.22 billion.

Given the economy's dependence on natural resource rents, the critical challenge for the state is to smooth long-run income. Failure to diversify the economy will have serious long-term consequences. The TLPF provides Timor Leste an opportunity to diversify its economy, and it must fulfill this mandate in a short period of time.

2.3.2: Norway

On July 19, 1966, the first oil well was drilled in the North Sea off the coast of Norway. On August 21, 1969, oil was found. Norway has a total population of 5.2mn and a per capita GDP of US\$74,046, the third highest in the world IMF (2015). It is ranked first in the UNDP's Human Development Index. Export revenues from oil and gas are about 50 percent of total exports, or around 20 percent of GDP (IMF, 2015). Tables 2.3 and 2.4 provide some basic macroeconomic data on key trends in the Norwegian economy.

	Oil rents (% of GDP)	Natural gas rents (% of GDP)
1991	8.42	1.20
1992	8.60	1.06
1993	8.65	1.30
1994	8.63	1.16
1995	8.58	1.03
1996	11.13	1.77
1997	10.55	1.84
1998	5.93	1.47
1999	8.40	1.26
2000	15.68	3.39
2001	12.50	3.31
2002	11.01	2.60
2003	10.97	4.23
2004	12.69	4.34
2005	14.55	6.23
2006	14.56	5.38
2007	12.57	4.69
2008	14.49	6.68
2009	9.22	3.49
2010	9.97	2.93
2011	10.80	2.61
2012	9.44	2.27
2013	8.34	2.19
2014	7.57	1.33

Source: WDI, online.

The main natural resource goods exported from Norway are petroleum, natural gas, iron ore, copper, lead, zinc, titanium, nickel, fish, lumber, and hydrocarbons. Table 2.4 shows selected social and economic indicators of Norway.

Table 2.4: Norway: Selected Economic and Social Indicators

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Real economy (change in percentage)	4.0	2.6	2.4	2.7	0.0	-1.6	0.6	1.0	2.7	1.0	2.2	1.6
Real GDP	4.1	3.8	4.6	6.8	1.4	-1.6	1.8	1.9	3.8	2.3	2.3	1.0
Unemployment rate (percentage of labor force)	4.5	4.6	3.4	2.5	2.6	3.2	3.6	3.3	3.2	3.5	3.5	4.4
Gross national saving (percent of GDP)	32.5	37.2	38.9	37.2	39.0	31.5	36.3	38.2	39.0	38.2	40.2	37.6
Gross domestic investment (percent of GDP)	20.3	21.5	23.0	25.8	24.5	22.5	25.4	25.8	26.5	27.9	28.3	28.6
Net financial assets, of which: capital of gov't Pension Fund Global	57.9	71.4	81.7	87.4	88.8	111.9	148.2	153.3	166.1	208.2	254.6	286.0
International reserves (end of period, in billions of US\$)	44.3	47.0	56.8	60.8	50.9	48.9	55.6	52.8	51.7	57.9	66.9	58.5
Source: IMF (2016b).												

The Norwegian government places surplus wealth generated by the petroleum sector into the Norwegian Government Pension Fund Global. (previously known as the Petroleum Fund of Norway). The purpose of the Fund is to invest some of the large amount of surplus resources generated by the Norwegian petroleum sector. By May 2016, the Fund had US\$873bn. The Fund has investments in 78 countries and 9,050 companies. Its average annual return for the period 1998-2015 was 5.6 percent. The fund operates with a strict budgetary rule, that is, no more than 4 percent of the value of the fund can be used in the national budget. This 4 percent is essentially the expected long-run average real return on the fund. In this way, the capital base of the fund is not affected.

2.3.3: Botswana's Pula Fund

Diamond prospecting in Botswana began with de Beers in 1954. At that time, the Botswanan economy was heavily dependent on agriculture and ranching. The Orapa pit, a major diamond-producing mine in Botswana, was discovered in 1967. The Jwaneng, another major producing mine, was discovered in 1972. In 1978, de Beers formed a 50-50 equity joint venture with the Government of Botswana to create Debswana. This move allowed the government to earn significant diamond revenues. Botswana has a population of 2.1mn people with a per capita GDP of US\$6,040.1 (IMF, 2016a).

The Bank of Botswana established the Pula Fund in 1994 to manage their natural resource rents from diamonds. The Bank of Botswana invests the proceeds from its non-renewable mineral resources for the benefit of future generations. The Government of Botswana also places some of its assets into the Government Investment Account with the intended short-term objectives of stabilization, but also with the long-term objective of ensuring that some of the assets are available for future generations.

The Bank manages the Fund as a long-term investment portfolio. The fund has two components: the Government Investment Account, which is owned by the Government of Botswana; and the Pula Fund's foreign reserve, which is owned by the Bank of Botswana (Natural Resource Governance Institute, 2013).⁷ The management of the Pula Fund has to be considered in the context of the three-pronged strategy of spending, whose components are the following:

- (a) Spending for development
- (b) Stabilization
- (c) Saving for future generations

The Pula Fund's investment policy is underpinned by the objective of preserving the purchasing power of the assets that enter the fund and maintaining liquidity and maximizing returns to the fund without exposing the Bank to unnecessarily high risk. In the determination of the annual allocation to the fund, the Government of Botswana sets a Sustainable Budget Index (SBI), which is the ratio of non-investment spending to non-mineral revenues.⁸ First, the government determines the percentage of its revenues that it will spend on recurrent expenditure. Then, the remaining revenues are split between expenditure on public goods (health, education, and infrastructure) and savings in the Pula Fund. The fund is invested both in fixed-income securities and in global equities.

With respect to portfolio composition, the Bank of Botswana reviews the Pula Fund's asset allocation every three to four years. The guideline for allocation since 2012 has been 40 percent equities and 60 percent fixed income securities (Alsweilem et al., 2015). The Pula Fund, whose net asset value stood at US\$7 billion in 2015, has been a true success story for Botswana. This success was due to continuous fiscal surpluses and saving for over 20 years (Alsweilem et al., 2015; Lewin, 2011). Its portfolio management by the Bank of Botswana has also contributed to the growth of the fund over time. "While Botswana has been successful in accruing assets as a means of ensuring inter-generational equity through its sovereign wealth fund as well as using it to smooth commodity price volatility, it is important

⁷ The Bank of Botswana hires external portfolio managers to manage the Pula Fund's foreign reserve part of the fund.

⁸ For example, in 2012 the government of Botswana set the SBI at 0.8. Therefore, a maximum of 80 percent of non-mineral revenues can be spent on recurrent government expenditures outside the health and education sectors.

to consider that the creation of a commodity fund does not necessarily ensure that politicians will not take its assets when it is flush. Indeed, part of the reason Botswana has been successful in preventing these practices is because it adheres to rules that prevent the government from interfering in the investment of the funds as well as using its assets.” (Mejia and Castel, 2012: 11). The Pula Fund’s unique governance structure, fiscal prudence, and commitment to save money for future generations have allowed it to grow over time (Lewin, 2011).

Table 2.5 indicates that Botswana experienced favourable growth rates up until 2014 but in 2015 this growth dipped into negative territory. The IMF expects that growth will return in 2016 on the assumption of a measured recovery in global diamond and copper prices (IMF 2016a). The inflation rate moderated in the listed period and the current account balance remained sufficiently healthy. Diamond production (in millions of carats) remained broadly constant. Imports of goods and services in months of import cover was 11.4 in 2015, way above the benchmark of 3 months.

Table 2.5: Key Economic Indicators, Botswana

	2012	2013	2014	2015
Real GDP	4.5	9.9	3.2	-0.3
Inflation	7.5	5.9	4.4	3
Current account balance	0.3	8.9	15.7	9.3
Diamond production (millions of carats)	20.9	23	24.7	21.7
Months of imports of goods and services	10	10.6	14.4	11.4
Source: IMF (2016a)				

2.4: Conclusion

This chapter emphasized the relative strengths and weakness of the PIH, BIH, and an optimal strategy as well as the resource cursed response to consuming natural resource rents. The PIH standpoint allows for future generations and smooths consumption and in so doing avoids procyclical tendencies. A major challenge with this approach is determining the long-run value of the resource. The BIH is really a delayed PIH but is more conservative in its approach to harnessing windfall revenues from the energy sector. With the BIH, all the country’s resources are placed in the SWF, and consumption is then linked to the interest obtained from the accumulated SWF. Compared to the PIH, the BIH is more conservative up front but facilitates a higher level of consumption at T_2 . The displacement of consumption into the future is considered a disadvantage of the BIH, although the increased expenditure over time, especially between T_1 and T_2 , can be appealing to politicians. The optimal approach proposed by Collier et al. argues that the return on domestic investment in a relatively poor economy is higher than the financial returns associated with a SWF. Thus, it may make to sense to invest in domestic investment.

The challenge occurs when the state follows a hand-to-mouth approach and spends the resource rents quickly, even incurring debt in the process. Given the weak institutional base of the Guyanese economy, policymakers may want to consider both developing a SWF and spending up front, on appropriate high-quality physical and human capital. Guyanese authorities face a triple challenge: how to rapidly build stronger institutions, how to save for future generations and smooth consumption, and how to assure that the oil revenue spent in the short term is planned well and spent well to boost productivity and improve living standards. With weak institutions and poor capacity to execute projects well, the recommendation would be to save as much as possible until the quality and capacity of institutions improve.

Chapter 3: Trinidad and Tobago's Experience in Managing and Coping with Dutch Disease

3.0: Introduction

This chapter outlines the experience of the Trinidad and Tobago economy in the context of the natural gas boom experienced in the period 1999-2015.

3.1: Fiscal, Monetary, and Exchange Rate Policies

3.1.1. Fiscal Policies

As can be seen in Table 3.1, Trinidad and Tobago's oil production peaked in 2005 at 52.7mn bbls and declined continuously thereafter. Natural gas production continuously increased from 1991 to 2010 but declined since then. Thus, it is no surprise that Trinidad and Tobago's oil and gas rents peaked in 2008 (rents are defined here as the difference of the actual price of oil less the lifting cost, times production). Since 2007, Trinidad and Tobago's oil and gas rents have been declining. Trinidad and Tobago's total oil and gas rents in 2015 were approximately US\$4.9 billion, which was about half the rent generated in 2011, and one-third of the rent generated in 2008.

Table 3.1: Trends in Key Variables Associated with the Petroleum Sector

Date	Natural gas annual production (mn boe)	Oil and natural gas production (mn boe)	HH US\$ mmbtu	WTI US\$ barrel	Oil rents US\$mn	Natural gas rents US\$mn	Oil and gas rents US\$mn
1991	31.21	74.62					
1992	32.16	77.21					
1993	34.17	79.37	2.12	14.51	655.89	421.34	1077.23
1994	39.08	86.93	1.92	17.17	821.51	436.25	1257.76
1995	40.63	88.33	1.69	19.03	907.66	398.44	1306.1
1996	48.04	95.21	2.76	25.37	1196.73	769.93	1966.66
1997	50.73	95.92	2.53	18.3	826.98	744.67	1571.65
1998	61.84	106.73	2.08	11.31	507.68	749.39	1257.07
1999	65.25	110.94	2.27	26.02	1188.83	859.61	2048.44
2000	94.05	137.64	4.23	28.4	1238.04	2310.71	3548.75
2001	100.54	141.94	4.07	19.31	799.41	2378.13	3177.54
2002	116.44	164.13	3.33	29.44	1403.83	2254.98	3658.81
2003	164	213.19	5.63	32.12	1580.03	5363.38	6943.41
2004	182.97	227.95	5.85	43.23	1944.48	6222.09	8166.57
2005	200.73	253.45	8.79	59.41	3131.82	10253.52	13385.34
2006	243.74	296.1	6.76	62	3246.28	9585.34	12831.62
2007	256.34	300.6	6.95	91.36	4043.74	10357.8	14401.54
2008	254.13	295.96	8.85	41.44	1733.27	13074.82	14808.09
2009	262.61	301.57	3.89	74.49	2902.58	5944.32	8846.9
2010	271.81	307.64	4.39	89.22	3197.34	6935.56	10132.9
2011	260.46	294.01	4.01	98.61	3308.4	6070.78	9379.18
2012	258.8	288.71	2.76	88.19	2638.2	4145.84	6784.04
2013	260.18	289.8	3.72	97.9	2899.51	5628.39	8527.9
2014	255.47	285.13	4.39	93.35	2768.7	6522.92	9291.62
2015	240.65	269.36	2.53	48.66	1397	3535.1	4932.1

Source: World Development Indicators online (2016) and own derivation.

Table 3.2 shows the changes in government expenditure and the non-energy fiscal balance. The non-energy fiscal balance has been perpetually in deficit and steadily worsening since the start of the data set in 1999/2000. Moreover, since 2009/2010 (with the marginal exception of 2010/2011), the overall fiscal balance has been in deficit.

Table 3.2: Government Expenditure and the Non-Energy Fiscal Balance, TT\$m, 1999-2000 to 2015-2016

	Central government total expenditure (TT\$m)	Non-energy fiscal balance (TT\$m)	Overall fiscal balance (TT\$m)
1999-2000	10,526.30	-2,753.80	-949
2000-2001	12,069.60	-3,804.60	-96.8
2001-2002	13,102.90	-3,867.70	890.9
2002-2003	14,226.80	-3,486.30	-354.3
2003-2004	15,802.90	-5,412.70	958.4
2004-2005	19,119.60	-6,413.40	1,510.10
2005-2006	24,641.00	-9,220.40	5,006.90
2006-2007	31,197.90	-13,948.20	7,713.10
2007-2008	37,765.90	-17,679.20	2,298.50
2008-2009	44,715.20	-16,281.20	12,132.70
2009-2010	45,730.80	-26,021.40	-6,686.00
2010-2011	43,674.90	-22,512.70	188
2011-2012	48,602.50	-28,271.60	-1,101.90
2012-2013	51,474.70	-28,822.70	-2,196.80
2013-2014	57,668.60	-31,512.00	-4,908.50
2014-2015	62,820.50	-32,553.40	-4,442.10
2015-2016	61,792.20	-25,656.10	-7,013.70

Source: CBTT online statistical database (2016).

From a political economy perspective, the 2001 elections in Trinidad and Tobago ended in a split vote, and the President had to determine who had won. The closeness of the election results seems to have motivated the eventual winner, and emergent government, to throw caution to the wind; transfers and subsidies increased fivefold between 2000 and 2010 and by 2015 had doubled again in relation to their 2010 values. This spending pattern by diminishing the pool of potential investible resources would have lowered the long-term development option for the Trinidad and Tobago economy by lowering the potential level of investment funding. (Table 3.3). Specifically, for the fiscal period 1999-2015, TT\$284.1bn was collected in fiscal revenues and TT\$283.9bn was spent on transfers and subsidies alone. This reflects that the Trinidad and Tobago economy basically followed a hand-to-mouth strategy of extracting the natural resource, collecting some proportion in fiscal revenues from the energy sector, and then spending these resources on transfers and subsidies. This component of government expenditure is not necessarily productivity enhancing, especially if the subsidies are not well targeted or effective in either diversifying the economic base or improving human capital.

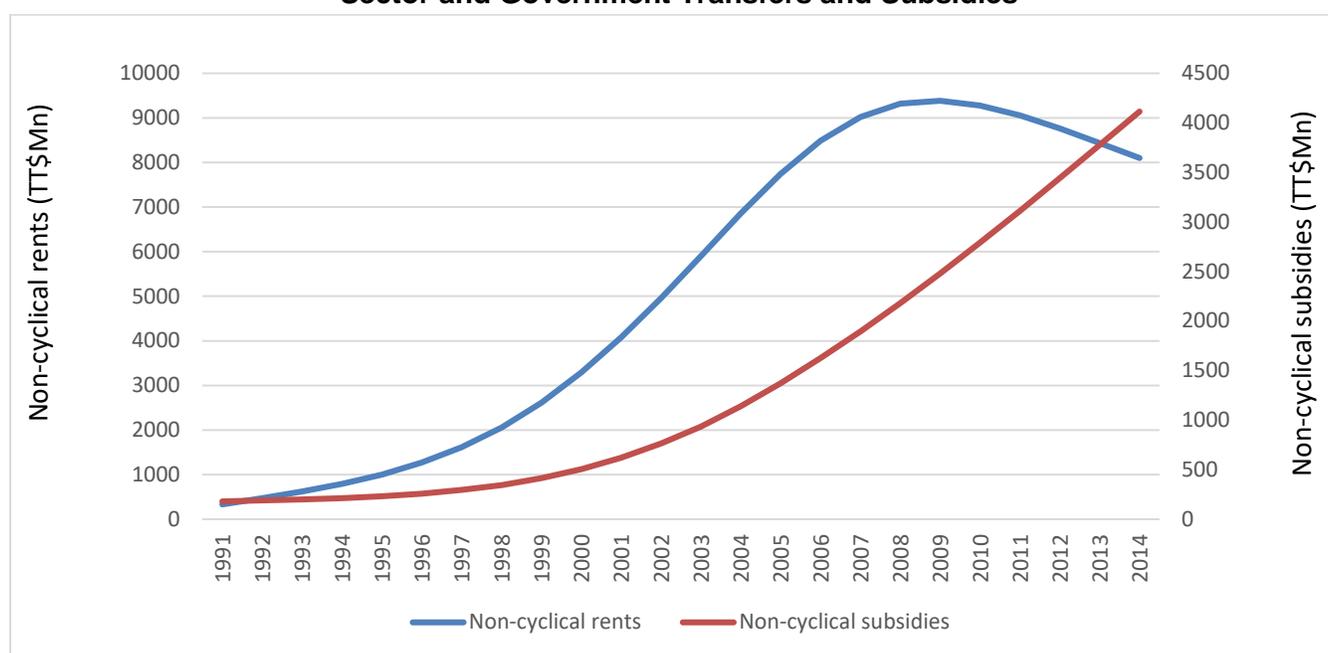
Table 3.3: Government Energy Revenue and Expenditure on Transfers and Subsidies, TT\$m 1999-2000 to 2015-2016

Fiscal year	Central government energy revenue (TT\$m)	Central government expenditure on transfers and subsidies (TT\$m)
1999-2000	1,703.60	3,261.60
2000-2001	3,689.10	3,980.20
2001-2002	4,583.80	4,555.40
2002-2003	3,249.40	5,186.70
2003-2004	6,182.50	5,963.40
2004-2005	7,641.70	7,910.60
2005-2006	13,961.30	10,821.60
2006-2007	21,416.00	14,830.40
2007-2008	20,025.90	16,780.90
2008-2009	32,463.20	20,114.10
2009-2010	19,335.40	21,173.60
2010-2011	22,700.60	20,833.30
2011-2012	27,169.80	25,099.50
2012-2013	26,625.90	27,206.10
2013-2014	26,603.60	30,068.40
2014-2015	28,111.30	34,663.50
2015-2016	18,642.30	31,439.50

Source: CBTT online statistical database (2016).

The non-cyclical aspect of government transfers and subsidies continued to rise (Figure 3.1) even after 2009, although the non-cyclical component of rents from the petroleum sector was on the decline, providing some evidence of fiscal imprudence.

Figure 3.1: Trends in the Non-cyclical Components of Economic Rents from the Petroleum Sector and Government Transfers and Subsidies



Source: Central Bank of T&T Online Statistical Database (2016).

The cyclical fiscal stance of the state nurtured the NT component of the Trinidad and Tobago economy, which climbed from 60.7 percent of GDP in 2000 to 71 percent in 2016. In the labor market, services sector employment climbed to 85.4 percent of total employment in 2017 compared to 78.9 percent in 2000. Fiscal policy created an incentive structure in favor of the services sector, which duly expanded.

Recently, the IMF commented that the Trinidad and Tobago economy needs a “sizable and sustained fiscal adjustment, staff encouraged the authorities to formulate and announce early on the comprehensive multi-year adjustment program” (2016d: 11). This adjustment process cannot be hasty or lumpy; rather, it must be measured.⁹ The IMF also recommended a comprehensive review of various expenditure programs undertaken by the state to help realize desired socioeconomic goals but in the context of a tighter budget (2016d).

Monetary Policy in Trinidad and Tobago

Monetary policy in Trinidad and Tobago is limited by the weakness of the monetary transmission mechanism and the de facto fixed exchange rate regime in the country. The objective of official monetary policy of the Trinidad and Tobago economy has been to maintain low inflation, an adequate stock of international reserves, and an orderly foreign exchange market.

In the last few years, the main instruments of monetary policy in Trinidad and Tobago have been the reserve requirement ratio, open market operations, and the repo rate. The reserve requirement has not been used excessively by the Central Bank (CBTT) as a monetary tool in the last few years (the last time was November 2008). Open market operations have been used mainly for mopping up liquidity.

The main monetary policy tool of the government of Trinidad and Tobago is the repo rate, which was introduced in 2002. The CBTT has maintained its repo rate at a cyclical low of 2.75 percent for an extended period. Credit growth has been moderate. The IMF in 2016 reported that the Trinidad and Tobago economy has practiced a pause in monetary policy tightening given the challenges faced with respect to economic growth. The monetary authorities noted that apart from prioritizing policy which focus on maintaining external balances the economy should also address foreign exchange shortages on current transactions.¹⁰

Recently, monetary policy in Trinidad and Tobago has followed a very tight line and remains finely balanced. Low inflation and falling aggregate demand in Trinidad and Tobago point in the direction of

⁹ Several non-energy revenue measures to strengthen the revenue intake of the government have been proposed, including a reduction in the VAT rate whilst reducing the number of zero-rated items. There are plans to reintroduce property taxes and to fast-track a betting and gaming act by the Government of T&T. There are also plans to synergize the information between the Board of Inland Revenue and the Customs and Excise Division.

¹⁰ As reported in the *Jamaican Gleaner*, 21 June 2016. <http://jamaica-gleaner.com/article/caribbean/20160621/imf-projects-further-contraction-trinidad-and-tobago-economy-year>

lowering interest rates, but a declining interest rate differential with the United States may put further pressure on an already strained foreign exchange market situation, and in so doing, puts pressure for the domestic exchange rate to rise.

Exchange Rate Policy

The oil price and production increases in the 1970s boosted economic growth in Trinidad and Tobago. However, as the production and price of crude oil fell in the early 1980s, so too did government oil revenue collection. By 1989, real GDP was 28 percent lower than in 1982. The current account balance carried an average annual deficit of US\$427 million per annum in the period 1983-1989, whilst the fiscal balance had an annual average deficit of US\$530.3 million per annum. Consequently, the government was forced to turn to the multilateral lending agencies for assistance and to adopt a Structural Adjustment Program (SAP). Trinidad and Tobago's SAP interventions included several reforms, including expenditure-switching policies in the form of a 33 percent devaluation of the value of the Trinidad and Tobago dollar in December 1985 and a further 15 percent devaluation in August 1988. In addition, the government introduced a 15 percent value added tax (VAT) in 1990 and set about monitoring the level and extent of public expenditures to reduce the fiscal deficit which had developed during the 1980s (total government expenditure averaged US\$2,374.5mn in the period 1983-1989 with corresponding government revenues averaging US\$1,933.4 million). In 1987, cost of living allowances and merit increases of government employees were suspended and salaries were cut by 10 percent (this would later be appealed and reinstated). Apart from these measures, the government also privatized some of its state holdings,¹¹ re-scheduled some of its outstanding public-sector debt repayments,¹² and by April 1993, had liberalized the exchange rate and dismantled some of its trade tariffs.

¹¹ By the end of 1985, the state held participation in some 66 enterprises, with 100 percent ownership in 37 of them. The goal of government during the period 1974-78, became increasingly distorted as it switched from spawning new industries towards taking over existing industries, some of which were sunset (Sergeant and Forde, 1992).

¹² During the period under review, the central government debt of Trinidad and Tobago grew precipitously from US\$42.6 million in 1955 to US\$2,790.3 million in 1999, with the external debt obligation in 1999 representing just over 53 percent or US\$1,482.9 million. During the period 1955-1973, the central government debt increased by a mere US\$261.4m. However, from US\$304m in 1973 the central government debt would escalate to US\$712.1m in 1980 although the surpluses on the fiscal and external current account balances during this period was US\$552.5m and US\$1,434m, respectively. This underscores the point that T&T (and many other oil-rich countries) borrowed freely even though they did not need to do so. The usual difficulties associated with debt repayment would linger with this country well into the next decade.

Table 3.4: Basic External Account Data for the T&T Economy, 1990-2015

	TT\$ per US\$ exchange rate	REER (1998=100)	Current account balance (% GDP)	% change in the index of retail prices end of period (%)
1990	4.2	115.9	9.1	
1991	4.2000	116.1	-0.1	2.3
1992	4.2000	118.6	2.6	8.5
1993	5.6128	107.2	2.5	13.4
1994	5.8178	99.8	4.4	5.5
1995	5.8411	97.4	5.5	3.8
1996	5.9433	98.5	1.8	4.3
1997	6.2186	96.4	-10.7	3.5
1998	6.2606	100.0	-10.6	5.6
1999	6.2459	101.8	0.4	3.4
2000	6.2502	104.0	6.7	5.6
2001	6.1679	109.8	4.7	3.2
2002	6.1747	112.6	0.8	4.3
2003	6.2312	110.6	8.7	3.0
2004	6.2440	109.2	13.5	5.6
2005	6.2318	111.5	24.3	7.2
2006	6.2494	115.9	38.8	9.1
2007	6.2736	118.9	23.9	7.6
2008	6.2236	126.7	30.5	14.5
2009	6.2736	138.0	8.5	1.3
2010	6.3203	145.8	19.8	13.4
2011	6.3731	144.3	7.0	5.3
2012	6.3716	156.0	-10.6	7.2
2013	6.3885	162.0	12.9	5.6
2014	6.3613	170.6	1.4	8.5
2015 p	6.32	188.8	-0.4	7.1

Source: WDI online (2016).

The more than proportional increase in Trinidad and Tobago's price level in relation to that of its main trading partner saw its real effective exchange rate appreciate considerably. In 2015, it had appreciated by 88 percent compared to 1998, when LNG production started (Table 3.4). Recently, various pressures have arisen on the foreign exchange market, including a fall in export revenues from the energy sector (in 2008, Trinidad and Tobago exports of mineral and fuels amounted to TT\$81.7 million compared to TT\$51.8 million in 2014). At the same time, the practice of expansionary fiscal policy since 2011 and an improvement in consumer credit have helped to spur demand. Expectations have also played a part in the process, as economic agents may be hoarding foreign exchange for precautionary

and speculative purposes. Also, there is a perception that the nominal exchange rate cannot remain stable as the current account balance collapses.¹³

With the sharp decline in energy sector prices and production in recent years, considerable pressure has been placed on the CBTT to provide foreign exchange to the domestic market to maintain an orderly and stable foreign exchange market. This stable foreign exchange provided a subsidy for imports. The non-energy current account balance in the economy averaged –8 percent between 2007 and 2016.

The gradual decline in the exchange rate (from TT\$6.4 per US\$ at the start of 2016 to TT\$6.8 per US\$ in November 2016) has so far been unable to improve the current account balance. Indeed, the IMF noted that “private sector market participants continued to confirm queues for foreign exchange (FX), including for current international transactions, notwithstanding official reserves equivalent to over 13 months of imports. Staff acknowledged that the issue has been longstanding, although it became exacerbated as queues have become relatively long and external payment arrears have emerged, most likely starting in late 2014 as the impact of the fall in energy prices began to flow through to the FX market. Queues now appear to be of macroeconomic significance, due to the significant delays in obtaining FX for current imports and for debt servicing” (IMF, 2016d: 18).

Using a CPI-based approach, the IMF (2017) found that the real effective exchange rate in the Trinidad and Tobago economy had a currency overvaluation of 28.5 percent at the end of 2016. The IMF’s external balance assessment also found an overvalued exchange rate averaging between 23.6 and 48.5 percent. The significant overvaluation of the Trinidad and Tobago currency reflects the sharp drop in energy prices and the appreciation of the U.S. dollar between 2012 and 2016.

3.2: Heritage and Stabilization Fund (SWF): Example of Imprudent Borrowing to Save

Trinidad and Tobago’s Interim Revenue Stabilization Fund (IRSF) was a natural resource fund (NRF) established by the Government of Trinidad and Tobago in 2000. The IRSF was a revenue stabilization fund only. In March 2007, the government modified the fund by adding a savings component. This new fund was named the Heritage and Stabilization Fund (HSF). The objectives of the HSF are to: (i) save petroleum rents so that they can be used as a buffer to smooth government expenditure in periods of significant decline in government petroleum revenue and (ii) save petroleum rents for future generations. Thus, Trinidad and Tobago’s HSF is a combination of both a revenue stabilization fund and a savings

¹³ In the mid-year budget review (2016), the Minister of Finance tried to reduce uncertainty in the market by putting in place several interventions to stem the flow of foreign exchange; these included a 7 percent levy on online purchases and a 50 percent increase in the customs duty on luxury cars.

fund. In practice, however, the HSF has functioned more as a savings fund than a revenue stabilization fund because the focus over the 2007 to 2015 period has been to accumulate savings.¹⁴

By way of a formula, the rule for the HSF is that if the actual petroleum taxation revenues exceed (or fall below) the estimated petroleum revenues by at least 10 percent, the HSF mandates that the excess revenues be deposited in the fund. Deposits into the HSF are compulsory, whilst withdrawals are discretionary.

**Table 3.5: T&T Fiscal Balance and Allocations to the HSF
(TT \$mn)**

	Total revenue	Energy revenues	Total expenditure	Fiscal balance	Deposits to HSF
2006/2007	40,064.4	21,111.5	37,765.9	2,298.5	2,030.2
2007/2008	56,847.8	19,608.1	44,715.1	12,132.7	6,587.8
2008/2009	39,044.8	34,282.1	45,730.8	-6,686.0	0
2009/2010	43,211.9	17,509.6	43,520.1	-308.2	3,026.5
2010/2011	47,500.6	23,881.4	48,602.4	-1,101.9	2,890.0
2011/2012	49,277.9	29,709.6	51,474.8	-2,196.9	1,332.1
2012/2013	52,760.1	23,467.8	57,668.5	-4,908.4	271.7
2013/2014	58,313.0	27,354.2	61,033.0	-2,720.0	0
2014/2015	60,351.2	27,913.0	64,664.5	-4,313.3	0
Source: CBTT (2010; 2014; 2016a).					

Moreover, the indication from the data is that Trinidad and Tobago's HSF has accumulated savings, even while the state operated a fiscal deficit. Thus, the government made contributions to the fund between 2009 and 2013 while incurring fiscal deficits (see Tables 3.5 and 3.6 for basic data associated with the HSF). This indicates, in part, that the Trinidad and Tobago economy may have been borrowing to save. Against this backdrop, the state was warned that "in the medium term, sustained transfers into the HSF should be conditioned on a return to fiscal surpluses within the same fiscal year" (IMF, 2013: 14). There also seems to be some confusion in the fiscal discipline imposed by the HSF and the urgency to appease the population and redistribute the economic rents from the energy sector, as indicated by the trends in the share of transfers and subsidies as a proportion of energy sector fiscal revenues.

¹⁴ In 2016, the Government withdrew TT\$2.5 billion from the HSF (Alexander, 2016). This marked the first withdrawal from the fund since its inception in 2007. This withdrawal was to assist the government in financing its recurrent expenditure, within the 2015/2016 fiscal year.

Table 3.6: Heritage and Stabilization Fund Portfolio Valuation (US\$)

Valuation date	Net asset value	Total comprehensive income	Accumulated surplus & unrealized gains/losses	Contributions & capital
Annual portfolio valuation				
September 30, 2007	1,766,200,701	41,966,361	41,966,361	321,706,043
September 30, 2008	2,888,421,556	68,412,770	110,379,131	1,054,174,457
September 30, 2009	2,964,686,478	76,248,691	186,755,766	-
September 30, 2010	3,621,984,014	177,645,460	364,361,226	477,344,263
September 30, 2011	4,084,016,158	9,715,841	374,074,067	451,400,519
September 30, 2012	4,712,376,278	420,693,705	794,770,772	207,550,846
September 30, 2013	5,154,027,747	399,007,950	1,193,778,722	42,414,251
September 30, 2014	5,533,425,248	379,167,024	1,572,945,746	-
September 30, 2015	5,655,143,565	120,639,605	1,693,585,351	-

Source: CBTT (2016).

3.3: Upstream/Downstream Investments in the Hydrocarbon Sector

Natural gas, which exists in conjunction with crude oil in Trinidad and Tobago was traditionally flared or used as a re-injector to assist in the crude oil extraction process. In the 1950s, attempts to harness this gas were made with the establishment of a fertilizer plant in Point Lisas. In 1968, a vast reservoir of natural gas was discovered, and the government, recognizing the obvious potential that existed in resource-based (gas) industrialization projects, attempted to redirect some of the wealth that the country had accumulated from the oil sector into the formation of a few resource-based industries founded on natural gas. Initially, the government sought foreign partnerships to provide technology, managerial expertise, and market contacts, much like Lewis' industrialization by invitation proposition.¹⁵

In 1975, the government concluded agreements with W.R. Grace to build a large ammonia plant and with three steel firms to build a large steel unit. In 1976, the government agreed to build a joint Amoco fertilizer plant. The government eventually withdrew from the joint steel venture and in 1977 began a steel venture of its own—the Iron and Steel Company of Trinidad and Tobago (ISCOTT). Undoubtedly, these decisions were partly politically motivated as, “in a democratic setting there are certain constraints to economic management and optimal resource allocation. Playing to the public gallery to get elected is part of that process” (Ramsaran 1993: 239). The petrochemical sector has since grown to become a significant part of the Trinidad and Tobago economy and has been buttressed by massive inflows of FDI (cited as estimated costs in Table 3.7).¹⁶

¹⁵Apart from all the associated benefits of gas-based industrialisation, Auty and Gelb (1986) also noted that there was another underlying factor, and this was: “A strong nationalist appeal in the prospect of leaping from a plantation economy to a technologically sophisticated state.” (Auty and Gelb, 1986: 1171).

¹⁶ Annual Economic Survey, CBTT (2005, 2010).

Table 3.7: Major Foreign Direct Investment in the Energy Sector, 1959-2010

Company	Established	Estimated cost (US \$Mn)	product
Yara Trinidad Ltd. (formerly Hydro Agri Trinidad Ltd.)	1959	n.a.	Ammonia
Trinidad Nitrogen I (Tringen)	1977	125	Ammonia
Caribbean Ispat Ltd.	1980	468.3	Direct reduced iron, steel billets & wire rods
PCS Nitrogen I (formerly Arcadian)	1981	333.3	Ammonia
PCS Nitrogen II	1984	172.5	Granular urea
Trinidad and Tobago Methanol Company (TTMC)	1984	182.8	Methanol
Tringen II	1988	350	Ammonia
Phoenix Park Gas Processors Ltd.	1991	98.8	Propane, butane, and natural gasoline
Caribbean Methanol Company (CMC)	1993	200	Methanol
Trinidad and Tobago Methanol Company II	1996	235	Methanol
PCS Nitrogen III	1996	75	Ammonia
PCS Nitrogen IV	1998	252	Ammonia
Farmland / Miss Chem Ltd (formerly, Point Lisas Nitrogen Limited)	1998	300	Ammonia
Methanol IV	1998	265	Methanol
Cleveland Cliffs DRI	1999	115	Direct reduced iron, steel billets & wire rods
Ispat DRI	1999	200	Direct reduced iron
Atlantic LNG Train I	1999	930	LNG
Methanex Trinidad Ltd (formerly, Titan Methanol)	1999	261	Methanol
Atlantic LNG Train II	2002	550	LNG
Caribbean Nitrogen Company	2002	300	Ammonia
Atlantic LNG Train III	2003	550	LNG
Atlas	2003	300	Methanol
N2000	2004	315	Ammonia
International Steel Group	2004		Hot briquetted iron (HBI)
M5000	2005	450	Methanol
ALNG IV	2005	1200	LNG
Nu-Iron (Nucor)	2006	180	Direct reduced iron
Methanol Holdings Trinidad Limited	2009	1700	Urea-ammonium nitrate, melamine, ammonia
Centrica Plc	2010	380	Natural gas
Methanol Holdings Trinidad Limited	2010	1700	Ammonia-urea

Source: Balance of Payments (Various years), Annual Economic Survey 2010.

Box 1: Chile's Experience with Structural Fiscal Rule

Unlike Trinidad and Tobago, which has not shown great fiscal discipline or deposited a significant amount in its heritage fund, another resource-dependent and commodity exporter, Chile, has shown far more fiscal discipline. Chile adopted a fiscal rule requiring a structural surplus equivalent to 1 percent of GDP starting in 2000. This has been the fundamental pillar of its macroeconomic stability. Chile has outperformed many LAC countries, despite being dependent on the export of copper, which experiences a high degree of price volatility. Over the last decade and a half, Chile has maintained moderate levels of inflation and unemployment, less than 10 percent debt-to-GDP ratio, and small current account deficits, and it has pursued countercyclical fiscal policy. Thus, Chile may be a good model for Guyana to emulate. The rule is based on a structural fiscal balance methodology that adjusts fiscal balances by considering the effects of the business cycle and the volatility of copper prices on government revenues. The enforcement of the fiscal rule began with implementation of the 2001 National Budget. In 2009 revisions and improvements to the methodology

3.4: Labour Market and Human Capital Policies: An Example of the Unintended Effect of Stimulating Relatively Unproductive Service Sector

Make-work programs in Trinidad and Tobago started in the 1950s, and because of their adverse impact on worker ethic and productivity, one source affirmed that, "helped along by the seasons of great wealth generated from energy resources, the all-pervasive state quickly morphed into a centre for distribution of the oil-generated national patrimony rather than an agency for development. The net effect of the make-work programmes was negative on the work ethic" (Ryan, 2015: 32). To understand the effects of these programs in Trinidad and Tobago, Table 3.8 shows that the labour force of the Trinidad and Tobago economy expanded from 492,300 in 1991 to 645,300 in 2015, an increase of 31.1 percent. In the same interval, the number of people employed increased from 401,100 to 623,300, an increase of 55.4 percent, motivated by the rapid economic growth of the economy during the same period. The more-than-proportional increase in the number of people employed in relation to the growth in the size of the labour force saw unemployment tumble from 91,200 in 1991 to 22,000 in 2015. Consequently, in that same interval, the unemployment rate fell from 18.5 percent in 1991 to 3.4 percent in 2015.

Table 3.8: Key Labor Market Indicators, 1991-2015

	Persons with jobs (000's)	Labour force (000's)	Unemployment (000's)	Unemployment rate (%)	Real economic growth rate
1991	401.1	492.3	91.2	18.5	2.68
1992	406.1	505.2	99.2	19.6	-1.65
1993	404.6	504.6	99.9	19.7	-1.45
1994	415.6	509.3	93.7	18.4	3.56
1995	431.6	521.0	89.4	17.2	3.95
1996	444.2	530.4	86.2	16.3	3.95
1997	459.9	541.0	81.2	15.0	2.7
1998	479.3	558.7	79.4	14.2	7.77
1999	489.4	563.4	74.0	13.1	4.39
2000	503.3	572.9	69.6	12.2	6.9
2001	514.1	576.5	62.4	10.8	4.2
2002	525.1	586.2	61.2	10.4	7.9
2003	534.2	596.6	62.4	10.5	14.4
2004	562.4	613.5	51.2	8.4	8
2005	574.0	623.7	49.7	8.0	6.2
2006	586.2	625.2	39.0	6.2	13.2
2007	587.9	622.4	34.5	5.5	4.8
2008	597.7	626.7	29.0	4.6	3.4
2009	588.3	620.9	32.6	5.3	-4.4
2010	582.2	618.9	36.7	5.9	3.3
2011	585.3	616.4	31.1	5.1	-0.3
2012	614.1	646.0	31.9	4.9	1.3
2013	626.3	650.1	23.9	3.7	2.3
2014	636.8	658.6	21.8	3.3	-1
2015p	623.3	645.3	22.0	3.4	-1.8
Source: CBTT (2016).					

Part of the reason for the decline in unemployment in Trinidad and Tobago was the government's introduction in 2002 of the Community-based Environment Protection and Enhancement Program (CEPEP). Its objective was "... The empowerment of communities...the expansion of employment opportunities, and...the creation of job opportunities to establish and develop small businesses." (CEPEP, 2016). Another program, the Unemployment Relief Programme (URP), managed by the Ministry of Local Government, provides short-term employment to citizens of Trinidad and Tobago. The main aim of URP is to provide short-term employment for the unemployed. It was designed to enhance entrepreneurial skills and help in the delivery of small-scale projects within communities.

By 2015, the CEPEP program had realized a cumulative expenditure of TT\$4.687bn. During this period, unemployment fell from 61,200 to 24,200; consequently, the unemployment rate also declined from 10.4 percent to 3.4 percent¹⁷ (Table 3.8).

¹⁷ The CEPEP and the URP employ 25,000 people.

Table 3.9: CEPEP Budgetary Allocation
(TT\$m)

Fiscal year	CEPEP (TT\$m)	Cumulative CEPEP (TT\$m)
May to September 2002	75	75
2003	155	230
2004	225	455
2005	244	699
2006	423	1122
2007	350	1472
2008	328	1800
2009	330	2130
2010	319	2449
2011	320	2769
2012	320	3089
2013	468	3557
2014	536	4093
2015p	594	4687

Source: Compiled from various National Budget documents

Make-work programmes arguably encourage workers to be less diligent in their job search, especially those with more work hours, but the same end-of-week salary. Indeed, by introducing these programmes, the state may have compromised the long-run growth potential of the economy by stifling more the dynamic sectors. Thus, in 2001, the total employment in the community social and personal services sector (make-work programs are counted under this sector) was 154,400 persons. By 2008, employment in this sector had increased by 16 percent to 179,500. Over the same period, the number of workers employed in the agriculture sector fell from 40,080 to 23,000, a 43 percent contraction.

Table 3.10: Aggregate Employment in Various Sectors of the Economy
2001-2015

	Total employed labour force	Employment in community social and personal employment (CSP)	Agriculture	Manufacturing
2001	514126	154,400	40,080	53,858
2002	525081	158,100	36,115	56,568
2003	534153	163,200	31,402	55,806
2004	562378	175,300	26,003	60,296
2005	574025	176,500	25,030	56,599
2006	586205	181,100	25,749	56,185
2007	587892	178,600	22,413	55,379
2008	597700	179,500	23,000	56,000

2009	588300	182,500	22,900	53,100
2010	582100	192,300	21,500	52,100
2011	583500	192,800	21,738	48,700
2012	614100	198,400	22,900	48,713
2013	626300	199,900	22,000	51,000
2014	636800	205,000	22,900	50,400
2015p	623300	201,000	21,300	51,200
Source: CSO, Continuous Sampling Survey of the Population (various years).				

Employment in the manufacturing sector increased by 3 percent, from 53,858 to 56,000 workers, between 2001 and 2008. These trends indicate that there was some degree of labour reallocation between the sectors in favour of the community, social, and personal services sector. Since 2008, the employment in the community, social and personal services sector increased from 179,500 to 201,000 workers in 2015, alongside a further decline in the same period in agricultural employment from 22,900 to 21,300, and more sharply in manufacturing, from 56,000 to 51,200.

CEPEP is akin to sharing the petroleum windfall at a time when the per capita income warrants more public investment in opening up economic space and crowding in the private sector to create more long-term jobs. Karl observed that, “what is often economically inefficient decision-making is an integral part of the calculation of rulers to retain their political support by distributing petrodollars to their friends, allies, and social support bases” (2007: 18).

3.5: Government Assistance for Tuition Expenses (GATE): Example of a Wasteful, Untargeted Subsidy

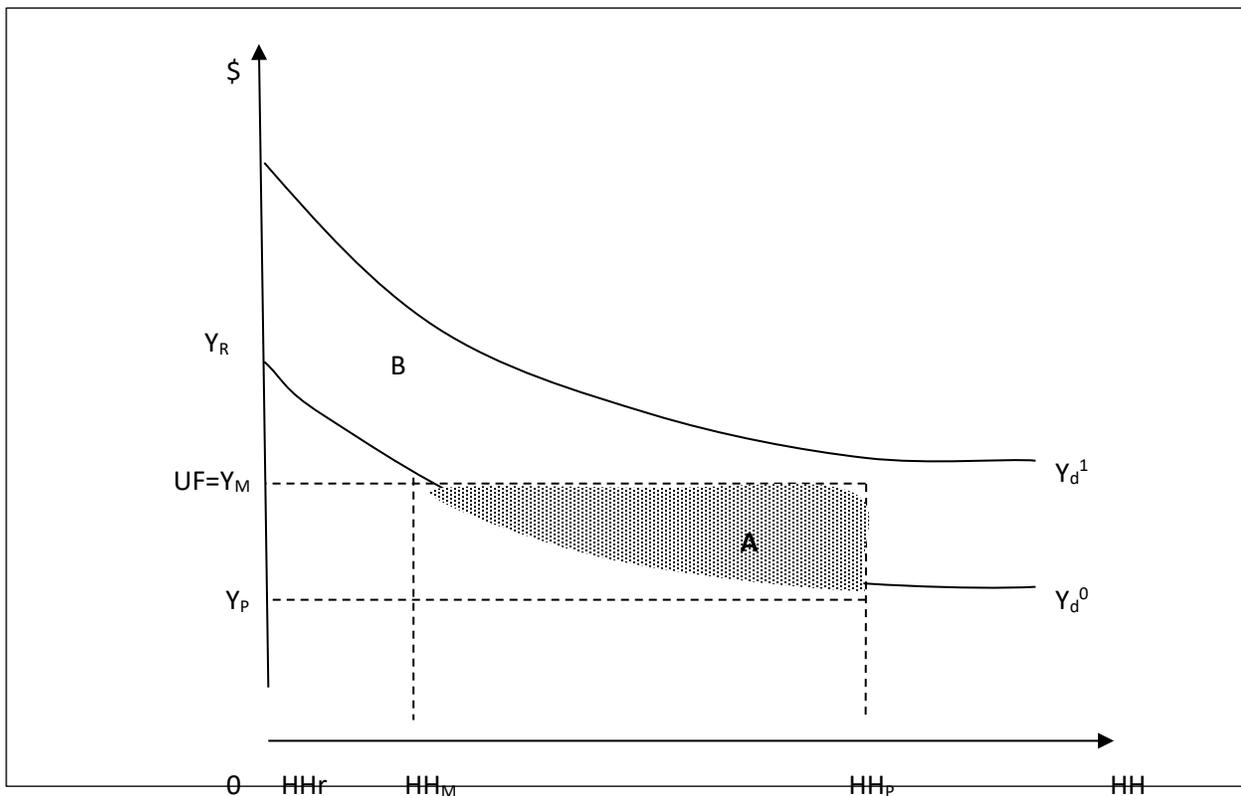
The major change in the educational landscape of Trinidad and Tobago was the introduction of funding for tertiary education. The Dollar for Dollar Education Plan (DDEP), implemented in September 2001, was established to reduce social inequality by increasing access to tertiary education. The government contributed 50 percent of all tuition fees and students paid the other 50 percent at specific institutions. The Government Assistance for Tuition Expenses (GATE) was introduced to Trinidad and Tobago in September 2004. Any citizen of Trinidad and Tobago could benefit from GATE once they were enrolled in a local or regional tertiary institution approved by the Ministry of Education. Based on a means test, low-income students were eligible to access up to 100 percent of their tuition needs.

In 2006, the government modified the GATE programme to offer funding to cover the entire cost of undergraduate tuition, regardless of students’ income or financial need. This was known as the GATE gas windfall programme. The programme also covered up to 50 percent of post-graduate tuition expenses. The intention of the program was to increase the number of citizens with a tertiary education.

To further complement the GATE gas windfall programme, in 2006 the government introduced the Higher Education Loan Programme (HELP). HELP is a low-interest loan (7.5 percent) facility which

provides financial assistance to students, in addition to that being provided by the GATE grant. (The interest on a normal three-year educational loan at the bank is 14 percent.) This programme addressed the needs of students unable to afford tuition fees and other miscellaneous expenses such as accommodation, food, books, and transportation in their pursuit of tertiary education. HELP is intended to offer students funding up to \$25,000 per year for three years. The HELP is disbursed for recognized higher education programmes that lead to tertiary level degrees.

Figure 3.2: Effect of “Oil Windfall” GATE on Income of Households Pursuing TLE



In the diagram above, line Y_d^0 shows the income distribution in initial conditions in the economy. On the horizontal axis, households are ranked from richest to poorest. The poorest household, HH^P, has an income of Y_P and the richest household, HH^R, has an income of Y_R . Household HH^M is the marginal household with an income of Y_M which is also equal to university fees. HH^P household income falls short of university fees by $Y_M - Y_P$ and so requires $\$Y_M - \Y_P in financial assistance to attend university. The marginal household, HH^M can just about afford to go to university with existing conditions, but any small increase in costs will require that the student borrow funds. Each household from HH^M to HH^P requires progressively more money to go to university. By providing full funding, however, $\$A + \B is laid out, whilst

only \$A is required. By providing \$A+\$B, the GATE gas windfall led to the wasting of \$B. This means that although the GATE program was horizontally efficient, it was vertically inefficient.

As the economic growth performance of the Trinidad and Tobago economy declined, the GATE program was reevaluated. On 3 August 2016, it was announced that starting in September 2017, fees for students from households in the range TT\$10,000 to \$TT\$30,000 per month would increase by 25 percent of the costs and students in households with income in the range TT\$30,000 and above would pay 50 percent of fees.

3.6: Industrial and Agricultural Promotion Policies

Agricultural Policy

Table 3.11: Real Value-Added and Employment in Agriculture, 1999-2015

	Agriculture value added (2000=100) TT\$m	Agriculture employment
1999	750.5	40346
2000	697.2	36600
2001	757.7	40500
2002	823.7	36700
2003	698	32000
2004	459.1	26800
2005	434.1	25800
2006	390.1	26448
2007	400.1	23000
2008	511.4	23400
2009	345.9	22100
2010	611.6	22200
2011	458.3	22700
2012	400.4	23700
2013	400.1	22300
2014	411.5	23800
2015	412.8	21900
Source: CBTT Online Database (2016).		

Table 3.11 shows that agriculture sector value-added decreased from TT\$750.5mn in 1999 to TT\$412.8mn in 2015, with related employment decreasing from 40,346 to 21,900. The Caroni GREEN (Growers Responsible for Evolving and Enriching the Environment) Initiative was established in June 2013 as a state-owned limited liability company. The aim of this project is to increase the supply of healthy and locally produced food. After the closure of Caroni 1975 Limited, the former workers were entitled to

a Voluntary Separation of Employment Programme (VSEP). Under this VSEP, workers were leased plots of prime agricultural land on which they were expected to produce sustainable and profitable crops. This project was done as a state-owned enterprise company because Caroni could not function as an active business entity because of the lack of procurement procedures. Under Caroni GREEN Limited, Trinidad exported hot peppers valued at over US\$100,000 to the United States in the last quarter of 2015. Previously, hot peppers were imported from Costa Rica and the Dominican Republic.

With a contracting agricultural sector and increasing food import bill, the Ministry of Agriculture also introduced the Commercial Large Farms Programme (CLFP). Under this programme, the State worked together with private agro-investors to establish large commercial farms. These farms were to be located on plots of former sugar cane lands, ranging between 100-300 acres in size. The aim of the programme is to use economies of scale to increase efficiency and productivity via the acquisition and utilization of new technologies.

An important aim of the project was to have a domestic and constant supply of locally produced crops which could help stabilize food prices and thus provide food at a more affordable price. The crops could also be used as raw materials for the agro-processing sector. The programme was also aimed at attracting and encouraging more entrepreneurs into the agricultural sector.

The State also upgraded several fishing centres in the last decade. In 2011, over TT\$18mn was spent to improve the basic facilities at numerous fishing sites. Upgrade work has continued, as noted in the 2016/2017 National Budget, at various fishing facilities, including at the Port of Spain Wholesale Fish Market, the Orange Valley, and the Southern Wholesale Fish Market.

3.7: Manufacturing and ETeCK Parks

Table 3.12 shows the trends in Trinidad and Tobago manufacturing value-added and employment. Manufacturing value-added increased sharply from 1999 to 2012, but thereafter decreased to 2015. Manufacturing employment also increased from 1999 to 2004, after which it declined. In 2015, the sector only employed 48,800 persons.

Table 3.12: Manufacturing Value-Added (constant prices TT\$m) and Manufacturing Employment, 1999-2015

	Manufacturing value-added TT\$m (2000)	Manufacturing employment
1999	3511.9	51196
2000	3625.4	53800
2001	3979.8	51600
2002	4131.1	53900
2003	4622.3	53600
2004	5009.5	57100
2005	5684.6	54000

2006	6387.7	54205
2007	7342.6	53000
2008	7629.6	50500
2009	7770.0	49900
2010	7861.0	52090
2011	7775.5	51300
2012	7933.0	49200
2013	7851.0	48000
2014	7573.0	47800
2015	7480.3	48800
Source: CBTT Online Database (2016).		

To support diversification efforts, the State has implemented several strategies: the establishment of industrial parks, the construction of hotels in Trinidad and Tobago, the promotion of eco, convention, and event tourism, creative industries, and marine services, and the export of energy services. Evolving Technologies and Enterprise Development Company Limited (eTeck) manage the industrial parks. As of December 2016, there were 16 parks throughout Trinidad and Tobago, which offered a mix of services to support light manufacturing such as polyethylene and electrical products, wood products, paper products, foam and foam products, cotton products, ceramic products, sanitary wear, crockery, pharmaceutical items, garments, petrochemical, downstream, and food processing.¹⁸ To date, most of these parks remain underutilized. The benefits of such parks to the wider economy include the following:

- a) They facilitate rural development and lower the unemployment rate
- b) They attract foreign direct investment as eTeck opportunities can be extended to non-nationals
- c) They support the local business sector and domestic innovation

The diversification efforts were no doubt stifled by the appreciated exchange rate and other factors in the economy, such as the difficulty to conduct business and port and other logistic failures.

3.8: Conclusion

This chapter profiled the experience of the Trinidad and Tobago economy during the period of the natural gas boom. Some steps, especially towards diversifying the agricultural and manufacturing sectors, were discussed but few of these interventions have sustainably borne fruit. This may be because of the economy's appreciated real exchange rate but also because of other institutional obstacles to the free flow and process of economic activity in these sectors.

¹⁸ These parks are located at, Abattoir, Port of Spain, Biljah Industrial Park, Chase Village Industrial Park, Diamond Vale Industrial Park, East Dry River Industrial Park, Frederick Settlement, Harmony Hall Industrial Park, Macoya Industrial Park, Milford Industrial Park, Morvant Industrial Park, O'Meara Industrial Park, Plaisance Industrial Park, Point Fortin Industrial Park, Point Lisas Industrial Park, Sea Lots Industrial Park, Trincity Industrial Park. <http://www.eteckparks.com/apps/parks/info/epark-list>.

Chapter 4. Lessons for Guyana

4.0: Introduction

Guyana is at a critical juncture in its industrial development because of its burgeoning hydrocarbon sector. Following the announcement of a potentially significant oil find in 2015, the economy's machinery has begun to adjust to the potential of hydrocarbon industrialization, with its associated considerations. The value of the find, which experts estimate to be 1.4 billion barrels, represents a massive opportunity to sustainably and permanently change the development dynamics of the country.¹⁹

The commercialization of this find catapults Guyana into a league of global energy producers and exporters. Even amidst the exuberance surrounding the potential of the discovery, Guyana must be careful to streamline commercialization in such a way that does not negatively impact on the wider economy. Venezuela, which sits next to Guyana, has been one of the region's larger oil producers, but has not been able to translate the economy's wealth generated from its windfalls into sustainable economic growth and prosperity for its citizens. Venezuela is now facing a significant economic recession and political instability. A less severe, though equally important case for consideration by Guyanese policy makers, is the experience of Trinidad and Tobago.

For now, as Guyana faces its myriad hydrocarbon-related possibilities, not the least of which is effective governance of the resource, policymakers must consider its current dynamics in the context of its vision for economic growth and prosperity in the medium to long term. An energy boom of the magnitude that Guyana is likely to realize would provide enough resources to transform the economy.

¹⁹ <http://oilprice.com/Energy/Crude-Oil/ExxonMobils-Large-Offshore-Discovery-Faces-Political-Risk.html>

Table 4.1: Selected Macroeconomic Indicators for Guyana 2005-2017

Year	Current account balance (US\$M)	Fiscal deficit (% GDP)	Debt (G\$M)	Real GDP growth (%)
2005	-120	14.2	304.4	-1.9
2006	-195	13.1	274.9	5.1
2007	-165	7.4	210.9	7
2008	-263	6.3	241.4	2
2009	-184	6.0	267.8	3.3
2010	-217	3.0	300.4	4.4
2011	-336	3.1	342.5	5.4
2012	-331	4.7	364	4.8
2013	-398	4.4	351.5	5.2
2014	-296	5.5	325.3	3.8
2015	-181	1.4	314.9	3.1
2016	14	4.4	342.8	3.3
2017	-70	4.5	402.8	2.9

Source: WEO October 2017 and Ministry of Finance Budget Speech (various years).

The windfalls from extracting the natural resource can also provide the resources to continue the growth momentum, which since 2006 has been healthy (see Table 4.1). Note that the Guyanese economy was forecasted to grow 3 percent in 2015 and forecasted growth for 2016 according to IMF (2016e) is 4.0 percent and continued low prices for fuel is likely to propel this growth, even further. However, as highlighted at the start of this chapter, the institutional framework of Guyana must be strengthened to support the likely increase in economic activity.

This chapter draws mainly on the experience of the Trinidad and Tobago economy in the period 1999-2015 to provide some guidelines for the pathway of development options Guyana may want to consider.

4.1: Boosting the Economy's Non-Booming Tradable Sector

The Government of Guyana ought to pay attention to the competitiveness of its NBT sector should the oil boom progress to the stage of commercial extraction. In this regard, the Guyanese authorities should ensure that they appropriately incentivise the NBT sector, especially manufacturing, tourism, and export agriculture.

As shown earlier with an oil boom, there is a rapid expansion in output, especially in the NT sector. Guyana has a small population (747,884 people) and, as the fiscal revenues from the energy sector are spent, there will be an increase in demand for labour, particularly in the energy sector and the NT service sector. The NBT sector carries the bulk of this adjustment.

Policymakers should increase the training of the labour force in petroleum-related activities and skills,²⁰ to minimize bottlenecks in the production process. A mechanism for the import of relevant critical labour skills as they become necessary would have to be put in place and as production increases, the State may wish to promote some six scholarships per year to the University of the West Indies St Augustine, of which three can be in geology and three more in petroleum engineering.

There is a disparity in the economic prosperity of natural resource-rich economies. Countries such as Angola, Nigeria, Saudi Arabia, Sierra Leone, Venezuela, and Zambia are all natural-resource rich yet experienced poor economic performance in the past. Other natural resource-rich economies, such as Australia, Botswana, Canada, and Norway, escaped the resource curse. Mehlum, Moene, and Torvik (2006) found that natural resource-rich countries which performed poorly did so because of poor and weak institutions. Mehlum, Moene, and Torvik (2006) used data from 87 countries over the period 1965-1990. Their dependent variable was per capita GDP growth. Their explanatory variables were: initial income level (measured by the log of GDP per head of the economically active population in 1965), trade openness, resource abundance (the share of primary exports in GNP), investments (the ratio of real domestic investments to GDP), and institutional quality. These researchers found that predominantly countries with “grabber-friendly institutions”²¹ experienced the resource curse. Countries with producer friendly institutions tend to escape the natural resource curse. Subsequently, they concluded that natural resource abundance does not cause deterioration in institutions. Instead, the occurrence of the natural resource curse is the consequence of grabber-friendly institutions. In this regard, the Guyanese economy will need to work hard from the outset to improve its performance on its Ease of Doing Business index, the Corruption Perception Index, Governance Indices, and the Logistics Performance Index to improve its overall competitiveness and to promote the competitiveness of its NBT sector. Table 4.2 shows that amongst the listed CARICOM economies, Guyana, Suriname, and Trinidad and Tobago were significantly less competitive than Barbados. This is not entirely surprising, although the determining factors may have been varied.

²⁰ In 1997, the National Energy Skills Center (NESC) was created with the aim of developing Trinidad and Tobago’s human capital by being the main training entity to develop the skillsets of persons. The Centre was developed to meet the needs of the growing demands for persons with specific skills as a result of the growth in the energy, construction and other related sectors. The first program conducted under the NESC program resulted in persons being trained and consequently employed on the Atlantic LNG, Train 1 project.

²¹ Grabber-friendly institutions are weak, inefficient institutions that exhibit rent-seeking behavior. Rent-seeking behavior here refers to actions by economic agents which lead to the acquisition of some form of wealth, but in exchange for production (Mehlum et al. 2006).

Table 4.2: Some Indicators of Competitiveness for Selected CARICOM Economies

Global Competitiveness Ranking						
	Barbados	Belize	Guyana	Suriname	Trinidad and Tobago	Venezuela
2015-2016			121		89	132
2014-2015	55		117	110	89	131
2013-2014	47		102	106	92	134
2012-2013	44		109	114	84	126
2011-2012	42	123	109	112	81	124
2010-2011	43		110		84	122
2009-2010	44		104		86	113
2008-2009	47		115		92	105
2007-2008	50		126		84	98
2006-2007	41		113		76	85
Ease of Doing Business Rank						
DB 2015	116	118	132	154	85	184
DB 2016	119	120	137	156	88	186
Overall Logistics Performance Rank						
2010			140			84
2012			133			111
2014			124			76
Corruption Perception Index						
2012	76		28	37	39	19
2013	75		27	36	38	20
2014	74		30	36	38	19
2015						
2016						

Source: World Bank (2016a and 2016b) Transparency International, (2016).

Table 4.3: Guyana's Performance on the World Governance Indicators

	1996	2000	2005	2010	2011	2012	2013	2014
Avg.	-0.25	-0.23	-0.49	-0.35	-0.38	-0.42	-0.40	-0.35
Voice and Accountability	0.26	0.51	-0.18	0.05	0.01	-0.02	-0.01	0.15
Political Stability and Absence of Violence/Terrorism	-0.38	-0.61	-0.45	-0.44	-0.43	-0.48	-0.44	-0.16
Government Effectiveness	-0.39	-0.19	-0.48	-0.12	-0.10	-0.14	-0.16	-0.22
Regulatory Quality	-0.19	-0.18	-0.51	-0.58	-0.66	-0.63	-0.62	-0.53
Rule of Law	-0.36	-0.55	-0.73	-0.48	-0.50	-0.52	-0.52	-0.60
Control of Corruption	-0.44	-0.38	-0.58	-0.55	-0.60	-0.75	-0.65	-0.73

Source: World Governance Indicators (2016)

This study argues that deliberate, targeted investments into the channels that strengthen these institutional aspects of the Guyanese economy must be made to improve the sustainable development possibilities of the NBT segment of the economy, with spill over benefits for the NT sector.

The U.S.-owned Exxon Mobil company indicated that it is considering bids from a number of companies to bring its oil discoveries in the deep-water Liza project on-stream possibly as early as 2018. The first project is to cater for 60,000 bpd, but industry sources indicate that a second project for a larger Floating Production Storage Offloading (FPSO) could come on-stream with a capacity in the range 150,000 to 200,000 bpd.

In July 2016, Exxon Mobil indicated it would commence training Guyanese nationals for jobs in the petroleum sector. Note though that the country manager of Exxon Mobil, at an engagement at Cara Lodge in Georgetown noted that the oil industry will not create thousands of jobs if the FPSOs are deployed. Some of the workers, the country manager noted, will have to be foreigners, because of the technicalities involved. However, Minister of Energy Raphael Trotman also emphasized that “As part of the new dispensation, we have stressed to the company that they must be involved in training, and not after production, but pre-production.” Minister of Education Dr. Rupert Roopnarine also pointed out that the Ministry of Education, in conjunction with the University of Guyana, will be establishing a special facility for oil and gas exploration studies.

4.2: Do Not Increase Transfers and Subsidies at the Expense of Capital Investment

In Trinidad and Tobago, transfers and subsidies effectively used up all the state’s energy sector fiscal revenues, in part at the expense of the deployment of these energy sector fiscal revenues for capital investments in the economy. The Guyanese government must plan to avoid making such an error. In parallel, it will have to put measures in place to build up its capacity to manage public sector investments.

4.3: Civil Society

A major shortfall of the Trinidad and Tobago economy was the insufficiency of the state’s commitment toward building up civil society. The position of this study is that the Guyanese people can learn substantially from the case of the Trinidad and Tobago economy, in the planning process, by taking the appropriate steps, starting immediately, to build up its civil society. A strong civil society can represent the voice of consciousness in an economy when politicians fail and can help to build up and lobby for various outcomes in the economy.

The literature is very clear on the role of civil society and its capacity to aid in the regulation of the governance process. An active civil society helps to increase the level of transparency and accountability in an oil-based economy. Cosse (2006) advocates for this regarding the Cameroon experience, stressing that “In order to hold policymakers accountable and strengthen governance, the public (particularly

parliament and civil society organizations) needs information on how oil resources are generated and spent (saved) (Cosse, 2006: 18).

The Government of Guyana will have to design a formula to work with the private sector and civil society to upgrade and train workers for the petroleum sector. In this regard, an important development in the Guyanese economy is the formation of the Guyana Oil and Gas Association (GOGA). This association aims to protect, promote, and advance the responsible development of the oil and gas economy within Guyana.

The Extractive Industries Transparency Initiative (EITI) aims to strengthen government and company systems, inform public debate, and promote understanding. The EITI 2016 Progress Report notes that “a country’s natural resources, such as oil, gas, metals and minerals, belong to its citizens” and as such, information about the exploitation, utilization and the distribution of benefits associated with the same should be accessible to the general population. The EITI, as a global standard, advocates for open and accountable management of a county’s extractive resources via the application of a system of principles by which resources are governed. In October 2017, the candidature application of Guyana was approved by the EITI Board.

4.4: Strategic Corporate Social Responsibility (CSR)

Because of the huge amounts of money that multi-national corporations (MNCs) in the petroleum sector tend to repatriate, many have argued that they need to follow the Hartwick rule to enhance their reputation as good corporate citizens, strengthen their legitimacy and, with the right type of intervention, foster greater genuine savings²² in host communities. Substantively, the Hartwick rule argues that the most important assets to which resource rents can be placed are produced capital, human capital and financial capital. Indeed, if CSR activities focussed on other areas, there is the possibility that it could compromise the long-run growth potential of the host community. For CSR to be relevant, it must address the most pertinent externality (Frynas, 2005). Genasci and Pray note that “building a town hall or health clinic in a mining community where the most apparent impact of the mining activity is large-scale environmental degradation or forced relocation of villages might be viewed as simply an attempt to buy off the community and create space to go on with business as usual” (Genasci and Pray, 2008: 6).

A successful case study is the Mayaro Initiative for Private Enterprises Development (MIPED) program. The MIPED program was deployed in 2002 in Mayaro, a small coastal village off the southeast

²² Genuine savings is defined as a measure of wealth that includes not only economic wealth but also human capital formation and caters for the depreciation of natural capital.

coast of Trinidad. This facility has helped facilitate the growth of small businesses in the area. Recognizing the challenges of small businesses and their access to finance, the MIPED program was started in 2003 by bpTT in the Mayaro community. MIPED began operations with a TT\$7 million-dollar investment from bpTT to develop Mayaro and environs into a model community, creating self-sustaining employment, and improving training and business opportunities to help build self-esteem and improve the quality of life. The MIPED program has created over 3000 jobs and today has an asset base in excess of TT\$70mn.

Table 4.4: FDI Inflows, Income and Remittances Abroad US\$mn, 1990-2011

	FDI inflows (a)	FDI income (b)	Remitted Abroad	(b/a) %	(c/a) %
1990	109.4	242.8	168.1	221.9	153.7
1991	144.1	256.9	139.1	178.3	96.5
1992	171	289.2	153.1	169.1	89.5
1993	372.6	202.4	110.9	54.3	29.8
1994	521	301.2	111.6	57.8	21.4
1995	295.7	287.8	133	97.3	45
1996	356.3	284.2	114.8	79.8	32.2
1997	999.6	289	163.9	28.9	16.4
1998	731.9	270.2	184.5	36.9	25.2
1999	643.3	338.9	187.4	52.7	29.1
2000	679.5	533.3	387.5	78.5	57
2001	834.9	467.8	300.2	56	36
2002	790.7	393.7	229.1	49.8	29
2003	808.3	614.5	248.6	76	30.8
2004	998.1	327.3	174.4	32.8	17.5
2005	939.7	741.6	449.4	78.9	47.8
2006	882.7	1005.5	599.1	113.9	67.9
2007	830	1007.7	704.1	121.4	84.8
2008	2800.8	1272.5	778	45.4	27.8
2009	709.1	1054.9	759	148.8	107
2010	549.4	943.3	692.2	156.2	126
2011	1831.0	Na	Na	Na	Na

Source: Balance of Payment yearbook of Trinidad and Tobago (various years).

Table 4.4 shows the relationship between the inflow of FDI into the Trinidad and Tobago economy and the associated FDI income. In the period 1990-2011, the Trinidad and Tobago economy received US\$15.2bn in FDI. In the same period, a whopping US\$11.04bn, or approximately 72.8 percent of the FDI inflows, accumulated as investment income. Note that of the FDI income stimulated by the inflowing FDI, 61.5 percent was remitted abroad, and the remaining 38.5 percent was reinvested in the country. These outflows are not trivial, and it means that a large amount of produced wealth leaves the Trinidad and Tobago economy.

Understandably, MNCs in the energy sector will have to provide an adequate return to their head offices and shareholders. Critically, this takes place whilst the host communities in which they operate are experiencing serious and severe environmental degradation and poverty of various forms including deprivations in human, physical, and social capital. From a Hartwick rule perspective, the MNCs cannot fulfil their ethical responsibility to the host community by merely providing hush money. The MNCs need to tackle the pertinent and most relevant externalities rather than token gestures.

In many regards, as an economy's stock of physical capital declines, the only way to maintain the productive capacity is to replace the depleting natural resource capital with human capital and physical capital. The Hartwick rule thus emphasizes a replacement of the extracted natural capital with an appropriate intervention by the MNCs to provide human, social, and infrastructural capital in the host community. Indeed, one source cites that for an economy, the "transformation of an exhaustible natural resource stock into a reproducible stock of capital manages to keep the level of production and thus consumption, constant" (Van der Ploeg, 2008: 7).

Part of the underlying argument here is that if MNCs target easy hit options in the community, such as Christmas parties and hampers alongside Carnival programs for children, then this is compromising the growth of the community. More meaningful interventions in the community are required, such as helping to build and improve the stock of human capital. Frynas notes that CSR often fails as "CSR initiatives have often been conceived by the 'helpers' in the air-conditioned offices of oil companies and consultancies rather than through ongoing participation with the beneficiaries; again, the approach follows the logic of CSR serving corporate objectives. Where oil companies have consulted local communities, the consultation exercises have usually been superficial and grossly inadequate." (Frynas, 2000: 580). These soft targets are a form of hush money and may even help to precipitate a type of dependency mentality in the host community. Meaningful CSR must be in sync with the core developmental needs of the community from a Hartwick perspective.

In this regard, Guyana must put in place an appropriate national CSR strategy to promote the avenues through which large firms, both national and multinational, are guided to link their CSR strategy with the pertinent Hartwick rule needs of the community. According to the 2016 Petroleum Agreement between the Government of Guyana and Exxon Mobil, the CSR from Exxon Mobil will amount to US\$300,000 per calendar year, and any unspent funds will be taken over into the ensuing year.

4.5: Managing the Size of the NT Sector

In the Trinidad and Tobago economy, there was a rapid increase in the size of the NT sector. Consequently, valuable resources flowed into that sector at the expense of other sectors. Whilst this

happens in the normal process of the development of an economy, overly rapid growth in this regard can create problems. In the Trinidad and Tobago economy case, the data in Table 4.5 helps illustrate that between 1999 and 2015 the average labour productivity of workers in the services sector as a proportion of average labour productivity of workers in the manufacturing sector has been relatively low. Thus, in 1999 labour productivity in the services sector as a proportion of labour productivity in the manufacturing sector stood at 114.2 percent, declining to 60.1 percent in 2013. Moreover, as the BT sector prospered, and the spending effect unfolded in the economy, the size of the NT sector's labour force expanded from 78.2 percent of total employment in 1999 to 85.4 percent in 2015. In this regard, it may be argued that the resource reallocation process that took place in the labour market on account of the Dutch disease triggered a structural burden effect on the Trinidad and Tobago economy. As such, Guyana would want to be prudent to avoid such a structural change in its economy, in the event that the pending oil boom becomes a reality.

Table 4.5: Output per Worker and the Distribution of Employment, 1999-2015

	Real output per worker, TT\$			Services sector put per % Share of workers worker as a % of				
	petroleum	manufacturing	services	petroleum	manufacturing	Petroleum	manufacturing	services
1999	933798.2	68597.2	78312.9	8.4	114.2	3.1	10.5	78.2
2000	1072300.8	67386.6	78577.7	7.3	116.6	3.1	10.7	78.9
2001	1094871.0	77127.9	78410.4	7.2	101.7	3.0	10.1	79.0
2002	1126292.4	76643.8	80073.1	7.1	104.5	3.3	10.3	79.4
2003	1571571.4	86236.9	82543.5	5.3	95.7	3.0	10.1	80.9
2004	1488250.0	87731.6	83472.1	5.6	95.1	3.3	10.2	81.7
2005	1560589.5	105270.2	82984.1	5.3	78.8	3.3	9.4	82.7
2006	1890683.4	117843.3	86071.2	4.6	73.0	3.3	9.3	82.9
2007	1716065.4	138538.7	90803.1	5.3	65.5	3.6	9.0	83.4
2008	1946824.5	151023.8	96444.2	5.0	63.9	3.2	8.6	84.2
2009	1974961.5	155711.4	91628.0	4.6	58.8	3.1	8.6	84.5
2010	2037978.0	150929.2	87857.1	4.3	58.2	3.1	8.9	84.5
2011	2048505.7	151569.2	96185.8	4.7	63.5	3.0	8.8	86.2
2012	1745101.5	161248.0	94133.1	5.4	58.4	3.2	7.9	84.8
2013	1741870.0	161256.3	96965.4	5.6	60.1	3.2	7.7	85.0
2014	1640570.0	156470.7	97357.6	5.9	62.2	3.3	7.5	84.8
2015	1621169.2	155717.2	100402.0	6.2	64.5	3.2	7.9	85.4

Source: CBTT (2016).

4.6: Petroleum Subsidy and the HSF

In 1974 the Government of Trinidad and Tobago introduced the Petroleum Production Levy and Subsidy Act (PPLSA) to provide the country with fuel subsidies, diesel, and kerosene at prices level below those prevailing in the international marketplace. The subsidy would help to lower the impact of high oil prices on the consumers of these commodities in Trinidad and Tobago. Initially, the PPLSA covered the entire

subsidy. The subsidy was amended in 1992 to 3 percent of the producer's gross income and in 2004 to 4 percent of the gross income of producers and remains the same to date. The 2004 amendment shifted a significant part of the burden of the subsidy to the State as any shortfall from the petroleum production levy is met by the state. The IMF (2016d) finds that in the last seven years, this averaged 71 percent). In the period 2004–2015, the fuel subsidy amounted to TT\$30.7bn. By 2013 the fuel subsidy was 10 times the nominal value of 2000. The fuel subsidy in the context of low rates of interest helped to lead to a surge in the number of vehicles on the roads in Trinidad and Tobago (new vehicles sold, for example, increased from 7,281 in 2001 to 19,118 in 2014 and 18,765 in 2015). Vehicular traffic has increased considerably on many of the country's roads.

Table 4.6: Subsidy Claims, New Vehicles Sold, HSF Deposits and the Fiscal Balance as a Percent of GDP in Trinidad and Tobago, 2000-2015

Year	Subsidy Claims (TT\$)	Total New vehicles sold	HSF deposits (US mn)	Fiscal balance
2000	449,452,719			1.6
2001	322,623,177	7,281		-0.1
2002	339,091,942	7,296		0.3
2003	490,981,238	8,327		2.6
2004	912,634,245	10,393		2.3
2005	1,621,570,474	12,138		6.3
2006	1,682,598,785	14,103		5.7
2007	2,207,737,580	16,303	321.7	0.5
2008	3,617,954,784	18,896	1054.2	6.8
2009	1,599,842,646	12,140	-	-5.4
2010	2,919,324,681	12,335	477.3	1
2011	4,410,393,680	12,965	451.4	0.7
2012	4,547,950,573	14,854	207.5	-3.2
2013	4,336,107,785	17,248	42.4	-0.3
2014	2,814,540,162	19,118		-4.6
2015	2,451,212,171	18,765		-4.9

Source: Ministry of Energy and Energy Affairs, T&T, (2016).

The fuel subsidy and the HSF are moving in opposite directions in terms of fiscal discipline, with the HSF intended to strengthen the economy's fiscal posture whilst the subsidy undermines the economy's fiscal discipline and is procyclical in nature. Furthermore, the fuel subsidy is regressive and favours the rich. The Government of Guyana would want to avoid the hasty introduction of fuel subsidies and should consider instead spending the same resources, they may direct at fuel subsidies, to the build-up of a functional and relevant public transportation network.

4.7: Avoid Borrowing to Save

One of the errors of the Trinidad and Tobago government in designing its HSF is that it did not restrict contributions to the HSF to those years where the overall fiscal balance was positive. This opened the opportunity for the Government of Trinidad and Tobago to “borrow to save.” The Trinidad and Tobago government in the absence of such legislation borrowed in 2012 and 2013, and consequently both its HSF savings and its national debt increased. One consideration is that if borrowing had taken place at a rate above the rate of return to savings, then the economy would have been worse off. The Guyanese government would have to be mindful of making similar type of mistakes, should it establish an HSF.

4.8: Avoid Procyclical Tendencies

The Government of Trinidad and Tobago engaged in procyclical behaviour, seemingly deducing that it could correctly forecast the increase in petroleum rents and thereby increase state expenses. This worked for a while but when the energy commodity price super cycle ended, the inertia in the expenditure pattern of the state triggered a series of fiscal deficits, as fiscal revenues fell in relation to expenditures. In this regard, the government of Guyana would be wise to avoid procyclical tendencies.

4.9: External Competitiveness

The real effective exchange rate is usually an indication of the external competitiveness of an economy. As the prices of goods in the NT sector increase because of the spending effect in the economy, the economy’s real effective exchange rate appreciates. In this regard, the Guyanese government will have to put appropriate counterbalancing measures in place to enhance competitiveness. These include improving port logistics and the public infrastructural network for land transportation, electricity, water, and generalized internet coverage.

Inflation in Guyana has been on the decline because of the lower price of imported fuel. This is likely to continue in the medium term as fuel prices are not slated to increase sharply. However, if the oil boom comes on stream, demand-side influences can put upward pressure on domestic prices within Guyana. The real effective exchange rate in Guyana in 2015 was 24 percent higher than in 2004, mainly because of inflation in the period 2005-2008. The Guyanese currency depreciated from G\$182.4 = 1\$US in 2000 to G\$206.5 = \$US1 in 2015, but the current account deficit persisted. This means that currency depreciation should not be a first avenue for Guyana to increase its external competitiveness. Instead, it should ease internal bottlenecks to the business process.

Table 4.7: Aggregate Indicators of Competitiveness in the Guyanese Economy, 1991-2015

	REER	Nominal exchange rate	Inflation Rate	Current Account Balance % of GDP
1991	149.6	111.8107
1992	164.3	125.0025	..	-37.62
1993	178.8	126.7304	..	-31.71
1994	102.6	138.2902	..	-23.1
1995	104.5	141.9892	12.21	-21.68
1996	112	140.375	7.09	-4.64
1997	114.8	142.4008	3.56	-8.42
1998	113.8	150.5192	4.59	-7.75
1999	102.5	177.995	7.54	-7.12
2000	107.1	182.43	6.15	-11.53
2001	107.3	187.3208	2.63	-13.06
2002	108.5	190.665	5.34	-8.62
2003	104.7	193.8783	5.98	-6.01
2004	100	198.3075	4.67	-2.53
2005	102.3	199.875	6.93	-11.67
2006	104.7	200.1883	6.58	-12.39
2007	107.6	202.3467	12.3	-9.52
2008	107.9	203.6333	8.1	-16.72
2009	114.6	203.95	2.91	-11.38
2010	113.2	203.6358	2.09	-10.9
2011	110.7	204.0175	4.98	-14.45
2012	114.2	204.3583	2.39	-12.86
2013	114.4	205.3942	1.83	-15.25
2014	114.2	206.4492	0.92	-12.52
2015	124.2	206.5	-0.96	-4.55

Source: WDI, online database (2016).

4.10: Guyana Petroleum Policy

Guyana will have to consider consulting and revising its Petroleum Act and Regulations to ensure broad distribution of benefits and good governance.

4.11: Local Content Policy

The state must ensure that there is an adequate local content policy and that it does not just import everything it needs, or every worker required. Table 4.8 provides a summary of the local content strategies and efforts of some firms in the Trinidad and Tobago economy.

Table 4.8: Oil and Gas Companies Local Content Strategy

Company	Strategy name	Main components
National Gas Company of Trinidad and Tobago Ltd (NGC)		Employ nationals of Trinidad and Tobago Procure the services of local contractors for maintenance work
Petrotrin	Refinery Operator Apprenticeship Program; Horizon Graduate Trainee Program	Provides job training to nationals of Trinidad and Tobago in the area of refinery operations Provides job training to university graduates that are nationals of Trinidad and Tobago Procure the services of local contractors for maintenance work
Petrotrin Operations	Trinmar Horizon Graduate Trainee Program	Provides job training to university graduates that are nationals of Trinidad and Tobago Procure the services of local contractors for maintenance work
Mora Oil Ventures Ltd. (MORAVEN)		Employ nationals of Trinidad and Tobago Purchase tools and equipment in Trinidad and Tobago
Primera Oil and Gas Trinidad Ltd.		Employ nationals of Trinidad and Tobago Purchase tools and equipment in Trinidad and Tobago
EOG		Training Trinidadians for future projects Local contractors are given first preference for contracts, and nationals of Trinidad and Tobago are given first preference for employment.
Repsol		Provides training in construction, information technology, business skills, agriculture and greenhouses, and other specialist areas in Trinidad and Tobago Provides specific training at the request of community-based stakeholders. Contracting the services of small scale suppliers
BPTT		Employs Nationals of Trinidad and Tobago Utilizes the services of TOFCO for the construction of platforms Utilizes the services of domestic subcontractors
BGTT		90 percent of staff are nationals of Trinidad and Tobago partnered with the Energy Chamber to develop STOW Utilizes the services of domestic subcontractors Developing the STEM program
Atlantic	Graduate Trainee Programme	98 percent of staff are nationals of Trinidad and Tobago Utilizes support services for maintenance, security, cleaning, water distribution from local suppliers Provides financial assistance to schools to develop human capital
Source: Compiled from various Ministry of Energy and Energy Reports (2016)		

More formally, recognising that local content policies could add significant gains, the Government of Trinidad and Tobago outlined its national policy position in the document *Local Participation Policy and Framework for the Republic of TT Energy Sector (2004)*. The objective of the government’s policy brief is to identify the guiding principles that will determine: (i) the major mechanisms for local content; (ii) participation and capability development; (iii) where, how, and by whom these will be delivered; (iv)

performance measurement and assurance; (v) the reporting processes to be used; and (vi) some key areas for priority focus.

In April 2017, the MNR formulated a draft Local Content Policy²³ that promoted the capture of ancillary services by Guyanese-owned entities and increased training in appropriate fields. However, the language is general and vague. No concrete targets or performance metrics are provided. The draft calls for some regulatory body to be established to establish metrics and to ask ExxonMobil to give preference. Much more specificity and elaboration are needed in this area. Other countries (See Table 4.8 above), for example, require an increased percentage of local purchases of goods and services, the placement of nationals in training/shadowing technical positions, specific amounts to be devoted by the oil/gas operator to scholarships and job training programs, affirmative action employment programs, set-asides for local engineering, accounting, and surveying firms, and others. None of these elements is included in this draft, which is more a statement of principles.

4.12: Oil Spills

In January 2013, Trinidad and Tobago's Cabinet approved a new plan (The National Oil Spill Contingency Plan, or NOSCP) to combat oil spills on land and in marine areas. With this plan, "deep-water drilling operators will now be required to demonstrate accessibility to a containment lap system to arrest a subsea blow out event...." (National Oil Spill Contingency Plan). Guyana should ensure that this plan is in place before actual production commences.

4.13: Joint Venturing and/or Partnering

Joint ventures are common in exploration and production arrangements. They offer the platform from which a local joint venture partner can learn the associated skills of a trade. Guyana should consider this type of option beyond this first exercise by Exxon. There may be such firms in Suriname, Trinidad and Tobago, and Brazil with which Guyana could enter into partnerships.

4.14: Some Rules for Guyana to Consider

Moving forward, policymakers cannot allow the economy's external competitiveness to decline. The government must monitor trends in the REER, restrict the growth of inflation, enhance agricultural productivity and marketing of agricultural commodities and processed food items, and limit the incidence of asset price bubbles, especially in real estate markets. By enhancing agricultural production, the

²³ Source: <https://www.nre.gov.gy/wp-content/uploads/2016/11/Guyana-Draft-Local-Content-Policy-for-the-Petroleum-Sector.pdf>

Guyanese economy can reduce dependence on the foreign market for agricultural and agro-processing based products. The real estate market also needs to be properly regulated so that prices do not escalate quickly and in so doing increase inflation. With a resource boom, many economic agents shift resources toward the real estate sector where prices increase rapidly, yielding them considerable gains. However, when the private sector shifts resources to the NT sector at the expense of investments in the NBT sector, the export earning segment of the economy is compromised. The trends in the domestic inflation rate associated with real estate bubbles and other types of bubbles in the economy also make the overall economy less externally competitive. It is crucial that the Guyanese authorities put policies in place to help enhance the supply side of the economy, to prevent such problems from emerging.

Guyanese policymakers should avoid rapidly escalating handouts and subsidies, except to the most vulnerable. These types of expenditures stimulate demand and de-incentivize work. The state must create an enabling environment to encourage employment and other opportunities in the economy while protecting the poor and most vulnerable. The poor performance of Trinidad and Tobago in fiscal management should be taken to heart, and the policies and fiscal discipline exhibited by Botswana and Chile should be emulated.

The Guyanese government should not cut capital expenditures in favour of transfers and subsidies. As the economy grows, capital expenditures spur production. The state should also take care not to provide the wrong types of incentives. Specifically, simply increasing transfers and subsidies leads to an increase in imports with adverse consequences for the non-energy current account balance. This could have serious long-term implications if it becomes persistent.

The government should formulate a well-designed stabilization fund, and an adequate proportion of energy rents collected should be placed in the stabilization fund in relation to the amount spent on transfers and subsidies, capital expenditures, and other expenditures. The state would not want to adopt the approach of borrowing to save, because borrowing to save is sometimes done with considerable interest accruals on the borrowed resources, surpassing the returns on the resources in the sovereign wealth fund.

Policymakers in Guyana should push for a National CSR program that encourages foreign firms and large domestic companies to strategically give back to the economy, specifically to host communities. Government officials must also aggressively promote non-energy sector export growth. In this regard, investment funds and state-owned banks to promote agriculture and manufacturing should be considered so that the economy does not become overly reliant on the mineral sector, with the attendant consequences. Finally, the government needs to demonstrate a solid understanding of the importance of strengthening human capital, or it will stifle the growth momentum of the Guyanese economy.

References

Alexander, G. 2016. "24 detained during PBR operation: Clampdown on illegals." Trinidad and Tobago Guardian, February 6. Accessed May 10, 2016. <http://www.guardian.co.tt/news/2016-02-05/clampdown-illegals>

Alsweilem, K. et al. 2015. A Comparative Study of Sovereign Investor Models: Sovereign Fund Profiles. Cambridge, MA: The John F. Kennedy School of Government, Harvard University.

Arezki, R., Dupuy, A., and Gelb, A. 2012. "Resource Windfalls, Optimal Public Investment and Redistribution: The Role of Total Factor Productivity and Administrative Capacity." IMF Working Paper WP/12/200. Washington, DC: International Monetary Fund.

Auty R. and Gelb, A. 1986. "Oil Windfalls in a Parliamentary Democracy: Their Impact on Trinidad and Tobago." World Development 14(9): 1161-75.

Bjerkholt O. 2002. Fiscal Rule Suggestions for Economies with Non-Renewable Resources. Oslo, Norway: University of Oslo.

Bollers, E. and Khemraj, T. 2016. "Foreign Exchange Shocks and Economic Growth in Small Very Open Economies." Central Bank of Barbados Working Paper No. WP/16/6. Bridgetown, Barbados: Central Bank of Barbados.

CBTT (Central Bank of Trinidad and Tobago). 2005. Annual Economic Survey. Port of Spain, Trinidad and Tobago: Central Bank of Trinidad and Tobago.

_____. 2010 Annual Economic Survey. Port of Spain, Trinidad and Tobago: Central Bank of Trinidad and Tobago.

_____. (various years). Balance of Payments Yearbook. Port of Spain, Trinidad and Tobago: Central Bank of Trinidad and Tobago.

Central Statistical Office of Trinidad and Tobago (various years) Continuous Sampling Survey of the Population.

Collier P., van der Pleog, F., Spence, M., and Venables, A. 2010. Managing Resource Revenues in Developing Countries. IMF Staff Papers 57(1): 84-118. Washington, DC: International Monetary Fund.

Constantine, C. and Bollers, E. 2016. Understanding Guyana's Recent Growth Process. Paper presented at the XLVIII (48th) Annual Monetary Studies Conference: Issues and Challenges Facing the Caribbean in the New Global Economy, (Nov. 9-11, 2016) in The Bahamas.

Corden, W. M. and Neary, P. 1982. "Booming Sector and De-Industrialization in a Small Open Economy." The Economic Journal 92: 825-48.

Cosse, S. 2006. "Strengthening Transparency in the Oil Sector in Cameroon: Why Does It Matter?" IMF Policy Discussion Paper PDP/06/2. Washington, DC: International Monetary Fund.

DIPRES (Dirección de Presupuestos). 2003. "Informe de finanzas públicas. Proyecto de ley de presupuestos del sector público para el año 2004." Santiago, Chile: DIPRES, Ministerio de Hacienda.

———. 2005. "Informe de finanzas públicas. Proyecto de ley de presupuestos del sector público para el año 2006." Santiago, Chile: DIPRES, Ministerio de Hacienda. http://www.dipres.cl/572/articles-37447_doc_pdf.pdf

———. 2007. "Informe presupuestario del gobierno central. Cuarto trimestre 2006." Santiago, Chile: DIPRES, Ministerio de Hacienda. http://www.dipres.cl/572/articles-23950_doc_pdf_presentacion.pdf

———. 2008. "Informe de finanzas públicas. Proyecto de ley de presupuestos del sector público para el año 2009." Santiago, Chile: DIPRES, Ministerio de Hacienda. http://www.dipres.cl/572/articles-41339_doc_pdf.pdf

Duesenberry, J. S. 1948. "Income-Consumption Relations and Their Implications," in Lloyd Metzler et al., *Income, Employment and Public Policy*. New York, NY: W.W. Norton & Company, Inc. pp. 54-72.

"The Dutch Disease." 1977. *The Economist* November 26: 82-83.

EITI (Extractive Industries Transparency Initiative). 2016. Progress Report. Available at: <https://eiti.org/sites/default/files/documents/progressreport.pdf>

Fatas, A. and Mihov, I. 2003. "The Case for Restricting Fiscal Policy Discretion." *Quarterly Journal of Economics* 118(4): 1419-47.

Frynas, J. G. 2000. *Oil in Nigeria: Conflict and Litigation between Oil Companies and Village Communities*. Hamburg, Germany and New Brunswick, NJ: LIT Verlag and Transaction Publishers.

———. 2005. "The False Developmental Promise of Corporate Social Responsibility: Evidence from Multinational Oil Companies." *International Affairs* 81(3): 581-98.

Genasci, M. and Pray, S. 2008. "Extracting Accountability: The Implications of the Resource Curse for CSR Theory and Practice." *Yale Human Rights and Development Journal* 11(1) Article 4.

Government of Guyana Petroleum Agreement with Exxon Mobil 2016. Retrieved from: <https://www.nre.gov.gy/wp-content/uploads/2017/12/Petroleum-Agreement-Oct-7-2016.pdf>

IMF (International Monetary Fund). 2013. *Trinidad and Tobago: Staff Report for the 2013 Article IV Consultation*. Washington, DC: IMF.

———. 2015. *Norway 2015 Article IV Consultation*. IMF Country Report No. 15/249, September. Washington, DC: IMF.

_____. 2016a. Botswana 2015 Article IV Consultation. IMF Country Report No. 16/103, April. Washington, DC: IMF.

_____. 2016b. Norway 2016 Article IV Consultation. IMF Country Report No. 16/214, July. Washington, DC: IMF.

_____. 2016c. 2016 Article IV Consultation with Timor-Leste. Washington, DC: IMF Country Report No. 16/183.

_____. 2016. Trinidad and Tobago 2016 Article IV Consultation. IMF Country Report No. 16/204, July. Washington, DC: IMF.

_____. 2016e. Guyana 2016 Article IV Consultation. IMF Country Report No 16/216207. Washington, DC: IMF.

_____. 2017. Guyana 2016 Article IV Consultation. IMF Country Report No 17/352. Washington, DC: IMF.

Innis, H. A. 1950. Empire and Communications. Oxford, United Kingdom: Clarendon.

Karl, T. 2007. The Political Challenge of Escaping the Resource Curse: The Case for a Transparent Fiscal Social Contract. Available at: https://web.stanford.edu/group/scspi/_media/working_papers/karl_terry_wp_20070330a.pdf

Katz, L. F. and Summers, L. H. 1989. "Industry Rents: Evidence and Implications." Brookings Papers on Economic Activity (Microeconomics): 209-275. Washington, DC: The Brookings Institution.

Kavoussi, R.M. (1984) "Export Expansion and Economic Growth: Further Empirical Evidence". Journal of Development Economics 14, 241-50.

Kurz, H. D. 1992. "Adam Smith on Foreign Trade: A Note on his 'Vent for Surplus' Argument." *Economica* 59: 475-81.

La'o Hamutuk (2015) "Timor-Leste's Oil and Gas are Going Fast." Timor-Leste Institute for Development Monitoring and Analysis, ili, Timor-Leste, April 15, 2015, Available at www.laohamutuk.org/Oil/curse/2015/OilCoingFast15Apr2015en.pdf. 21.

Lewin, M. 2011. "Botswana's Success: Good Governance, Good Policies and Good Luck." In: Yes, Africa Can: Success Stories from a Dynamic Continent. Washington, DC: World Bank.

Lewis A. 1954. Economic Development with Unlimited Supplies of Labour in The Manchester School of Economic and Social Studies, Vol XXII May.

Lucas, R. E. 1988. "On the Mechanics of Economic Development." *Journal of Monetary Economics* 22: 3-42.

Marcel, M. 2013. *The Structural Balance Rule in Chile: Ten Years, Ten Lessons*. IDB Discussion Paper No. IDB-DP-289. Washington, DC: Inter-American Development Bank. Available at: <http://services.iadb.org/wmsfiles/products/Publications/37889337.pdf>

Matthee, M. and Naude, W. 2008. *Export Diversity and Regional Growth in a Developing Country Context: Empirical Evidence*. Paper submitted to the Regional Studies Association International Conference "Regions: The Dilemmas of Integration and Competition." Prague, Czech Republic. 27-29 May.

Marcel, M., M. Tokman, R. Valdes, and P. Benavides. 2001. "Balance estructural del gobierno central, metodología y estimaciones para Chile: 1987–2000." *Estudios de Finanzas Públicas* no.1. Santiago, Chile: DIPRES.

Mehlum H., Moene, K., and Torvik, R. 2006. "Institutions and the Resource Curse." *Economic Journal* 116: 1-20.

Mejia P. X. and Castel, V. 2012. *Could Oil Shine Like Diamonds: How Botswana Avoided the Resource Curse and its Implications for a New Libya*. Abidjan, Cote d'Ivoire: African Development Bank.

Merco Press. 2016. *Esso to intensify oil exploration in Guyana's Maritime Zone*. Retrieved at: <http://en.mercopress.com/2016/02/29/esso-to-intensify-oil-exploration-in-guyana-s-maritime-zone>

Ministry of Finance Guyana Budget Speech (Various Years).

Ministry of Natural Resources. 2015. *Guyana Petroleum Sector: Upstream Policy*. Georgetown, Guyana: Ministry of Natural Resources.

Mitra P. 1994. *Adjustment in Oil Importing Developing Countries: A Comparative Economic Analysis*. Cambridge, United Kingdom: Cambridge University Press.

Natural Resource Governance Institute. 2013. *Botswana Pula Fund*. Available at https://resourcegovernance.org/sites/default/files/NRF_Botswana_July2013.pdf

Palatino, M. 2014. "East Timor's Oil Resource: Boon or Bane?" *The Diplomat*, November 21.

Pinto B. 1987. "Nigeria During and After the Oil Boom. A Policy Comparison in Indonesia." *World Bank Economic Review* 1(3): 419-45.

Ramsaran, R. F. 1993. "Growth and Adjustment in a Petroleum Based Economy: Some Aspects of the Trinidad and Tobago Experience since the 1970's." *Social and Economic Studies* 42(3): 217–40.

Romer, P. M. 1986. "Increasing Returns and Long-run Growth." *Journal of Political Economy* 94(5): 1002–37.

Rodríguez, J., C. Tokman, and A. Vega. 2006. "Política de balance estructural: Resultados y desafíos tras seis años de aplicación en Chile." *Estudios de Finanzas Públicas* no 7. Santiago, Chile: DIPRES.

Ryan, S. 2015. "Black Entrepreneurship in Post-Independence Trinidad And Tobago: The Eric Williams Legacy." *First Magazine*. Available at <http://www.firstmagazine.com/DownloadSpecialistPublicationDetail.642.ashx>

Sachs J., 2007. "How to Handle the Macroeconomics of oil Wealth." In: *Escaping the Resource Curse*. Humphreys, M., Sachs, J., and Stiglitz, J. E. (eds). New York, NY: Columbia University Press.

Sachs, J. D. and Warner, A. M. 1995. *Natural Resource Abundance and Economic Growth*. NBER Working Paper W5392, Cambridge, MA: National Bureau of Economic Research.

Segal P. 2012. "How to Spend It: Resource Wealth and the Distribution of Resource Rents." *Energy Policy* 51: 340–8.

Sergeant, K. and Forde, P. 1992. "The State Sector and Divestment in Trinidad and Tobago: Some Preliminary Findings." *Social and Economic Studies* 41(4): 173–204.

Singer H. 1950. "The Distribution of Gains Between Investment and Borrowing Countries." *American Economic Review* 40(2): 473–85.

Smith A. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. MetaLibri.

Takizawa, H., Gardner, E., and Ueda, K. 2004. *Are Developing Countries Better off Spending their Oil Wealth Upfront?* IMF Working Paper WP/04/141. Washington, DC: International Monetary Fund.

Van der Ploeg, F. 2008. *Voracious Transformation of a Common Natural Resource in Productive Capital*. OxCarre Research Paper No 2008–02. Oxford Centre for the Analysis of Resource-Rich Economies, Oxford, United Kingdom: Oxford University.

Velasco, A., A. Arenas, J. Rodríguez, M. Jorrat, and C. Gamboni. 2010. "El enfoque de balance estructural en la política fiscal en Chile: resultados, metodología y aplicaciones al período 2006–2009." *Estudios de Finanzas Públicas* no. 15 Santiago, Chile; DIPRES.

Appendix 1: Mechanics of the Dutch Disease

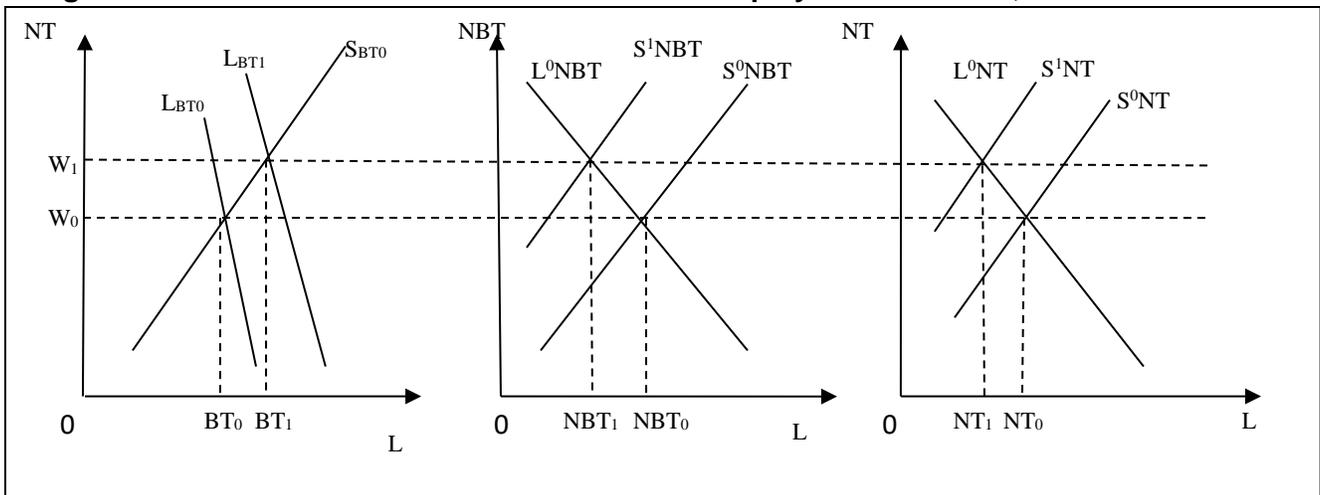
The analysis of the Dutch disease is premised on the following assumptions. The economy is characterized by three sectors: the booming sector (BT), the lagging tradable sector (NBT), and the non-tradable sector (NT). It is assumed that the BT and the NBT sectors both produce tradable goods that are sold at internationally determined prices and that both sectors are price takers in these international markets. Output in each sector is produced by a production function involving one fixed factor and one variable factor. Labour is the mobile factor of production and moves between the various sectors and in so doing wages are equalized between the three sectors of the economy. In initial conditions of full employment, the employed labour force L may be distributed as:

$$L_0 = BT_0 + NBT_0 + NT_0$$

Assume now that the price of the good sold in the BT sector increases on the international marketplace (or alternatively that there is a resource discovery or a favourable technological shock), then the marginal revenue productivity of labour in the BT sector would increase, other things remaining constant (i.e., assuming no income benefits), resources would migrate toward the BT sector. This is the R^m effect. Thus, with the R^m effect, the distribution of employment in the economy becomes:

$$L^R = NBT_1 + BT_1 + NT_1 \quad (3)$$

Figure 0.1: Illustration of the R^m Effect Alone on Employment in the BT, NBT and NT Sectors



The change in the distribution of employment between the resource movement-induced employment situation (L^R) and the initial distribution of labour (L) is:

$$L^R - L = 0 = \Delta BT_1 + \Delta NBT_1 + \Delta NT_1$$

$$\Delta BT_1 = -(\Delta NT_1 + \Delta NBT_1)$$

Observe that there is a fall in the size of the employed workforce in both the NBT and NT sectors and in contrast the size of the workforce in the BT sector increases. The contraction in output in the NBT sector (which includes the manufacturing sector) is called direct deindustrialization. Overall, the nominal wage rate in the macro economy climbs from w_0 to w_1 .

In small economies, the petroleum sector is typically an enclave sector. This means that the government acts as the conduit between the offshore and the onshore sector. When workers in the BT sector and the government spend their higher incomes, the economy as a whole realizes an increase in demand for NT goods. This spending effect (S^e) results in an increase in the demand for labour in the NT sector from NT_1 to NT_2 and a rise in the wage rate from w_1 to w_2 in that sector, and given the initial assumption of full employment, wage rates increase in the NBT and BT sectors as well. The distribution of labour with the influence of the S^e becomes:

$$L^{se} = BT_2 + NBT_2 + NT_2 \quad (3)$$

Collectively the change in the distribution of labour between the S^e and R^e episodes can be represented as:

$$L^{se} - L^{re} = (BT_2 + NBT_2 + NT_2) - (BT_1 + NBT_1 + NT_1)$$

$$\Delta L^{se} = \Delta BT_2 + \Delta NBT_2 + \Delta NT_2$$

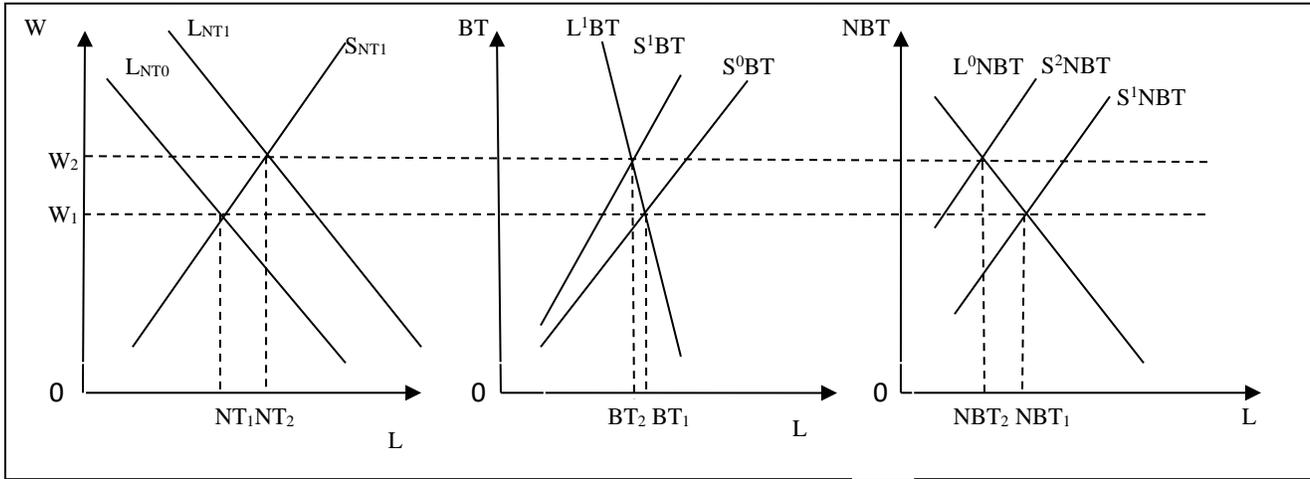
$$0 = \Delta BT_2 + \Delta NBT_2 + \Delta NT_2$$

or

$$\Delta NT_2 = -(\Delta BT_2 + \Delta NBT_2)$$

This change between the resource movement and the spending effect can be illustrated in the Figure 0.2 below.

Figure 0.2: An Illustration of the Spending Effect (alone) of the Dutch Disease



The eventual distribution of labour in the economy on account of the Dutch disease (L^{DD}) may be represented as follows:

$$L^{DD} = L^{RM} + \Delta L^{se} = BT_2 + NBT_2 + NT_2$$

$$\text{Where } L^{RM} = L + \Delta L^{RM}$$

so that:

$$L^{DD} = L + \Delta L^{RM} + \Delta L^{se}$$

Given that:

$$\Delta L^{RM} = (BT_1 - BT_0) + (NBT_1 - NBT_0) + (NT_1 - NT_0)$$

and

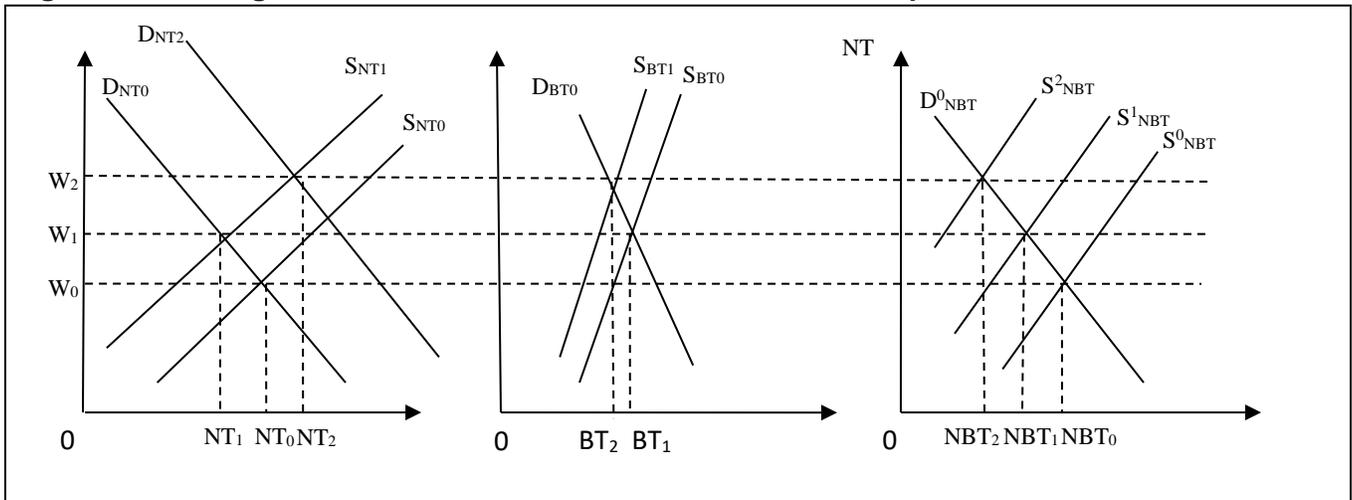
$$\Delta L^{se} = (BT_2 - BT_1) + (NBT_2 - NBT_1) + (NT_2 - NT_1)$$

we can express $L^{DD} - L$ as:

$$L^{DD} - L = BT_2 - BT_0 + NBT_2 - NBT_0 + NT_2 - NT_0$$

The change in the labour market on account of the Dutch disease given by $L^{DD} - L$ is shown in Figure 0.3 below.

Figure 0.3: Change in the Labour Market on Account of the Compound Effects of the R^m and S^e



Appendix 2: Chilean Methodology for Estimating Structural Balance Fiscal

COMPONENT	ORIGINAL METHODOLOGY	PRESENT METHODOLOGY (2009)
Actual balance (B)	Budgetary balance of the central government on a cash basis, including reclassifications to reflect changes in net worth (Adjusted balance)	Consolidated balance of the central government (budget and off-budget) based on GFSM-2001 (Net acquisition of assets in governmental state of operations)
GDP (Y)	Total GDP at market prices according to national accounts; base year: 1996	Total GDP at market prices according to national accounts; base year: 2003
Physical copper sales (C)	Physical CODELCO sales	Physical CODELCO sales Income tax and additional tax on remittances revenues from the 10 main mining companies Royalty revenues from the private mining companies
Tax revenues (T)	Total tax revenues plus social security contributions	Tax revenues, minus income tax and additional tax on remittances from the 10 main mining companies, minus royalty from private mining, plus health insurance contributions
Elasticity of tax revenues to GDP (μ)	Aggregate elasticity of total tax revenues plus social security contributions to GDP	Elasticity disaggregated by five tax categories: annual income tax, monthly income tax, PPM, indirect taxes, other taxes; and health care contributions
Trend GDP (Y*)	Trend GDP estimated based on a production function using Stock-Watson methodology Production factors adjusted by quality Total Factor productivity (PTF) obtained as a residual Hodrick-Prescott filter to smooth out fluctuations in production factors and PTF Off-sample observations obtained based on assumptions prepared by the Finance Ministry	Trend GDP estimated based on a production function using Stock-Watson methodology Production factors adjusted with a new indicator of capital use, variable depreciation rate, hours worked and educational quality PTF obtained as a residual Hodrick-Prescott filter to smooth out fluctuations in production factors and PTF Off-sample observations obtained from consultations with committee of independent experts

Actual price of copper (PCu)	Average FOB price of CODELCO's exports	Average FOB price of CODELCO's exports; BML price for taxation on big private mining companies
Long-term price of copper (PCu*)	Reference price of the Copper Compensation Fund (FCC), estimated by the Finance Ministry	Long term price of copper, estimated by a committee of independent experts as an average over the next 10 years
Revenue from molybdenum	Not considered	Revenue obtained by CODELCO from the sale of molybdenum, adjusted for differences with long-term price, calculated as a moving average of the previous four years
Interest earned	Not considered	Interest earned on financial assets, recalculated according to long-term nominal interest rate
Other income	Not considered	Operational income, property revenues other than interest and capital gains on financial assets in sovereign funds, presuming a unit elasticity regarding GDP

Sources: Marcel et al. (2001); DIPRES (2003), (2005), (2007), (2008); Rodriguez et al. (2006), and Velasco et al. (2010).