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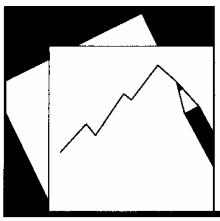

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Trinidad and Tobago: The Energy Boom and Proposals for a Sustainable Fiscal Policy

Delia Velculescu and Saqib Rizavi

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Trinidad and Tobago: The Energy Boom and Proposals for a Sustainable Fiscal Policy

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Abstract

Trinidad and Tobago is experiencing an energy boom stronger than the ones in 1970s and 1980s. The main fiscal policy challenge is to ensure that the increased revenues from the ultimately exhaustible resources are used in a way that protects the competitiveness of the nonenergy sector, builds assets to ensure intergenerational equity, and provides a cushion for stabilization. This paper derives estimates of a sustainable level of primary fiscal balance using Friedman's permanent income hypothesis. These estimates can be used as a guide for the formulation of medium- and long-term fiscal policy frameworks.

JEL Classification Numbers: E6, H5, Q3

Keywords: Trinidad and Tobago, oil boom, permanent income hypothesis

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Contents Page

I. INTRODUCTION

Trinidad and Tobago, the Caribbean's largest producer of oil and gas, is experiencing a major energy boom. Owing to new large oil and gas discoveries and a number of projects that already have or are scheduled to come on stream in the next few years, energy production is projected to nearly double over the medium term and significantly boost the revenue receipts from the energy sector. However, notwithstanding new discoveries, the estimated proven oil and gas reserves are expected to taper off by 2021.

The main policy challenge facing the Trinidadian authorities is the prudent management of the large but eventually exhaustible energy wealth. A key issue in conducting fiscal policy in countries rich in natural resources is the choice between consumption and savings out of current and expected resource revenues. This choice crucially hinges on striking the right balance between current priorities, such as social and capital development programs, and long-term goals, such as ensuring that the future generations' standard of living is protected. In practice, however, this balance can be difficult to achieve, since the likely temptation during a boom is to embark on expensive projects that permanently raise the level of government spending while relying on a revenue stream that may be only temporary. Furthermore, the adverse macroeconomic consequences of a boom-bust cycle for overall demand and for the nonenergy sector are often underestimated, which can stifle growth and development in the long run.

Historical and cross-country experience indicates that, more often than not, resource wealth has been mismanaged. For example, in the aftermath of the oil booms of the 1970s and 1980s, a number of countries,[2] including Trinidad and Tobago, experienced the disruptive effects of overly expansionary and unsustainable fiscal policies during the booms, which resulted in their nonenergy tradable sectors becoming uncompetitive and rendered their economies vulnerable to shocks, such as the sharp drop in oil prices that began in 1981–82. There were two noteworthy exceptions: Norway—whose economy was widely diversified and its policy was prudent and countercyclical—and Indonesia—which pursued a flexible exchange rate and a tight fiscal policy—were both able to maintain macroeconomic stability after the oil booms of the 1970s and 1980s.

With the benefit of hindsight, this paper offers some proposals for efficient management of the expected resource windfall in Trinidad and Tobago. With respect to long-run resource management, it proposes simple theoretical guidelines to calculate sustainable government consumption out of energy wealth and to target sustainable levels of nonenergy fiscal deficits. The analysis suggests that key elements of an effective fiscal strategy should include: fiscal restraint, with incentives to save at least part of the resource wealth; protection of the competitiveness of the nonenergy sector; gradual policy shifts to

[2] See Gelb and others (1988), and Azerbaijan Selected Issues, 2003, for a detailed description of the historical experience of other resource rich countries that experienced difficulties after the oil booms of the 1970–80 period, including Nigeria, Angola, Algeria, Venezuela, Ecuador, and Gabon.

avoid macroeconomic instability; and efficient use of energy resources. In addition, a well designed resource fund could be established to simultaneously accumulate resources for the future and prevent a loss of competitiveness of the nonenergy sector. Where resources must be spent to meet current social needs, mechanisms could be put in place to ensure competitive bidding for various projects and to gauge, to the extent possible, the projects' social return and overall costs, including maintenance costs over the long term.

II. A Brief Historical Perspective on Fiscal Policy in Trinidad and Tobago During the Oil Booms of 1970–80

Trinidad and Tobago experienced substantial growth in revenue and foreign exchange inflows during 1973–74 and 1979–80 due to high oil prices. Initially, the windfall was used prudently by saving a large fraction of the proceeds abroad and investing a part of it in infrastructure and other projects aimed at output diversification. However, growing political pressures led to rapid growth of subsidies to consumers, labor, and unprofitable firms. During the second oil boom, fiscal policy became more expansionary and economic inefficiencies more pervasive. Eventually, a host of subsidies, price controls and wage increases, together with an appreciation of the real exchange rate and an expansion of the public sector, undermined the non-oil sectors of the economy. When oil prices declined after 1982, fiscal policy was slow to adjust, and the economy entered into a lengthy recession.

Figure 1. Expenditure Categories as Percent of Nonenergy GDP
(In percent of GDP)

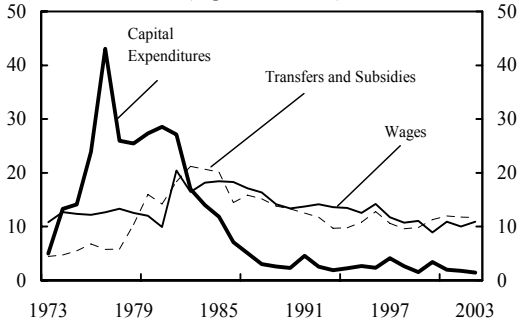


Figure 2. Real Exchange Rate and the Share of Agriculture and Manufacturing in Nonenergy GDP

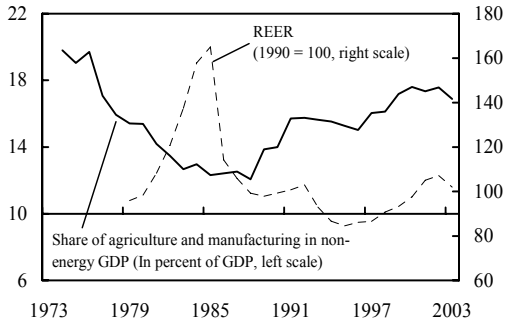


Figure 3. Oil Price and Overall and Non-Oil Balances

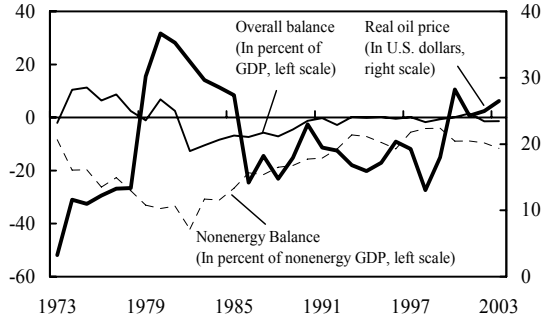
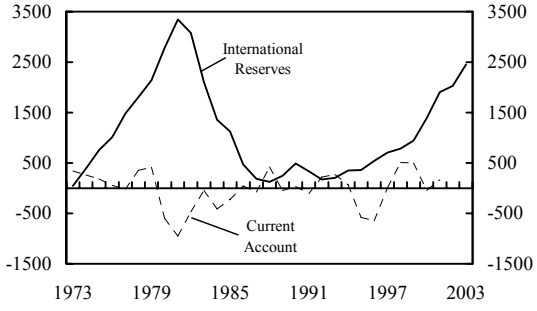


Figure 4. Current Account and International Reserves
(In millions of U.S. dollars)



An assessment of the oil booms of the 1970s and 1980s highlights several problems with the fiscal policies adopted during the period. First, the costly subsidies, credit facilities, and extensive protection provided to agriculture and manufacturing sectors during the oil booms did not result in restructuring these sectors, but only became an expense after the boom. Second, the protectionist trade policy adopted, which allowed for import restrictions, high tariffs on competing imported goods, and duty concessions on imported inputs, together with the real exchange rate appreciation resulting from the massive foreign inflows, eroded competitiveness and led to "Dutch disease" in the tradable sector. Third, the resource-based industrialization strategy drained the oil revenues and added to indebtedness, and the highly capital intensive nature of these projects did not increase employment. Fourth, underestimation of project costs, delays in project implementation, and the failure to consider future expenditure outlays for the operation and maintenance of investment projects led to serious inefficiencies in the use of resources. Finally, excessive subsidization of public utilities and other state enterprises drained the budget of revenues, and the construction and the special public works programs preempted resources away from agriculture and manufacturing sectors.

III. The Current Energy Boom and the Tax Structure [3]

The current energy boom is mainly the result of new discoveries of large oil and gas reserves. The distinguishing feature of the current boom, compared with the two previous ones, is that apart from high oil prices, it is mainly driven by large newly discovered reserves of oil and natural gas and by an expansion in the liquefied natural gas sub-sector. The growth in revenues resulting from the output expansion has certainly been helped by the high international energy prices prevailing for some time. As measured by the actual and expected increase in oil and gas production between 2002 and 2006, estimated to be about 100 percent, the current boom is larger than those of 1974–80, when energy production increased by 66 percent between 1973 and 1978. However, owing to the currently more diversified structure of the economy compared with that prevailing during 1970–80, energy revenues are projected to register, a more modest although significant increase from about 31 percent of total revenues in 2002 to about 41 percent of total revenues by 2009, as compared with an increase from 22 percent in 1973 to 67 percent of total revenues in 1974, and to about 64 percent in 1980.

At end-2003, the energy sector accounted for about 40 percent of total GDP, 83 percent of exports of goods, and slightly over 40 percent of central government revenues, and contributed about 3 percent to employment (Tables 1 and 2). Since the late 1970s the production structure of the energy sector in Trinidad and Tobago has shifted from being primarily oil-based to more natural gas-based.

[3] The authors would like to emphasize that the discussion in the following section pertains to data, information, and the economic and financial environment as of end-2003, as a result, subsequent developments are not covered in this analysis.

Table 1. Trinidad and Tobago: Energy Sector Indicators, 1999–2003

	1999	2000	2001	2002	2003
Energy sector employment, in percent of total formal	3.1	3.2	3.0	3.3	3.3
Real GDP growth, in percent	4.4	7.3	4.0	7.1	13.1
Of which : energy sector	11.6	12.4	6.1	13.2	30.6
As percent of GDP					
Energy sector	31.1	32.6	33.2	35.1	40.6
Extracted 1/	17.8	18.2	18.6	20.0	23.1
Refined 2/	4.4	5.7	5.4	6.3	9.5
Processed 3/	8.9	8.7	9.2	8.8	7.9
As percent of total revenues					
Energy sector	16.1	30.2	36.6	31.1	41.1
Oil and gas exploration and production	4.7	20.1	19.3	16.4	25.0
Other taxes	11.4	10.1	17.3	14.8	16.1
As percent of total export values					
Energy sector	71.0	81.2	78.2	75.9	83.3
Extracted 1/	13.0	13.4	10.5	14.9	15.5
Refined 2/	38.9	50.5	48.7	44.5	50.5
Processed 3/	19.0	17.3	18.9	16.5	17.2
Memorandum items:					
Non-energy sector as share of GDP	77.5	68.7	73.2	76.3	65.8
Revenues from non-energy sector/value-added in non-energy sector	26.0	24.4	23.8	18.9	23.7
Relative tax burden of the energy sector	74.0	75.6	76.2	81.1	76.3
Crude oil and condensate production, in millions of barrels	45,685	43,680	41,469	47,824	49,117
Natural gas production, in millions of cubic feet per day	1,281	1,498	1,596	1,826	2,594

Sources: Trinidad and Tobago authorities; and Fund staff estimates.

1/ The value added refers to crude oil and gas extracted, and exports refers only to crude oil.
2/ This includes refined petroleum, liquefied natural gas and natural gas liquids.
3/ This refers to all other energy related e.g., petrochemicals, marketing and distribution services.

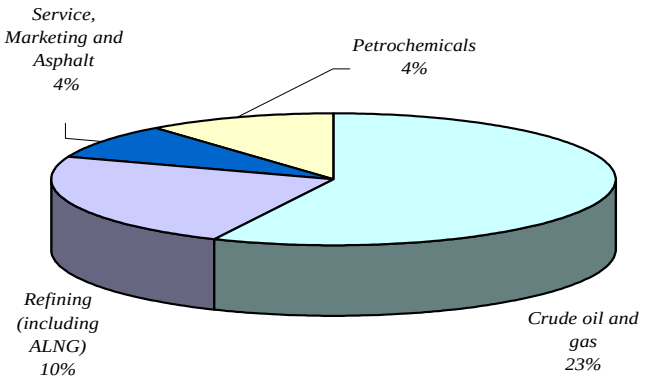
Table 2. Trinidad and Tobago: Revenues from the Energy Sector
(In millions of Trinidad and Tobago dollars)

	1998/99	1999/00	2000/01	2001/02	2002/03
Energy sector	1,799	3,763	5,376	3,552	7,141
Oil and gas exploration and production	480	2,530	2,830	1,876	4,345
Gas processing	...	...	552	221	480
Petrochemicals	...	...	386	84	203
Royalties	520	577	756	613	1,008
Unemployment levy	205	154	191	99	291
Withholding tax	15	23	126	88	157
Excise duty	580	481	494	525	563
Green Fund levy	...	...	41	47	94
		(As percent of total revenues)			
Energy sector	17.5	31.0	36.6	31.0	41.1
Oil and gas exploration and production	4.7	20.8	19.3	16.4	25.0
Gas processing	...	...	3.8	1.9	2.8
Petrochemicals	...	...	2.6	0.7	1.2
Royalties	5.1	4.7	5.2	5.4	5.8
Unemployment levy	2.0	1.3	1.3	0.9	1.7
Withholding tax	0.1	0.2	0.9	0.8	0.9
Excise duty	5.7	4.0	3.4	4.6	3.2
Green fund levy	...	...	0.3	0.4	0.5
		(As percent of GDP)			
Energy sector	4.3	16.4	22.9	15.2	29.2
Oil and gas exploration and production	1.1	11.0	12.1	8.0	17.8
Gas processing	...	...	2.4	0.9	2.0
Petrochemicals	...	...	1.6	0.4	0.8
Royalties	1.2	2.5	3.2	2.6	4.1
Unemployment levy	0.5	0.7	0.8	0.4	1.2
Withholding tax	0.0	0.1	0.5	0.4	0.6
Excise duty	1.4	2.1	2.1	2.2	2.3
Green fund levy	...	...	0.2	0.2	0.4
Memorandum items:					
Total revenue	10,264	12,144	14,672	11,446	17,367
Nominal GDP (fiscal year basis)	42,116	22,914	23,484	23,397	24,421

Source: Trinidad and Tobago authorities.

As a result, natural gas production has increased from 346 million cubic feet per day (mmcf/d) in 1975 to 2,594 mmcf/d in 2003. The expansion of the gas sector received a major boost in 1999, when the Atlantic Liquefied Natural Gas Company (ALNG) began operations. Trinidad and Tobago has used its natural gas to develop its petrochemical and liquefied natural gas (LNG) mainly for exports. The subcomponents of the energy Sector are distributed according to Figure 5.

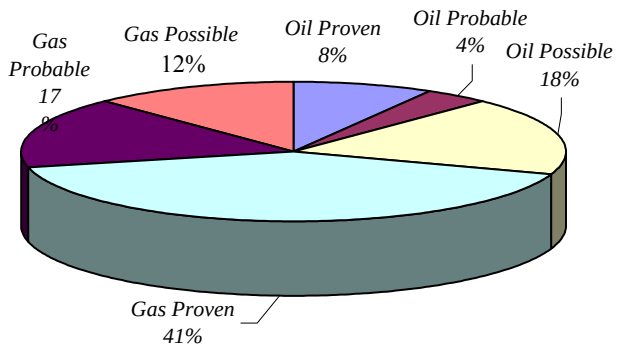
Figure 5. Composition of the Energy Sector, 2003
(In percent of GDP, 2003)



Source: Ministry of Energy and Energy Industries.

As of end-2003, total proven oil and gas reserves were estimated at 4,500 million of barrels of oil equivalent.[4] Of this, oil accounts for about 760 million barrels (17 percent of total) and gas for the remainder of 3,750 million barrels of oil equivalent. If, however, **probable** and **possible** reserves are also included, oil and gas reserves amount to almost 9,000 million barrels of oil equivalent. Figure 6 shows the breakdown of energy reserves according to the Ministry of Energy and Energy Industries (MEEI) classification into proven, probable and possible reserves.[5] At the current rates of extraction, which are 140,000 barrels of oil per day for oil and about 510,000 barrels of oil equivalent per day for gas, proven energy reserves are expected to be exhausted in about 20 years, and proven, probable and possible reserves are expected to last for about 40 years.

Figure 6. Risked Energy Reserves at End-2003
(In percent of total reserves)



Source: Ministry of Energy and Energy Industries.

Trinidad and Tobago applies a complex tax regime to petroleum production, which makes use of a number of fiscal instruments. The tax regimes that apply to oil and gas are different, though both are based on production and income taxes. Under these regimes, oil and gas activities are characterized as either exploration or production, refining, or marketing

[4] One billion cubic feet of natural gas is equivalent to 0.18 million barrels of oil.

[5] For comparison purposes, gas reserves have been converted to barrels of oil equivalents. Furthermore, the categories of oil and gas reserves presented have been risked according to industry standards. In the case of oil, proven reserves are associated with a 90 percent probability, probable reserves have a 50 percent probability, and possible reserves have a 10 percent probability. Proven gas reserves have a 100 percent probability, probable reserves have a 60 percent probability, and possible reserves have a 20 percent probability.

operations. The profits of each type of business are taxed separately under the tax law.[6] For example, for oil extraction, production-based receipts consist of: royalties,[7] a petroleum production levy,[8] and a small petroleum impost.[9]

Box 1. Reform of the Energy Tax Regime

The government of Trinidad and Tobago for some time has been considering a reform of its energy tax regime, in particular pertaining to the gas sector. The main impetus for this move has been the realization that the royalty rate for gas production in Trinidad and Tobago is extremely low by international standards. Most of the gas production (about 70 percent) is subject to a specific royalty of only TT$0.015 per mcf if used domestically, and TT$0.02 per mcf if exported. In ad valorem terms, the royalty is less than 0.3 percent of the value of the natural gas. Options to adjust the gas royalty under the existing exploration and production contract are somewhat limited, since royalty rates are specified in the license agreements. Altering these long standing agreements could be viewed by the petroleum companies as reneging on contractual commitments. Moreover, a significant volume of the natural gas produced is sold to the state-owned National Gas Company (NGC) under long-term contracts that contain pass-through arrangements. As such, any increase in the royalty rate would be passed on to NGC, and thus would result in lower government revenue. These issues have constrained the government's ability to change policy not only with respect to natural gas royalties, but also with respect to other levies on the production of gas.

To pursue the matter of reforming the gas tax regime, the government has appointed a technical team to undertake a comprehensive review of the current petroleum legislation. The review, to be done in consultation with the oil and gas companies, will aim at formulating a fiscal regime that would increase the government's receipts from the sector while maintaining the incentives for continued private investment. It is expected that based on the technical team's findings, the government would introduce a bill in parliament by mid-2005.

Income-based taxes consist of: a petroleum profit tax,[10] an unemployment tax,[11] a supplemental petroleum tax levied on crude oil sales (less certain allowances) at a sliding rate that varies with the price of oil, the time the development license was granted, and the time

[6] The following companies pay their taxes in U.S. dollars: British Petroleum, Petrotrin, Enron Oil and Gas Company, and Trintomar.

[7] Of 10 percent on onshore oil sales and 12.5 percent of offshore sales.

[8] Which is levied on sales on a complex formulaic basis related to production levels and retail prices, or at a rate of 3 percent (whichever is less).

[9] Which is used to cover administrative expenses of the Ministry of Energy.

[10] Levied at a 50 percent rate on profits from oil production.

[11] Levied at a 5 percent rate on profits from oil production (this tax is not deductible against the profits tax).

production began.[12] For gas production, companies are liable to pay royalties at a rate negotiated with the government. Companies also pay the corporate income tax at the standard rate of 35 percent on profits and the petroleum impost.[13]

The fiscal issues facing the Trinidadian policymakers, given the current energy boom, have remained largely the same as in the previous boom episodes of the 1970s and 1980s. These include the probability of large foreign inflows, which, under a heavily managed exchange rate regime, could put upward pressure on the real exchange rate and threaten competitiveness in the nonenergy tradable sector, the risk that the energy revenues will be inefficiently used, and the danger that fiscal policy will become unsustainable in the face of macroeconomic shocks such as a global slowdown, a sharp drop in oil prices, and the eventual depletion of energy revenues. In addition, the deterioration in the fiscal stance is likely to be masked by growth in the energy sector, which artificially lowers the overall and primary fiscal balances relative to GDP.

IV. Theoretical Underpinnings of Fiscal Sustainability Based on the Permanent Income Hypothesis[14]

The governments of countries rich in natural resources must solve an intertemporal portfolio problem to determine the optimal level of government consumption and saving out of resource revenues. On the one hand, there is an immediate pressure to spend resource windfalls on current priorities, such as capital and social development programs aimed at alleviating poverty and improving education and health, or on investments in infrastructure. On the other hand, intergenerational considerations and the fact that resources are finite and exhaustible should impose constraints on the government's current consumption and encourage saving. In practice, finding the right balance between spending and saving, as well as choosing the optimal mix of spending programs can be a very challenging policy task. One inherent difficulty with the management of resource wealth is the lack of a methodology to correctly gauge the return on various social programs and of an appropriate mechanism to ensure that only those programs that are likely to provide the largest welfare gains are implemented. In addition, the enormous uncertainty surrounding the estimation of energy revenues, stemming both from unpredictable price fluctuations as well as from the imprecise assessments of energy resources further complicates the decision-making process.

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[12] The rate ranges from a low of 0 percent when the oil price is US$13 per barrel of oil or less, to a maximum of 38 percent for onshore activities and 45 percent for offshore activities (if these activities were licensed and development began prior to 1988) when the price was US$49.51 per barrel of oil or more. This tax is deductible from the petroleum profit tax.

[13] The supplemental petroleum tax and the petroleum production levy do not apply to the gas producing companies.

[14] The same caveat as in footnote 3 apply to the analysis and the results reported in this section.

A useful theoretical framework that can be applied to fiscal policy in an intertemporal context is provided by Friedman's (1957) permanent income hypothesis (PIH). Despite being abstract and somewhat simplified, this framework can nevertheless provide a valuable reference point against which existing or planned policies can be evaluated. According to the PIH, individuals are forward looking and optimally smooth their consumption over time, in line with permanent income. Defining optimal policy as the path for government consumption that a benevolent social planner would choose over a very long time horizon, theory suggests that the government smooths consumption of energy wealth over time.

The extent of consumption smoothing and the long-run optimal level of consumption predicted by theory crucially depend on a number of factors, including intergenerational equity considerations, the expected energy reserves of the country, the real interest rate, the growth rate of nonenergy output, the rate of population growth, etc. For the government's intergenerational discount rate, which is a simplified measure of the importance that policymakers place on present social concerns in relation to future concerns, a useful benchmark is to assume that it equals the real interest rate prevailing on the international markets. Under this benchmark, and assuming zero population and technological growth, PIH intuitively implies that optimal government consumption is constant over time and equals the annuity value of wealth. In other words, all generations would optimally enjoy the same amount of government consumption in perpetuity, without increasing the country's debt or reducing its total wealth. As such, the policy path implied by theory is by construction fiscally sustainable. Because of its simplicity and its powerful predictions for fiscal policy, this baseline will be used in the remainder of the analysis.[15]

Sustainable government consumption out of energy wealth, under the defined baseline, can be calculated as follows:

$$\textit{Sustainable government consumption} = r \times \left[V + \sum_{t=1}^{n} \frac{R_t}{(1+r)^t} \right], \qquad (1.1)$$

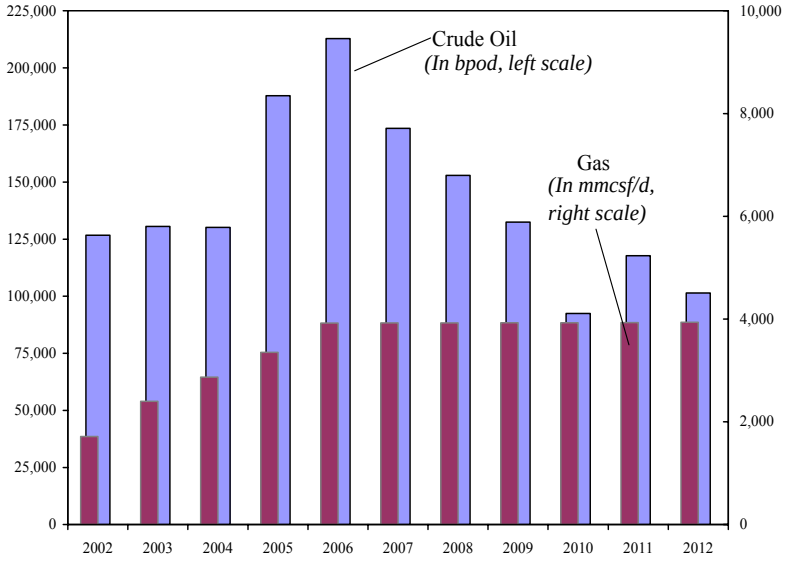
where V is the value of net energy revenues at the end of the previous fiscal year, in constant prices; $R_1 \ldots R_n$ are projected energy revenues for the current and future fiscal years, in constant prices; and r is the average real return on wealth expected to prevail in the future.

The country's energy revenues can be estimated using information on the total amount of proven, probable and possible reserves in the ground and on the average rate of extraction. In this paper, we use ten year projections of oil and natural gas production based

[15] Alternative assumptions about the government's intergenerational discount rate will result in increasing or declining optimal consumption paths over time, depending on whether the discount rate is higher or lower than the real interest rate. Similarly, if population and technological growth (TFP) are assumed to be different from zero, sustainable wealth and consumption need to be calculated using an adjusted interest rate (equal to the real rate minus the rate of population growth and TFP).

on data from the Ministry of Energy and Energy Industries (as shown in Figure 7) and assume that after the first 10 years, energy production declines gradually over the remainder of the useful life of the resource.[16] Three scenarios are considered: the first assumes that only proven reserves are available (and which, based on the average rate of extraction, imply a useful resource life of approximately 20 years); the second takes into account proven and probable reserves (implying an average life of 28 years); and the third assumes that proven, probable and possible reserves materialize (useful life of 40 years). Figure 8 shows the profiles of production at constant 2003 prices in the energy sector and Figure 9 outlines the corresponding fiscal revenues, also in 2003 prices.[17]

Figure 7. Crude Oil and Gas Production, 10-Year Projections



[16] The nonenergy sector is assumed to grow at a long-run rate of about 3.5 percent.

[17] In the long run, energy revenues as a percent of energy GDP are held constant at a level of about 27 percent.

Figure 8. Energy Output
(In millions of constant 2003 TT$)

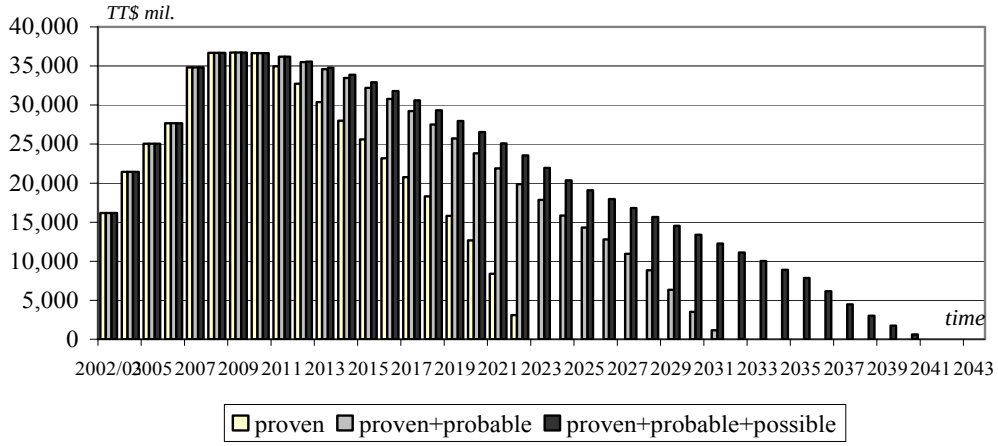
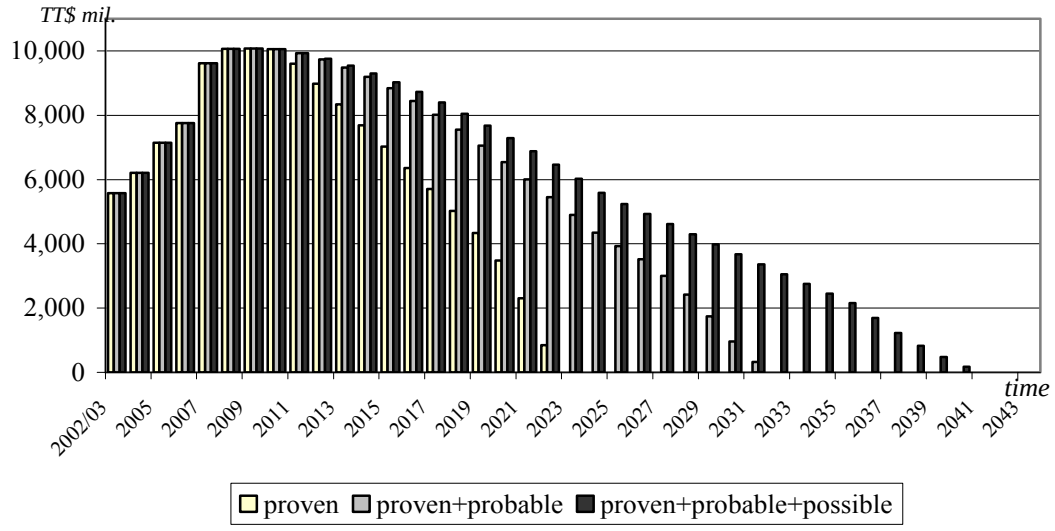


Figure 9. Energy Revenue
(In millions of constant 2003 TT$)



Energy wealth, sustainable government consumption and the corresponding nonenergy sustainable overall deficit can be calculated based on the energy projections presented above and on equation (1.1) for a baseline real interest rate of 3.5 percent and two alternative values of 2.5 and 4.5 percent.[18] As shown in Table 3, for a real interest rate of

[18] Oil price projections underlying this analysis are based on realized oil prices as of end-2004, that is US$38 per barrel, and thereafter it is assumed that over the long-run the oil prices increase by 3 percent on an annual basis.

3.5 percent, under the baseline, energy wealth is US$16 billion, generating a sustainable government consumption level of US$575 million, or US$443 in per capita terms.[19] The sustainable nonenergy overall deficit of the central government which will ensure that energy wealth and total debt remain constant over time is 8 percent of nonenergy GDP under the baseline, and varies between 6 percent and 10 percent of GDP across all cases considered.

Table 3. Trinidad and Tobago: Sustainable Government Consumption from Energy Wealth

	r	Proven	Proven + Probable	Proven + Probable + Possible
Energy wealth	3.5 percent	16,433	20,704	22,965
(in millions of 2003 US$)	2.5 percent	17,803	22,953	25,869
	4.5 percent	15,212	18,767	20,529
Sustainable government consumption	3.5 percent	575	725	804
(in millions of 2003US$)	2.5 percent	445	574	647
	4.5 percent	685	845	924
Nonenergy sustainable deficit	3.5 percent	-8	-10	-12
as percent of nonenergy GDP (2004)	2.5 percent	-6	-8	-9
	4.5 percent	-10	-12	-13

The obtained levels of sustainable government consumption out of energy wealth and overall nonenergy deficits are likely to constitute upper bounds, notwithstanding new discoveries in the energy sector. Furthermore, they represent guidelines, rather than strict targets, as they can vary when the underlying assumptions are allowed to change. If, for example, nonenergy GDP is growing in the long run, then the sustainable deficit levels as a share of nonenergy GDP will decline over time. With technological growth and/or population growth, the effective interest rate will be lower, and as such, lower levels of the sustainable non-oil fiscal deficits would be optimal. Finally, if the profile of energy production changes, the sustainable government consumption and nonenergy deficits will change accordingly. From a policy point of view, it would therefore, be advisable that such an analysis be conducted on a regular basis to capture new developments in the energy sector, and that its sensitivity to various assumptions (such as the interest rate) be carefully checked.[20]

[19] The exchange rate used is 6.23 Trinidadian dollars per U.S. dollar.

[20] The exploration activities of the international energy companies in Trinidad and Tobago continue to result in further discoveries. In addition to those already mentioned, which have been quantified, more recently there appear to have been a few more discoveries of gas reserves. For example, British Petroleum is reported to have discovered gas fields at Chachalaca (estimated at 2.0 tcf), Manatee (1.1 tcf), and Coconut (0.9 tcf). These new finds underscore the need for reassessing and reevaluating the fiscal policy stance on an ongoing basis in the context of a framework similar to the one suggested in the paper.

The theoretical guidelines proposed above may help assess the consistency of the current fiscal stance with long-term sustainability of consumption out of energy wealth. For example, an overall nonenergy fiscal deficit around 10 percent of nonenergy GDP would be overly expansionary as it would imply using up the country's energy wealth in about 10 years from now under baseline assumptions. To achieve long-run sustainability, the level of expenditure needs to be adjusted such that the nonenergy deficit falls within the limits presented in Table 3. Theory suggests that the sooner the expenditure level is contained within the sustainable limits, the less will be the loss in energy wealth over time, and the less will be the need to cut spending abruptly later on, which could generate macroeconomic instability. Therefore, according to the model presented here, there would be a strong case to put in place incentives to save.

V. Resource Funds as Policy Tools to Achieve Fiscal Sustainability

Resource savings funds are policy tools that have been used by a number of countries to save part of their resource wealth. Such funds, when used in conjunction with prudent fiscal measures, can be effective tools to accumulate national wealth for future generations, while at the same time being able to insulate the economy from external shocks. However, as cross country evidence suggests,[21] resource funds have had mixed success in achieving efficient resource management. This less than desired performance is thought to be due to two main factors: poor design of the fund rules, and inability to coordinate the fund's operations with countercyclical fiscal policy. As such, setting up a resource fund is advisable only if there is commitment to formulating and adhering to a set of rules for the resource fund that are coherent and consistent with its stated goals and with overall fiscal policy.

In FY 2004–05, the government of Trinidad and Tobago decided to convert the existing Interim Revenue Stabilization Fund (IRSF) into a Heritage and Stabilization Fund (HSF).[22] The broad objectives of the HSF are to save part of the energy sector revenues for stabilization, intergenerational wealth transfer, and strategic investments. It is expected that the fund would allow Trinidad and Tobago to prepare for the post-petroleum and gas era by developing a diversified economy and attenuating the impact on the economy emanating from the volatility and uncertainty in the prices of oil and gas. The government intends to legislate the HSF once all the details have been worked out. As shown in the previous section, based on intergenerational equity and fiscal sustainability grounds, saving for the future should be a priority of Trinidad and Tobago's authorities. An additional reason to save

[21] For a description of international experience with oil stabilization and savings funds, see Fasano (2000), and Davis, Ossowski, Daniel, and Barnett (2001).

[22] The IRSF was established in FY 1999–2000 to promote fiscal discipline during oil booms, cushion the effects of unexpected drops in oil prices, and encourage public savings. By end-2004, approximately TT$4 billion were transferred to the IRSF. Description of the features and modalities of the HSF given here are as of end-February 2005.

now is the upcoming aging of the population, which will put significant pressures on the government budget in the coming decades.[23]

Box 2. What Resource Funds Can and Cannot Do

Resource funds can:

- Crystallize public support for saving energy resources rather than spending them;
- Let the public see how much petroleum revenue is being saved;
- Allow political justification for budgets that build up fund resources by referring to the need to save for future generations;
- Generate substantial investment revenues for the future;
- Protect the competitiveness of the nonresource tradable sector, by investing its assets abroad and thus preventing a real appreciation of the exchange rate; and
- Better insulate the economy from resource price volatility and from macroeconomic instability generated by volatile government expenditure.

However, resource funds cannot:

- Substitute for good fiscal policy. If the government makes contributions to the fund according to its set rules, but still borrows elsewhere to finance expenditures, the assets in the savings fund, to the extent that they are matched by other debts, do not represent genuine net savings.
- Deliver benefits without government controls on expenditure and a countercyclical fiscal policy.

The main features of the HSF are as follows. The HSF will comprise two portfolios: a financial investment portfolio, which would hold more liquid assets assigned to two accounts: a fiscal sustainability account and a heritage account; and a strategic investment portfolio based on a strategic account. Deposits in any financial year would be made when oil and gas taxation revenues for that year exceed the budgeted medium-term oil and gas taxation revenues by at least 10 percent. Withdrawals from the fund would be for two purposes: stabilization—in the event of a short fall in revenue from oil and gas taxation; and strategic investment—to undertake strategic and tactical investments in companies identified for this purpose. Sixty percent of the deposits to the HSF would be for the financial investment portfolio, and the rest 40 percent for the strategic investment portfolio. The assets comprising the financial investment portfolio will be managed by the central bank as part of its external reserves. The overall HSF would be managed by a board of trustees, with the minister of finance as its head, and will publish a quarterly report.

While the HSF has some desirable features, there are a number of issues that would need further clarification. Among the positive aspects of the HSF are: integration of the

[23] While the state of the National Insurance Scheme is currently healthy and projected to be sustainable over the next five decades, government pensions, which are unfunded and noncontributory, will place a significant burden on the budget once the large labor force starts to retire.

fund within the budget, management of the fund by the central bank under the supervision of the ministry of finance, and investment of assets abroad. Some of the outstanding issues regarding the fund include the criteria for allocating funds between the two accounts and the framework and guidelines for investment decisions for the assets in the financial investment portfolio. In the case of the strategic investment portfolio, there is a need to clarify the basis for identifying the sectors or industries deemed to be strategic, the level of government exposure, policies regarding the rate of return, and the management of the portfolio. The basis for determining the medium-term prices of oil and gas will also have to be clarified. Box 3 outlines[24] a comparison of the HSF features and that of the international best practices.

In line with international best practices and the PIH model, the future design of the HSF could be strengthened by incorporating a number of enhancements. For example, deposits to the fund could comprise all energy revenues, including oil and natural gas exploitation and refining (i.e., energy tax revenues and payments under production sharing contracts). Furthermore, the budget should transfer all net energy revenues to the HSF, and drawings from the fund should only be used to finance budget deficits (via a reverse transfer) arising from expenditures and revenues approved by parliament under the normal budget appropriation process. Finally, the amount of funds available to the government from the HSF in any one year should be subject to "sustainable consumption" guidelines, as described by the PIH model detailed in the previous section. These guidelines should be revised periodically to take into account new developments in the energy sector, such as new discoveries or dry wells.

Both the investment strategy and transparency and accountability could be strengthened along the lines of the Norwegian State Petroleum fund (Box 4). The investment strategy should envisage clear and conservative rules regarding the portfolio composition of the fund in terms of mix of assets (equities versus bonds), currencies, and liquidity and maturity of assets. Furthermore, it should be stated explicitly that the fund is not allowed to borrow or lend, and its capital will not be used as collateral for any public sector borrowing. Furthermore, efforts should be made to ensure that the parliament and the public are kept well informed of the overall value of HSF's assets and of issues relating to its management. Comprehensive reporting requirements, including inter-year reporting and its publication on a public website should be explicitly incorporated in the law. There should be a clear assignment of accountability for the performance of the fund; its rules and operations should be free from political interference. The assets of the HSF need to be presented and assessed in the context of the government's net financial wealth.

[24] For a detailed description of international best practices see Davies, Ossowski, Daniel, and Barnett (2001).

Box 3. Heritage and Stabilization Fund's Current Practice and Best Practices

Best Practices		Comments
Current practices are checked off in boxes		
Operational Aspects:		
• Coherent integration within the budget.	☑	• HSF is in the form of an account at CBTT.
• Flexible rules, such as the fund financing the overall budget balance.	☐	• Rigid rules: deposits and withdrawals occur when oil revenues exceed budgeted revenues, which are based on a discretionary reference price.
• The fund's assets should constitute the net savings of the government.	☐	
• Parliament should approve expenditures.	☐	• Withdrawals authorized by MOF.
• Countercyclical fiscal policies should be adopted.	☐	Fiscal policy appears procyclical.
Asset Management:		
• The central bank or private investment managers may manage the fund's assets.	☑	• CBTT manages HSF's financial assets; it may appoint professional investment bankers.
• Assets should be placed abroad.	☑	• Assets are denominated in foreign currency and are to be invested in foreign currency securities issued by sovereign countries.
• Explicit consideration of mix of assets, currencies, liquidity and maturity of assets.	☐	
• Explicit restrictions to borrow, lend, make capital expenditures directly or to use fund's capital as collateral.	☐	
Transparency and accountability:		
• Transparent rules and operations.	☑	• CBTT submits a quarterly report of the operations of the HSF to the Minister of Finance.
• Regular and frequent (inter-year) reporting of the fund's operational guidelines, its asset flows, and the allocation and return on assets should be submitted to legislature and made publicly available.	☐	• No clear assignment of accountability.
• Clear assignment of responsibilities and accountability.	☐	• Annually audited by the auditor general or by another auditor authorized by it.
• Independent audit of investment performance.	☑	

Box 4. Norway's State Petroleum Fund (SPF)

- **Operational aspects**

➢ The SPF is a government account rather than a separate entity, and hence fully integrated within a unitary fiscal system.
➢ The budget transfers net oil revenues to the SPF, which then finances the non oil balance via a reverse transfer. No rigid and obscure rules are used. The operations of the fund are completely flexible and integrated within the budget, ensuring that the funds accumulated represent the net savings of the government.

- **Asset management**

➢ Norges Bank manages the SPF on behalf of the Ministry of Finance. The ministry formulates both the overall investment guidelines and the benchmark portfolio against witch performance is measured.
➢ Part of the SPF (approximately 36 percent of the equity portfolio and 10 percent of the bond portfolio) is managed by external managers monitored (daily) by Norges Bank.
➢ The benchmark portfolio is composed of 40 percent equities and 60 percent bonds. For equities the benchmark regional (currency) distribution is 50 percent Europe and 50 percent Americas/Asia/Oceania/South Africa. For bonds the mix is 55 percent Europe, 35 percent Americas and 10 percent Asia/Oceania

- **Transparency and accountability**

➢ The fund's operations are highly transparent. All transfers to and from the fund require parliamentary approval, and the fund's operations are integrated into the fiscal accounts.
➢ Norges Bank is required by law to make public the information concerning the fund's management.
➢ Extensive data of the fund's assets, its performance, etc., is widely available via internet.
➢ Norges Bank issues quarterly and annual reports on the fund's performance, transfers to and from the budget, administrative costs, etc.
➢ The SPF is regularly audited, and the audit reports are made public.

VI. Short- and Medium-Term Policy Issues

Political pressures to use energy windfalls to address immediate social needs are likely to exist, despite the conspicuous need to save energy resources in order to maintain a sense of intergenerational equity and long-run sustainability. As the theoretical analysis of section IV reveals, countries with nonrenewable resources can afford to run nonenergy deficits during booms, in contrast to countries without such resources, which need to generate fiscal surpluses during expansions. Sustainable government consumption, as calculated in the previous section, can be used for various projects with more immediate impact. The challenge for the policymakers is to choose the right kind of projects, so as not to repeat the mistakes of the past and hamper, rather than promote growth.

Short-term fiscal policies, as described in annual budgets, should be coordinated and embedded in a medium-term strategy aimed at: maintaining of macroeconomic stability, spending energy resources efficiently, and strengthening the nonenergy sector.

High public expenditures can lead to an overheating of the economy, fueling inflation and real appreciation of the exchange rate. This, in turn, can negatively affect the nonenergy tradable sector, which is the engine of employment for the economy and the long-run generator of growth when energy resources are exhausted. Furthermore, if a negative shock occurs, cutting expenditures abruptly can generate macroeconomic instability and could be disruptive for economic activity. Consequently, fiscal policy should aim at smoothing the non-oil balance over the medium term and should move gradually toward the sustainable non-oil deficit. Finally, energy resources must be spent efficiently, to help promote macroeconomic stability, to target development in the nonenergy sector and avoid implementing projects with low rates of social return, leading to a waste of resources.

The composition of expenditures should be carefully thought out and mechanisms be put in place to improve project appraisal, selection, and ex-post evaluation. Increasing current expenditures, such as subsidies and wages is not advisable, as it can fuel demand and have negative macroeconomic consequences, as described earlier. Capital expenditures, targeting, for example, infrastructure, communication and transport improvement can stimulate development of the nonenergy sector. Health and education projects could also be beneficial for long-term development, if appropriately targeted toward primary and secondary education and primary healthcare.[25] Appropriate mechanisms would be needed to ensure that only those projects with higher expected returns be implemented. Furthermore, the long-term consequences of new projects (such as maintenance costs for infrastructure, new schools or hospitals, etc.) should be taken into account from the start and budgeted appropriately.

VII. CONCLUSION

Trinidad and Tobago is currently facing an energy boom which constitutes a unique opportunity for policymakers to set in motion a virtuous cycle of growth and development. Given new large oil and gas discoveries, significant energy revenues are expected to flow in during the next few years. A wise and prudent fiscal strategy could convert these temporary resources into permanent engines of development. In contrast, spending all the resources in a short period of time may lead to macroeconomic instability, to a deterioration of the nonenergy sector, and to lower long-run growth. Therefore, current and long-term needs must be carefully balanced to enhance the welfare of present and future generations, while at the same time ensuring macroeconomic stability, efficient spending of energy resources, and strengthening of the nonenergy sector.

This present paper outlines some fiscal guidelines that could help the authorities to develop a coherent and sustainable long-term fiscal strategy. It develops a methodology

[25] The empirical evidence on the relationship between public spending on education and health care and social indicators is mixed. However, some recent studies (such as Gupta, Verhoeven, Tiongson, 1999) have shown that intrasectoral allocations matter, and that shifting expenditures toward primary care and primary and secondary education have a positive effect on reducing mortality rates and increasing school enrollment.

to calculate targets for the sustainable level of nonenergy deficits based on the permanent income theory of consumption. Adhering to these targets ensures that present and future generations alike optimally enjoy the same amount of consumption in perpetuity, without increasing the country's debt or reducing its total wealth. According to the guidelines, the current fiscal stance is found to be overly expansionary, implying a need to increase saving and reduce expenditures in order to gradually arrive at the targeted levels of nonenergy deficits.

One useful policy tool to help achieve fiscal sustainability is a resource fund. Resource funds can be effective policy tools to help save for the future and to stabilize the economy in the event of negative shocks. However, we caution that inadequate rules and insufficient commitment to the fund can hinder more than help fiscal policy. If there is a willingness to adopt a policy that promotes national saving, the existing HSF could be modified to help manage resource wealth in accordance with the principles of fiscal sustainability and intergenerational equity. In addition, by investing its assets abroad, the fund can help sterilize the large foreign inflows that will start flowing in, thus preventing a potential real exchange rate appreciation that could hurt the nonenergy sector. We propose specific guidelines to strengthen the HSF following the Norwegian State Petroleum Fund model, such that it is integrated within "sustainable income" guidelines.

Although saving and fiscal restraint are key ingredients to achieving long-run sustainability, political pressures exist to address immediate social needs. In this regard, it would be advisable to undertake expenditures so that they are maintained within sustainable limits and the efficiency of spending is improved. Expenditures to enhance infrastructure, health, and education can be more effective than increasing wages to promote growth in the nonenergy sector and maintain macro stability. However, mechanisms would need to be put in place to carefully consider the cost-benefit profile of various projects, to ensure that resources are not wasted, that only projects with higher expected returns are implemented, and that the long-term maintenance costs of such projects are correctly accounted for. A selective and effective spending agenda, embedded in a sustainable medium- and long-term fiscal strategy, could help Trinidad and Tobago use the current energy boom as a stepping stone toward a new stage of development and economic prosperity.

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