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TRINIDAD AND TOBAGO

Selected Issues

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Approved by the Western Hemisphere Department

October 5, 2006

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I. Medium-Term Fiscal Sustainability in Trinidad and Tobago[1]

Trinidad and Tobago has greatly benefited from high energy prices in recent years. However, its reserves are being depleted rapidly and may be exhausted in 20 years at current extraction rates. Policy choices are complicated by uncertainties regarding future energy prices, real rates of return on financial assets, and the potential growth of the nonenergy sector. From a medium-term perspective, intergenerational distribution considerations call for accumulation of assets while smoothing the evolution of public expenditure is crucial from a macroeconomic management point of view. This paper discusses alternative ways of assessing medium-term fiscal sustainability and estimates the sustainable nonenergy deficit for Trinidad and Tobago using these different methodologies. The sensitivity of these estimates to shocks are also examined.

A. Introduction

1.   **A dependence on revenues from nonrenewable natural resources poses a number of important challenges to fiscal policy**. Fiscal policy needs to be geared towards ensuring that future generations can benefit from nonrenewable resource wealth notwithstanding the inevitable exhaustion of the resource endowment. This involves policy decisions on how much and at what pace energy wealth is transformed into other assets. However, expenditure decisions in that context need to take the economy's absorption capacity into consideration, so as to minimize the risk of economic overheating and the erosion of wealth through inflation. At the same time, commodity prices tend to exhibit a high degree of volatility, thus implying that fiscal policy has a role to play in smoothing (or at least not exacerbating) economic cycles. Achieving these various objectives requires striking a delicate policy balance.

2.   **High energy prices, the discovery of new gas fields, and investment in downstream industries have significantly boosted energy revenues in Trinidad and Tobago**. The increase in energy revenues, which have more than doubled relative to the level in the late 1990's, has allowed for an impressive reduction in central government debt. However, energy revenue gains have also been used to increase social and capital expenditure and tax cuts to the

	1988-1997	1998-2002	2003-2005	2005/06
	(In percent of GDP)			
Energy revenues	7.4	5.1	11.8	19.4
Nonenergy revenues	19.9	19.4	14.6	11.8
Expenditure	28.8	24.9	23.3	27.3
of which:				
Capital expenditure	2.1	1.6	2.1	3.4
Nonenergy balance	-9.0	-5.5	-8.7	-15.5
Overall balance	-1.6	-0.4	3.1	3.8

nonenergy sector, resulting in a relatively significant deterioration in the underlying fiscal position.

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[1] Prepared by Irineu de Carvalho Filho (WHD).

3.   **Trinidad and Tobago's own experience illustrates that the mismanagement of energy price booms can lead to severe economic hardship when prices decline**. During the oil boom of the 1970s, the nonenergy deficit was allowed to soar from less than 10 percent of nonenergy GDP to over 40 percent by the early 1980s.[2] When oil prices collapsed, the end of the oil boom brought about the need for a sharp fiscal adjustment and total expenditure had to be reduced from an average of 56 percent of nonenergy GDP in 1980–85 to 36 percent in the nineties. Output per capita declined by about 33 percent between 1981 and 1992, and unemployment rose from 10 percent to 22 percent in 1987–89.
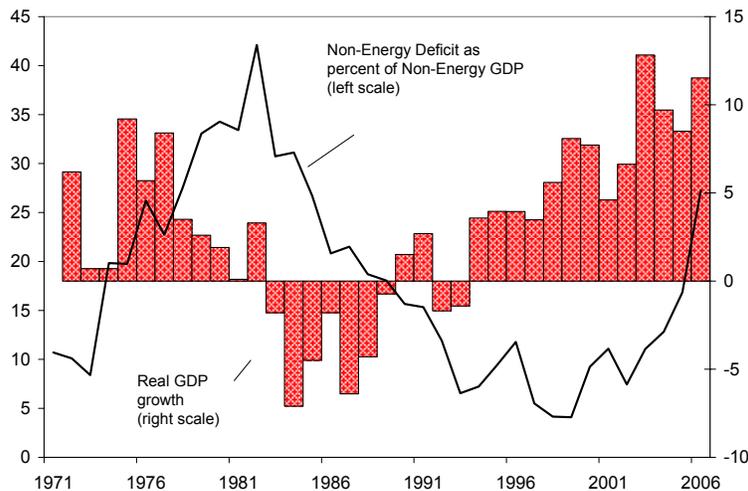
4.   **This paper will focus on the challenge of distributing the nonrenewable resource wealth across generations**. Its recommendations are geared towards the goal of intergenerational distribution and therefore focus on the transformation of the natural resource wealth into other assets. Issues related to the economy's absorption capacity are beyond the scope of this paper and it is therefore assumed that the government accumulates financial assets as opposed to making other public infrastructure and social investments. However, the importance of taking cyclical and absorption considerations into account in the design of fiscal policy should not be underestimated.

B. Defining Fiscal Sustainability

5.   **Fiscal sustainability is a broader concept than financial solvency of the public sector**. Fiscal solvency requires that the government's intertemporal budget constraint is met, that is, that the net present value of future primary surpluses is greater or equal to the government's initial current net debt. Fiscal sustainability requires that current revenue and

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[2] The nonenergy deficit is the overall balance of the central government, excluding energy revenues.

expenditure policies can be maintained into the future while respecting the intertemporal budget constraint. This latter criterion safeguards against the need for drastic policy reversals—often associated with significant social and economic dislocation—when energy income declines. For countries whose stream of fiscal receipts is front loaded, as in the case of those endowed with nonrenewable resources, fiscal sustainability involves the accumulation of assets to finance public spending once the nonrenewable resource is exhausted.

6.   **A number of alternative criteria consistent with the above definition can be used to assess fiscal sustainability in countries with nonrenewable resources**. Most criteria focus on a path for the nonenergy deficit, or for a path for expenditures given underlying assumptions for nonenergy revenues over time. The various criteria reflect different preferences for intergenerational distribution. The two most often cited criteria in the literature define fiscal policy as sustainable when the nonenergy deficit can be indefinitely maintained:

Criterion I.   *Constant in real terms.* Under this criterion, energy wealth is converted into a fixed annuity stream in real terms to finance the nonenergy budget deficit indefinitely. Over time, as population and nonenergy output grow, the nonenergy deficit declines both in per capita terms and as percent of the nonenergy GDP. In practice, there is a need to reduce the nonenergy deficit as a share of nonenergy GDP.[3]

Criterion II.   *Constant in percent of nonenergy GDP.* Under this criterion, energy wealth is converted into a stream that finances a nonenergy deficit that can be maintained indefinitely as a percent of nonenergy GDP. The estimates in this case are subject to the additional uncertainty of having to project nonenergy GDP growth. In this more stringent sustainability criterion, preferences between the consumption of current and future generations are better balanced. Furthermore, contrary to Criterion I, there is no need for sustained fiscal adjustment to accommodate a sustainable nonenergy deficit that must shrink as a percent of GDP.[4]

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[3] This approach to assess medium term fiscal sustainability has been used in several works, such as Leite (2004) for the Republic of Congo; Kim (2005) for Timor-Leste; Segura (2006) for São Tomé and Príncipe; Takizawa (2005) for Kuwait; and Velculescu and Rizavi (2005) for Trinidad and Tobago. Bailen and Kramarenko (2004) analyzed both cases of constant and growing consumption out of oil wealth for the Islamic Republic of Iran; and Lohmus (2005) considered the case of constant per-capita non-oil deficit for Kazakhstan.

[4] Leigh and Olters (2006) drew from this concept of sustainability for Gabon. Their paper also modeled the adjustment path for the nonoil deficit for Gabon, drawing from a habit in consumption specification.
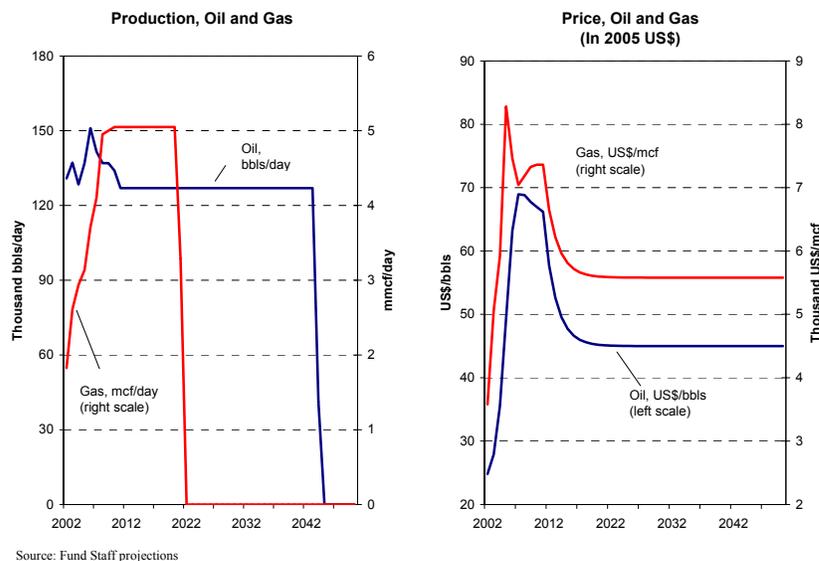
C. Assumptions

7.   **Estimating fiscal sustainability inevitably requires making assumptions with respect to a number of key parameters**. The estimates presented in this paper are based on the following assumptions:

> *Energy prices.* Projections for energy prices reflect those underlying in the IMF's May 2006 World Economic Outlook (WEO) until 2011. In particular, oil prices are assumed to decline gradually from US$66.5/bbl in 2006 to an average of US$66.0/bbl in 2011. Thereafter they converge towards a long-term value of US$45/bbl in real terms. This level is slightly above the historical average, reflecting the current understanding that some of the recent increases in oil prices is structural.[5]

> *Energy reserves and extraction probabilities.* Fiscal sustainability is highly sensitive on the overall endowment of energy reserves. For this exercise, data on energy reserves reflects the latest audited data on proven, probable, and possible reserves. However, proven, probable and possible reserves are assumed to have extraction probabilities of 100 percent, 75 percent and 50 percent, respectively, to reflect the uncertainty about the economic feasibility of extracting them. Figure 1 shows the baseline path of production and prices used in the exercise.

Figure 1. Trinidad and Tobago: Oil and Gas Production and Prices

Source: Fund Staff projections

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[5] Husain and Davoodi (2005) discuss how oil exporters should use their oil revenues, under the assumption that a sizable portion of the rise in their earnings is expected to persist over the medium term.

Real interest rate. The real rate of return on assets is set at 4 percent, in line with the annual real return net of management costs for the Norwegian Petroleum Fund since 1997, of 4.3 percent.[6] A more conservative investment policy tilted toward debt instruments would call for a lower real rate of return.

Nonenergy GDP growth. The assumption for the growth rate of nonenergy GDP is 3 percent, in line with long-term growth rates of Caribbean countries.[7]

Table 1. Baseline Scenario Assumptions

Real interest rate	4.0
Rate of growth of NE-GDP	3.0
Long-term oil price (US$/bbl)	45.0
Long-term gas price (US$/mcf)	5580.0
Oil reserves (Jan 05), in bbl mn	
Proven	615.1
Probable	249.0
Possible	1529.7
Gas reserves (Jan 04), in tcf	
Proven	18.8
Probable	9.0
Possible	7.1

8. **Fiscal sustainability estimates are also based on policy parameters that describe the fiscal claim on energy and nonenergy sector GDP**. While the government take from these sectors is subject to change, the working assumption for this paper is that their current values are a good indication of tax policy for Trinidad and Tobago over the medium term.

9. **Presently, the government take from the energy sector is based on a percent share of the production value of crude oil and natural gas**.[8] The taxation regime for oil and gas are both based on production and income taxes. In periods of high energy prices, income taxes tend

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[6] From Norges Bank (2005).

[7] Average growth for a sample of 15 Caribbean countries for which data is available from 1970 to 2004. The list of countries is Antigua and Barbuda, Bahamas, Barbados, Bermuda, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.
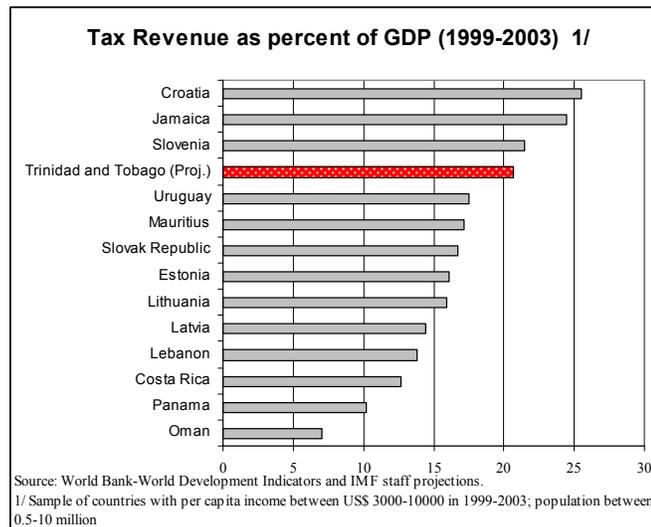
[8] For the purposes of this paper, energy revenues comprise corporate taxes on oil and gas production and exploration, gas processing (LNG), and petrochemical companies; the withholding tax, unemployment levy, business levy, and Green Fund levy on those companies; royalties on oil and gas; signature bonuses; and the oil and gas impost.

to yield more cents on the dollar of energy produced. Hence the government take is non-linear on energy prices. In FY 2005/06 there was a reform in the tax regime for oil and gas, with the goal of significantly increasing energy revenues. Preliminary figures for FY 2005/06 indicate that the government take has reached 27 percent of the production value of crude oil and natural gas—a substantial increase relative to about 18 percent in the previous 3 years. For the sake of simplicity and the purposes of this paper, the government take from the production value of crude oil and natural gas is assumed to remain at 27 percent indefinitely. A constant government take is likely to overestimate revenues when prices are low and underestimate it when prices are high. In that light, more prudence is called for when interpreting low-price scenarios.

Table 2. Government Take

	Avg. 02/03-04/05	Proj. 2005/06
From nonenergy GDP	22.5	20.7
From energy sector	18.2	27.1

10. **The baseline value for the government take on the nonenergy sector is 20.7 percent of the nonenergy GDP**. This figure is lower than the average for the fiscal years ending in 2001 and 2005, which was about 22½ percent of non-energy GDP, reflecting the FY2005/06 tax reform that included reductions in income and petrol excise taxes. Nevertheless, even at 20.7 percent of GDP, this exceeds the average tax revenue for other countries of similar income and populations which averages around 16 percent of GDP.


Tax Revenue as percent of GDP (1999-2003) 1/

Source: World Bank-World Development Indicators and IMF staff projections.
1/ Sample of countries with per capita income between US$ 3000-10000 in 1999-2003; population between 0.5-10 million

D. Fiscal Sustainability: Baseline

11.   **This section presents the nonenergy deficit, primary expenditure, and net asset profile that are sustainable under the two sustainability criteria presented above**. It also discusses a scenario in which the nonenergy deficit is sustained at the level projected for the current fiscal year and then brought abruptly into balance in 2020 is also examined.

Criterion I: Nonenergy Deficit Constant in Real Terms

12.   **The sustainable nonenergy deficit in the baseline is TT$ 11,724 million in FY 2004/05 prices**. In FY 2005/06 the sustainable nonenergy deficit is 18¼ percent of current nonenergy GDP, or 10¾ of current GDP. This level is lower than the projected primary nonenergy deficit based on the supplemental budget of FY 2005/06 (23½ percent of nonenergy GDP, or 13½ percent of GDP). Sustainability in this case entails a building-up net assets equivalent to 135 percent of nonenergy GDP by 2044, when oil and gas reserves are exhausted in the baseline scenario. After that, the real value of the fund will be constant in real terms and withdrawals from the fund will equal the real return earned by the fund net assets.

13.   **Assuming that the government take from the nonenergy sector is constant and equal to 21 percent of nonenergy GDP**, the ratio of primary public expenditure to nonenergy GDP will converge in the long-run to the government take since the transfer from the revenue fund will shrink relative to the growing size of the nonenergy economy.
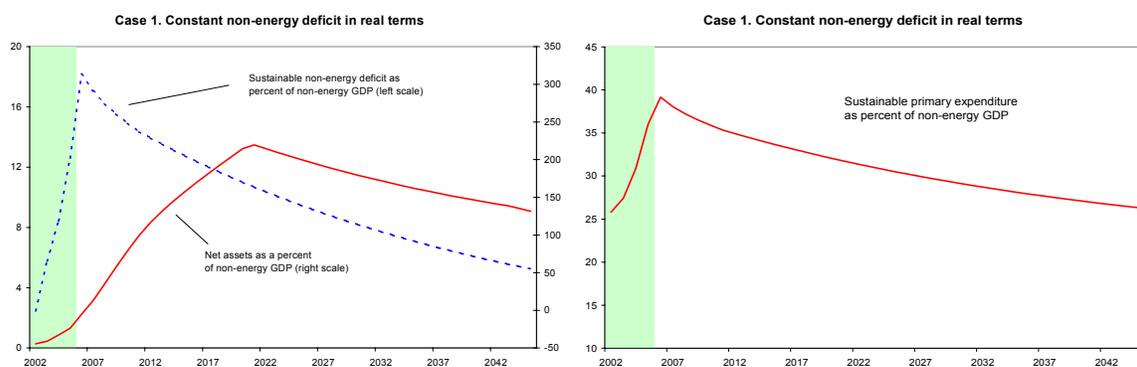

14.   **In the 2005 Article IV Consultation (IMF 2005), the IMF estimated the sustainable nonenergy deficit in constant dollar terms for Trinidad and Tobago at about 13½ percent of FY 2005/06 GDP—substantially higher than what is estimated in this paper**. The difference with the 10¾ percent estimate in this paper reflects: (i) the introduction of varying extraction probabilities of energy reserves; (ii) a lower government take on energy output over the projection period in line with recent history; (iii) upward revisions to GDP; and (iv) a more conservative medium term energy prices. The impact of these changes was only partially offset by higher energy prices until 2011 (as projected in the WEO) and a higher assumed real rate of return.

Criterion II: Nonenergy deficit constant in percent of nonenergy GDP

15.   **Since the nonenergy sector will likely continue to grow at positive rates in the long-run, the sustainable nonenergy deficit in percent of nonenergy GDP is substantially lower than the sustainable deficit in constant dollar terms estimated using criterion I**. Under criterion II, the sustainable nonenergy deficit is about 4¼ percent of the nonenergy GDP. For FY 2005/06, this entails a sustainable nonenergy deficit of TT$2,850 million in current prices, which is substantially lower than the nonenergy deficit currently projected based on the FY2005/06 supplemental budget.

16.   **This sustainable path would entail an accumulation of net assets in a nonrenewable resource fund building-up to 430 percent of nonenergy GDP**.[9] Assuming a constant government take from nonenergy GDP equal to 21 percent, primary public expenditure is projected to stay constant at 25¼ percent of nonenergy GDP indefinitely.
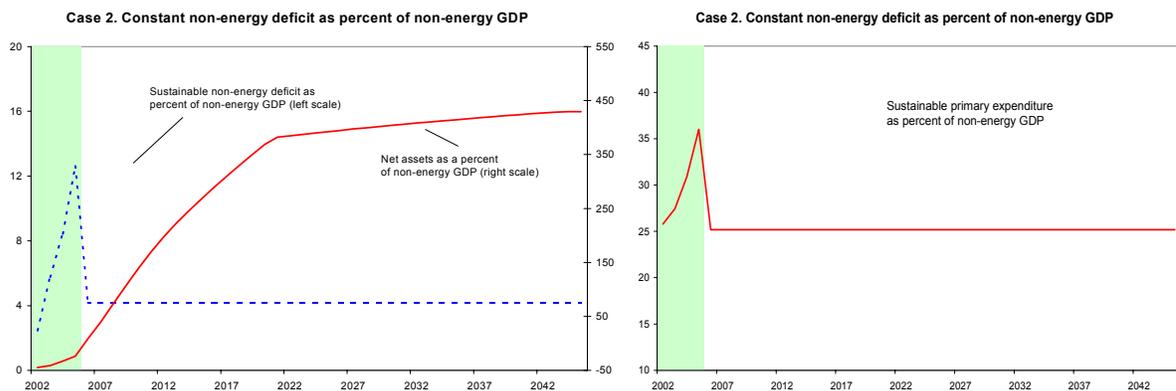

Zero Deficit in 2020

17.   **Maintaining the nonenergy deficit at the level currently projected for FY 2005/06 involves a drastic fiscal adjustment**. Balancing the budget in 2020 when energy revenues are near exhaustion and accumulated assets are not enough to finance any further significant deficits would require an adjustment of about 30 percent of nonenergy GDP.

18.   **In this case, net assets in the nonrenewable resource fund would peak at 26 percent of nonenergy GDP in 2012 and then would drop to zero by 2020, when the nonenergy deficit would converge to the energy revenue**. This strategy would entail a higher level of primary expenditure than the policy of sustainable nonenergy deficit constant in dollar terms

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[9] The market value of the Norwegian Government Petroleum Fund was estimated at 78 percent of Norway mainland GDP in the beginning of 2005 and the 2005 budget projects it to reach 128 percent of the mainland GDP in 2010 (Jafarov and Moriyama, 2005). The Kuwaiti net financial assets position was about 200 percent of GDP in 2005 (Takizawa, 2005).

until 2021, and lower thereafter. How to attain the necessary fiscal adjustment to achieve zero deficit in 2020 is beyond the scope of this paper, and it is not clear that the fiscal adjustment necessary to balance the budget in 2020 can be attained without a hard landing.

Case 2. Zero overall deficit in 2020

Case 3. Zero overall deficit in 2020
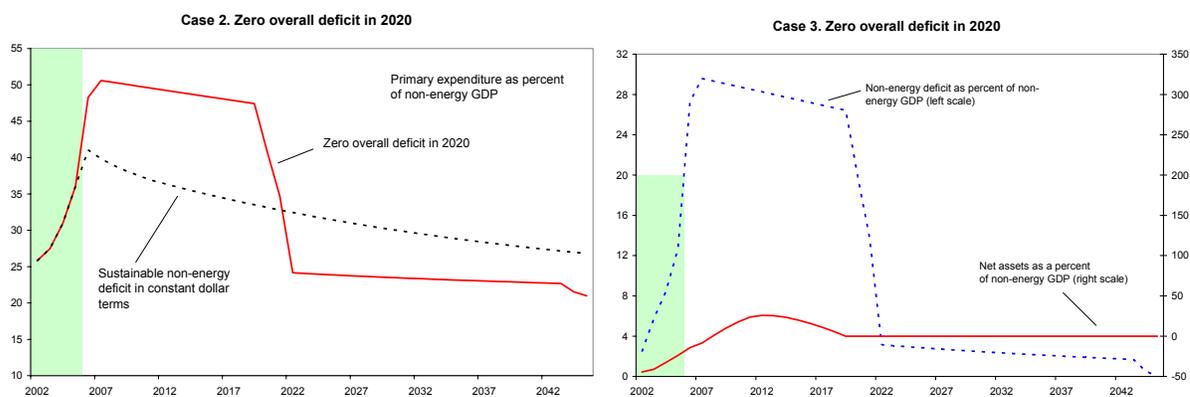
E.   Sensitivity Analysis and Stress Tests

19.   **Fiscal sustainability also requires that fiscal targets are robust to most changes in assumptions**. Changes in key macroeconomic parameters underlying directly affect estimates of the sustainable nonenergy deficit. However, fiscal targets are generally deemed robust when they can accommodate likely deviations from baseline parameters. Table 3 below presents low and high parameter values for sensitivity analysis. In particular: (i) the long-term crude oil price, which is assumed to be constant at US$45/bbl beyond 2011, is set at US$25 for the most pessimistic and US$65 in the most optimistic price scenarios; (ii) the return on the net assets of the revenue fund is set between 3.5 percent and 4.5 percent; (iii) the growth rate of nonenergy GDP is set between 2.5 percent and 3.5 percent; and, (iv) the stock of crude oil and natural gas reserves is bounded between a low reserves scenario in which only proven reserves are available and a high reserves one in which the full stock of proven, possible and probable reserves is available.

Table 3. Sensitivity Analysis for Sustainable Nonenergy Deficit
(In percent of nonenergy GDP)

		Case 1			Case 2
	Description	FY 2005/06	FY 2025/26	FY 2065/66	Indefinitely
Baseline		18.2	9.2	2.8	4.2
Pessimistic oil prices	US$25 long-run oil price	14.4	7.3	2.2	3.3
Low oil prices	US$35 long-run oil price	16.3	8.3	2.5	3.7
High oil prices	US$55 long-run oil price	20.0	10.2	3.1	4.6
Optimistic oil prices	US$65 long-run oil price	21.9	11.1	3.4	5.0
Low rate of return	3.5% real rate of return	16.6	8.4	2.6	2.2
High rate of return	4.5% real rate of return	19.5	9.9	3.0	6.0
Low nonenergy GDP growth	2.5% growth in long-run	18.2	9.9	3.7	6.1
High nonenergy GDP growth	3.5% growth in long-run	18.2	8.6	2.2	2.1
Low reserves	Only proven reserves	12.7	6.4	2.0	2.9
High reserves	100% of proven, possible and probable	20.5	10.4	3.2	4.7

20.   **Fiscal sustainability estimates are generally robust to changes in individual assumptions**. Table 3 shows the sustainable nonenergy deficit for FY 2005/06, 2025/26 and 2065/66 obtained when a single parameter is varied while keeping other parameters constant, for the Criterion I sustainable deficit in constant dollar terms (Case 1), as well as the Criterion II sustainable deficit as constant share of nonenergy GDP (Case 2). The main results are as follows:

- **Changes in the crude oil price assumption**. When the assumption for long-term crude oil prices are changed between US$35 per barrel and US$65 per barrel, the sustainable nonenergy deficit varies from 14.4 percent to 21.9 percent of current nonenergy GDP in Case 1, and from 3.3 percent to 5.0 percent of nonenergy GDP in Case 2.

- **Changes in the real interest rate assumption**. The real interest rate determines the return on the net assets accumulated in the revenue fund. As real interest rates range from 3½ percent to 4½ percent, the sustainable nonenergy deficit goes from 16.6 percent to 21.9 percent of current nonenergy GDP in Case 1, and 2.2 percent to 6.0 percent of nonenergy GDP in Case 2.

- **Changes in the nonenergy GDP growth assumption**. The nonenergy GDP growth assumption does not affect the sustainable nonenergy deficit in real terms in Case 1, but it affects its size relative to the nonenergy GDP in the future. Because the faster the nonenergy GDP grows the greater the need for asset accumulation to finance a growing nonenergy deficit, the growth rate of the nonenergy GDP is an important determinant of the sustainable nonenergy deficit in Case 2. As the nonenergy GDP growth assumption increases from 2½ percent to 3½ percent, the sustainable nonenergy deficit from 6.1 percent to 2.1 percent of nonenergy GDP.

- **Changes in the oil and gas reserves assumption**. In a low reserves scenario, probable and possible reserves are assumed to have a zero extraction probability; in a high reserves scenario, all reserves receive a 100 percent extraction probability. In moving from the low to the high reserves scenario, the sustainable nonenergy deficit goes from 12.7 percent to 20.5 percent of FY 2005/06 current nonenergy GDP in Case 1, and from 2.9 percent to 4.7 percent of nonenergy GDP in Case 2.

21.   **The possibility that shocks occur to more than one parameter can also be assessed**. In the worst case scenario, the real interest rate, reserves are concomitantly low, and energy prices are pessimistic (as defined in Table 3). Conversely, in the best case scenario, the real interest rate, reserves are concurrently high, and energy prices are optimistic. Table 4 presents the sustainable nonenergy deficit for FY 2005/06 for the best and worst case scenarios. In the worst case scenario, the sustainable deficit is 10.8 percent of

Table 4. Best and Worst Case Scenarios
Sustainable nonenergy deficit for FY 2005/06
(In percent of nonenergy GDP)

	Worst Case	Best Case
Criterion I	10.8	24.4
Criterion II	1.4	7.5

nonenergy GDP for Criterion I and 1.4 percent of nonenergy GDP for Criterion II.

22.   **Based on the above analysis, fiscal sustainability in Trinidad and Tobago is at risk**.
Preliminary estimates suggest that the projected outturn for FY 2005/06 is sustainable only under
the best case scenario for the parameters when sustainability is defined as a constant nonenergy
deficit in real terms—the weaker of the two sustainability criteria examined. In the best case
scenario, the sustainable nonenergy deficit reaches 24.4 percent of current nonenergy GDP
(Criterion I), which is slightly larger than the 23½ percent currently being projected based on the
supplemental budget for FY 2005/06. However, under the most stringent rule which requires a
constant nonenergy deficit as percent of nonenergy GDP (Criterion 2), the sustainable nonenergy
deficit is 7½ which is significantly smaller than the projected figures for FY 2005/06.

F. Conclusions

23.   **Intergenerational distribution requires that the consumption of nonrenewable
wealth be spread over time and across generations**. This paper presented two criteria for
determining fiscal sustainability in the presence of revenues stemming from a nonrenewable
resource.

24.   **Estimates for Trinidad and Tobago suggest that the projected nonenergy deficit in
FY 2005/06 is likely to exceed the sustainable level under both criteria**. For the least stringent
of the two criteria, which requires the nonenergy deficit to be constant in real terms, current
fiscal performance is only sustainable under a best case scenario with high medium-term energy
prices, reserves, and return on assets.

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II.   THE MONETARY TRANSMISSION MECHANISM IN TRINIDAD AND TOBAGO[10]

Inflation has been on the rise in Trinidad and Tobago since 2004. Monetary policy actions of the Central Bank of Trinidad and Tobago have been aimed at containing the rise of inflation and influencing inflation expectations. Understanding the monetary transmission mechanism is key to the implementation of monetary policy. This paper reviews the main aspects of the monetary transmission mechanism in Trinidad and Tobago, and offers some suggestions to improve the effectiveness of monetary policy transmission.

A.   Introduction

27.   **Understanding the monetary transmission mechanism is central to fighting inflation**. This paper reviews the functioning of the monetary transmission mechanism in Trinidad and Tobago and offers suggestions to improve the effectiveness of monetary policy in controlling inflation. Section B describes some special characteristics of the Trinidad and Tobago economy and financial markets. Section C discusses how these affect the monetary transmission mechanism. Section D provides recommendations to strengthen the effectiveness of monetary policy, and briefly describes how the transmission mechanism would change in a more flexible exchange rate regime. The last section presents the main conclusions.

B.   The Trinidad and Tobago Economy

28.   **Very favorable terms of trade and an expansionary fiscal policy have generated upward pressures on the real exchange rate in recent years**. Trinidad and Tobago is an energy rich economy that has benefited from surging energy prices, the exploitation of new gas fields, and an expansion of industrial capacity in recent years. Economic activity has been growing rapidly, the external accounts have been strengthening, and the government's balance sheet improved. However, the rapid increase in public spending together with tax cuts to the nonenergy sector have led to a deterioration in the underlying fiscal position. This has added to the upward pressures on the real exchange rate from the positive terms of trade shock. Given the de facto fixed exchange rate regime, these pressures have been manifested in the form of higher inflation, which has risen to nearly 9 percent from 3 percent in 2003.

29.   **Monetary policy independence is limited in Trinidad and Tobago due to the de facto fixed exchange rate and open capital account**.[11] With the liberalization of financial markets, foreign interest rates have had a greater degree of influence on domestic interest rates, and the extent to which the central bank can affect domestic interest rates is determined by the risk

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[10] Prepared by Zsofia Arvai (MFD).

[11] Although the exchange rate regime is officially classified as floating, in practice, the rate is pegged to the U.S. dollar. Exchange controls on current and capital transactions were abolished in 1993.

premium over foreign interest rates, and by the degree of substitution between domestic and foreign assets. The capacity to deviate from foreign interest rates has likely diminished in recent years. The premium on local currency-denominated assets has narrowed as the country's balance sheet strengthened due to the energy boom. At the same time, the substitutability between domestic and foreign assets seems to be increasing as investors' risk aversion regarding foreign investments appears to be waning—as demonstrated by the increase in investments in foreign assets with low credit ratings. Moreover, the fastest growing segment of the financial sector is the less regulated one, which is less constrained in terms of foreign investments. In the short term, the central bank can gain some degrees of freedom to influence monetary conditions through changes in reserve requirements, prudential regulations, and moral suasion. However, their scope is limited.

30.   **Monetary policy gained some independence from a rationing of foreign exchange leading to a less open capital account than suggested by the official classification**. The excess liquidity in the system has prompted an excess demand for foreign exchange. This demand has only been partially met by central bank sales. Unsatisfied customer demand for foreign exchange led to "queues" which increased substantially in 2005, when the central bank started giving guidance to banks to prioritize the supply of foreign exchange to their clients for current account transactions. The rules governing the foreign exchange market ensure that only minor movements in the exchange rate can occur.

31.   **The conduct of monetary policy is Trinidad and Tobago is influenced by a number of country-specific characteristics of the economy and financial system, including**: (i) the dual structure of the economy; (ii) the composition of the price index; (iii) the excess liquidity generated by the monetization of energy receipts to finance the nonenergy budget deficit; and (iv) the design of monetary instruments and operations.

- **The dual structure of the economy complicates the conduct of monetary policy due to the asymmetric response of the two main segments of the economy**. The energy sector accounts for over 40 percent of GDP, about 90 percent of exports, and over half of government revenues, though its contribution to employment is minor. The impact of domestic monetary policy on the energy sector is minimal, whereas its impact on the nonenergy corporate sector and household can be significant. Companies in the energy sector obtain their financing mostly from foreign sources, in part because of domestic banks' limited lending capacity. The share of the oil and gas sector in commercial banks' assets was below 3 percent in 2005. On the other hand, the nonenergy corporate and household sectors are impacted by monetary conditions due to their reliance on domestic financing. Lending to households is the largest component of banking sector assets at around 40 percent.

- **The composition of the price index (RPI) basket in Trinidad and Tobago makes the link between monetary policy and measured inflation less straightforward**. The RPI basket is dominated by items that are subject to strong supply shocks (food) or subject to

administrative prices (transportation, utilities, health care, and education). As a consequence, headline inflation reacts to changes in policy rates with longer and more irregular lags than would generally be expected. From this point of view, a good measure of core inflation is needed to help guide interest rate decisions. Moreover, the central bank needs to follow closely a variety of indicators, such as excess liquidity, when judging the appropriateness of monetary conditions.

- **Energy receipts and the monetization of the nonenergy deficit has led to a situation of structural excess liquidity**.[12] The nonenergy deficit, which has risen rapidly in recent years and reached 10 percent of GDP in fiscal year 2004/2005, has been financed by the monetization of energy receipts in foreign currency. The ensuing liquidity injections have only been partially sterilized by foreign exchange sales and open market operations in excess of scheduled treasury securities sales by the central bank.

- **Monetary operations have had difficulties coping with the structural excess liquidity**. The central bank signals the stance of monetary policy through the repo rate. However, the repo rate has not been binding in the current structural excess liquidity environment, and treasury bill rates and effective commercial bank rates have diverged persistently from the interest rate path signaled by the central bank's policy rate. Between mid-2005 and mid-2006, the gap between the repo rate and treasury bill rates widened markedly and the average effective commercial bank lending did not tend to follow repo rate increases. Commercial banks' prime lending rate increased with the repo rate, but the link between the prime and average effective lending rate became weaker. Average deposit rates also stayed flat, contributing to increased financial disintermediation. However, more recently, the central bank has allowed treasury bill rates to rise, thus facilitating the tightening of monetary conditions.

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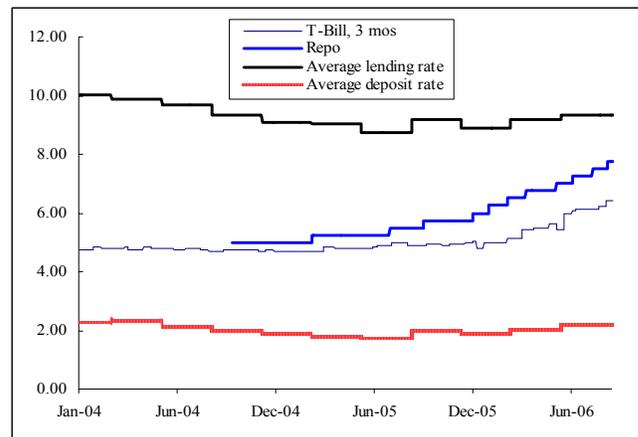
[12] Structural excess liquidity occurs when the central bank almost always needs to absorb liquidity from the banking system. A common feature in many developing and emerging countries, structural excess liquidity is usually the result of the monetization of budget deficits or foreign exchange inflows.

C. The Monetary Transmission Mechanism in Trinidad and Tobago

Interest rate channel

32.   **Trinidad and Tobago's relatively large financial sector creates the conditions for effective monetary policy transmission**. The relatively high level of domestic credit to the private sector (around 40 percent of GDP or 65 percent of nonenergy GDP) makes the interest rate channel a potentially important channel of monetary transmission.[13] However, as discussed above, the effect of changes in the central bank's policy rate (repo rate) on commercial banks' lending and deposit rates has been muted in the current excess liquidity environment.

33.   **The dual structure of the economy, however, limits the effectiveness of the interest rate channel**. Access to foreign financing by the energy sector and some related industries (accounting for over 40 percent of GDP) renders the interest rate channel very weak for that segment of the economy. At the same time, low access to domestic finance by domestic small and medium-size companies limits the importance of interest rate changes for this segment of the nonenergy sector. On the other hand, the high and increasing indebtedness of households is strengthening the interest rate channel for this sector (Table 1). Government plans to increase the domestic content of energy sector investments are likely to make the monetary transmission mechanism even more complex by increasing the share of domestic resources the use of which is decided independently of domestic monetary conditions.

Table 1. Trinidad and Tobago: Banking Sector Asset Composition

	2000	2001	2002	2003	2004	2005
Sectoral distribution of loans-to-total loans						
Households	45.7	42.8	41.3	40.4	38.9	41.0
of which:						
Proportion secured as mortgage loans	9.8	10.2	11.4	11.3	18.3	27.2
Financial sector	12.7	12.5	12.1	17.6	17.8	16.9
Oil and gas sector	2.9	5.5	4.2	4.6	2.9	2.8
Construction	4.5	3.8	4.6	7.4	6.4	5.9
Transport and communication	6.8	4.9	3.7	3.7	3.6	2.7
Non-residents	1.9	2.2	3.2	2.3	4.6	5.6
Geographic distribution of loans-to-total loans						
Domestic	98.1	97.8	96.8	97.7	96.3	93.8
Foreign	1.9	2.2	3.2	2.3	3.7	6.2

Source: Central Bank of Trinidad and Tobago.

34.   **The degree of competition in the financial sector also affects the interest rate channel**. In a competitive financial sector, changes in monetary policy rates are more rapidly

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[13] The average ratio of commercial bank loans to GDP in Latin America was 30 percent for 1999–2002.

transmitted to loan and deposit rates than in a highly concentrated one. In this regard, the concentration in the Trinidad and Tobago banking sector reduces the speed of transmission for lending rates. For deposit rates, the transmission appears faster in the financial sector as a whole than just in the banking system, as other segments such as the mutual fund industry seem more competitive than the banking sector. However, within the banking sector the transmission mechanism for deposit rates has been slow due to limited competition among banks for funds resulting from excess liquidity conditions. Regarding securities market development, deep and liquid securities markets usually respond faster to monetary policy changes than bank loan and deposit rates. Inactive secondary markets for government and private securities in Trinidad and Tobago hamper the functioning of the monetary transmission mechanism. In this connection, developing a benchmark yield curve would aid monetary policy.

35.   **The terms of financial contracts and extent of dollarization also play an important role in determining the effectiveness of monetary policy**. The larger the share of short-term loans and deposits and/or the share of variable rate instruments compared to fixed rate ones, the faster the interest rate transmission. On the other hand, dollarization hampers the transmission of domestic interest rates. The significant share of foreign currency loans, representing approximately one quarter of total loans, and of foreign currency deposits, amounting to over 30 percent of total deposits, in Trinidad and Tobago reduces the effectiveness of monetary policy.

Other transmission channels

36.   **The importance of the asset price channel remains limited, but it is growing, especially in the case of real estate**. This channel operates through wealth effects generated by variations in asset prices—mainly bonds, equities and real estate—resulting from changes in interest rates. In Trinidad and Tobago, this channel is unlikely to be strong for bonds given the lack of a deep secondary market. However, the excess liquidity in recent years seems to have contributed to a real estate price boom and rapid rise in stock prices.[14] The effect on aggregate demand seems limited thus far, but rapidly growing mortgage lending indicates that the asset price channel is likely to strengthen.

37.   **The credit availability channel is important in emerging market economies like Trinidad and Tobago**. Monetary policy works through credit rationing when there is imperfect information or contract enforcement problems. Since collecting information about small borrowers is costly, the implicit cost of borrowing and the volume of credit vary substantially

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[14]Local financial markets have gone through an orderly correction since mid-2005 following a stricter enforcement of limits on institutional investors' equity investments. The local stock market index has fallen by over 20 percent from its peak in May 2005.

more for them than for large firms during the monetary policy cycle.[15] This way credit rationing amplifies the direct interest rate effects. In Trinidad and Tobago microeconomic data makes it difficult to reach a definitive conclusion on the strength of the credit availability channel. However, the small and medium-size borrowers' apparent lack of access to alternative financing sources and evidence from other similar emerging markets indicate that the credit channel is likely to be important.[16]

38.   **The expectations channel is crucial for monetary policy effectiveness**. All variables that have intertemporal implications, and are therefore determined in a forward looking way, are affected by agents' beliefs about future shocks to the economy and how the central bank will react to them. The expectations channel operates through the economic agents' expectations about the real rate of return on financial assets (ex-ante) and investment decisions. Moreover, inflation expectations play a role in wage negotiations. Strong central bank autonomy and credibility strengthen the speed and effectiveness of the transmission of monetary policy signals. CBTT autonomy in monetary policy decisions is key to its credibility and thus to the strength of the expectations channel. The cost of fighting inflation is significantly reduced as the expectations channel is strengthened.

D. Strengthening the Effectiveness of Monetary Policy in Trinidad and Tobago

39.   **Regaining control over the liquidity in the system should be the main focus of monetary policy in the near term**. In the current excess liquidity environment, the interest cost of open market operations can be quite high. Sterilization through open market operations involves visible costs: the interest rate paid on the instruments placed to mop up the liquidity. On the other hand, foreign exchange sales incur the opportunity cost of the interest that could be earned on international reserves. Moreover, foreign exchange sales may also increase in the country's perceived financial vulnerability. Therefore, a proper mix of foreign exchange sales and open market operations needs to be found.

40.   **Several measures could improve the effectiveness of Trinidad and Tobago's monetary transmission mechanism**. The main areas for improvement are the following: (i) increasing the effectiveness of the central bank's interest rate policy; and (ii) debt financing of the nonenergy deficit.

41.   **The active use of a reverse repurchase facility could improve the signaling of the central bank's policy intentions and increase the effectiveness of the monetary transmission**

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[15] For these segments of the economy changes in interest rates prompt changes in the supply of credit (credit availability channel) as well as in the quantity of credit demanded (interest rate channel). See e.g. the Colombian experience in BIS (1998).

[16] BIS (1998).

mechanism.[17] A liquidity absorbing facility, such as a reverse repo or deposit facility, would provide a better policy signal as it would be binding in the current structural excess liquidity environment.[18] It would not allow persistent significant divergence of treasury and commercial bank rates from the path signaled by the central bank. Such facilities are usually between one and four weeks in maturity as opposed to the standard overnight standing deposit facilities.[19] The maturity should be coordinated with the characteristics of the reserve requirement framework. The instrument can be devised as tender-based or unlimited access depending on the design of the other sterilization instruments, the magnitude of sterilization needs, and the structure and concentration of the banking sector.

42. **A properly designed liquidity-absorbing instrument would not hamper the development of the interbank market**. The interbank money market serves the very short-term liquidity management needs of the banking sector and a sufficiently long (at least seven days) reverse repo facility would not eliminate banks' need to manage their day-to-day liquidity through the interbank market. In case of a reverse repo or deposit facility, the central bank would directly bear part of the sterilization costs as opposed to the current situation when all sterilization costs are directly financed by the budget. This is similar to the costs which the central bank would incur if it were to issue its own paper to mop up liquidity. More importantly, such costs should not be a problem if there is a well-functioning profit transfer and recapitalization arrangement between the central bank and the budget. The bulk of sterilization should continue to be carried out by longer-term open market operations.

43. **Debt financing of the nonenergy budget deficit would eliminate the need for the central bank to sterilize the government's liquidity injections, and would contribute to financial market development**. Instead of financing the nonenergy deficit by monetizing the foreign currency energy receipts, the government could consider issuing domestic debt to finance the deficit while keeping the energy receipts deposited in the central bank as part of the international reserves. Straightforward debt financing would make monetary policy more transparent and eliminate the problem of partial sterilization. In addition, it would make debt management and planning more predictable, thereby aiding the development of the primary market and eventually the secondary market. More efficient primary and secondary markets would reduce the costs of government debt in the long run.

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[17] Ideally the reverse repo rate would become the policy rate. However, if there is a fixed relation between the repo and the reverse repo rate, setting either one is equivalent.

[18] The CBTT has an overnight reverse repurchase facility, but the interest rate on it was reduced to zero with the objective promoting the development of the interbank market, therefore the facility is not operational anymore.

[19] Most Central and Eastern European countries have such liquidity absorbing facilities as one of their instruments to sterilize the large capital inflows they have received in recent years, and to credibly signal their policy stance.

The monetary transmission mechanism in a more flexible exchange rate regime

44.   **In a more flexible exchange rate regime, the exchange rate channel would be operational and the independence of monetary policy would increase**.[20] Changes in the nominal exchange rate influence aggregate demand in two different ways: the relative price effect through which the demand for domestic goods relative to foreign goods changes; and the balance sheet effect through changes in the relative position of foreign exchange assets and liabilities in economic agents' balance sheets.[21] Changes in the exchange rate may affect net worth and debt-to-asset ratios thus triggering responses to spending and borrowing. The exchange rate channel can be especially strong in small open economies, as it can have a substantial effect on aggregate supply as well as on aggregate demand.

45.   **The successful management of a flexible exchange rate regime has some important requirements in order to deliver low and stable inflation and work as an efficient shock absorber**. These main conditions are (i) a sufficiently deep and liquid foreign exchange market; (ii) a credible domestic nominal anchor for monetary policy; and (iii) sufficient central bank independence to conduct effective monetary policy.[22] Progress has been made in all three areas in Trinidad and Tobago.

E.   Conclusions

46.   **The large positive terms of trade shock from high energy prices and the expansionary fiscal policy will continue to put upward pressure on the real exchange rate**. In the context of a fixed exchange rate and an open capital account, the central bank has few degrees of freedom to affect monetary conditions in the economy. The central bank of Trinidad and Tobago has gained some room for domestic interest rates to diverge from international rates by limiting the availability of foreign exchange, allowing lower domestic interest rates than otherwise. The liquidity injections from the monetization of the nonenergy budget deficit have only been partly sterilized, adding to inflationary pressures.

47.   **The central bank is moving to regain control over liquidity by increased sterilization through open market operations and an increase in foreign exchange sales**. The accumulation of large excess liquidity has been the main contributor to rising inflation and credit growth. It will be important for excess liquidity gradually to be drained and future liquidity injections to be effectively sterilized. The effectiveness of the interest rate transmission is limited in Trinidad and Tobago despite the relatively large size of the financial sector due to excess liquidity and certain structural characteristics of the economy and the financial sector.

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[20] A discussion on the appropriate exchange rate regime for Trinidad and Tobago is beyond the scope of this paper.

[21] See "The transmission of monetary policy in emerging economies" in BIS (1998) for more details.

[22] For a useful review of the main issues, see "The choice and design of exchange rate regimes" and "Anchors for monetary policy" in BIS (2006).

48.	**The paper provided recommendations to improve the conduct of monetary policy and strengthen the monetary transmission mechanism**. These recommendations are focused on increasing the effectiveness of the central bank's interest rate policy, strengthening monetary operations, and debt financing of the nonenergy deficit. The active use of a reverse repurchase (or deposit) facility would be one way to improve the effectiveness of monetary transmission. Debt financing of the nonenergy fiscal deficit would maintain the "sterilization" costs in the non-financial public sector and would contribute to financial market development.

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