FISCAL MANAGEMENT IN THE BAHAMAS
(1980-1991)

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Introduction

The recent experience in economic management in The Bahamas has shown that relying on automatic stabilisers alone is not a viable policy option for fiscal policy, especially within the context of a small open economy with a fixed nominal exchange rate. The inherent vulnerability of the economy to external influences precludes some form of demand management to safeguard against balance of payments crises and to protect external reserves.

Paramount to such an objective is the coordination of fiscal and monetary policy. The Bahamas has been able for the most part to successfully coordinate policy ; however, more recently, from about 1987/8, there has been some divergence in policy stances brought about by a combination of circumstances. Ever since the 1987 credit boom, the Central Bank has kept a close reign on the expansion of credit to the private sector given the high import propensity and potential threat to the balance of payments. At the same time the external environment was changing such that tourism inflows began to decline and this had an immediate impact on the government's revenue performance. Consequently the fiscal borrowing requirements increased. The net result was a diversion of credit from the private sector to the public sector .

Historically, there was very little adjustment in effect to the changes in the external sector. In fact, it was not until the start of the recession in the United States in 1991 and the ensuing negative impact upon employment and real activity that any attempt was made at fiscal reform. Belated though they were, the measures, aimed at enhancing the revenue performance of existing instruments as well as reducing capital expenditure, resulted only in a temporary reprieve.

This paper presents a brief analysis of the trends in fiscal management over the period 1980-1991, focusing mainly upon the government's budgetary operations. It is a preliminary report on a more extensive research effort underway on the subject of fiscal management and its impact upon The Bahamian economy. In view of the immediate prospects for The Bahamian economy we suggest a programme of fiscal reform intended to enhance the budgetary process and introduce greater control in the rate of public sector borrowings. Hopefully the issues raised in this paper will invite meaningful discussions and provide some insight into the challenges facing the present administration.

The paper is divided into three sections. In Section I we present a brief overview of the structure of The Bahamian economy, followed by an analysis of the trends in government revenue and expenditure, and their impact upon the overall fiscal position. The section concludes with a discussion of the measures taken by the government to counteract the recessionary pressures of 1991. In section II the definition of the government is expanded to include the entire public sector followed by an assessment of the broad trends in public sector deficits and the methods of financing. The paper concludes in Section III, offering a number of recommendations for a sustainable course of fiscal policy in the medium term horizon.

Section I

The Structure of The Bahamian Economy

The Bahamas is a mini-state characterized as an open economy with a fixed exchange rate and capital controls. These features impose certain restrictions on macro-policy ; monetary policy is very constrained, with fiscal policy exerting the greatest influence upon national expenditure, output and the balance of payments. In order to preserve the exchange rate, monetary policy has been confined to monitoring external

reserves and the balance of payments; (interest rates and prices have been largely determined by external factors).

Another feature, typical of small economies, is the extent of government involvement in the economy. It is estimated that the government provides about one third of all employment. When the public corporations are included in the total, the share increases to about 35-40% of the total employed. Furthermore, government has a substantial equity positions in local hotels, and more recently it has acquired ownership in a local bank. Much of this has resulted from the government's philosophy of saving jobs.

Up to this point then the role of government can be characterized by the welfare view of the state, wherein the government actively intervenes in the economy. The impact of its activities have been far-reaching and the performance of the public sector has been tightly entertwined with that of the other sectors of the economy.

Trends in The Public Sector

Over the past ten years or so, and especially from 1989, the vulnerability of the Bahamian economy to developments in the tourist industry has been brought home. The Bahamas has been losing competitiveness in the tourist market and, given the structure of the economy, adjustment has not been easy. Government revenue has suffered in the process. Nevertheless, spending patterns have remained unchanged with the most striking result being the growth in overall fiscal deficits. These developments are tracked in Table 2.

Theoretically, there are two opposing views on the incurring of budgetary deficits, Keynesian theory and the neo-classicists' Ricardian Equivalence theory. First of all the Keynesian view suggests that an expansion in government expenditure financed by an increase in the stock of debt should have desirable counter cyclical and growth effects.

Meanwhile, the Ricardian Equivalence Theory postulates that pump-priming will not be effective because consumers, possessing perfect foresight, will recognize that

increased expenditure and borrowings imply more taxes later. Hence consumption will adjust in expectation of future taxes thereby negating the initial boost to demand. In essence, the government's action may simply serve to crowd out the private sector.

Crowding-out in the general sense is defined as a reduction in national wealth accumulation; 'financial' crowding-out highlights the causal link between deficits and high interest rates. Theory suggests that deficits financed by borrowings tend to put upward pressure on interest rates which, if we assume that certain portions of aggregate demand are interest elastic, would lead to a decline in output and income. If they are interest inelastic then the result could be an excess of demand with adverse effects upon the balance of payments.

Until recently the financing of fiscal deficits has not been a major problem. However, starting in 1988 and 1989 recurrent deficits emerged, which in the process, compromised the flow of funds available for capital projects. In the last few years the increased strain upon domestic financing has raised the issue of 'financial' crowding-out.

In terms of adjusting the pattern of expenditure, the government has typically resorted to cutting capital outlays, and at times to boosting revenue flows. The 1991 budget introduced various measures aimed at enhancing revenue performance, (again, capital expenditures were curtailed). The need for an overhaul of the budgetary process was also recognized. These measures had the immediate impact of reversing the recurrent deficit to a surplus and reducing the overall deficit. In 1991, despite a cutback in the capital budget, a recurrent deficit again emerged and the overall deficit reverted to its 1989 level. (see Table 2)

In order to appreciate where changes may be warranted in the current pattern of fiscal budgeting, we have conducted a brief analysis of the underlying trends in government expenditure and revenue. Overall the results suggest that either a reduction in the size of the government is necessary, or that major reforms are warranted in the existing

tax base, or a combination of these measures. Both nominal and real trends have been examined and the key fiscal indicators are located in the Appendix I.

Trends in Government Expenditure

First of , in terms of size, total nominal government spending represents about 20% of GDP although in 1981 and 1989, it rose to 22%. For a developing country this is average (Lindauer and Valenchick, 1992). Notice, however, that the buoyancy ratio over the period 1980-1991 was greater than one, for every one percent increase in nominal GDP, there was a 1.02% increase in nominal government expenditure. While the measure is fairly small in terms of the relative growth of the sector, the problem evidently was a growing crisis because of the inelasticity of nominal revenue flows with respect to nominal income.

Over the study period, current expenditure represented on averaged about 80% of total outlays; although the fraction has fallen slightly from 82.7% in 1980 to 79.9% in 1991. As a percentage of nominal GDP however, current spending has risen from 13.9% to 14.7% over the same period. The lion's share of these expenditures have been for salary payments. These have risen from 66% to 72% of current government spending in 1991 vis-a-vis 1980. In relation to the overall budget they represent more than half of all outlays. Thus any attempt at expenditure reduction will inevitably affect salaries and possibly employment in the public sector.

As regards transfer payments, these have been increasing steadily over the study period. Over the endpoints of the study, current transfers have risen from 14.6% to 18.4% of total expenditures. Transfers to public corporations have accounted for between 6-7% of the current amount and on average about 34% of the capital figure. In 1991 capital transfers to the corporations were estimated at as high 60% of all such expenses. With the government's capital budget being financed via borrowings, these transfers constitute an additional debt burden for the government.

Government capital outlays expanded at a considerably fast pace in the first half of the 1980s - far exceeding the growth of GDP in both nominal and real terms. During the second half of the decade, however, capital spending slowed. As a percentage of all budgetary expenditures, capital outlays decreased in nominal terms from 11.7% in 1980 to 8.6% in 1991 (in nominal terms). This trend was replicated in the pattern of capital formation. By contrast, transfers to non-financial public corporations in real terms grew at a rate of 19.0%. and the share of expenditure allotted to capital transfers went from 2.2% in 1986 to 5.2% in 1991. These transfers essentially constituted direct subsidies to public corporations.

Trends in Government Revenue

On the income side, while nominal government revenue grew at a steady pace (an average of 6.3% annually), it still lagged the 7.8% growth in nominal GDP, and consequently the tax buoyancy ratio was less than one - indicative of an inflexible tax base. In real terms the divergence was even greater - revenue growth averaged about 0.8%, whereas real GDP growth over the period was recorded at an average 2.3%. In 1991 over 54% of revenue was derived from import taxes followed by stamp and departure taxes accounting for 9.7% and 6.8% of nominal GDP, respectively.

During the first half of the period (1980-1985) tax flows grew at a healthy 9.6% in nominal terms, but slackened to a more moderate 4.0% in the second half (1986-1991). The slowdown was even more pronounced in non-tax revenue - declining in growth from 6.4% to less than 1% over the two periods. In real terms, both tax and non-tax revenue declined over the period 1986-1991.

a) Buoyancy Ratios

The buoyancy ratios presented in Table 3 of Appendix I give a good indication of the inflexibility of real revenue and expenditure patterns relative to the growth in real

output. Generally these ratios should be equal to or greater than one. The tax flows clearly have a low buoyancy; with the important import component estimated at a mere 0.24% over the decade. On average, non-tax flows exhibited negative elasticities, which possibly reflect the slow responsiveness of the government to effect changes in the system to compensate for price level changes and other factors over time. Even though expenditures too, exhibited low buoyancy ratios on average over the period, they were generally more elastic than the counterpart for revenue flows, with the resulting imbalances being reflected in the overall budgetary position. The entire period elasticity for capital expenditures was negative (1.71%), and suggest these expenditures probably had to absorb most of the adjustments necessitated by inadequate income flows.

As it currently stands, the ability of the government to adjust to any disruptions in the economy is severely constrained because of the inflexibility of revenue and expenditure patterns. These buoyancy ratios measure the effects of both income and non-income factors upon the budgetary process. In the exercise immediately following, we employ regression analyses to single out these varied effects on revenue performance.

b) Regression Analysis of Revenue Performance

The responsiveness of government revenue to increases in national income (i.e., the elasticity) is a reliable indicator of how the fiscal balance can tend to improve or deteriorate over time. From the above discussion it is clear that revenue performance has been less than optimal, lagging the growth in total spending. In what follows we constructed a small exercise to determine the elasticity of government revenue with respect to income and prices. We estimated the following log-linear relationship

$$\ln R_t = \alpha + \beta_1 \ln Yt + \beta_2 \ln Pt + \beta_3 \ln \Pi_t + u_t$$

where R: revenue in constant terms; Y: Gross Domestic Product in constant terms; P: price index; Π: rate of inflation; u: error term; and the 'β's' represent the relevant elasticities.

To adjust for shifts in revenue over time we used dummy variables to account for significant changes in tax legislation - these occurred in 1985 and 1991. Revenue data for the period 1980-1991 was fitted to the regression equation which was corrected for second order auto-correlation. The results are presented in Table 4 in Appendix I.

In a growing economy the expectation is that the income elasticity measure would be greater than one. The results indicate that for all categories this has been the case with the exception of import taxes which has an income elasticity of 0.68 reflecting the inelastic nature of the demand for imports. Non-tax revenue has a very high positive income elasticity possibly emanating from the fact that these flows are based on items that themselves are income elastic.

With regard to price effects, non-tax is negatively elastic whereas all the other categories of revenue are negatively inelastic. Therefore a 1% increase in the price level would result in less than a 1% decline in revenue flows, tending to counteract the effect of the inflation tax. In fact the inflation coefficients are positive and greater than one, this time with the exception of the import tax.

Import taxes tended to decline by more than the rate of increase in inflation. This may be an indication of increased tax evasion during periods of high inflation. Additionally real exchange rate effects may be at work. A real depreciation induced by rising inflation may lead to reduced imports and likewise import taxes.

The 1985 change in the tax base seem to have a significant positive impact on all categories of revenue, barring non-tax revenue, as indicated by the coefficients on the D2 variable.

The Impact of the 1991 Budget Measures

The 1991 budget introduced a number of changes in tax rates, but no new tax measures were introduced. As an illustrative exercise we tested for the overall impact of these measures on revenue. We tested the significance of a dummy (D3) for the 1991

budget measures. The findings reveal that the overall impact on total revenue was not significant. However, it did have a significant but small positive effect on tax revenue, but a negative significant impact on import taxes. The positive effect on tax revenue probably related to the increase in departure taxes, whereas a number of incentives were given to industry in terms of duty-free imports, which would account for the negative impact on import taxes.

At this time it is not possible to quantify the magnitude of any change attributed to each of these measures due to the lag component of any policy change. A more detailed exercise (forthcoming) will re-examine these issues with an expanded data set to ascertain the overall impact of the 1991 measures upon revenue performance.

Nevertheless based on the preliminary exercise above it appears that the inflexibility of revenue flows to overall real income growth experienced over the period will present an interesting challenge to the administration in the foreseeable future. To avoid chronic deficits, expenditure growth will have to be contained within attainable targets. Further the process of tax administration will have to be improved; this may require overall reform aimed at broadening the base, with periodic innovations to stem tax evasion.

Section II

Sustainable Public Sector Deficits and Borrowings (were they?)

As the economy grows the demands placed on the public sector will increase. It is not possible to finance fiscal deficits indefinitely; therefore in setting out a pattern of expenditure and revenue growth, the public sector ought to take account of the constraints with which it is faced as well as consider the way in which its activities impact on the behavior of the private sector and the conduct of monetary policy. Certain developments

were no doubt outside the control of the authorities; but, even given the constraints, the issue is whether or not the government responded optimally in dealing with the situations. If this is found not to be the case then we have to explore the implications that would have been involved in pursing alternative measures. This is in essence, the thrust of this paper. In examining the issue, we have drawn from the work by Anand and Wijnbergen (1989) and Wijnbergen (1990).

The exercise revolves around an analysis of real trends in public sector deficits and the associated methods of deficit financing; also focused upon is the rate of growth in public sector borrowings. The two main issues that arise in this process are those of the sustainability and optimality of fiscal deficits and borrowings.

The government is defined to include the central bank and all public enterprises excluding social security (The National Insurance Board). This broad treatment of the government will enable modeling of the interaction of the various sectors in respect of net transfers from the central government to public enterprises, and profits received by the central government via the central bank's operations. The exclusion of the National Insurance Board from the exercise is an admission of the fact that the financial resources of this corporation are rightfully private savings, and as such their use by the public sector constitutes the incurring of additional liabilities by the government to the private sector.

The sustainability factor, imposes restrictions on the level of government indebtedness, relative to its long-term serviceability. The rule requires that at any time the stock of government debt must be equal to the discounted present value of all future budgetary surpluses. From the overall position of the government, the level of taxation (inflation and otherwise), real interest rates, economic growth and labor productivity, all influence the size of the sustainable debt. As regards the external sector, sustainability of foreign borrowings hinges upon real exchange rates, and export earning capacity, among other factors. A reasonable deficit financing strategy would involve maintaining fixed ratios of domestic debt to real GDP and of foreign debt to export earnings (Horne, 1991).

By imposing optimality constraints on fiscal policy, we are able to account for the impact of fiscal operations upon overall economic activity (Zee, 1988). Government borrowings tend to influence real interest rates which may cause some crowding-out of the private sector. Furthermore, under liquidity constrained conditions the increased indebtedness too, may also contribute to this crowding-out process. Additionally, shifting taxation and inflationary policies tend to exert both short and long-run effects upon the behaviour and welfare of consumers. Thus in view of such factors, the fiscal process ought to give reasonable consideration to private investors as well as to the welfare concerns of consumers. Given the pattern of private behaviour and underlying economic conditions, optimality constraints not only affect the choice of financing options, but also determine the economic trade-offs involved in the use of the various options (for example, higher debt versus increase taxes, or direct taxes versus inflation and seigniorage).

These are all important issues which must be borne in mind when interpreting the results of the exercise which follows. At present, unfortunately, the absence of reliable data on private activity does not permit construction of a complete econometric model of the interaction of the private and public sectors of the Bahamian economy. Accordingly complete inferences about the optimality of fiscal policies are not possible from the analysis. It does however, pose an interesting area for future research.

For the present case, a budget constraint is specified, which states that any deficit incurred by the public sector must be financed through a combination of new borrowings or by real money transfers (monetization). Since the central bank is also included in our definition its external reserves have to be netted away from the public sector foreign currency debt, and similarly interest earned on its external assets have to be netted out of total foreign currency interest payments. A more complete derivation of the full budget constraint is outlined in Appendix II. However, in real terms the constraint reduces to

$$d + rb + (r^{*} + \hat{e})(b^{*} - nfa^{*})e = \dot{b} + \Delta[(b^{*} - nfa^{*})e] + \dot{m} + \hat{P}m$$

which states that the real fiscal deficit inclusive of the central bank's profit and loss account, counting real interest payments, is equal to the change in the real value of domestic and foreign currency debt plus the revenue from seigniorage and inflation taxes.

Estimates of these values for The Bahamas are shown in Table (5) for 1981-1991, along with similar values represented as a percentage of real GDP. All interest rates are effective with the nominal rate defined as the ratio of total interest payments on the debt to the stock of debt. For the foreign debt i^{*} is computed as:

$$\frac{[i^{*}B^{*} + i^{*}nfa^{*}]}{[B^{*} + nfa^{*}]}$$

Real interest rates are calculated as the effective nominal rates minus the inflation rate.

In the early period of the study (1981-1983) the magnitude of the deficits was influenced by the recessionary pressures in the United States, which impacted negatively upon tourism flows. These deficits had disappeared by 1984, with a significant surplus occurring that same year. This was followed however by a disappearance of the surplus and a return to larger and larger deficits by the end of 1991. It appears from our estimates that the trend will have been arrested by the end of 1992. As evident from earlier discussions the deficits of the latter half were of a different character with recurrent government expenditures (in 1990 and 1991) forming an important component.

The non-interest components of the deficit were the driving force behind the shifts in the overall trends. It can be observed that these deficits were gradually increasing from 1984 onwards, with a dramatic jump in 1989. The measure increased more than six fold to $40.4 million in the referenced year over 1988, prompting an almost fourfold increase to $155.6 million in the overall deficit.

Although real effective interest rates on the foreign debt were higher on average than domestic rates, domestic interest payments were generally larger, because of the

greater domestic share in the total debt. Both foreign and domestic real interest payments were negative in 1981, owing to double digit inflation rates. Throughout the period an appreciating real exchange rate had a dampening effect upon foreign interest payments, which were in fact negative in 1986, 1987, and 1991. While from the public sector's point of view this may have appeared to have been a good thing, one cannot ignore the negative effects of such movements in the exchange rate upon exports and the overall trade balance. Evidently, between 1980 and 1991 real export earnings fell an average 2.4%, due in some extent no doubt to real exchange rate movements.

As regards the financing of deficits over the period, the government relied mostly upon domestic borrowing and monetization. With the exception of 1987, net foreign debt was reduced in each of the years 1983-1988. The turnaround in 1989-1991 reflected mounting pressures to supplement domestic borrowings, and monetization, which were heightened by declining external reserves and tight bank liquidity. Throughout the entire period (1981-1991), monetization provided a steady stream of debt relief, with the inflation tax being the most consistent source of funding. The seignorage, however, was negative in at least four of the eleven years.

Before significant conclusions can be attached to these results we have to consider how the overall deficits interacted with real GDP. Notwithstanding the current low debt burden ratios compared to most developing countries, a strategy of increasing debt to GDP and export ratios is not prudent at the moment, since any position now enjoyed, can be drastically altered with a sudden drop-off or shift in tourism earnings. Thus, for The Bahamas, the best debt strategy would appear be one of fixed ratios to output and exports, having regard of course to the optimal policy framework.

This however has not been the case for the decade under review. From an examination of the two ratios calculated for the public sector, it is clear that the implied burden of the domestic debt has increased in every year since 1981 and that the foreign debt burden, which was declining in the earlier half of the study period, is at its highest

level ever. Evidently the pattern of net domestic borrowing only acted to slowdown or accelerate the magnitude of changes in the net domestic ratio. Up through 1987 increases in this ratio were gradual, being substantially magnified year-on-year in the remainder of the study period. In 1991 the ratio measured 32.4% compared with 21.6% in 1987 and a low of 15.7% in 1982. As regards to the foreign debt to export ratio, this quadrupled to 14.6% from 4.1% in 1990 over 1989.

In terms of the real deficits of the public sector, in the midst of the earlier recession (1981-1983) these averaged more than 4% real GDP, and a higher 6% in the final three years of the study; the entire period average was pegged at 3.3%. The first surplus ratio, occurring in 1984, signaled a slowdown in borrowings relative to GDP. However, as noted this development did not have much of an effect on the debt-output ratios. In 1989 and 1990 the deficit was pegged at 6.9% and 6.5% of GDP respectively, as opposed to the previous high of 5.1% experienced in 1983. The actual deficits point to a more enlarged difference, ($98.9 million in 1983, as opposed to $155.9 million in 1989 and $144.3 million in 1991).

Arguably, the magnitude of the deficits in 1989-1991 was influenced by the failure of fiscal policy to adequately adjust in the face of sluggish real growth; in 1991 growth was negative. The government realized significant capital developments the in middle portion of the last decade which were not manifested in such large borrowings characteristic of the period 1989-1991. A major difference between the two periods, however, was the presence of recurrent savings which disappeared in latter period.

A look at the projected trends for 1992, the present year, reveals that the debt ratios will not improve. Rather, on the assumption of sluggish 0.5% recovery in real activity, the real Bahamian dollar debt will level off at 32.6% of real output and the foreign net component to 16.9% of real exports, with a slowdown in domestic and foreign borrowings to a combined 1.5% of GDP, down from 6.2% in 1991. In this regard, the real deficit is expected to fall from 6.5% to 3.3% of total output. The non-interest deficit

ratio should average 1.5% as opposed to 6.4% in 1991, or in dollar terms $32.8 million opposed to $142.5 million. A further depreciation of the real exchange rate should produce negative interest payments on the foreign debt; domestic interest payments are projected to be higher.

In view of these developments the goal of fiscal policy over the next few years should be in effecting greater control in the budgetary process over the relationship between net borrowings and real output growth, and on the monetary side to the maintenance of a fixed real exchange rate.

At this point we examine the implication of pursuing such a strategy over the medium term, 1993-1995. On the surface it would appear as though fiscal performance and deficits have been viewed commonly in nominal terms, ignoring the underlying movements in the real variables; this practice needs to be reviewed. Based upon the 1992 figures, we therefore impose the real restrictions of a constant debt to output ratio for domestic debt (32.9)% and a fixed ratio of foreign debt to non interest exports (16.9%). Real exchange rate appreciations are set to zero. Given the openness of the economy and the heavy dependence upon exports, we assume that exports and real GDP growth will be equal. Under such restrictions therefore, the growth rate of both real net domestic debt and net foreign debt must equate with movements in real GDP (and exports).

Three scenarios are considered. At its highest real growth is projected at 2% in 1993 and at 3% in 1994-1995. The medium case pegs real output growth at 1.5% in 1993 and at 2% in 1994 and 1995. On the low-end sluggish conditions are expected to keep real growth depressed at 0.5% for 1993-1995. With a fixed nominal exchange rate real exchange rates will remain constant provided that the foreign and domestic price inflation are the same. We estimated inflation at 5% annually over the next three years. Furthermore, in light of past trends, foreign real interest rates are projected to be higher than the domestic rates at 2% as opposed to 1.5% for the latter.

The starting values for the simulations are the end-1992 projections. In order to provide reliable estimates of optimal revenue flows from seigniorage and inflation taxes base money demand is estimated from the following log-linear equation using quarterly data from the period 1980-1989:

$$\ln m_t = \underset{(1.461)}{5.503} + \underset{(0.119)}{0.373}\ln y_t + \underset{(0.008)}{0.027}\ln r_{td} - \underset{(0.049)}{0.133}\ln d^*_{cg}$$

$$\underset{(0.022)}{-0.051}\ln\pi_t + \underset{(0.057)}{0.133}\ln t + \underset{(0.022)}{0.059}d1$$

$$\text{Aj-Rsq} = 0.964 \qquad \text{DW} = 2.019$$

where all the variables are expressed in real terms and y is real income proxied by tourism earnings, r_{td} real interest rate on time deposits (weighted), d^*_{cg} foreign currency debt of the central government, and d1 a dummy term for the first and second quarters of the year. The results of the various scenarios are presented in Table 6. Even under the most favourable conditions they suggest that public sector borrowings will have to be drastically scaled back over the next few years, if current debt ratios are to be sustained. Implicitly current expenditures will have to absorb the brunt of these cutbacks. In other words, the absolute size of the public sector will have to reduced.

In all three scenarios, the sustainable borrowings and consequently the financeable deficits are required to be below 1992 levels in the initial period (1993), increasing marginally in dollar terms in each of the remaining years. Under the worst-case scenario the overall deficit would average 0.57% of real output in 1993, declining marginally to an average of 0.56% by 1995. With real interest payments fixed in relation to GDP, as is also the case in the other scenarios, the public sector would have to produce a non-interest surplus in all three years. In both the medium- and upper-case scenarios it is possible to incur a non-interest deficit, which is an increasing function of the real growth rate. As regards financing, only the seignorage ratio increases with real income growth.

The inflation tax and net borrowing ratios, are by assumptions tied one to one with the real growth rate.

The figures in dollars suggest that real deficits and, consequently, domestic and foreign borrowings have to be reduced substantially in relation to their counterpart levels in recent years. Under sluggish growth conditions the public sector would be required to effect cumulative non-interest savings of $8.1 million over the three years, just to sustain real interest payments on the domestic and foreign debt. With monetization over these years estimated at $24.6 million, real net domestic and foreign borrowing would be limited to a combined $13.7 million. In the medium case scenario the sustainable non-interest deficit emerges, estimated over the period at $29.7 million, while under the optimistic conditions, a sustainable deficit of $54.8 million is possible. Likewise in the medium- and upper-cases combined domestic and foreign borrowings would be limited to $50.5 million and $74.1 million, respectively.

Section III

Conclusions and Recommendations

In the first half of this paper, we have shown how a lack of buoyancy in the revenue tax base has contributed to the decline in government tax flows relative to real output. The problem has been magnified in recent years, with the onslaught of slower growth and the recessionary pressures experienced in the latter half of the decade. Consequently, fiscal deficits and related government borrowings are becoming a serious problem for The Bahamas.

The results from our exercise in Section II suggests that this lack of buoyancy in the tax base may have been partly responsible for rising debt burden ratios, experienced throughout the 1980s. If the pattern of borrowings remains unchanged these difficulties

will become magnified in the future. It would seem that the most rational course of action would be a reduction in the size of the public sector. The need for tax reform is also important since any reduction, in the public sector which causes a decline in employment is likely to have adverse feedback effects on revenue performance. Perhaps increased efficiency with respect to tax collection is all that is required. Alternatively the government may also wish to consider introducing new tax measures, or an outright increase in tax rates imposed on the existing base. However, recommendations for reform must be weighed in terms of the relative administrative costs and disincentive effects.

The extent of adjustment warranted will no doubt depend upon the total impact of the public sector's activity on the Bahamian economy. Once this has been ascertained with some degree of reliability, the extent of optimal adjustment may well exceed or fall short of those noted in this paper. As a first step, however, it is hoped that the paper can add to the deliberations already underway by the present administration.

Appendix I: List of Tables

Table 1 – Bahamas: Summary Economic Indicators

(In 1987 B$ Millions)

			Growth Rates	
	1980	1991	1980-1985	1986-1991
Gross Domestic Product[1]				
Nominal	1235.00	2730.00	8.55	6.28
Real	1727.27	2129.49	3.12	0.87
Imports of Goods & Services	1641.12	1519.42	0.89	-1.88
% of GDP	95.01	71.35		
Exports of Goods and Services	1622.52	1361.70	0.50	-3.58
% of GDP	93.94	63.94		
Current Account Deficit	-21.26	-141.89	19.57	30.86
% of GDP	-1.23	-6.66		
External Reserves	129.51	134.02	8.69	-10.55
% of GDP	7.50	6.29		
Financial Savings	515.52	711.23	8.56	-2.87
% of GDP	29.85	33.40		
Foreign Currency Debt of PS	137.03	321.05	8.82	8.02
% of GDP	7.93	15.08		
Public Sector Debt	423.92	1011.01	7.78	9.24
% of GDP	24.54	47.48		
Fiscal Deficit	-10.93	-79.11	23.00	44.86
% of GDP	-0.63	-3.71		
Tourist Expenditure	832.87	953.43	5.28	-3.16
% of GDP	48.22	44.77		
Retail Price Index	71.50	128.20	5.26	5.37
Inflation Rate	12.24	6.50		
Effective Exchange Rate[1]				
Nominal	84.80	112.63 *a)*	4.90	1.95 *a)*
Real	89.79	96.63 *a)*	2.79	-1.70 *a)*

Source: Central Bank of The Bahamas
[1]IMF Estimates
a) Data for 1990

Table 2 – Bahamas: Summary of Government Operations and Financing

(In 1987 B$ Millions)

	1980	1981	1982	1983	1984	1985	1986	1987	1988p	1989p	1990p	1991p
Revenue	341.4	362.3	336.0	353.7	378.4	407.8	404.1	424.0	400.9	398.6	406.4	370.9
Current Spending	291.0	312.8	321.8	348.4	368.3	383.5	370.4	386.2	405.1	418.9	394.1	391.8
Current Surplus	*50.4*	*49.5*	*14.2*	*5.3*	*10.1*	*24.3*	*33.7*	*37.8*	*-4.2*	*-20.3*	*12.3*	*-20.9*
Capital Spending	54.3	58.5	49.5	24.4	21.4	56.0	55.2	62.7	71.1	80.9	47.9	37.0
Net Lending*	7.1	70.8	60.7	62.1	7.6	-0.9	-9.1	-10.8	4.8	-9.7	13.9	21.2
Total Deficit	*-10.9*	*-79.8*	*-96.1*	*-81.2*	*-18.9*	*-30.8*	*-12.4*	*-14.1*	*-80.1*	*-91.4*	*-49.6*	*-79.1*
Financing:												
Foreign Currency	0.1	77.2	87.5	25.5	2.5	10.5	132.1	4.1	13.5	24.2	22.8	18.7
Bahamian Dollar (Net)	10.9	2.6	8.6	55.7	16.4	20.3	119.7	10.0	66.7	67.2	26.8	60.4

Source: Central Bank of The Bahamas.

*Net Lending to Public Enterprises.

Table 3 – Bahamas: Fiscal Revenue and Expenditure Buoyancy Ratios[1]

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	Entire Period[2]
Import Tax Buoyancy	0.83	-0.3	1.59	1.77	3.6	-3.97	2.19	-3.28	0.81	5.07	9.32	0.24
Tax Buoyancy	1.06	-0.59	0.6	6.11	3.39	-0.18	1.49	-3.09	-1.01	-1.27	5.99	0.73
Non-Tax Buoyancy	-9.01	-2.3	-3.33	8.74	-4.71	-3.83	-2.22	-14.14	3.94	-1.91	0.93	-2.5
Revenue Buoyancy	-1.17	-1.02	0.72	3.27	1.95	-0.73	0.98	-4.43	0.43	-1.35	5.35	0.09
Current Exp. Buoyancy	-1.43	0.38	1.11	2.69	1.05	-2.83	0.86	3.8	2.51	4.26	0.34	0.86
Capital Exp. Buoyancy	-7.28	-2.27	-9.45	-6.39	23.32	-1.2	2.61	10.08	9.58	35.74	15.17	-1.71
Expenditure Buoyancy	-1.44	0.002	0.05	2.15	3.13	-2.62	1.09	4.7	3.61	8.57	1.78	0.55

Source: The Central Bank of The Bahamas.

[1]The year-to-year buoyancy ratio has been estimated by the following formula:
$b = [\Delta T / \Delta Y]/[\text{Average Taxes/Average Income}]$,
where the average levels are calculated as the last period level plus the current level divided by 2.

[2]The entire period average is the ratio of the compounded growth rate in total flows divided by the compounded growth rate in income over the period.

Table 4 – Bahamas: Estimates of Revenue Elasticities (Regression Results)

Dependent Variable by Revenue Source	Constant	Income Coefficient	Price Coefficient	Inflation Coefficient	Shift Variables D2	D3	*Adjusted* R-sq.
Total Current Revenue	-0.41 (-0.19)	1.18 (3.4)	-0.59 (-5.02)	1.52 (1.72)	0.10 (3.12)	0.02 (0.81)	0.95
Total Tax Revenue	-5.86 (-10.33)	1.89 (20.83)	-0.65 (-21.28)	2.12 (9.23)	0.13 (16.53)	0.02 (2.24)	0.99
Import Taxes	1.52 (0.93)	0.68 (2.53)	-0.27 (-2.95)	-2.15 (-5.40)	0.19 (9.78)	-0.13 (-7.06)	0.99
Non-tax Revenue	-8.89 (-1.03)	3.03 (2.30)	-2.31 (-5.74)	15.22 (2.87)	-0.34 (-2.25)	0.13 (0.62)	0.86

Regressions adjusted for second-order autocorrelation using the Cochrane-Orcutt Method
T-Ratios in parentheses; All Durbin-Watson and F statistics were significant
D2: Dummy variable for the 2½ % across the board increase in import duty rates in 1985
D3: Dummy variable for the changes in taxes initiated in the 1991 budget

Table 5 – Bahamas: Real Public Sector Deficits (1981–1991)

(In 1987 B$ Millions)

	1981	1982	1983	1984	1985	1986	1987	1988	1989p	1990	1991	Period Average	1992 Est.
						(Deficits in B$ MIllions)							
I. Non-Interest Deficit)	92.4	62.4	78.0	-57.1	-28.4	5.0	56.8	23.9	140.4	89.4	142.5	55.0	32.4
II. B$ Interest Payments	-5.0	8.3	13.0	14.7	27.0	10.6	11.0	17.9	14.0	12.1	6.3	11.8	10.9
III. F/C Interest Payments	-1.7	8.9	7.9	3.7	0.7	-0.6	0.2	-0.1	1.5	2.8	-4.5	1.7	-1.0
Overall Deficit	*85.8*	*79.6*	*98.9*	*-38.7*	*-0.7*	*15.0*	*67.9*	*41.7*	*155.9*	*104.3*	*144.3*	*68.5*	*42.3*
Financing:													
I. Change in B$ Liab. (Net)	16.9	3.9	75.6	26.8	32.4	30.9	23.8	65.1	76.8	65.0	36.4	41.2	7.5
II. Change in F/C Liab. (Net)	72.8	65.2	-10.7	-75.3	-45.7	-29.5	37.9	-22.8	67.6	27.9	100.6	17.1	26.2
III. Monetization	-4.0	10.5	34.1	9.8	12.7	13.6	6.2	-0.6	11.5	11.4	7.3	10.2	8.6
Seigniorage	-11.0	7.1	31.5	6.1	8.1	7.9	-0.7	-5.3	5.7	6.2	-1.1	4.9	0.9
Inflation Taxes	7.0	3.4	2.6	3.8	4.6	5.7	6.9	4.7	5.8	5.3	8.4	5.3	7.7
						(Deficits to GDP Ratios – In Percent)							
I. Non-Interest Deficit)	5.4	3.4	4.0	-2.9	-1.4	0.2	2.6	1.1	6.2	3.9	6.4	2.6	1.5
II. B$ Interest Payments	-0.3	0.5	0.7	0.7	1.3	0.5	0.5	0.8	0.6	0.5	0.3	0.6	0.5
III. F/C Interest Payments	-0.1	0.5	0.4	0.2	0.0	-0.0	0.0	-0.0	0.1	0.1	-0.2	0.1	-0.0
Overall Deficit	*5.0*	*4.4*	*5.1*	*-1.9*	*-0.0*	*0.7*	*3.1*	*1.9*	*6.9*	*4.6*	*6.5*	*3.3*	*1.9*
Financing:													
I. Change in B$ Liab. (Net)	1.0	0.2	3.9	1.3	1.6	1.4	1.1	2.9	3.4	2.9	1.6	1.9	0.3
II. Change in F/C Liab. (Net)	4.2	3.6	-0.6	-3.8	-2.2	-1.4	1.7	1.0	3.0	1.2	4.5	0.9	1.2
III. Monetization	-0.2	0.6	1.8	0.5	0.6	0.6	0.3	0.0	0.5	0.5	0.3	0.5	0.4
Seigniorage	-0.6	0.4	1.6	0.3	0.4	0.4	-0.0	-0.2	0.3	0.3	-0.1	0.2	0.0
Inflation Taxes	0.4	0.2	0.1	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.4	0.3	0.3
						(Debt Burden Ratios in Percent)							
B$ Debt/GDP	16.4	15.7	18.6	19.5	20.2	21.2	21.6	24.1	27.4	30.0	32.4	22.5	32.6
F/C Debt/Exports	4.5	8.8	7.8	3.4	0.7	-0.9	1.3	-0.1	4.1	5.8	14.6	4.5	16.9
						(Underlying Factors Affecting the Deficit)							
Non-Interest Exports % Δ	-10.8	-6.5	5.0	1.2	9.5	-3.9	-6.0	-4.1	3.8	1.1	-16.0	-2.4	0.5
GDP % Δ	-6.8	6.0	7.0	2.6	4.2	2.6	3.2	2.0	0.2	1.0	-2.4	1.8	0.5
Real Exchange Rate	107.37	107.37	106.65	106.95	105.83	102.31	100.00	99.90	99.34	100.09	97.39	103.0	95.01
Real Exchange Rate % Δ	-0.6	-0.0	-0.7	0.3	-1.1	-3.3	-2.3	-0.1	-0.6	0.8	-2.7	-0.9	-2.4
Real B$ Interest Rate	-1.8	2.9	3.6	3.8	6.4	2.3	2.3	3.3	2.3	1.8	0.9	2.5	1.5
Real F/C Interest Rate	-1.4	6.2	6.6	6.0	6.2	6.9	3.1	6.8	2.9	2.2	0.4	4.2	2.0

Source: Central Bank of The Bahamas

Table 6 – Bahamas: Estimates of Sustainable Public Sector Deficits

(In 1987 B$ Millions)

	Worst Case				*Meduim Case*				*Optimistic Case*			
	1993	1994	1995	Total	1993	1994	1995	Total	1993	1994	1995	Total
					(Deficits in B$ MIllions)							
I. Non-Interest Deficit)	-2.6	-2.7	-2.8	-8.1	6.7	11.4	11.6	29.7	11.4	21.0	21.5	53.8
II. B$ Interest Payments	10.9	11.0	11.1	33.0	11.1	11.3	11.5	33.8	11.1	11.4	11.7	34.3
III. F/C Interest Payments	4.4	4.5	4.5	13.4	4.5	4.6	4.7	13.7	4.5	4.6	4.8	13.9
Sustainable Deficit	*12.8*	*12.7*	*12.8*	*38.3*	*22.2*	*27.3*	*27.7*	*77.2*	*27.0*	*37.1*	*38.0*	*102.0*
Financing:												
I. Change in B$ Liab. (Net)	3.6	3.5	3.5	10.5	10.4	14.0	14.3	38.7	13.8	21.1	21.8	56.7
II. Change in F/C Liab. (Net)	1.1	1.1	1.1	3.2	3.2	4.3	4.4	11.8	4.2	6.4	6.6	17.3
III. Monetization	8.2	8.2	8.2	24.6	8.7	9.0	9.1	26.7	8.9	9.5	9.6	28.0
Seigniorage	2.2	2.1	2.0	6.4	2.7	2.9	2.8	8.4	2.9	3.4	3.3	9.6
Inflation Taxes	6.0	6.1	6.2	18.3	6.0	6.1	6.2	18.3	6.0	6.1	6.3	18.4
					(Deficits to GDP Ratios – In Percent)							
I. Non-Interest Deficit)	-0.1	-0.1	-0.1		0.3	0.5	0.5		0.5	0.9	0.9	
II. B$ Interest Payments	0.5	0.5	0.5		0.5	0.5	0.5		0.5	0.5	0.5	
III. F/C Interest Payments	0.2	0.2	0.2		0.2	0.2	0.2		0.2	0.2	0.2	
Sustainable Deficit	*0.6*	*0.6*	*0.6*		*1.0*	*1.2*	*1.2*		*1.2*	*1.6*	*1.6*	
Financing:												
I. Change in B$ Liab. (Net)	0.2	0.2	0.2		0.5	0.6	0.6		0.6	0.9	0.9	
II. Change in F/C Liab. (Net)	0.0	0.0	0.0		0.1	0.2	0.2		0.2	0.3	0.3	
III. Monetization	0.4	0.4	0.4		0.4	0.4	0.4		0.4	0.4	0.4	
Seigniorage	0.1	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	
Inflation Taxes	0.3	0.3	0.3		0.3	0.3	0.3		0.3	0.3	0.3	
					(Base Line Assumptions and Underlying Restrictions)							
B$ Debt/GDP	32.6	32.6	32.6		32.6	32.6	32.6		32.6	32.6	32.6	
F/C Debt/Exports	16.9	16.9	16.9		16.9	16.9	16.9		16.9	16.9	16.9	
Non-Interest Exports % Δ	0.5	0.5	0.5		1.5	2.0	2.0		2.0	3.0	3.0	
GDP % Δ	0.5	0.5	0.5		1.5	2.0	2.0		2.0	3.0	3.0	
Real Exchange Rate	95.01	95.01	95.01		95.01	95.01	95.01		95.01	95.01	95.01	
Real Exchange Rate % Δ	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
Real B$ Interest Rate	1.5	1.5	1.5		1.5	1.5	1.5		1.5	1.5	1.5	
Real F/C Interest Rate	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0	2.0	

Source: Central Bank of The Bahamas

Appendix II

Derivation of the Public Sector's Budget Constraint

The nominal public sector budget constraint is specified as

$$D+iB+i^{*}(B^{*}-NFA^{*})E=\dot{B}+(\dot{B}^{*}-\dot{NFA}^{*})E+\dot{M} \qquad \text{(A1)}$$

which states that the non-interest deficit, D, plus net interest payments on domestic (iB) and foreign liabilities $i^{*}(B^{*}\text{-}NFA^{*})E$, must equate with the change in domestic debt, B, plus the change in the net foreign debt $(\dot{B}^{*}-\dot{NFA}^{*})E$ along with the movements in the monetary base, M, where:

B = outstanding domestic debt
B^{*} = outstanding foreign debt
i = nominal interest rate on the domestic debt
i^{*} = nominal interest rate on the foreign debt
NFA^{*} = external reserves of the central bank
E = nominal exchange rate (B$ per US$), and the dot denotes changes in the variables

Further adjustments to (A1) require that deficit financing be considered net of the domestic and foreign inflation components of interest rates, $\hat{P}B$ and $\hat{P}^{*}(B^{*}-NFA^{*})$ respectively, which represents repayments of principals, and thus capital rather than current account transactions. The hat (^) over the variables indicates percentage changes; P^ and P^* represent the domestic and foreign inflation. At this point (A1) is translated into a real identity

$$b+rb+r^{*}(b^{*}-nfa^{*})e=\dot{b}+(\dot{b}^{*}-\dot{nfa}^{*})e+\dot{M}/P \qquad \text{(A2)}$$

so that d=D/P, is the real value of the non-interest deficit, b and b^{*} are the real values of domestic and foreign debt in terms of domestic and foreign goods respectively, and m is the real money stock, M/P. The variable "*e*" is the real exchange rate: $e=EP^{*}/P$, and nfa^{*} is the real value of external reserves. The real foreign interest rate is $r^{*}=i^{*}\text{-}P^{*}$, and the real domestic interest rate is $r=i\text{-}P$. Percentage changes in the real exchange rate are

given by e^. As a further step we note that servicing of the foreign debt is affected by capital gains or losses arising from changes in the real exchange rate. To capture this Wijnbergen and Anand use the identity

$$\Delta[(b^* - nfa^*)e] = (\dot{b}^* - n\dot{f}a^*)e + \hat{e}(b^* - nfa^*)e \qquad \text{(A3)}$$

where the second term on the right hand side represents the change in the real foreign currency debt due to real exchange rate deprecations. Further $M./P$ is broken into two components

$$\frac{\dot{M}}{P} = \dot{m} + \hat{P}m \qquad \text{(A4)}$$

where m is seignorage or the real increase in the monetary base, and P^m, the inflation tax, (or the amount of nominal money balances that need to be accumulated just to keep the value of real money stock constant). Insertion of (A4) into (A2) and adding real exchange rate changes in (A3) to both sides of (A2) yields the real budget constraint specified earlier.

$$d + rb + (r^* + \hat{e})(b^* - nfa^*)e = \dot{b} + \Delta[(b^* - nfa^*)e] + \dot{m} + \hat{P}m \qquad \text{(A5)}$$

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