

FISCAL SEIGNIORAGE: THE CASE OF CENTRAL BANKS IN CARICOM¹

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1. Introduction

The invention of money has resulted in a tremendous reduction in information, transaction and search costs the world over. Providers of this service earn a reward, which is usually referred to as seigniorage². In effect therefore, seigniorage can flow to as many suppliers of money and to any provider, public or private. Government's role in this emerges from its declaration and definition of a legal tender and the imposition of a monopoly solution on the provision of monetary services.

The call for a common currency for CARICOM, and the setting up of a committee to study and report on it, is a reversal of attitudes and conduct of central banking in the Caricom region³. However, the road to a common currency would not be without cost to the individual member states. Governments in Caricom have attempted to achieve several goals from their production and maintenance of money. The differences, which exist between the CARICOM central banks, are significant at several levels. These differences include the quality of their balance sheets, the extent of quasi-fiscal expenditures, operational independence and policy focus. However, the discussions to date have concentrated on the foreign asset cover to imports, exchange rate stability, inflation and debt management. No discussion has taken place on the seigniorage flows of the various central banks or indeed the sharing of seigniorage in any new monetary/central bank arrangement. This omission can be reasonably described as a weakness of the process, since the choice of a common currency would hinge eventually on the benefits of possessing a domestic currency in the first place. One such benefit is seigniorage earned and in particular its distribution to government.

This paper provides estimates of seigniorage generally and fiscal seigniorage (Neumann, 1992) in particular of the individual CARICOM central banks. The process through which Caricom central banks generate seigniorage is also explained. It is re-

¹ Caribbean Community.

² By serving as a standardised medium of exchange, money has facilitated the reduction of both transaction and information cost. The reward for this service is total seigniorage, of which only a portion is transferred to the government.

³ Member governments of Caricom have established an advisory committee on monetary integration, which have identified specific economic convergence criteria. A common currency was one of the recommendations of the West Indian Commission's Report (1992).

vealed that those countries which generated the greatest flow of seigniorage did so at the expense of the external value of their domestic currency. In effect, by debasing their domestic currency, a larger flow of seigniorage was generated. This in turn had implications for central bank capitalisation. Central banks with a weakened capital base had tremendous difficulties in maintaining the credibility of their domestic currencies as measured by their external values.

The rest of the paper is organised as follows. In section two, the topic is introduced and a definition of fiscal seigniorage is provided. Data sources and variable construction are presented in section three. Section four discusses the extent of total seigniorage generated by CARICOM central banks. The capitalisation of CARICOM central banks and its relationship to the generation of seigniorage are discussed in section five. The extent of fiscal seigniorage for CARICOM central banks are provided in section six. A conclusion is provided in section seven.

2. A definition of fiscal seigniorage

The literature does not specifically identify fiscal seigniorage as a phenomenon. Instead, it is often assumed that all seigniorage is fiscal. This is demonstrated by the way that it is measured empirically - either by the cash flow or opportunity cost method. Therefore, no distinction is made between total seigniorage⁴ earned by a central bank and that which is transferred to governments. In this work, the methodology of Neumann (1992) is adopted in the definition and measurement of fiscal seigniorage.

Fiscal seigniorage is defined to be separate from total seigniorage. Fiscal seigniorage in this work is defined as that portion of total seigniorage, which is transferred to the government. In this definition, fiscal seigniorage includes, but is not equal to, dividend payments of the central banks to governments. It also depends on the net deposit position and net interest flows of the government relative to the central bank. Moreover, the extent of fiscal seigniorage, which a government receives,

⁴ This term has been subjected to a number of interpretations in the literature. In the money literature, seigniorage has often been used interchangeably for either the total revenue or the profit derived from money production and maintenance.

depends, other things equal, on the institutional structure and independence of the central bank.

The paper uses a simplified accounting framework to demonstrate the concept of seigniorage and identify its sources and uses. The first step is to write down the central bank's balance sheet. The balance sheet of the monetary authority in first difference terms is provided in equation (1):

$$\Delta MLG + \Delta FRM + \Delta OA = \Delta RM + \Delta BD + \Delta FL + \Delta OL \quad (1)$$

On the asset side of the balance sheet there is the change in the monetary authority lending to the governments (ΔMLG), the change in holdings of foreign assets (ΔFRM) and the change in other assets (ΔOA). On the liability side of equation (1), there is the change in the monetary base (ΔRM), the change in government deposits (ΔBD), the change in foreign liabilities, plus the change in other liabilities (ΔOL).

The other aspect of the accounting framework is the income statement of the central bank. The net income of the monetary authority is provided in equation (2), where revenue is earned from interest on the stock of foreign assets (f^*FRM), the holdings of government debt (g^*MLG) and fluctuations from revaluations (gain or loss) of foreign assets (F). On the other hand, there is operating costs (OC). The difference between these inflows and outflows are distributed either as dividends to the participating governments (G^*p) or retained by the bank (RE):

$$f^*FRM + g^*MLG + F - OC = G^*p + RE \quad (2)$$

The sources and uses of funds of the central bank can be described by the following equation:

$$(\Delta RM + d^*D + f^*FRM + F + g^*MLG) / GDP = (OC + G^*p + \Delta(MLG - BD) + (\Delta FRM - FL) + \Delta(OA - OL)) / GDP^5 \quad (3)$$

The first term on the left hand side measures the flow of seigniorage, whilst the remaining terms measure the flow of investment income obtained by the central

⁵ Unless otherwise stated, the GDP numbers are measured at market prices.

bank. Neumann (1992) describes this measure as extended monetary seigniorage. Further, note that central banks in CARICOM usually hold foreign assets as a ratio to their monetary base. That is, the operational framework $FRM = d \cdot NC$ is incorporated in the measure of seigniorage.

The sources of seigniorage (S_s) emerges from changes in the monetary base (ΔRM) less changes in net foreign assets, earnings on holdings of non-government domestic debt ($d \cdot D$) and foreign assets ($f \cdot FRM$) and on the gain or loss on foreign exchange transactions (F). This is presented in equation (4):

$$S_s = (\Delta RM \cdot (1-d) + d \cdot D + f \cdot FRM + F) / GDP \quad (4)$$

In this setup, there is an inverse relationship between the flow of seigniorage and foreign assets. For instance, an increase in foreign assets reduces the flow of seigniorage and conversely.

The uses of seigniorage (S_u) can be obtained from the framework derived above as

$$S_u = (OC + ((G \cdot p - g \cdot MLG) + (\Delta(MLG - \Delta BD))) + \Delta(OA - OL)) / GDP \quad (5)$$

Therefore, $S_u = S_s$

From equation (5), it is revealed that fiscal seigniorage (S_f) is part of the uses of total extended monetary seigniorage revenue earned by the central bank. That is,

$$S_f = S_u - OC - \Delta(OA - OL) \quad (6)$$

Fiscal seigniorage can be written in three ways. The first is as the result of net interest flow from the central bank, that is, the difference between dividends paid to government and interest paid to the central bank on government debt, plus its net deposit position with the central bank. That is,

$$S_f = ((G \cdot p - g \cdot MLG) + (\Delta MLG - \Delta BD)) / GDP \quad (7)$$

In this case, government appropriates seigniorage revenues by taking interest free loans (or at least loans on which interest are lower than interest received) from the central bank. In this instance, seigniorage flow reduces government's interest

cost. In the estimation of fiscal seigniorage this is the method employed, since it is most transparent and the data is most readily available.

A second method is by using the government's budget constraint, that is,

$$Sf = (G - T + \pi Ao - \Delta\Omega) / GDP \quad (8)$$

Where $(G - T)$ is government's primary budget deficit or surplus and π is government's interest expenditure on debt held outside the system (Ao). From this equation, fiscal seigniorage is the portion of government's deficit that is not financed by borrowing from the public ($\Delta\Omega$). This means that fiscal seigniorage contributes to the finances of the primary budget deficit and of the interest expenditures on debt held by the public outside the central bank.

The third method in which governments obtain seigniorage from central banks is by using them to undertake quasi-fiscal expenditures. In other words, the central bank in addition to its monetary functions may conduct bank supervision, compile statistics and such other functions which are not directly related to the management of the domestic currency. In the final section of the paper estimates of quasi-fiscal expenditures are made for Caricom central banks. These estimates are then added to the pure concept (first measure) of fiscal seigniorage to ascertain the true measure of central bank flows to Caricom governments.

3. Data sources

Data used in the estimation of fiscal seigniorage were obtained from the Annual Reports of the Caricom central banks for various years. These are the East Caribbean Currency Authority, Eastern Caribbean Central Bank, Central Bank of Barbados Annual Report, Bank of Jamaica Annual Report, Central Bank of Guyana Annual Report, Central Bank of Belize Annual Report and the Bahamas Central Bank Annual Report.

Most of the numbers from the balance sheets and income statements were used as stated. However, some variables were modified. Banker's reserve balances were computed as current accounts, statutory and required reserve balances. On the assets side, government borrowing from the central bank was calculated as government securities plus, as in the case of the ECCB special deposits.

4. Evidence on extended monetary seigniorage flows

This section reports on the extent and uses of total extended monetary seigniorage earned by the various CARICOM central banks over the period 1980 to 1996. In particular, the extent and evolution of fiscal seigniorage earned by Caricom governments from the creation and maintenance of the domestic currency is estimated.

Table 1. *Total Extended Seigniorage Earned by CARICOM Central Banks.
In per cent of GDP for selected years*

Central Banks	1980 to 1996	1980 to 1985	1985 to 1990	1990 to 1996
ECCB	1.13	2.5	0.44	0.45
The Bahamas	0.85	0.67	1.56	0.76
Barbados	0.7	1.2	2.1	-0.68
Belize	0.89	1.47	-1.63	1.6
Guyana	37.6	14.9	76.0	18.3
Jamaica	5.4	15.6	2.2	0.2
Trinidad	4.5	6.5	4.1	1.8
Total	50.3	41.4	83.6	22.1

4.1 The Sources of Total Extended Monetary Seigniorage

Table 1 reveals the extent of extended monetary seigniorage earned by the CARICOM central banks. The Central Bank of Guyana yielded the lion's share of extended monetary seigniorage. The majority of this seigniorage was earned in two sub-periods - 1985 to 1990 and 1991 to 1996. In these two sub-periods, seigniorage averaged 76.0 per cent and 18.0 per cent of GDP per year respectively. Other countries of note are Jamaica and Trinidad and Tobago, which yielded approximately 5.4 per cent and 4.5 per cent of GDP respectively as seigniorage over the period 1980 to 1996.

Table 2. *Sources of Extended Monetary Seigniorage.
As a per cent of GDP (individual country), Period Average 1980-1996*

Categories	ECCB	Bahamas	Barbados	Belize	Guyana	Jamaica	Trinidad
"Seigniorage"	0.15	0.11	0.015	0.032	27.2	5.3	0.85
Investment Income	1.13	0.73	0.69	0.84	10.4	1.59	3.57
Total Extended Monetary Seigniorage	1.28	0.85	0.705	0.88	37.8	6.89	4.4

The main sources of extended monetary seigniorage flows to the central bank can be divided into two groups. These are "seigniorage", i.e. currency debasement, and investment income. Table 2 reveals the extent of both components in total extended monetary seigniorage earnings for CARICOM central banks as a whole.

There are two broad categories of central banks in terms of their earnings of extended monetary seigniorage, see Table 2. In the first group are those countries which earn the majority of their extended monetary seigniorage from investment income. Included in this group are the Eastern Caribbean Central Bank (ECCB), The Bahamas, Barbados, Trinidad and Tobago and Belize. All central banks in this group earned in excess of 70.0 per cent of their extended monetary seigniorage from investment income. The second group of countries, which consists of Guyana and Jamaica, earned in excess of 70.0 per cent of their extended monetary seigniorage from "seigniorage", which in this study amounts to debasing the domestic currency – a decumulation of the foreign asset backing of the domestic currency. That is, by increasing domestic assets the monetary base expands and by so doing, the "seigniorage" earnings of the central bank.

4.2 Inflation Tax

In general, it is also possible to divide the seigniorage earnings of the various central banks into that which is obtained from the inflation tax and other resource flows.

Table 3. *Inflation Tax of CARICOM Central Banks.*
Period average in per cent

Period	Bahamas	Barbados	Belize	ECCB	Guyana	Jamaica	Trinidad
1980-1996	3.9	3.8	3.0	2.5	5.1	21.0	4.99
1980-1985	4.1	5.2	3.8	2.2	4.8	5.3	5.3
1985-1990	6.6	3.2	2.3	2.9	8.4	8.6	6.5
1990-1996	4.2	3.5	3.1	2.5	2.4	42.7	3.9

Jamaica had the highest inflation tax over the entire period at 21.0 per cent, see Table 3. The sub-period when the average tax was highest was 1990 to 1996 at 43.0 per cent. Guyana experienced the second highest average inflation tax at 5.1 per cent. Its highest period of tax was in the sub-period 1985 to 1990, when the tax averaged 8.4 per cent per year. Also, of note is the inflation tax in Trinidad and Tobago at 5 per cent for the entire period. For the other countries over the entire period 1980 to 1996, the average inflation tax was less than 4.0 per cent per year. The Bahamas experienced a higher inflation tax in the other sub-periods. Its highest being 6.6 per cent in the period 1985 to 1990.

5. Capitalisation of CARICOM central banks

In this section the effects of seigniorage generation and quasi-fiscal expenditures on the quality of the central bank's balance sheet (net worth) is revealed. In addition, the monetary base composition of the individual Caricom central banks is analysed.

5.1 *The Net Worth of Caricom Central Banks*

Using, equation (3) the profit and loss statement of the central bank can be written as

$$\dot{A} = s * eA + k * K + \Delta RM - N * NeA \quad (9)$$

Where iA is the return on total assets, s – the return on earning assets, k – the return on capital, K – capital, NeA – non-earning assets. Central bank losses or deficits arise where $iA < OC$. In addition, as mentioned previously, central banks may incur non-operational gains or losses in assets or liabilities on their external assets (F). This emerges for example where foreign assets are marked to market. In reality though a number of central banks have suffered losses because of special operations conducted on behalf of the fiscal authorities. The sum of operational expenditures and non-operating losses attributable or made on behalf of governments constitutes total quasi-fiscal expenditures.

The change in the central bank's balance sheet is therefore given by the following relationship:

$$iA + F - SF - OC = \Delta A \quad (10)$$

That is, changes in the operations (operational and non-operational activities) of the central bank increase or decrease its net assets. Moreover, the net worth (NW) of the central bank can be written as

$$-\Delta NW = \Delta EAf = \Delta(RM - EAd - NeA + K) \quad (11)$$

Where EAf is foreign earning assets and EAd is domestic earning assets⁶. Therefore, both operational and non-operational losses affect the central bank's net worth position. Transfers of fiscal seigniorage to government, other things equal, reduce the growth of assets, which results in lower central bank net worth. In addition, a central bank which incurs losses on its earning assets can only continue to make net transfers to government by a reduction of its capital base, i.e. reducing foreign assets. Moreover, from equation (11) the more seigniorage transferred to government in one period lowers the potential flow of seigniorage in future periods. This is obtained by in effect lowering the net worth of the central bank.

A number of CARICOM central banks have incurred losses, the result of which has been a decline in their net worth. In addition, activities such as net lending to government have a direct impact on the net worth of the central bank⁷. Such losses

⁶ Earning assets is divided into foreign earning assets (EAf) and domestic earning assets (EAd).

⁷ Some central banks also lend to other economic agents besides government.

severely affect the ability of these central banks to function effectively, since by generating losses they pump excess domestic liquidity into the financial system and are ultimately dysfunctional to the economy. Central bank decapitalisation has occurred in Jamaica and Guyana as a result of significant financial losses, - quasi-fiscal expenditures - sustained over a period of time. Government's borrowing can be written as $\Delta B = \Delta T + SF + \Delta MLG + \Delta Z$, which implies that

$$\Delta(B - NW) = (\Delta RM - (\Delta Z + \Delta T - \Delta B) - \Delta NeA + \Delta K) \quad (12)$$

Where B - total bonds, Z - external debt, and T- the stock of government's domestic debt other than central bank holdings.

Therefore, the quality of the central bank's balance sheet is impaired by the fiscal activities of the government. Indeed movements in the net worth of central banks have a monetary impact. If net worth increases, central banks take liquidity out of the system and conversely when net worth of the central bank falls, liquidity is pumped into the system, which may result in currency crises with balance of payments consequences. In effect, the decapitalisation of the central bank in this context is a fiscal problem.

Table 4. *Net Foreign Assets of Caricom Central Banks
In per cent of Monetary Base*

Period averages	Barbados	The Bahamas	Belize	ECCB	Guyana	Jamaica	Trinidad
1980-1996	57.8	97.1	84.1	104.9	-304.9	-123	151.9
1980-1985	53	120.1	55.2	109	-149.2	-333.9	289.4
1985-1990	35.7	108.4	124.4	96.5	-293.8	-104.2	81.8
1990-1996	49	59.9	81.5	104.1	-446.7	-10.3	83.4

An examination of the Caricom central banks' balance sheets, shown in Table 4, revealed the following stylised facts. Over the period under review, Guyana on average had negative net foreign asset (net worth) of 304.9 per cent of the monetary base. This average negative balance worsens over the period: in the sub-period 1990 to 1996 it was negative, 446.7 per cent of the monetary base. Jamaica also had negative foreign assets as a per cent of monetary base at 123.0 per cent. However, this negative balance has consistently declined (negative net worth has fallen) over the

period. In the 1990 to 1996 sub-period, Jamaica had a negative foreign asset ratio (net worth) of only 10.3 per cent of monetary base.

Of those central banks with positive net foreign assets in per cent of monetary base, Barbados recorded the lowest at 57.8 per cent over the period under consideration. This central bank has experienced a fluctuation in its net worth over the period. Next in line is The Bahamas which recorded a foreign assets ratio of 97.1 per cent of monetary base over the period. Nevertheless, there has been a strong trend decline in their holdings of foreign assets. The ECCB yielded an average ratio of 104.9 per cent of the monetary base over the entire period 1980 to 1996. The ECCB has more or less maintained the net worth of its balance sheet over the entire period. In the final sub-period foreign assets represented 104.1 per cent of the monetary base. Finally, Trinidad and Tobago yielded the highest per cent of monetary base to be backed by foreign assets at an average of 151.9 per cent over the entire 1980 to 1996 period. However, Trinidad has suffered deterioration in its net worth over the period under analysis. For example, in the first sub-period 1980 to 1985 the foreign assets to monetary base ratio was 289.4 per cent⁸. However, in the final sub-period 1990 to 1996 the foreign assets to monetary base ratio had fallen to 83.4 per cent.

5.2 Monetary Base Composition

An analysis of the currency holdings and bank reserves of the various central banks is shown in Table 5.

5.2.1 Currency

For all countries except Jamaica and Trinidad currency represented the largest proportion of the monetary base. The country with the highest average currency to GDP ratio was Guyana, at approximately 17.3 per cent of GDP on average over the period 1980 to 1996. However, this ratio has declined in the sub-period 1990 to 1996 to 14.9 per cent. The country with the lowest ratio was The Bahamas, with currency

⁸ The oil boom years.

holdings of approximately 4 per cent of GDP. Overall, holdings of currency across Caricom are trending downwards. This trend is most pronounced in the ECCB, Guyana and Barbados.

Table 5. *Currency Holdings and Bank Reserves within CARICOM.
Period Average: 1980-1996, as a per cent of GDP*

Category/Country	1980-96	1980-85	1985-90	1990-96
Currency				
Barbados	7.0	7.3	6.8	6.9
The Bahamas	4.0	4.0	4.0	4.0
Belize	6.2	6.3	6.4	6.1
ECCB	6.2	6.8	5.9	5.8
Guyana	17.3	17.0	20.8	14.9
Jamaica	6.2	6.1	6.3	6.1
Trinidad	4.4	4.3	4.8	4.2
Bank Reserves				
Barbados	3.1	2.9	3.1	3.3
The Bahamas	2.5	2.1	2.3	2.8
Belize	3.4	2.8	4.0	3.4
ECCB	4.4	2.5	4.9	5.7
Guyana	13.7	4.8	20.1	13.4
Jamaica	9.6	6.3	10.9	11.2
Trinidad	7.6	8.6	6.1	7.9

5.2.2 Bank Reserve Balances

As a percentage of the total monetary base, bank reserve balances were highest in Jamaica and Trinidad. For both countries, bank reserves represented approximately 60.0 per cent of total monetary base. For Caricom as a whole over the period 1980 to 1996, bank reserves represented approximately 6.3 per cent of GDP. The country with the highest level of bank reserves as a per cent of GDP was Guyana, at 13.7 per

cent. There was a large jump in 1987 for Guyana to approximately 50.0 per cent of GDP, but an equally sharp decline in 1989. Overall, the trend has been slightly upwards after a downward adjustment in the 1990 to 1992 period. The country with the lowest per cent of bank reserves was The Bahamas, at 2.5 per cent of GDP. The other countries are trending in an upward direction. Except for Trinidad, bank reserve balances across Caricom are trending upwards. The countries with the most pronounced trends are Guyana, ECCB and Jamaica.

Table 6. *The Uses of Seigniorage.*
Average Flows: 1980-1996, In per cent of GDP

	ECCB	Bahamas	Barbados	Belize	Guyana	Jamaica ⁹	Trinidad
Seigniorage	1.13	0.85	0.71	0.89	37.6	5.4	4.45
- Operating cost	0.48	0.41	0.84	0.69	12.64	1.78	2.96
= Net Profit	0.65	0.43	-0.13	0.19	24.2	3.63	1.49
- Investment in non-government assets	-0.06	-0.13	0.3	-0.18	-11.93	0.12	-0.14
= Fiscal Seigniorage	0.71	0.57	-0.42	0.38	36.86	3.52	1.63

6. Uses of seigniorage

Central Banks can use-up their seigniorage in the following categories, operating cost, investment in non-government assets or as fiscal seigniorage, see Table 6. This section focuses primarily on fiscal seigniorage as a use of extended monetary seigniorage by CARICOM Central Banks. Some attention is also paid to operating costs as a likely source of hidden transfers to governments.

6.1 Fiscal Seigniorage

The revenue which governments obtain from money creation, fiscal seigniorage,

⁹ Please note that data for Jamaica is incomplete. In particular, income statement data only extend from 1986. Therefore, these results must be interpreted with this limitation in mind.

ranged from 36.86 per cent of GDP in Guyana to -0.42 per cent of GDP in Barbados. For Guyana, the highest flow of fiscal seigniorage was obtained in the period 1985 to 1990, when it averaged 85.2 per cent of GDP, see Table 8. In the sub-period, 1990 to 1996, it became less significant at 15.1 per cent of GDP. In general, fiscal seigniorage has expanded at a slower rate than that of total monetary seigniorage. Guyana also had the highest ratio of fiscal seigniorage as a per cent of extended monetary seigniorage, (98.1 per cent), see Table 7. Jamaica and the ECCB area countries had a ratio of fiscal seigniorage of over 60.0 per cent of extended monetary seigniorage. Over the period Barbados experienced a negative average flow of fiscal seigniorage as a per cent of extended monetary seigniorage at 61.4 per cent.

Table 7 also reveals the major components of fiscal seigniorage, as a per cent of GDP. The main component of fiscal seigniorage varied among the member countries of CARICOM. Those countries for which government debt is the main component of fiscal seigniorage are The Bahamas, Belize, Guyana and Jamaica. In this group Guyana is the most significant at 44.28 per cent of GDP. The second is Jamaica at 6.7 per cent of GDP. The other category of countries are those for which net interest represents the largest source of fiscal seigniorage. The countries in this group are the ECCB, Barbados and Trinidad and Tobago. The largest within this group is Trinidad and Tobago at 0.64 per cent of GDP.

Table 7. *The Components of Fiscal Seigniorage:
Average Flows: 1980-1996 - in per cent of GDP*

	ECCB	Bahamas	Barbados	Belize	Guyana	Jamaica	Trinidad
Government Debt bought outright	0.27	0.26	-0.044	0.071	44.28	6.73	0.27
+ Net interest received on government debt	0.47	-0.095	-0.12	-0.011	-3.88	-0.47	0.64
- Change in government's deposits with the Central Bank	0.034	0.036	0.27	0.055	3.54	1.94	-0.78
= Fiscal Seigniorage	0.71	0.13	-0.44	0.0046	36.6	4.31	1.69
Memo: (percentages)							
Fiscal Seigniorage/Government Revenue	2.7	1.5	-1.3	0.43	99.9	32.2 ¹⁰	12.2 ¹¹
Fiscal Seigniorage/Interest cost (Govt.)	158.6	27.7	-6.9	47.2	212.7	70.3	140.2
Fiscal Seigniorage/Total Seigniorage	62.8	49.7	-61.4	0.05	98.1	64.8	36.6

Expressing fiscal seigniorage as a percentage of government revenues results in two categories of countries, see Table 7. First are those countries for which fiscal seigniorage is less than five per cent of total government revenues. This group of countries include the ECCB, The Bahamas, Barbados and Belize. The second group is where fiscal seigniorage represents more than 10.0 per cent of government revenues. In this group Trinidad and Tobago is the lowest at 12.2 per cent of government revenue. However, Guyana is the country that stands out with fiscal seigniorage representing 99.9 per cent of government's revenue over the entire period 1980 to 1996.

A slightly different story is obtained where fiscal seigniorage is expressed as a percentage of total interest cost of Caricom governments over the period 1980 to 1996 – which in effect reveals approximate interest cost savings. On this basis, Bar-

¹⁰ Using numbers from 1980 to 1989.

¹¹ Using numbers from 1980 to 1985.

bados fears the worse, fiscal seigniorage represented approximately negative 6.9 per cent of government's interest costs. Guyana has the highest interest cost saving, with fiscal seigniorage at 212.7 per cent of interest costs. The ECCB member states yield fiscal seigniorage at 158.6 per cent of interest cost over the entire 1980 to 1996 period. Table 8 provides fiscal seigniorage for different periods.

Table 8. *Fiscal Seigniorage Earnings of Caricom Central Banks.
In Per cent of GDP for Selected Years. Period Averages*

	1980-96	1980-85	1985-90	1990-96
ECCB	0.76	1.55	0.40	0.22
The Bahamas	0.57	-0.22	0.09	0.29
Barbados	-0.42	-0.17	0.39	-1.25
Belize	0.38	1.17	-2.58	1.09
Guyana	36.90	7.20	85.20	15.10
Jamaica	3.50	9.50	5.70	-2.40
Trinidad	1.60	3.40	3.00	-1.3
Caricom	42.50	22.10	92.28	11.60

6.2 Operating costs and quasi-fiscal expenditures

Central Banks undertake a number of functions, which are not directly related to the issue of the currency or its management. As such a large part of their operating expenditures relate to non-central banking activities, such as bank supervision, compiling statistics and so on¹². These activities ought to be conducted by the central government. The recorded transfers, which go to governments as fiscal seigniorage, are understated by that amount. Therefore, to provide an idea of this hidden transfer, the operating cost of the Central Banks, both as a per cent of GDP and total seignior-

¹² In the estimation of quasi-fiscal expenditures in this study attention was focused on the operational expenditures. The non-operating portion of quasi-fiscal expenditures is more difficult to separate from normal central bank operations. Even so, the operational expenditures will provide an idea of the magnitude of these quasi-fiscal expenditures.

age earned are examined. It is almost impossible to distinguish monetary from quasi-fiscal expenditures of the Central Bank in practice¹³. Nevertheless, there appears to be a trend among Central Banks when fiscal seigniorage declines, operating expenditure increases, or at least declines at a slower rate. This is interpreted as the Central Bank undertaking quasi-fiscal expenditures on governments' behalf.

Table 9. *Total Operating Cost of Caricom Central banks.
In per cent of GDP*

Period	Bahamas	Barbados	Belize	ECCB	Guyana	Jamaica	Trinidad
1980-1996	0.45	0.71	0.08	0.48	12.65	1.78	2.96
1980-1985	0.62	0.55	0.051	0.53	8.40	0.65	3.48
1985-1990	0.41	0.78	0.11	0.45	18.59	2.64	2.44

Over the period 1980 to 1996, Central Bank of Guyana had the highest operating cost at 12.65 per cent of GDP, see Table 9. Moreover, between the period 1985 to 1990 it achieved an expense ratio of 18.59 per cent of GDP. Central Bank of Trinidad and Tobago achieved an expense ratio of approximately 3.0 per cent of GDP over the period 1980 to 1996. Its highest was over the period 1980 to 1985, when it averaged 3.48 per cent of GDP. For those countries with operating expenditures at less than one per cent of GDP, Barbados was the highest at 0.71 per cent of GDP over the entire period. The period 1985 to 1990 was the highest at an average 0.78 per cent per year. Overall, Belize experienced the lowest expense ratio over the entire period at 0.08 per cent of GDP.

If operating costs is divided into that associated with the direct management of the currency and other operating costs, an idea of the extent of quasi-fiscal expenditures of the various Central Banks in CARICOM can be obtained. This is done in Table 10.

¹³ Indeed it is almost impossible to obtain transparent information for the Central Banks of The Bahamas, especially on its income and expenditure accounts, and of Jamaica, which did not publish income and expenditure accounts before the 1980s. For the other central banks, there is generally no consistent classification of expenditures and it is typically not broken down into sufficient detail. For instance, depreciation expenditure is included in the category other expenses; however, some Central Banks do not provide any indication as to the magnitude of this figure.

Table 10. *Direct Currency Expenditures as a Per Cent of Total Operating Costs¹⁴*

Period	Bahamas	Barbados	Belize	ECCB	Guyana	Jamaica	Trinidad
1980-1996	8.40	11.40	18.10	19.10	9.00	1.25	1.43

As can be deduced from Table 10, the majority of CARICOM's Central Banks expenditures are not directly related to the management of the domestic currency. Now by combining the information in Table 10 with fiscal seigniorage reported in Table 6 a more accurate approximation of fiscal seigniorage (resource) flows, which CARICOM governments obtained from their Central Banks over the entire 1980 to 1996 period is provided. This information is displayed in Table 11.

Table 11. *Total Central Bank Augmented Fiscal Seigniorage Flows to Government As a Per Cent of GDP, Period Average 1980 -1996*

	Bahamas	Barbados	Belize	ECCB	Guyana	Jamaica	Trinidad
1980-1996	0.98	1.05	0.45	1.20	48.40	5.30	4.50

The flows to all governments increased with the inclusion of quasi-fiscal expenditures. Indeed, Barbados, which previously yielded a negative flow on the pure definition of fiscal seigniorage, now yields a positive flow of 1.05 per cent of GDP over the period 1980 to 1996. Moreover, Guyana remains number one yielding an augmented fiscal seigniorage flow of 48.4 per cent of GDP.

7. Conclusion

The paper yields two basic insights. First, the extent and differences in fiscal seigniorage flows among Caricom central banks. Second, the extent of quasi-fiscal expenditures which Caricom central banks undertake. In short, the analysis suggests that seigniorage transfers to governments within Caricom are significant.

¹⁴ For those central banks which do not fully report for all years the break down of expenditure, currency was estimated. The basis of these estimates was benchmarks as per currency to GDP ratio across countries, which were then converted to proportion of total expenditures.

The policy implication of the results is straightforward. To be successful a regional central bank must not only be sheltered from lending to domestic agents, but also from quasi-fiscal expenditures. Moreover, to prevent an adverse transfer of resources within the membership of the central bank an equitable and transparent mechanism for sharing seigniorage revenues ought to be worked out upfront.

This paper can be extended in at least two directions. First, to analyse the precise impact of fiscal seigniorage on regional economic performance. Second, the most appropriate operational framework for a Caricom central bank and its implications for seigniorage distribution within Caricom.

There is at least one qualification to the results obtained in this paper. It assumes that the environment within which all Caricom central banks operate is similar. This may not be necessarily the case as some banks are more operationally autonomous than others. Therefore, for some central banks, activities which they undertake may in fact represent a business decision, as opposed to assigned tasks from an external agent - government.

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Summary

Fiscal seigniorage is the revenue which governments obtain from the creation and maintenance of money. Among CARICOM countries, governments of Guyana and Jamaica earned the most seigniorage from their central banks. The Central Bank of Guyana generated the largest flow of fiscal seigniorage, approximately 36.0 per cent of GDP over the period 1980 to 1996. Bank of Jamaica generated fiscal seigniorage equivalent to 4.5 per cent of GDP over the same period. However, concentration on this pure concept of fiscal seigniorage may understate the true magnitude of central bank resource flows to government. Important also are quasi-fiscal expenditures, which constitute the majority of total expenditures of most CARICOM central banks. Such expenditures must be added to fiscal seigniorage to obtain the true value of central banks' transfers to government.

LE SEIGNEURIAGE FISCAL - LE CAS DES BANQUES CENTRALES DE LA COMMUNAUTÉ DES CARAÏBES.

Le seigneurage fiscal est le revenu que les gouvernements reçoivent de la création et le financement de l'argent. Les gouvernements de La Guyane et de La Jamaïque gagnent plus de seigneurage de leur banque centrale que les autres membres de la communauté des Caraïbes. La Banque Centrale de la Guyane a gagné 36.0% du produit intérieur brut (PIB), pendant la période 1980 jusqu'à 1996. La Banque Centrale de la Jamaïque a gagné la seigneurage fiscale équivaloir à 4.5% du PIB, pendant la même période. Si, toutefois, nous portons toute notre attention à ce concept de seigneurage fiscal, c'est possible que nous pouvons minimiser la valeur du mouvement des ressources des banques centrales aux gouvernements. Parce que dans la communauté des Caraïbes la majorité des dépenses des banques centrales est quasi-fiscale, ces dépenses sont aussi importantes. Elles doivent être incluses dans la seigneurage fiscale afin d'attribuer une valeur exacte aux transferts des banques centrales au gouvernement.