

A CRITIQUE OF SHORT-TERM

CAPITAL FLOWS

BY

HAROLD CODRINGTON

CENTRAL BANK OF BARBADOS

OCTOBER 1984

A Critique of Short-Term Capital Flows

Introduction

In recent times in Barbados there has been some debate about the impact of short-term capital movements on foreign exchange liquidity. This concern, which has been aggravated by the weakness of the Balance of Payments since 1981, initially derived from a negative error-term in the Balance of Payments accounts; in addition the banking system has been recording higher and higher levels of unrepatriated export proceeds. Both these phenomena can weaken a country's payments position; a negative error-term may indicate a flight of short-term investment while a build-up in unrepatriated export earnings, (trade debits) represents an increase in short-term foreign assets of local businessmen.

In this study we employ quarterly statistics from 1977 to 1983 in an attempt to explain the behaviour of short-term capital flows. The analysis will mostly concentrate on trade credits, the largest component of short-term capital. We shall first highlight the magnitude of these flows and comment on their movement and composition; in addition attention will be paid to their importance as a financing item. Following this we will specify an explanatory model and test how well it fits the data.

1. The Problem Defined

Short-term capital is capital which has an original contractual maturity of one year or less¹. It is speculative in nature reflecting only the investor's desire to earn a quick return. This kind of capital only became a prominent feature of foreign investment inflows since 1977. Between 1964 and that year short-term flows did not account on average for more than eight percent of total capital inflows; after 1978 that ratio rose to one-third.

Elsewhere in Caricom short-term capital does not seem to be an important part of the capital account; for example, neither Trinidad and Tobago nor Guyana makes a distinction in the Balance of Payments between long and short-term flows. During 1981 and 1982, short-term investments as a percentage of net capital inflows averaged just below seven percent of the capital account of Jamaica.

In Barbados up to the mid nineteen-seventies short-term inflows comprised mainly bank deposits by foreigners. These may not even have been speculative reflecting perhaps no more than a desire by some foreigners to keep working balances here. As the local banking system grew increasingly more sophisticated and integrated with international finance another type of short-term investment became popular - the trade credit. The increasing popularity of trade credits was further promoted by the surge in imports after 1978 which local importers found difficult to

finance from their own resources. It was approximately at this time too that the monetary authorities put curbs on credit to the distributive sector. By 1983 trade credits accounted for 96% of net short-term capital inflows.

In Barbados short-term flows are now so important that the implications for the Balance of Payments are quite different if they are removed. It will mean, *ceteris paribus*, a lower surplus or a larger deficit on the Balance of Payments accounts; that is, there are less funds for reserve accumulation or there is a greater need for financing requirements through a draw down of reserves or by official borrowings.

Between 1964 and 1983 short-term flows accounted for 23% of total foreign capital inflows; over the comparable period they financed 17% of the cumulative current account deficits. Because of the reasons advanced earlier their share in total foreign capital and ability to partly finance the current deficit were at their highest levels between 1978 and 1983. It was during this period that short-term capital reached historically high levels occasionally surpassing the value of long-term investment.

Net errors and omissions is a balancing item in the Balance of Payments which is intended to offset over or under-estimates in the accounts. An over-estimation of current items would lead to a negative error-term while an under-estimation will result in a positive error-term. Sometimes, however, it is felt that the error term also contains some items which display the

characteristics of short-term capital flows. If this is true a positive error-term causes no problem since it represents an inflow of capital but a negative sign indicates a flight of capital which is undesirable. Barbados never experienced a negative error-term until 1980 and since then, with the exception of one year, the sign has remained negative.

It is the fact that the error-term was never negative before 1980 which has reinforced the belief that the item represents largely short-term inflows. Such investment, as we pointed out earlier, is speculative in nature and it was in 1980 that foreign interest rates reached historically high levels; early in that year foreign interest rates exceeded local ones by as much as eleven and one half percentage points. This may have been enough incentive to encourage individuals to remove short-term funds from the country. Although the differential has since fallen it is still above those which were prevalent prior to 1978.

Since 1982 records have shown that smaller and smaller portions of the value of exports sold in a particular time period are returned to the banking system during the period. It is never the case that all the export proceeds in a period are accounted for by the end of that period; but it causes some concern when the ratio accounted for, falls significantly in just a few years. The data show that on an annual basis the ratio fell from 63% in 1977 to 18% in 1983. For most of the time the decline in repatriated export proceeds has been accompanied by

a fall in the movement of net trade credits. These flows which expanded at a yearly average of 158% between 1977 and 1979 contracted by 19% per annum in the next four years.

Both the negative error-term and the slow down in net trade credits have occurred when pressure on the Balance of Payments has placed severe constraints on the country's liquid foreign reserves. Since 1981 the current account deficit has averaged \$144 million, the highest for any three year period on record.

In 1980, for the first time, the Central Bank resorted to short-term borrowing in order to ease liquidity constraints; this has been repeated every year since then. Official short-term liabilities were as much as \$68 million, \$58 million and \$56 million in 1981, 1982, and 1983 respectively. During the period the U.S prime rate on loans never fell below 10.50% and reached 20% on two occasions. The steep increase in the cost of borrowing helped to push up Central Bank interest payments from \$2.4 million in 1980 to \$7.8 million in 1981 and \$12.1 million in 1982.

One cannot deny that during the three years in question payments imbalances were largely a result of declines in real economic activity. Tourist arrivals fell on average by 3.5% yearly while manufacturing output contracted by almost 2% and sugar production reached its lowest level in more than three decades. But it must be conceded that falling foreign reserves could be partly a result of the rise in unrepatriated export earnings.

The Central Bank first drew on its short-term lines of credit during the third quarter of 1980. Since then, with one exception, the quarterly levels of unrepatriated earnings have exceeded outstanding short-term liabilities. Indeed unrepatriated earnings are so large that the Central Bank needed only half of the quarterly amounts to wipe out outstanding short-term indebtedness for most of the time. Up to early 1983 they were equivalent on average to 42% of the quarterly level of net foreign reserve holdings. Since the demise of the CMCF liquid foreign assets now average, on a quarterly basis, half the value of unrepatriated export earnings.

2. The Model

It is only with the weakening external position that it was realised that trade credit activity deserved attention and could give important insights into the behaviour of local businessmen and perhaps of their foreign counterparts. The net trade credit position represents the net ability and desires of local entrepreneurs to keep balances overseas, repatriate export earnings and pay for imported materials. It also mirrors the ability and intentions of foreign businessmen to pay for Barbadian exports and to extend credit to locals.

Trade debits (TDS) which are short-term foreign assets owned by local businessmen include unrepatriated export earnings as well as funds under collection from foreigners. These funds

are likely to be held abroad if in the entrepreneur's view the return from doing so is greater than from investing them locally. This is also the case if there is no pressing need for cash, that is, if he is making money or getting domestic credit. TDS will therefore depend on interest rates as well as the level of businessmen's liquidity and the level of economic activity.

Short-term foreign liabilities or trade credits (TCS) are partly determined by the ability or willingness of local firms to pay for imports but more importantly by the desire of foreigners to offer trade credits to Barbadian entrepreneurs. These business intentions are in turn related, both to cash balances and credit charges; here again, interest rates and liquidity levels are pivotal factors.

In addition to TDS and TCS our model also attempts to explain the rate at which export proceeds are repatriated (REP); REP is really a mirror image of TDS and is determined by virtually the same forces. By definition this measure moves in the opposite direction from TDS, declining as more funds are held abroad, and tests on it should confirm the conclusions reached about TDS.

The above scenario appears to indicate that trade credit activity depends on interest rates, investment opportunities and liquidity. As far as an interest rate variable is concerned we are faced with three possibilities - the local rate, the foreign rate or the differential between the two. The local rate is

fixed by monetary authorities, moves infrequently, is very low and is therefore very unlikely to be seriously considered by a potential investor. Businessmen who intend to invest abroad are more likely to follow trends in the foreign rates of interest which are freely determined and can occasionally rise to record heights.

Some commentators believe that a local investor may even be more concerned with the differential by which foreign interest rates exceed domestic ones and that his actions are determined by critical levels in the differential. Moreover, we can assume that economic agents may form expectations about future movements in interest rates which are based on past rate behaviour. Studies by Boamah [1984] and Worrell and Holder [1984] confirm this assumption of naive expectations on the part of local economic agents. Since the U.S.A is the largest trading partner, in the model the expectation relates to movements in the U.S rates (USR) and the extent to which they rise above local rates (DIFF). Naive expectations are shown in the equations as one and two period lags of USR and DIFF.

Interest rates apart, we assume that the investment climate must look good to investors. Local businessmen will therefore be concerned with the rate of real growth in foreign countries; here again we take the U.S economy as the most likely haven for short-term funds. As before we further assume that expectations may be formed about both the level of economic activity in the U.S (USGDP) and its real growth (USGDPP).

Earlier it was pointed out that liquidity is an important consideration for entrepreneurs. If a local firm is liquid it has no pressing need for its unrepatriated earnings or to accept short-term credit. If domestic credit is forthcoming the firm can both leave earnings abroad and speed up payments for imports thus reducing short-term liabilities; rising profit levels would encourage similar behaviour. Export earnings accrue mostly to manufacturers and firms in the distributive sector; it seemed reasonable therefore that liquidity levels could be approximated by the amount of commercial bank credit (CDM) and the magnitude of the commercial bank deposits (DDM) which could be attributed to these firms.

In summary the dependent and explanatory variables have the following relationships:

$$TDS = F_1(CDM, DDM, USR, DIFF, USGDP)$$

+ + + + +

$$TCS = F_2(CDM, DDM, USR, DIFF, USGDP)$$

- - + + +

$$REP = F_3(CDM, DDM, USR_{-1}, USR_{-2}, DIFF_{-1}, DIFF_{-2}, USGDPP_{-1}, USGDPP_{-2})$$

- - - - - - - -

3. Regression Results

Statistically the results are encouraging but they are not definitive. The explained variation which ranges between 61% and 88% is highest for the TDS equation; moreover serial correlation does not appear to be a problem and by and large the overall significance of the regressions is at acceptable levels.

In the regression on TDS (short-term funds kept abroad), CDM and USGDP both had the expected positive signs and were statistically significant. DIFF had the right sign indicating some influence but it was not significant while DDM appeared to be totally unimportant. This corroborates our belief that the easier it is for local businessmen to raise credit at home, the greater the temptation to leave export earnings abroad. Also the stronger the foreign economy the higher the value of the short-term investment will be. The interest rate variable USR proved to be significantly negative; this merits a comment. The negativity of USR may be related particularly to that component of TDS which is uncollected export proceeds. If foreign rates are rising it becomes harder to collect export earnings since foreigners may choose to invest in short-term instruments rather than settle for goods.

The rate at which export earnings are repatriated (REP) is also significantly explained by both the liquidity variables CDM and DDM. Obviously, funds will be repatriated more quickly when working capital is needed and it becomes difficult to raise loans and expand local sales. Much less can be made of the assumption of naive expectations regarding interest rates and real growth in the U.S. Both USR₁ and DIFF₁ had the expected negative sign but the coefficients were statistically insignificant; conversely USR₂ and DIFF₂ were positive and sometimes significantly so. But we must remember that in the model, each time period covers three months and that a two period lag describes a point in time

more than six months previously. It is quite likely that if interest rates were on the rise six months ago exporters expect them to fall or least level off soon and therefore increase the repatriation rate. The results show little evidence that naive expectations about the performance of the U.S economy affect the repatriation rate.

In the TCS regression only the coefficients of USGDP and DIFF both had positive signs and were statistically significant. TCS more accurately reflects the intentions of foreign entrepreneurs than local ones; as a result the regression results merely confirm that foreigners are more inclined to grant credit to local importers if economic conditions abroad are buoyant and if a rising interest rate differential makes it profitable to do so. CDM and DDM were of minor importance, indicating that liquidity levels in Barbados do not determine whether or not foreign businessmen extend trade credit. USR came up, surprisingly, with a negative sign.

4. Conclusions

The statistical analysis points to a number of factors which determine short-term capital movements; they are the level of cash balances held by local businessmen, the performance of the U.S economy and the level of interest rates. Even though the last of these fails to be statistically significant, in several cases the coefficient has the right sign showing that it does exert some influence.

Of the three variables none is totally within the control of local authorities. The results show that as long as investment opportunities exist abroad exporters will continue to increase their foreign assets; that is a given. On the issue of interest rates decision makers have to move very cautiously; for one the model shows that their links with short-term investment are tenuous. Moreover movements in interest rates have implications for much more than the amount of export earnings which is kept abroad. Still it is hard to ignore that in the TDS equation every 10% increase in the interest rate differential leads to a 47% expansion in unrepatriated export earnings.

The level of credit is the variable which can be most easily manipulated; indeed lending to distribution is already regulated by the monetary authorities. According to the model if credit is restricted then businessmen are forced to reduce short-term foreign assets to meet local commitments. A restriction in credit can be achieved by imposing a ceiling on lending or by raising interest rates. Both these measures are politically and economically controversial since the losses they may impose on the rest of the economy may exceed the dollar value of the unrepatriated export earnings.

It seems that the problem of short-term capital flight must be tackled directly. The solution which is least worrisome is for authorities to strictly apply foreign exchange regulations regarding the time allowed for repatriating export proceeds.

This, coupled with some incentives to speed up repatriation rates, may go a long way towards solving the short-term foreign exchange liquidity problem.

Footnotes

1. See the Balance of Payments of Barbados: Notes and Definitions
P.46
- 2 The Public Sector short-term flows were never high; these are in the main net settlements due to foreign governments and regional organisations (these include Treasury Bills)
- 3 It was once thought that the large positive errors in the B.O.P were related to an underestimate of tourist earnings. Tourism credits were subsequently revised.

References

1. Bank of Guyana, Annual Report 1981, pl6 Table 1.
2. Bank of Jamaica, Balance of Payments of Jamaica, 1982.
3. Boamah, Daniel., "Wage Formation, Employment and Output in Barbados" Central Bank of Barbados, 1984 (mimeographed).
4. Central Bank of Barbados, Balance of Payments of Barbados, various issues.
5. Central Bank of Barbados, Economic and Financial Statistics, various issues.
6. Central Bank of Barbados, Exchange Control Department, Digest of Statistics, December 1983.
7. Government of Trinidad and Tobago, Central Statistical Office, Annual Statistical Digest, 1982.
8. Holder C., and Worrell, D., "A Model of Price Formation for Small Economies: Three Caribbean Examples", Central Bank of Barbados, 1984 (mimeo).
9. International Monetary Fund, Balance of Payments Manual (4th Edition) IMF Washington, D.C., 1977.
10. International Monetary Fund, International Financial Statistics, various issues.

Appendix 1

Even though the Balance of Payments provides annual statistics on trade credits we needed to take a closer look which these data do not permit. It was decided that the quarter was the most representative time period. It corresponds closely both with a period for which credit is usually granted and with the maturity of popular short-term financial instruments. Indeed all the interest rates measures employed in the model are related to the yield on three-month fixed deposits in Barbados and the U.S.

For this study it was possible to get quarterly data for the years 1977 to 1983. We took the quarterly value of exports recorded by the Customs Department and subtracted the export inflows for the period reported by the Exchange Control Department. The residual is the unrepatriated export earnings or trade debits (TDS) i.e. short-term credit extended to foreigners by local exporters. Similarly, if we subtract actual payments for imports from their C.I.F value the residual or unpaid portion is the trade credits (TCS) extended to Barbadian importers by foreigners.

The net trade credit inflow is therefore the net of trade debits and credits; a positive number indicates an inflow or a short-term liability to Barbados, whilst a negative number indicates that the country is a net lender of short-term funds to the rest of the world. The variable (REP) represents the rate of repatriation of export earnings. It is calculated by expressing actual quarterly inflows as a ratio of export values.

Appendix 2

Explanation of Variable Names

- TDS: Trade debits which are short-term foreign assets of Barbadian businessmen; they include unrepatriated export earnings and other funds under collection.
- TCS: Trade credits extended to locals by foreigners.
- REP: The repatriation rate of export earnings.
- CDM: The quarterly level of commercial bank credit outstanding to the distributive and manufacturing sectors.
- DDM: The quarterly level of commercial bank business deposits which are attributed to firms in the distributive and manufacturing sectors.
- USR: The average quarterly yield on three-month fixed deposits in the U.S.
- DIFF: The difference between USR and the average quarterly yield on three-month fixed deposits in Barbados.
- USGDP: The quarterly level of real US gross domestic product (1980=100).
- USGDPP: The percentage change in USGDP.

Indicators of Falling Foreign Exchange Liquidity

\$M

	Central Bank Short-term Loans Outstanding	Unrepatriated Export Earnings	<u>Unrepatriated Earnings</u> <u>Net Foreign Reserves</u>
1980-3	10.0	63.4	41
4	-	55.0	33
1981-1	-	39.9	23
2	10.0	45.3	35
3	30.0	49.9	58
4	58.0	49.1	39
1982-1	38.0	41.0	25
2	1.0	72.6	51
3	39.5	78.8	71
4	56.0	72.4	39
1983-1	13.0	61.0	79
2	25.0	94.2	112
3	35.0	149.4	190
4	19.0	171.4	292

Source: Central Bank of Barbados, Economic and Financial Statistics, various issues.

Central Bank of Barbados, Exchange Control Department, Digest of Statistics, December 1983.

Table 2

Data used in the Regressions

	TCS	TDS	REP	CDM	DDM
1977-1	30.4	18.3	29.1	82.2	26.4
2	25.6	12.3	73.5	86.1	21.7
3	37.1	10.4	79.2	86.2	22.1
4	53.0	12.9	47.9	95.2	29.4
1978-1	32.6	19.7	46.6	90.4	41.0
2	54.7	29.4	34.7	98.1	19.7
3	42.5	28.7	57.5	94.8	26.8
4	44.9	20.6	44.2	107.3	24.0
1979-1	75.0	36.4	27.8	110.1	31.9
2	57.0	17.4	64.5	118.4	19.1
3	74.0	41.0	45.3	119.0	26.0
4	85.9	35.0	39.9	131.6	32.3
1980-1	69.2	30.0	41.6	145.7	33.8
2	70.2	47.6	49.7	166.5	28.3
3	91.4	63.4	42.8	168.4	34.4
4	34.9	55.0	31.5	182.2	33.5
1981-1	76.9	39.9	30.9	174.6	45.8
2	56.3	45.3	56.5	195.3	26.6
3	122.6	49.9	29.8	190.0	36.0
4	53.9	49.1	25.6	198.5	38.2
1982-1	75.1	41.0	41.7	204.5	36.4
2	42.1	72.6	28.3	201.5	37.5
3	53.6	78.8	19.6	206.4	48.7
4	81.5	72.4	29.7	208.4	52.4
1983-1	70.8	61.0	30.4	227.8	38.8
2	74.6	94.2	24.9	216.7	43.0
3	127.4	149.4	13.7	220.2	47.5
4	154.5	171.4	12.2	235.0	40.1

Table 2 Cont'd

Data used in the Regressions

	USR	DIFF	USGDP	USGDPP
1977-1	4.88	0.38	2370.0	2.1
2	5.23	0.73	2400.9	1.3
3	6.07	1.57	2441.9	1.7
4	6.73	2.23	2453.9	0.4
1978-1	6.93	1.93	2497.3	1.0
2	7.63	2.13	2551.6	2.2
3	8.42	3.25	2576.4	0.9
4	10.67	5.67	2610.5	1.3
1979-1	10.17	5.67	2627.3	0.6
2	10.08	5.58	2621.4	0.0
3	11.25	6.75	2652.4	1.2
4	13.75	9.25	2657.3	0.2
1980-1	15.80	11.30	2667.2	0.4
2	10.18	5.02	2601.0	-0.2
3	10.90	5.40	2611.7	0.4
4	15.86	10.36	2639.6	1.10
1981-1	14.75	7.50	2690.2	1.9
2	16.88	9.63	2680.2	-0.4
3	16.75	9.50	2694.9	0.5
4	12.86	3.53	2658.6	-1.3
1982-1	13.54	4.04	2651.0	-0.01
2	13.67	4.17	2657.2	2.3
3	10.28	0.78	2650.8	-0.01
4	8.70	-0.80	2641.9	-0.04
1983-1	8.67	0.33	2658.6	-0.6
2	8.82	2.15	2721.1	2.4
3	9.50	3.00	2771.6	1.9
4	9.43	2.27	2805.7	1.20

Table 3

Regression Results

(t-Statistics in Parentheses)

$$\text{TDS} = -896.87 + 0.41\text{CDM} + 0.37\text{USGDP} + 4.65\text{DIFF} - 9.81\text{USR}$$

(-3.66) (1.97) (3.75) (1.14) (-2.18)

$$R^2 = 0.88 \quad \text{D.W} = 1.89 \quad F(4,23) = 30.83$$

$$\text{TCS} = -543.0 + 0.21 \text{CDM} + 0.13\text{DDM} + 0.24 \text{USGDP} + 6.09\text{DIFF}$$

(-2.35)(0.96) (0.17) (2.57) (1.77)

$$- 8.01\text{USR}$$

(-2.29)

$$R^2 = 0.61 \quad \text{D.W} 1.91 \quad F(5,20) = 4.69$$

Assuming Naive Expectations

REP =:

$$\text{(a)} \quad 71.89 - 0.17\text{CDM} - 0.59\text{DDM} - 0.93\text{USR}_1 + 2.11 \text{USR}_2$$

(8.63) (2.82) (2.09) (-1.04) (2.23)

$$R^2 = 0.67 \quad \text{D.W} = 2.25 \quad F(4,21) = 7.77$$

$$\text{(b)} \quad 73.37 - 0.14\text{CDM} - 0.52\text{DDM} - 1.10\text{DIFF}_1 + 1.96\text{DIFF}_2$$

(9.58)(-2.70) (-1.77) (-1.44) (2.48)

$$R^2 = 0.68 \quad \text{D.W} = 2.25 \quad F(4,21) = 8.09$$

$$\text{(c)} \quad 69.75 - 0.14\text{CDM} - 0.62\text{DDM} - 0.52\text{USR}_1 + 1.64\text{USR}_2$$

(7.24)(-2.28) (-2.07) (-0.54) (1.40)

$$- 1.61\text{USGDPP}_1 + 1.34\text{USGDPP}_2$$

(-0.66) (0.63)

$$R^2 = 0.69 \quad \text{D.W} = 2.14 \quad F(6,18) = 5.23$$

Figure 1

