

**XXVII ANNUAL CONFERENCE
OF MONETARY STUDIES**

**A POSSIBLE ROLE FOR FOREIGN CURRENCY
FORWARD, FUTURES AND OPTIONS MARKETS
IN MANAGING FOREIGN EXCHANGE EXPOSURE
IN UNDERLYING CAPITAL TRANSACTIONS
IN CARICOM**

**Aidan Harrigan
Ministry of Finance, Anguilla**

**JACK TAR VILLAGE
FRIGATE BAY
ST KITTS**



NOVEMBER 8 - 11, 1995

A Possible Role For Foreign Currency Forward, Futures and Options
Markets in Managing Foreign Exchange Exposure in Underlying Capital
Transactions in CARICOM.

SUBMITTED BY

AIDAN A. HARRIGAN
SENIOR STATISTICAL OFFICER
STATISTICS UNIT
MINISTRY OF FINANCE & ECON. DEVELOPMENT
THE VALLEY, ANGUILLA¹

FOR PRESENTATION AT THE XXVII ANNUAL CONFERENCE OF THE CENTRE FOR
MONETARY STUDIES (CCMS), ST. KITTS, NOV. 8-11, 1995.

¹ The views expressed in this paper are entirely those of the author
and do not in any way reflect those of the Ministry of Finance or the
Government of Anguilla.

ABSTRACT

As emerging markets CARICOM member countries could potentially benefit from the movement in private capital to the South, as both foreign direct investment and portfolio capital seek the higher returns and diversification that investment in these markets offer. However, the fact that there is little scope in CARICOM foreign exchange markets for providing cover for underlying capital transactions, in the form of conventional forward and swap transactions and the more unconventional futures and options or derivatives transactions, could serve as an impediment to such flows. This paper examines the basic theory of the assets approach to exchange rate determination and forecasting (which has been the dominant perspective in recent times), the problem of foreign exchange exposure, and methods/mechanisms for managing this risk. In addition, the potential for the development of foreign currency forward, futures and options markets in CARICOM is examined.

Introduction

The importance of global capital flows, both foreign direct investment (FDI) and portfolio capital, is perhaps a stylized fact of recent economic development in emerging economies (See The IMF, 1991; The Economist: Sept. 25, 1993; Nov. 27, 1993; Oct 1, 1994). Such flows amounted to US\$166.1bn in 1993 (See Appendix I for statistics on global and regional capital flows). This is global financial intermediation taken to new levels and is perhaps the modern corollary of the importance of financial development in overall economic development first highlighted by, among others, Patrick (1966), McKinnon (1973), and Shaw (1973). However, the flow of global capital to developing countries, such as CARICOM, faces a potential barrier in the form of exchange rate uncertainty. The abandonment of the Bretton Wood system of fixed exchange rates and the adoption of flexible rates in 1973 presented foreign investors with a fundamental question: are changes in exchange rates predictable? The answer to this question is critical as the returns from foreign investment is influenced by exchange rate variability.

For FDI the costs associated with fluctuating exchange rates mainly relate to operating exposure, transaction exposure and accounting exposure. Operating exposure, sometimes called economic exposure, measures the change in the present value of the firm that results from changes in future operating cash flows caused by an unexpected change in exchange rates (Eiteman et al., 1992: 185). The change in value depends on the effect of the exchange rate on future sales volume, prices, and costs. Transaction exposure measures the changes in the value of outstanding financial obligations incurred prior to a change in exchange rates but not due to be settled until after the exchange rates change. Transaction exposure thus deals with changes in cash flows that result from existing contractual obligations. Accounting exposure, sometimes called translation exposure, measures potential accounting-derived changes in owners' equity that result from the need to "translate" foreign currency financial statements of affiliates into a single reporting currency in order to prepare worldwide consolidated financial statements (Eiteman et al., 186).

In terms of portfolio flows, the return on the foreign investment in terms of the home currency depends not only on the return on the foreign stock market in terms of local currency, but also on the change in the exchange rate between the two. For example, when a US investor invests in the Jamaican stock market, the return on the foreign investment in terms of US dollars depends not only on the return on the Jamaican stock market in terms of local currency, but also on the change in the exchange rate between the Jamaican and US dollars. Therefore, instruments such as forward, swap, futures and options contracts provide the possibility to hedge against or mitigate the effects of foreign exchange variability.

In terms of the organization of the paper, a brief description of a "typical" foreign exchange market is given. This is followed by sections on foreign exchange rate determination and forecasting, the instruments of foreign exchange rate management, and the potential for their development in CARICOM exchange markets.

The Foreign Exchange Market

The foreign exchange market provides the physical and institutional environment in which foreign exchange is traded, exchange rates are determined, and foreign exchange rate management is implemented. It consists of two tiers, the interbank or wholesale market, and the client or retail market. Five broad categories of participants operate within these two tiers: bank and nonbank foreign exchange dealers, individuals and firms conducting commercial or investment transactions, speculators and arbitragers, central banks and treasuries, and foreign exchange brokers. It is perhaps useful to mention the motive of speculators and arbitragers in particular. Speculators seek all their profit from general price changes in the foreign exchange market while arbitragers seek to profit from simultaneous price differentials in different markets.

Transactions in the foreign exchange market are executed on a "spot," "forward," or "swap" basis. A spot transaction requires almost immediate delivery of foreign exchange. A forward transaction requires delivery of foreign exchange at some future date. A swap transaction is a simultaneous purchase and sale of a foreign currency.

Exchange Rate Determination and Forecasting

The asset market theory of exchange rate determination as developed by, among others, Dornbusch (1976a and b), Frenkel (1976), Mussa (1976) and Frankel (1979), has been the predominant view in the literature for the past twenty years. From this perspective, exchange rates are viewed as merely the relative price of assets determined in organized markets where prices can be adjusted instantly to whatever the market regards as the currently appropriate price. In this respect, exchange rates are similar to stock prices, long-term bond prices and the prices of commodities traded on organized exchanges. One particular aspect of asset prices is that they are usually regarded as being determined in "efficient markets" - the so-called "efficient market hypothesis" (EMH) - See Fama 1965, 1970.

The concept of "efficient markets" is seen to be inextricably linked with the assumption concerning the mechanisms used by agents in asset markets to form expectations. Consequently, the distinction is made between "strong," "semi-strong" and "weak" forms of market efficiency (See Fama, 1970). Strong market

efficiency holds that prices reflect all information that can possibly be known. The semi-strong form of market efficiency holds that current prices incorporates all publicly held known information, including past prices. Finally, the weak form of market efficiency holds that current prices incorporate the information contained in past prices. In theoretical discussions, strong market efficiency is usually invoked. The hypothesis of an efficient foreign exchange market, therefore, is in principle merely the theory of informationally efficient financial markets extended to international money markets (See Fama, 1984). Hence, for a foreign exchange market to be efficient, exchange rates must always fully reflect all relevant and available information. In brief, exchange rates are determined entirely in asset markets by interest rates and expectations.

The use of exchange rate forecasts is typically motivated by a desire on the part of foreign investors to hedge against the impact of exchange rate variability on returns. Understanding what determines exchange rates presumably makes it easier to forecast them. The efficient market hypothesis allows the formulation of a relationship between the forward rate and the expected spot rate. Essentially, the forward rate is seen as an unbiased predictor of the future spot rate. This however assumes that speculators are risk neutral. If they are, the forward rate is the market's expectation of the future spot rate. If instead speculators are risk averse, the forward rate will equal the expected spot rate plus a term usually interpreted as a risk premium. Empirical tests have mostly rejected the hypothesis of the forward rate as an optimal predictor of exchange rate change (See Ballie & McMahon, 1989; MacDonald and Taylor, 1989; The Economist, Oct 9, 1993). Since the EMH is essentially a joint hypothesis, in that it consists of a statement about what determines the forward exchange rate combined with the assumption that agents are endowed with rational expectations, attempts to explain its failings have been similarly oriented. The first component relates to whether agents are risk neutral or risk averse and their ability to ensure equilibrium on the basis of the exploitation of available information.

Two recent models, the "news" and "noise trader" approaches have tried to explain the apparent short-comings in the expectations component of the EMH. The "news" approach is an extension of the efficient markets model in that it emphasizes the importance of expectational revisions in explaining why the forward exchange rate maybe a poor predictor of the future exchange rate. It does not however, purport to explain why the forward rate is a biased predictor of the future spot rate. The news model states that the error in forecasting the exchange rate is driven by new information about the fundamental determinants of the exchange rate and a random error (which is viewed as measurement error and likely to be small). (See Copeland, 1984 and MacDonald, 1985 for empirical tests of the news model). The "noise trader" model, on the other

hand, is presented as the successor of the efficient market theory, given its failings, as the theory of asset markets. (Even Fama, 1991 has admitted to the short-comings of the EMH). This model attempts to combine the technical analysis associated with market operators, which is known to characterize the trading behaviour of agents, with a more traditional view of economic behaviour based on rational maximising behaviour. The noise trader model is based on the work of De Long et al. (1990) with respect to the behaviour of stock market prices.

There is also the argument that since day-to-day movements are largely unpredictable, the exchange rate follows a "random walk". In other words, if the probability that the currency will appreciate is the same as the probability that it will depreciate, the forecaster expects a neutral or random outcome. The future exchange rate is then best estimated to be the same as it is today.

Given that exchange rate forecasting is not an exact "science," there is need for instruments to hedge against foreign exchange exposure. These are provided in the form of forward, swap, futures and options contracts. Forward and swap contracts form part of most conventional exchange markets and have been discussed already. Futures and options contracts, on the other hand, form part of the derivative financial market and are now discussed.

Futures and Options Markets

Financial derivative securities are designed primarily to lower the cost of managing financial risk associated with the volatility in exchange, interest and inflation rates.

Foreign Currency Futures Contract

A foreign currency futures contract is an exchange traded contract calling for future delivery of a standard amount of foreign exchange at a fixed time, place, and price (Eiteman, et al., 1992: 111). The most renown emerging country foreign currency futures market is the Singapore International Monetary Exchange (SIMEX). While they are both used for the same commercial and speculative purposes, foreign currency futures contracts differ from forward contracts in a number of important ways (See Appendix II).

Foreign Currency Options Contract

A foreign currency option is a contract giving the option holder the right, but not the obligation, to buy or sell a given amount of foreign exchange (the underlying currency) at a fixed price per unit for a specified time period, usually until the expiration or maturity date (Eiteman, et al., 1992: 116). In terms of terminology, a "call" is an option to buy foreign currency, and a "put" is an option to sell foreign currency. An "American" option

gives the buyer the right to exercise the option at any time between the date of writing and the expiration or maturity date. A "European" option can be exercised only on its expiration date, not before. The "exercise" or "strike" price is the specified exchange rate for the underlying currency at which the option can be exercised. The "premium" or "option" price is the cost of the option, usually paid in advance by the buyer or seller (Eiteman, et al., 116).

Foreign currency options can be purchased or sold in three different types of markets:

- (i) Options on the physical currency, purchased on the over-the-counter (interbank) market.
- (ii) Options on the physical currency, purchased on an organized exchange.
- (iii) Options on futures contracts, purchased on specialised international money markets.

When they are used as hedging tools, foreign currency futures and options contracts can be very useful in reducing the costs associated with foreign exchange exposure. However, they are also used for speculative purposes often with dire consequences as the Barings episode of earlier this year bears adequate testimony. (See the Greenwald article, in Time Magazine's, April 11, 1994 issue on the potential riskiness of foreign exchange and other financial derivatives contracts). This highlights the need for clearly defined accounting and regulatory rules where the use of these financial instruments are concerned.

The EMH in the Caribbean Context

It could be argued that the EMH with its emphasis on the perfect availability of information and the assumption of rational profit maximizing behaviour makes it irrelevant to the Caribbean context. With respect to the first feature, a precondition for the strong version of the EMH is that information and trading costs, the costs of getting prices to reflect information, are always zero, a virtual impossibility for developed to say nothing of emerging economy markets (See Grossman and Stiglitz, 1980). However, as Fama himself indicated, the case of "strong" market efficiency is purely theoretical in that it allows one to ignore the problem of deciding what are reasonable information and trading costs (Fama, 1991: 1575). In this light, Jensen's (1978) version of EMH, which says that prices reflect information to the point where the marginal benefits of acting on information (the profits to be made) do not exceed the marginal costs, seems more relevant.

In terms of rational expectations, Jones-Hendrickson (1985) questions its applicability to the Caribbean context. He cites the

high level of state intervention in the economic affairs of Caribbean economies and questions whether the Caribbean public is a sophisticated public to anticipate what macroeconomic policies will be and its ability to adjust economic behaviour accordingly, as per the rational expectations hypothesis (Jones-Hendrickson, 129). It should be noted that since 1985 the level of state intervention in Caribbean economies has been greatly reduced in the process of structural adjustment which lessens that particular objection. While the essence of Jones-Hendrickson's point is acknowledged, there is no reason not to believe that private individuals in the Caribbean utilize information available to them in a less "rational" way than is typical of developed market economies. For example, the adoption of an interbank system saw the Jamaican dollar depreciate by 100% over the period October 1990 - October 1991. Benneth (1992) argues that even though prior to the introduction of the interbank system the Jamaican exchange rate was well above the level suggested by the relative purchasing power parity principle, such a large adjustment was clearly not required to establish an appropriate relationship between the price of tradeables and non-tradeables. This suggests that something more was at play, i.e., speculation. As Benneth pointed out, the adoption of a floating exchange rate regime created an ideal environment for holders of foreign exchange to earn substantial economic rents (Benneth, 128). This is an example where private individuals in Jamaica, utilizing the information available to them, were able to respond in a rational profit maximising fashion to a change in policy, the floating of the exchange rate.

Potential for Development of Foreign Exchange Derivatives Markets

The principal currencies within CARICOM, in order of stability, are as follows:

- (i) Eastern Caribbean Dollar (EC\$);
- (ii) Barbadian Dollar (BD\$);
- (iii) Trinidad & Tobago Dollar (TT\$);
- (iv) Jamaican Dollar (J\$)
- (v) Guyanese Dollar (G\$)

Of the major currencies, the Eastern Caribbean dollar has been the most stable in recent years. It has remained at the rate EC\$1.00 = US\$0.37 since the inception of the peg in 1976. The Barbadian dollar too has remained at the rate BD\$1.00 = US\$0.50 established in recent times. The situation with respect to the Jamaican, Trinidadian, and Guyanese dollars is in sharp contrast, as various exchange rate systems (managed float, auction, crawling pegs, etc.) have been utilized in these three countries (Trinidad to a lesser extent) over the past twenty years to stabilize the exchange rate. For example, as Fig. 1 (See Appendix III) shows, in terms of the annual change, the J\$ has been extremely volatile over the period 1976-1994. The within period activity was even more

volatile. Beginning with Jamaica in 1992 and Trinidad and Guyana in 1993 floating exchange rates have been adopted in the three islands. The Trinidad and Guyanese floats were relatively successful while the Jamaican dollar deteriorated sharply upon being floated, though it has stabilized somewhat in the last couple of years.

Barbados, Jamaica and Trinidad all have vibrant stock markets. Furthermore, since 1991 cross-border trading has been ensuing among these three exchanges. Given the volatility in exchange rates outlined, foreign currency hedging instruments could play an important role in facilitating international and intra-CARICOM portfolio flows to these markets. As discussed earlier, for FDI the costs associated with fluctuating exchange rates mainly relate to operating exposure, transaction exposure and accounting exposure. Again, forward, futures and options contracts can be used to hedge against foreign exchange exposure relating to FDI.

In terms of the actual trading of hedging instruments in the two major currency markets, the Jamaican and Trinidadian dollars, the situation is as follows. In Jamaica there is scope for trading foreign exchange forward contracts on the official exchange. The fledgling derivatives market, however, was dismantled in 1991/92. In Trinidad there is presently scope for trading forward exchange contracts on the official exchange and the major commercial banks do write and sell simple derivatives contracts. However, such trading only commenced in 1993 with the abolition of exchange controls and the liberalization of the foreign exchange sector. In both instances the information with regards to the trading of hedging instruments is scant.

Conclusion

The critical challenge of economic development is to assure access to capital resources with which to initiate and sustain investment in infrastructure, industrial and human development. The ideal case is to generate a high enough level of domestic saving to facilitate such investment. However, historically, international capital has also played an important role in the economic development of countries (eg. British investment in Latin America in the 19th century). The resources available to developed economy mutual, pension and insurance funds has taken global financial intermediation to new heights. However, foreign exchange volatility poses an impediment to the flow of such funds to emerging markets. Foreign exchange forward, futures and options contracts provide investors with the capability to hedge against foreign exchange exposure. The trading of foreign exchange forward and derivatives contracts is still in the infant stage in the Caribbean. However, given the recent volatility in currencies that have been allowed to float on a free or semi-free basis these instruments could play an important role in facilitating

international and intra-CARICOM investment. In assessing the merits of foreign exchange derivatives, it is important to remember that they are designed as risk hedging instruments. However, when they are used for speculative and other purposes the potential for losses is huge. Given this potential for abuse of these financial instruments the implementation of an appropriate legal and regulatory framework is essential. In the final analysis, however, there are significant benefits to be derived from the use of foreign exchange forward and futures and options in underlying capital transactions in CARICOM.

REFERENCES

- Baillie, R. and P. McMahon (1989) The Foreign Exchange Market, Cambridge: Cambridge Univ. Press.
- Benneth, K.M. (1992) "Exchange Rate Management in a Balance of Payments Crisis: The Guyana and Jamaica Experience," Social and Economic Studies, Vol. 41, No. 4: 113-131.
- Copeland, L. (1984) "The Pound Sterling-US Dollar Exchange Rate and the News," Economics Letters, Vol. 15: 109-113.
- De Long, J.B., et al. (1990) "Noise Trader Risk in Financial Markets," Journal of Political Economy, Vol. 98: 708-738.
- Dornbusch, R. (1976a) "Expectations and Exchange Rate Dynamics," Journal of Political Economy, Vol. 84: 1161-1176.
- Dornbusch, R. (1976b) "Exchange Rate Expectations and Monetary Policy," Journal of International Economics, Vol. 6: 231-244.
- Eiteman, D.K., et al. (1992) Multinational Business Finance, Massachusetts: Addison-Wesley Publishing Co.
- Fama, E.F. (1965) "The Behaviour of Stock Market Prices," Journal of Business, Vol. 38: 34-105.
- Fama, E.F. (1970) "Efficient Capital Markets: A Review of Theory and Empirical Work," Journal of Finance, Vol. 25: 383-417.
- Fama, E.F. (1984) "Forward and Spot Exchange Rates," Journal of Monetary Economics, Vol. 14: 319-338.
- Fama, E.F. (1991) "Efficient Capital Markets: II," The Journal of Finance, Vol. XLVI, No. 5: 1575-1617.
- Frankel, J.A. (1979) "On the Mark: A Theory of Floating Exchange Rates based on Real Interest Differences," American Economic Review, Vol. 69: 610-622.
- Frenkel, J.A. (1976) "A Monetary Approach to the Exchange Rate: Doctrinal Aspects and Empirical Evidence," Scandinavian Journal of Economics, Vol. 28: 200-224.
- Greenwald, J. (April 11, 1994) "The Secret Money Machine," Time Magazine, pp. 20-23.
- Grossman, S.J. and J.E. Stiglitz (1980) "On the Impossibility of Informationally Efficient Markets," American Economic Review, Vol. 70: 393-408.

International Monetary Fund, (May, 1991) "International Capital Markets: Developments and Prospects," IMF Occasional Paper, Washington, D.C.: IMF.

Jensen, M.C. (1978) "Some Anomalous Evidence Regarding Market Efficiency," Journal of Financial Economics, Vol. 6: 95-101.

Jones-Hendrickson, S.B. (1985) "Rational Expectations, Causality and Integrative Fiscal-Monetary Policy in the Caribbean," Social and Economic Studies, Vol. 34, No. 4: 111-138.

MacDonald, R. (1985) "'News' and the 1920's Experience with Floating Exchange Rates," Economics Letters, Vol. 17: 379-383.

MacDonald, R. and M.P. Taylor (1989) "Economic Analyses of Foreign Exchange Markets: An Expository Survey," in R. MacDonald and M.P. Taylor (eds.) Exchange Rates and Open Economy Macroeconomics, Oxford: Blackwell, 1989.

McKinnon, R.I. (1973) Money and Capital in Economic Development, Washington, D.C.: The Brookings Institute.

Monteil, P.J. (1994) "Capital Mobility in Developing Countries: Some Measurement Issues and Empirical Estimates," The World Bank Economic Review, Vol. 8, No. 3: 311-350.

Mussa, M. (1976) "The Exchange Rate, the Balance of Payments and Monetary and Fiscal Policy under a Regime of Controlled Floating," Scandinavian Journal of Economics, Vol. 78: 229-248.

Patrick, H.T. (1966) "Financial Development and Economic Growth in Underdeveloped Countries," Economic Development and Cultural Change, Vol. XIV.

Shaw, E.S. (1973) Financial Deepening in Economic Development, New York: Oxford Univ. Press.

The Economist, (Sept. 25, 1993) "A Survey of Third World Finance," pp. 5-44.

The Economist, (Oct. 9, 1993) "Efficiency and Beyond," in "Frontiers of Finance," pp.3-22.

The Economist, (Nov. 27, 1993) "A Survey of Investment Management," pp. 3-30.

The Economist, (Oct. 1, 1994) "A Survey of the Global Economy," pp. 3-38.

Appendix I

Portfolio capital flows						
Countries	1976-80	1981-85	1986-90	1991	1992	1993 ¹
	in billions of US dollars, annual averages					
	Outflows					
United States	5.3	6.5	13.6	44.7	48.0	125.4
Japan	3.4	25.0	85.9	74.3	34.4	51.7
Western Europe	6.2	27.7	82.1	148.1	168.4	260.6
<i>of which: United Kingdom</i>	2.3	13.5	26.6	51.6	55.4	142.4
Developing countries ²	8.7	3.6	3.5	10.7	10.5	20.5
<i>of which: Asian NIEs²</i>	0.1	0.2	1.2	2.3	2.3	3.1
<i>Other Asia</i>	0.0	0.0	0.2	0.3	0.5	2.0
<i>Latin America</i>	0.2	0.1	2.3	7.7	6.4	14.8
	Inflows					
United States	5.2	29.4	44.7	54.0	67.2	103.9
Japan	5.1	12.6	26.9	115.3	8.2	-11.1
Western Europe	16.7	25.9	99.1	185.5	221.8	396.5
<i>of which: United Kingdom</i>	2.3	3.5	24.7	34.4	35.7	61.5
Developing countries ²	1.9	4.1	8.2	27.9	50.7	91.9
<i>of which: Asian NIEs²</i>	0.1	0.5	0.3	4.2	7.3	13.8
<i>Other Asia</i>	0.2	1.7	1.3	0.9	0.4	9.7
<i>Latin America</i>	1.3	1.2	5.4	22.0	39.7	67.9

¹Partly estimated.

²Excluding Hong Kong

Global pattern of direct investment

	1976-80	1981-85	1986-90	1990	1991	1992	1993*
	in billions of U.S. dollars, annual averages						
Total outflows	39.5	43.0	162.8	217.4	184.5	173.5	173.4
Industrial countries	38.7	41.3	154.0	203.5	173.3	158.9	152.5
<i>of which: United States</i>	16.9	8.4	25.1	27.1	29.1	34.8	50.2
<i>Japan</i>	2.3	5.1	32.1	48.0	30.7	17.2	13.7
<i>United Kingdom</i>	7.8	9.2	28.1	19.4	16.0	18.5	25.4
<i>Other Europe</i>	9.8	14.6	59.4	102.8	90.1	85.1	54.2
Developing countries	0.8	1.7	8.9	14.0	11.2	14.5	20.8
<i>of which: Asia</i>	0.1	1.1	7.8	12.5	9.3	12.9	19.0
<i>Latin America</i>	0.2	0.2	0.6	1.0	1.2	0.3	0.5
Total inflows	31.8	52.6	147.6	193.9	152.5	140.3	175.7
Industrial countries	25.3	34.9	124.1	161.0	111.0	85.9	101.5
<i>of which: United States</i>	9.0	19.1	53.1	48.0	24.0	2.4	31.5
<i>Japan</i>	0.1	0.3	0.3	1.8	1.4	2.7	0.1
<i>United Kingdom</i>	5.6	4.3	21.7	32.5	16.2	16.8	14.5
<i>Other Europe</i>	8.7	9.9	38.8	63.6	57.5	54.1	50.7
Developing countries	6.5	17.7	23.5	32.8	41.5	54.4	74.2
<i>of which: Asia</i>	2.1	4.9	13.7	20.2	23.3	32.7	47.5
<i>Eastern Europe</i>	0.0	0.0	0.2	0.6	2.5	3.4	5.0
<i>Latin America</i>	3.7	4.7	5.8	6.8	11.3	13.8	17.5

*Partly estimated.

Ratios of Gross Capital Flows to GDP, 1980 - 1989
(annual average in percent)

	Capital flow ratio		
	1980-89	1984-86	1987-89
Antigua	20.21	19.09	19.89
Barbados	8.08	7.38	6.58
Jamaica	24.39	33.61	22.81
Trinidad and Tobago	7.67	6.33	10.79
Korea	5.42	5.27	4.25
Singapore	21.15	22.99	23.07
Thailand	6.20	6.45	6.04

Source: Monteil: 1994, 324.

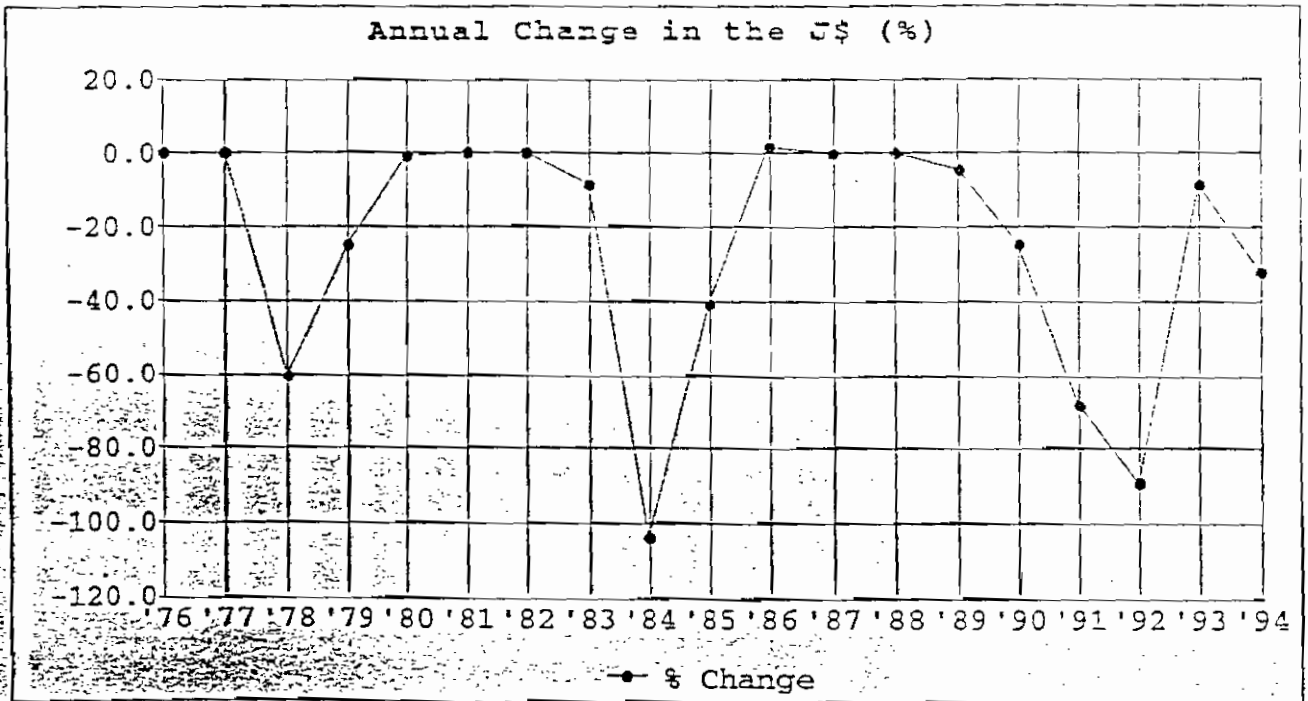
Appendix II

* Exhibit 5.3 Comparison of Foreign Currency Futures and Forward Contracts

Characteristic	Foreign Currency Futures	Forward Contracts
Size of contract	standardized contracts per currency	any size desired
Maturity	fixed maturities, the longest being typically less than one year	any maturity up to one year, sometimes longer
Location	trading occurs on the floor of an organized exchange	trading occurs between individuals and banks, and banks with each other, by telecommunications linkages
Pricing	open outcry process in the "pit" by floor traders	prices are arrived at by <u>bid</u> and <u>offer</u> quotes
Collateral	initial margin which is marked to market value on a daily basis	no explicit collateral, but standing bank "relations" necessary
Settlement	rarely delivered upon; settlement normally takes place through the purchase of an offsetting position	the contract is normally delivered upon, although the taking of offsetting positions possible
Commissions	single commission covers both purchase and later sale (roundtrip)	commissions gained through the bid-offer spreads provided to retail customers
Trading hours	traditionally traded during exchange hours; several exchanges are now moving to automated 24-hour-a-day trading	negotiated by phone 24 hours a day through bank global networks
Counterparties	unknown to each other due to the auction market structure	parties are in direct contact in setting forward specifications
Liquidity	liquid but relatively small in total sales volume and value	liquid and relatively large in sales volume compared to that of futures contracts

APPENDIX III

Fig.1.



* Calculated from IMF, IFSYB, 1994; IFS June 1995.