I. Introduction

After seven years of sharply reduced lending to developing countries in Latin America and elsewhere, capital inflows have once again surged in 1990-93. These inflows have partly gone to finance renewed trade deficits in some countries, but also show up as renewed surpluses on the overall balance of payments. The increase in foreign demand for domestic assets could have been reflected as appreciations of the local currencies, if the central banks so chose. But to a large degree, the monetary authorities have chosen to intervene to keep the exchange rate relatively stable, buying dollars to add to their reserve holdings and selling local currencies. 1/ In many countries, fears that increases in the money supply would be inflationary have prompted the central banks to attempt to sterilize the reserve inflows. The Latin American case is well documented by Calvo, Leiderman and Reinhart (1993). Some countries in East Asia and the Mideast have also faced large inflows recently, and have attempted to one degree or another to sterilize them.

A number of reasons have been given to explain the recent capital flows. Some factors are external to the countries. Calvo, Leiderman and Reinhart (1993) argue convincingly that the external factors, particularly a decline in the rate of return to capital in the United States, play a dominant role. An important piece of evidence is the pattern whereby capital seemed to be flowing, not just to countries with an established reputation for the pursuit of sound economic policies, but also to a number of emerging market economies which had not yet established a track record to the same degree.

Other relevant factors are internal to the countries, particularly market-oriented policy reforms. These reforms include trade liberalization, monetary stabilization, domestic financial liberalization, and international financial liberalization. This last policy reform, the removal of controls on the international flow of capital, is especially relevant to the question of whether these countries should or can successfully sterilize the reserve inflows. The sterilization issue has arisen in developing countries before, for example, during the commodity booms in the early 1970s for countries producing oil, coffee, or other agricultural and mineral products; in the late 1970s with the attempts at monetary stabilization in the Southern Cone of South America; and in the 1980s during the manufacturing booms in Korea

1/ The recent increased reliance in Latin America on a stable exchange rate as a nominal anchor for monetary policy has been examined by Edwards (1992b).

and Taiwan Province of China. But the recent introduction of a higher degree of capital mobility in many countries alters the problem. 1/

The conventional view of these matters is fairly clear. It is that (i) sterilization of a reserve inflow is impossible under the idealized conditions of perfect capital mobility and a fixed exchange rate, but that (ii) sterilization is possible in the short run if capital is less than perfectly mobile, and that it might even be desirable if inflation-fighting is considered sufficiently important. Indeed, if the goal is either to supply a nominal anchor to the monetary system or to prevent exporters from losing price competitiveness on world markets, then there would not be much point in pegging the exchange rate, only to let the money supply and price level increase. These goals would require that both the exchange rate be pegged and the consequent reserve inflow be sterilized.

The conventional view has recently been attacked from two opposite directions. The first attack comes in several important and influential papers by Calvo, Leiderman, and Reinhart. I will characterize the critique as "sterilization is more difficult than the conventional view has it". Specifically, they have argued in the recent Latin American context that sterilization has driven up interest rates and led to excessively high budgetary costs. Calvo (1992, 1991) writes:

> Capital inflows often accompany the first stages of stabilization programs based on exchange rates. This is, in principle, a welcome development, since these inflows contribute to the accumulation of reserves at the central bank.... However, it will be argued in this note that if the [sterilization of inflows] is carried out by expanding the stock of nominal debt, forces may be set in motion that could also jeopardize the credibility--and, hence, the sustainability--of the anti-inflationary effort.

Calvo, Leiderman and Reinhart (1993, p. 110) write that sterilization of capital inflows is "a step that tends to perpetuate a high domestic-foreign interest rate differential and that gives rise to increased fiscal burden".

At the same time, Helmut Reisen (1993 a, b) has, in provocative and appealing terms, argued essentially that sterilization is easier than the conventional view has it. Specifically, he has argued in the recent East

---

1/ As Kenen (1993) points out, the removal of capital controls has two distinguishable implications. First, as one step in the direction of a more market-oriented economy, the liberalization makes domestic assets more attractive to foreign investors (shifting downward the BP schedule in the familiar textbook model that is presented below). Here the removal of controls on outflow, e.g., repatriation of earnings, is at least as important as the removal of controls on inflow. Second, the removal of controls on inflow by definition allows foreign residents to satisfy their demand for domestic assets more easily (flattening the BP schedule in the textbook model).

Table of Contents

IMF WORKING PAPER

WP/94/159
Corrected: 2/8/95

INTERNATIONAL MONETARY FUND

Research Department

Sterilization of Money Inflows: Difficult (Calvo) or Easy (Reisen)?

Prepared by Jeffrey A. Frankel 1/

Authorized for distribution by Peter Wickham

December 1994

Abstract

Some countries undergoing exchange-rate-based stabilization and financial liberalization in Latin America, Asia and elsewhere have faced large capital inflows since 1991. Many have tried to sterilize the reserve inflows. Calvo, Leiderman, and Reinhart argue essentially that sterilization is more difficult than generally realized, due to the interest costs on sterilization bonds. Reisen argues essentially that sterilization is easier than generally believed. This paper reviews the issues in the simplest textbook model and concludes that local interest rates are not likely to rise if the source of the disturbance is an exogenous capital inflow, but will rise if the disturbance is an increase in money demand or an increase in exports.

JEL Classification Numbers:
F31, F41, G15

1/ Professor of Economics, University of California, 787 Evans Hall, Berkeley, CA 94720. The author was a Visiting Scholar in the Research Department when this paper was written. Written for a conference in Cartagena, Colombia, July 29-30, 1993 on Capital Inflows: Size, Nature and Policy Adaptations, the paper was subsequently revised. The author would like to thank Guillermo Calvo, Sebastian Edwards, Carmen Reinhart, Helmut Reisen, and Andres Velasco, for valuable discussion and comments; Alberto Carrasquilla, Roberto Steiner and other participants at the Cartagena conference; as well as Miguel Urrutia and his fellow governors at Colombia's Banco de la Republica. He would also like to thank Gikas Hardouvelis and Thierry Wizman for making available their data on country fund discounts, and Yutong Li for research assistance. The author bears full responsibility for any views expressed, including the presentation of views of others.

IMF WORKING PAPER

February 10, 1995

WP/94/159
Correction 1

Subject: Sterilization of Money Inflows - Difficult (Calvo) or Easy (Reisen)?

The following corrections have been made in WP/94/159 (December 1994):

Page i, title page: for "Authorized by Peter Wickham"
read "Authorized for distribution by Peter Wickham"

Page 1, para. 2, lines 6-9: for "not just into...Brazil and Egypt."
read "not just to...the same degree."

Corrected pages are attached.

Att: (2)

MICROFILM
ROOM C-525

0441

Other Distribution:
Department Heads
Division Chiefs