

WDP 207

**207**



World Bank Discussion Papers

---

Proceedings  
of a Conference  
on Currency  
Substitution and  
Currency Boards

---

edited by  
Nissan Liviatan

## Recent World Bank Discussion Papers

- No. 147 *The Effects of Economic Policies on African Agriculture: From Past Harm to Future Hope.* William K. Jaeger
- No. 148 *The Sectoral Foundations of China's Development.* Shahid Javed Burki and Shahid Yusuf, editors
- No. 149 *The Consulting Profession in Developing Countries: A Strategy for Development.* Syed S. Kirmani and Warren C. Baum
- No. 150 *Successful Rural Finance Institutions.* Jacob Yaron
- No. 151 *Transport Development in Southern China.* Clell G. Harral, editor, and Peter Cook and Edward Holland, principal contributors
- No. 152 *The Urban Environment and Population Relocation.* Michael M. Cernea
- No. 153 *Funding Mechanisms for Higher Education: Financing for Stability, Efficiency, and Responsiveness.* Douglas Albrecht and Adrian Zideman
- No. 154 *Earnings, Occupational Choice, and Mobility in Segmented Labor Markets of India.* Shahidur R. Khandker
- No. 155 *Managing External Debt in Developing Countries: Proceedings of a Joint Seminar, Jeddah, May 1990.* Thomas M. Klein, editor
- No. 156 *Developing Agricultural Extension for Women Farmers.* Katrine A. Saito and Daphne Spurling
- No. 157 *Awakening the Market: Viet Nam's Economic Transition.* D. M. Leipziger
- No. 158 *Wage Policy during the Transition to a Market Economy: Poland 1990-91.* Fabrizio Coricelli and Ana Revenga, editors
- No. 159 *International Trade and the Environment.* Patrick Low, editor
- No. 160 *International Migration and International Trade.* Sharon Stanton Russell and Michael S. Teitelbaum
- No. 161 *Civil Service Reform and the World Bank.* Barbara Nunberg and John Nellis
- No. 162 *Rural Enterprise Development in China, 1986-90.* Anthony J. Ody
- No. 163 *The Balance between Public and Private Sector Activities in the Delivery of Livestock Services.* Dina L. Umali, Gershon Feder, and Cornelis de Haan
- No. 164 *How Do National Policies Affect Long-run Growth?: A Research Agenda.* William Easterly, Robert King, Ross Levine, and Sergio Rebelo
- No. 165 *Fisheries Development, Fisheries Management, and Externalities.* Richard S. Johnston
- No. 166 *The Building Blocks of Participation: Testing Bottom-up Planning.* Michael M. Cernea
- No. 167 *Seed System Development: The Appropriate Roles of the Private and Public Sectors.* Steven Jaffee and Jitendra Srivastava
- No. 168 *Environmental Management and Urban Vulnerability.* Alcira Kreimer and Mohan Munasinghe, editors
- No. 169 *Common Property Resources: A Missing Dimension of Development Strategies.* N. S. Jodha
- No. 170 *A Chinese Province as a Reform Experiment: The Case of Hainan.* Paul M. Cadario, Kazuko Ogawa, and Yin-Kann Wen
- No. 171 *Issues for Infrastructure Management in the 1990s.* Arturo Israel
- No. 172 *Japanese National Railways Privatization Study: The Experience of Japan and Lessons for Developing Countries.* Koichiro Fukui
- No. 173 *The Livestock Sector in Eastern Europe: Constraints and Opportunities.* Cornelis de Haan, Tjaart Schillhorn Van Veen, and Karen Brooks
- No. 174 *Assessing Development Finance Institutions: A Public Interest Analysis.* Jacob Yaron
- No. 175 *Resource Management and Pastoral Institution Building in the West African Sahel.* Nadarajah Shanmugaratnam, Trond Vedeld, Anne Mossige, and Mette Bovin
- No. 176 *Public and Private Sector Roles in Agricultural Research: Theory and Experience.* Dina L. Umali

(Continued on the inside back cover.)

207



World Bank Discussion Papers

---

# Proceedings of a Conference on Currency Substitution and Currency Boards

---

edited by  
Nissan Liviatan

The World Bank  
Washington, D.C.

Copyright © 1993  
The International Bank for Reconstruction  
and Development/THE WORLD BANK  
1818 H Street, N.W.  
Washington, D.C. 20433, U.S.A.

All rights reserved  
Manufactured in the United States of America  
First printing October 1993

Discussion Papers present results of country analysis or research that is circulated to encourage discussion and comment within the development community. To present these results with the least possible delay, the typescript of this paper has not been prepared in accordance with the procedures appropriate to formal printed texts, and the World Bank accepts no responsibility for errors.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent. The World Bank does not guarantee the accuracy of the data included in this publication and accepts no responsibility whatsoever for any consequence of their use. Any maps that accompany the text have been prepared solely for the convenience of readers; the designations and presentation of material in them do not imply the expression of any opinion whatsoever on the part of the World Bank, its affiliates, or its Board or member countries concerning the legal status of any country, territory, city, or area or of the authorities thereof or concerning the delimitation of its boundaries or its national affiliation.

The material in this publication is copyrighted. Requests for permission to reproduce portions of it should be sent to the Office of the Publisher at the address shown in the copyright notice above. The World Bank encourages dissemination of its work and will normally give permission promptly and, when the reproduction is for noncommercial purposes, without asking a fee. Permission to copy portions for classroom use is granted through the Copyright Clearance Center, 27 Congress Street, Salem, Massachusetts 01970, U.S.A.

The complete backlist of publications from the World Bank is shown in the annual *Index of Publications*, which contains an alphabetical title list (with full ordering information) and indexes of subjects, authors, and countries and regions. The latest edition is available free of charge from the Distribution Unit, Office of the Publisher, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A., or from Publications, The World Bank, 66, avenue d'Iéna, 75116 Paris, France.

ISSN: 0259-210X

At the time this report was written, Nissan Liviatan was a consultant to the Country Operations Division, in the Brazil, Peru, and Venezuela Country Department of the World Bank's Latin America and the Caribbean Regional Office. He is a professor of economics at The Hebrew University of Jerusalem, Israel.

#### Library of Congress Cataloging-in-Publication Data

Conference on Currency Substitution and Currency Boards (1992 : World Bank)

Proceedings of a Conference on Currency Substitution and Currency Boards / [edited by] Nissan Liviatan.

p. cm. — (World Bank discussion papers ; 207)

Includes bibliographical references.

ISBN 0-8213-2521-3

1. Currency question—Latin America—Congresses. 2. Foreign exchange rates—Latin America—Congresses. 3. Demand for money—Latin America—Congresses. 4. Monetary policy—Latin America.

I. Liviatan, Nissan. II. Title. III. Series.

HC660.5.C58 1992

332.4'98—dc20

93-26386  
CIP



## Foreword

This paper provides an account of the proceedings of a conference held at the World Bank in January 1992 on currency substitution and currency boards. The discussion had two purposes. The first one was to examine the process and implications of the increased use of dollars as a substitute for domestic currency. The dilemma was whether to resist this trend or to encourage it. The second purpose was to examine the usefulness of introducing a fortified fixed exchange rate regime, administered through currency boards, as a means of stabilizing the currencies of high inflation economies. Here the dilemma is whether the rigidity introduced by the currency board is worth the possible gains in disinflation.

The main discussion focused on currency boards. These are independent institutions which replace the central bank as the sole issuer of base money in the framework of a fixed exchange rate regime. The conference reviewed the historical experience with currency boards and discussed the pros and cons of this form of commitment to the fixed exchange rate. The purpose of the conference was not to reach a consensus on the issue of currency boards (or on some alternative strong commitment to a fixed exchange rate regime) but rather, to obtain the assessment of top experts on this issue. Indeed, there were often diverse views about the performance of this institution in the past and about its applicability at the present time to the solution of high inflation in the region. There was clearly unanimity about the role of the fiscal stabilization as part of introducing the currency board, but there were different views about the specific contributions of this institution to enhancing credibility and improving fiscal discipline.

The conference discussed in detail the relevance of currency boards for Argentina, Brazil and Peru. The participants viewed favorably the performance of the quasi-currency board in Argentina but could not reach a clear recommendation for the other countries. While some participants from outside the region favored a currency board for Brazil and Peru, the policy makers of these countries were more doubtful. The arguments on both sides will, we hope, be useful in reaching a balanced policy decision in the future.

This conference was sponsored by the Latin American Region at the World Bank, and attended by experts from the World Bank, IMF, the academia and policy makers from the countries of the region.

This paper was edited by Nissan Liviatan, who was also on the conference organizing committee. Valeriano Garcia was also a member of the organizing committee.

The editor of this paper is grateful for the cooperation of the many participants at the conference, the World Bank, as the conference sponsor, and the organizing committee. The editor is particularly grateful for the support and consideration provided by Mr. Demetris Papageorgiou, Chief of the Country Operations Division in the Latin America and the Caribbean Region and Mr. Armeane Choksi, Vice President of Human Resources Development and Operations Policy. Mr. Edward T. Hearn provided technical assistance and Ms. Maria Theresa Cruz helped prepare the report.



Demetris Papageorgiou  
Acting Director  
Country Department I  
Latin America and Caribbean Region



## Contents

	<u>Page No.</u>
Summary and Evaluation of Main Topics Nissan Liviatan . . . . .	vii
Opening Statement by Mr. S. Shahid Husain . . . . .	xxiii
 I. INTRODUCTORY PRESENTATIONS . . . . .	 1
1. Dollarization in Latin America - Sebastian Edwards . . . . .	1
2. Currency Boards and Their History - Alan Walters . . . . .	4
3. Seigniorage and Official Dollarization - Stanley Fischer . . . . .	6
 <u>Introductory Presentations - Discussion:</u> . . . . .	 10
 S. Edwards, R. Hausmann, A. Meltzer, R. Mundell, S. Fischer	
 II. CURRENCY BOARDS AND THEIR RELEVANCE FOR LATIN AMERICA . . . . .	  13
1. Currency Boards for Latin America - Steve Hanke and Kurt Schuler . . . . .	13
2. Financial Aspects of Currency Boards - Guillermo Calvo . . . . .	22
3. Currency Boards and Policy Rules - Leonardo Auernheimer . . . . .	24
4. Currency Boards, Fixed Exchange Rates and Monetary Discipline - Robert Mundell . . . . .	25
5. Fiscal Prerequisites - Allan Drazen . . . . .	29
6. Rules, Real Exchange Rates and Monetary Discipline - Larry Summers . . . . .	32
7. Cost of Reneging on Exchange Rate Rule - Alex Cukierman . . . . .	33
8. Dollarization and Real Interest Rates - Larry Sjaastad . . . . .	35
 III. STABILIZATION AND CURRENCY BOARDS IN THE CONTEXT OF SPECIFIC COUNTRIES . . . . .	  37
A. Argentina . . . . .	37
1. The Convertability Plan - Domingo Cavallo . . . . .	37
2. Some Aspects of the Recent Program - Daniel Artana . . . . .	41
3. Argentina's Quasi-Currency Board - James Hanson . . . . .	43

<u>Argentina - Comments:</u> . . . . .	48
M. Selowsky, C. Bolona Behr, L. Sjaastad, R. McKinnon, S. Hanke, A. Meltzer, D. Cavallo	
B. Peru's Stabilization Policies and the Currency Board Option . . . . .	52
1. Stabilization Policies in Peru - Carlos Bolona Behr . . . . .	52
2. Inflation and Stabilization in Peru - Julio Velarde . . . . .	53
3. A Currency Board for Peru? - Carlos Paredes . . . . .	56
<u>Peru's Stabilization Policies and the Currency Board Option - Comments:</u> . . . . .	64
M. Canzoneri, S. Fischer, M. Kiguel	
<u>Comments on Argentina and Peru:</u> . . . . .	68
M. Bruno, A. Choksi, A. Walters, S. Edwards	
C. Alternative Stabilization Policies for Brazil . . . . .	71
1. The Inflation Process in Brazil - Affonso Pastore . . . . .	71
2. Inflation and the Currency Board Option - Adroaldo Moura . . . .	73
3. Inflation and Stabilization in Brazil - Arminio Fraga . . . . .	76
4. Inflation and Stabilization in Brazil - Allan Meltzer . . . . .	77
5. A Currency Board for Brazil - Leonardo Auernheimer . . . . .	83
6. Fiscal Aspects and the Currency Board - Michael Michaely . . . .	85
ROUND TABLE ON STABILIZATION AND CURRENCY BOARDS . . . . .	87
Opening Comments by Panel . . . . .	87
A. Walters, R. McKinnon, M. Michaely, A. Meltzer	
Discussion . . . . .	93
S. Edwards, K. Schuler, J. Hansen, A. Cukierman,	
Concluding Comments by Panel . . . . .	96
A. Meltzer, M. Michaely, R. McKinnon, A. Walters, N. Liviatan	
Appendix I: List of Participants . . . . .	101

## Summary and Evaluation of Main Topics<sup>1</sup>

### 1. Introduction

The conference on Currency Substitution and Currency Boards was held at the World Bank in Washington on 27-28 of January 1992.<sup>2</sup> The purpose of the present review is to summarize and evaluate the presentations of the various topics and the discussions that took place. As can be seen from the proceedings, the views on the policy issues were diverse. For example there were opposing views about the desirability of introducing currency boards in general and of their effectiveness in some specific countries. The purpose of this review is not to derive definite policy implications from the conference but rather to present and evaluate the rationale of the main views. The selection of the topics to be covered in this review is somewhat arbitrary and the presentation, which is inevitably subjective, may not do full justice to the views of the participants. The latter are presented in detail in the proceedings which are documented later on.

This conference dealt with two main issues. The first one concerned the increased use of dollars as a substitute for domestic currency in many Latin American countries as, for example, in Argentina, Bolivia, Peru and Uruguay. The dilemma is whether to resist this trend for currency substitution (CS) or to encourage it. The second issue was the desirability of applying some fortified version of a fixed exchange rate policy in the inflationary economies of the Region. The question was whether it is advisable to institutionalize a fixed exchange regime by setting up as an independent authority a "currency board" to manage and safeguard the stability and convertability of the exchange rate. The currency board is an institution that issues notes and coins, convertible into a foreign "reserve" currency, at a fixed rate. Under this system the currency board replaces the central bank as the sole issuer of base money, which is fully backed by the reserve currency. The suggestion to adopt this institutional set-up, which was widely used in colonial times, was inspired by the recent implementation of a fixed exchange rate policy with full convertability by Argentina. Although this is not a currency board in the sense of a fully independent institution, it approximates it in various respects (it is often referred to as a "quasi-currency board").

The issues of CS and currency boards (CB) are not directly related. In principle, a CB may be an appropriate policy for a country without much CS, but there are some considerations which link the two issues. Thus, some economists believe that when the use of the dollar as a means of payment becomes widely accepted, there is an advantage in stabilizing the currency by linking it tightly to the dollar.

The discussion of the desirability of a CB presupposes that the prior issue of the fixed versus flexible exchange rate regimes has been solved in favor of the former. While this was the general attitude of the conference for stabilization in high inflationary economies, it was fully recognized that

---

<sup>1</sup> I benefitted from helpful comments by Valeriano Garcia, Allan Meltzer and Demetrios Papageorgiou.

<sup>2</sup> The organizing committee consisted of Valeriano Garcia and Nissan Liviatan.

this choice involves many problems and depends on the broader policy perspectives, such as the time horizon and the ability to implement fiscal and financial supportive measures.

Given that the preference is for a fixed exchange rate as the appropriate regime for stabilizing high inflation economies, one can debate whether the CB is the most appropriate choice. It was recognized that the fixed exchange rate regime consists in fact of a broad class of institutional settings which differ in many respects, such as the existence of multiple exchange rates, controls on capital flows, convertability, commercial policy and so on. There is, however, one special characteristic of the fixed exchange rate regime which is especially relevant for the issues in question and yet is not directly measurable, namely the degree of commitment to the fixed exchange rate. Here we have again a continuum starting with the adjustable peg, going through stronger commitments in the form of the Argentinean quasi CB, and the full CB as in Hong Kong and Singapore. The "official dollarization", as in Panama where the dollar is the legal tender, represents a still stronger commitment to the fixity of the exchange rate.

The CB is a strong form of a fixed exchange rate regime in the sense that it implements full convertability and it is managed by an authority which is independent of the central bank. This institutional arrangement signals a strong commitment to the policy, i.e. one which cannot be easily reversed.

The costs and benefits of a strong commitment involve a tradeoff between credibility and flexibility and one may debate its net gain for economies with a long inflationary history. The risks associated with the CB and official dollarization were discussed at length in the conference and will be summarized later. One may also question the marginal contribution of institutionalization of the fixed exchange rate (ER), in the form of a CB, over and above the fiscal and financial preconditions. These issues were discussed fully at the conference and will be presented in some detail below.

Since the CB system, is just one form of a fixed ER regime, it can be compared with weaker and stronger arrangements. Special consideration was given to official dollarization (replacement of the national currency by the dollar). It was pointed out that one of the costs of official dollarization, not shared by the CB, is the loss of seigniorage. The significance of this consideration was discussed at some length.

Given the costs associated with a strong commitment to the fixed ER regime and the difficulties in providing the preconditions in time, some participants brought up the option of a dual currency system in which a strong currency (for example, one backed by a CB) coexists with a weak domestic currency which is related by a floating ER to the former. This was offered as a policy for the transition during which the fiscal preconditions are gradually put in place.

While the foregoing issues can be, and were, discussed on a general level, the conference devoted a considerable proportion of its program to discuss the implications of the theoretical analysis for economic stabilization in Argentina, Peru and Brazil. The Argentinean quasi CB, which was part of an impressive stabilization program, was viewed by many participants as a model of the correct blend of institutional arrangements and adjustments in the fundamentals. Some important lessons were drawn from this experience with respect to the preconditions for institutionalization of some variant of a CB system.

The drastic stabilization program adopted recently in Peru was based on an (essentially) flexible ER with monetary policy providing the nominal anchor. Some economists consider this policy as one that was bound to be ineffective in an economy where dollarization has proceeded as far as in Peru. In their view, the CB system seems to be more appropriate in this case. Yet, the fragile state of the fiscal adjustment seemed to be the drawback for those who stress the importance of the fiscal preconditions. To them, the implementation of a CB for Peru has to come jointly with a strengthening of the fiscal reforms, especially in the tax administration.

Brazil resembles the previous two cases in its recent trend towards hyperinflation but it differs radically in the currency substitution process. Instead of proceeding along the CS path, Brazil developed a most sophisticated system of indexation and other financial devices to deal with inflation. Some participants considered this as an a priori reason for rejecting official dollarization, or a CB system, as an appropriate policy for Brazil. Other participants pointed out the advantages of a CB-type regime in terms of transparency in the intractable complexity of the Brazilian financial system. The Brazilian participants did not tend to favor the CB solution and expressed the view that a standard fiscal and monetary stabilization, jointly with basic reforms, is more appropriate for their countries. In their view Brazil has exhausted the potential of monetary gimmickry and only a full fledged orthodox policy package with a flexible ER will work at this stage.

In presenting the detailed discussion of these topics we shall start with the issues concerning the process of CS before turning to the ER regimes and to CBs which occupied most of the conference.

## 2. Currency substitution<sup>3</sup>

Currency substitution (CS), often referred to as "dollarization", which has been gaining momentum in Latin America in the 1980s, is largely related to the entrenchment of inflation in the countries of this region. The replacement of domestic currencies by the dollar is a natural reaction of rational economic agents to the inefficiency of the former as a store of value and as a medium of exchange in the inflationary environment. While the CS for portfolio reasons (i.e. as a store of value) has a long tradition in Latin America, the tendency to use dollars on a large scale for transaction purposes is a more novel phenomenon. Another relatively new development in CS is the use of dollar deposits which, in the case of Peru, exceeds domestic currency deposits.

A special feature of the CS process, which has been stressed by many participants, is its tendency to persist even when inflation is brought down, at least in the medium run.<sup>4</sup> This may reflect lack of credibility in the persistence of disinflation or the fixed cost which is involved in changing a payments regime which has evolved over many years.

---

<sup>3</sup> For a discussion of issues related to currency substitution see Guillermo A. Calvo and Carlos A. Végh (1992) "Currency Substitution in Developing Countries: An Introduction", *Revista de Analisis Economico*, Vol. 7, 3-27.

<sup>4</sup> This feature of CS has been documented and analyzed in a recent study by Pablo E. Guidotti and Carlos A. Rodríguez "Dollarization in Latin America: Gresham's Law in Reverse?" IMF WP/91/117, December 1991.

What are the problems raised by the CS process, and to what extent can they be alleviated without the elimination of inflation? Is an active policy of limiting CS advisable before the basic causes for inflation are removed, or after their removal?

The CS process can be discouraged in many ways. The legal means include prohibition of dollar deposits, of holding dollars as cash and of contracting in foreign currency. In Latin America there was also the dubious practice of forced conversion of dollar deposits at an artificially low exchange rate. It must be pointed out however that all these measures are only partially effective as long as the domestic currency is unstable and no alternative indexed assets are introduced.

What is the justification for discouraging the CS process? The main argument given in the literature on this subject is that CS tends to raise inflation to higher levels than would otherwise be the case. Thus, to the extent that it is possible to discourage CS by any of the above means, inflation will be lower. This argument is based on the idea that CS, by diminishing the demand for domestic money, reduces the base of the inflation tax and therefore raises the rate of inflation which is required (in steady states) by a constant fiscal deficit.<sup>5</sup>

The foregoing argument, which is widely held, is open to criticism. Note that it assumes that the fiscal deficit (or rather, the level of real seigniorage) is arbitrarily fixed. However, in general, the size of the deficit is also an endogenous decision variable. In this case the reduction in the demand for money will reduce the policymaker's (PM's) incentive to inflate for the purpose of raising more revenues [this is a standard result in policy-game models of the Barro-Gordon<sup>6</sup> type]. According to this view, CS will reduce rather than increase the long term rate of inflation.

Another argument in favor of limitation of the CS process is based on considerations of optimal taxation.<sup>7</sup> If inflation is viewed as a tax on domestic money then there is also a case for taxing foreign money or limiting its use so as to raise more seigniorage, and thus diminish distortions originating in other taxes. However, this argument is applicable when the policy maker has full control over inflation and is capable of making credible commitments about his monetary policy. What happens if this is not the case, i.e. when the PM is not capable of credible precommitments and has only limited control over inflation? This is, for example, the case in the Barro-Gordon models under the discretionary regime where the policy maker may end up on the wrong side of the Laffer Curve, which is of course non-optimal.

Clearly, in the latter cases, inflation is excessively high and could lead to an extreme cut in liquidity with much damage to the functioning of the economy. This fact is acknowledged by PMs in high inflation economies by permitting extensive use of foreign exchange in the domestic economy. The acceptances of CS in these economies can be formal or informal, but there is limited interference in this process.

---

<sup>5</sup> In a recent paper by Miguel A. Savastano, "The pattern of currency substitution in Latin America: An overview", *Analisis Economico*, Vol. 7, June 1992. The author presents empirical evidence on the downward shift of the Laffer curve for the inflation tax as a result of introducing foreign currency deposits in Peru and Uruguay. The results are less clear for Mexico. In the case of Bolivia there did not seem to be a shift in the demand for money following the introduction of these deposits.

<sup>6</sup> See Barro, Robert, J. (1983) "Inflationary finance under discretion and rules", *Canadian Journal of Economics*, 16, pp. 1-16.

<sup>7</sup> As in E. Phelps (1973), "Inflation and the theory of public finance," *Swedish Journal of Economics*, vol. 75, pp. 71-94.



These considerations indicate that in analyzing the CS process we must draw a sharp distinction between experiences of moderate and high inflation economies (Colombia is an example of the former and Peru, prior to 1990, of the latter). In the first case inflation can be regarded as a controlled tax on money balances, whereas in the second it represents lack of control over monetary policy. While for moderate inflation economies there may be a justification for significant limiting of the CS process, the case is much weaker for high inflation economies.

These considerations lead to another aspect regarding the intervention in the CS process in high inflation economies. We have seen that since in these economies inflation is excessively high, the PM cannot afford to let liquidity drop drastically. Therefore, if he insists on preventing CS, he must provide an alternative form of a stable near-money. This was, in fact, the route taken by Brazil which developed a sophisticated market of indexed financial instruments and a complex system of daily repurchase agreements which enable effective hedge against inflation.

Thus, the alternative to CS is not a system devoid of inflation hedges (as is usually assumed in theoretical models) but rather an alternative form of indexed money. The problem is then of comparing the cost-benefit results in these alternative systems. While it is true that the indexed (Brazilian type) system does not involve loss of seigniorage to foreign governments, as is the case with CS, yet it involves other costs which may make it less efficient.

Specifically, the indexed regime requires a technology for very frequent conversions of near moneys into means of payment (and vice versa) which require a costly financial infrastructure and specialized manpower. It also requires thorough involvement of the government in financial markets. This weakens the case for severe interference in the process of CS, as it is not clear whether the system which may replace it (i.e. the indexed regime) is preferable.

Another argument in favor of discouraging CS is that it is hard to reverse. The establishment of a widely accepted payment system based on foreign exchange involves a set-up cost, and the same is true for a switch back to domestic currency.<sup>8</sup> Therefore, if the elimination of the basic causes of inflation is contemplated in the near future, it is not advisable to get involved too deeply in the CS process. If currency substitution persists for a long time, even after the basic causes of inflation are removed, the government will lose over an extended period the non-inflationary component of seigniorage (such as the one associated with the growth of the economy). It should be noted, however, that in practice it is often difficult to justify promises of pending basic stabilization policies. The very strengthening of the potential for extraction of seigniorage by restricting the process of CS is a signal in the opposite direction.

### 3. Currency boards and official dollarization

Much of the discussion in the conference was devoted to the institutionalization of the fixed ER regime by means of a currency board (CB), which will be independent of the central bank, and will have the exclusive authority to create base money. This will be done exclusively through buying or selling foreign exchange at a fixed rate. The CB must keep the ER convertible and must back the

---

<sup>8</sup> See elaboration of this argument in Guidotti and Rodriguez op.cit.

base money by at least 100% in foreign exchange. Thus, the CB replaces the central bank as far as creation of base money is concerned.

It has been noted by the participants that since the CB is just one form of the fixed ER regime one has to address first the issue of fixed vs. flexible exchange rates. It is only when this issue is settled in favor of the fixed ER that we may examine various forms of the latter regime, including the CB. In dealing with the latter problem, we have to examine the tradeoffs involved in shifting from one variant of the fixed ER regime to another. An important tradeoff is the one between credibility and flexibility, which is associated with the strength of the commitment to the fixity of the ER.<sup>9</sup>

Other considerations which would affect the foregoing choice relate to the effect of the ER regime on seigniorage. It is also important to know whether the fixed ER regime is planned as a permanent arrangement and to what extent the choice of the specific regime depends on fulfillment of fiscal and financial preconditions. Thus, a strong commitment to a fixed ER may not seem credible in the absence of prior signals concerning the supporting fiscal reforms. The issue of such preconditions concerning the fundamentals was hotly debated. As some participants put it -- without the preconditions the CB is not possible, but with them it may not be necessary. In a more general setting, the issue is to what extent can institutions play an independent role in the process of economic change.

#### 4. Fixed vs. flexible ERs

The tendency in the conference to favor the fixed ER regime as part of a stabilization package was influenced by the recent experiences of Bolivia after February 1986 and Argentina (1991-92) in bringing down inflation from very high levels using a fixed ER regime. The successful stabilization programs of Mexico and Israel did also rely on a fixed ER for part of the time. Mexico moved later to a crawling peg, which still represents reliance on an ER rule rather than on a monetary one. Several considerations speak in favor of adopting a fixed ER regime for stabilization of high inflation economies. In the very short run a fixed exchange rate with endogenous money supply may facilitate the proper amount of monetization at the lower inflation rate.

Another consideration in favoring a fixed ER regime relates to the ineffectiveness of the money supply rule when the monetary base is very small. One cannot rely on immediate remonetization of the economy with the fall of inflation because of credibility problems or because of persistence in the CS or in the indexation system. An additional consideration is the transparency of the ER rule (for the purpose of monitoring) versus the complexity of the money supply rule. The latter consideration is especially relevant for economies which developed sophisticated financial markets to deal with inflationary uncertainties.

It must be noted, however, that experience shows that there are considerable risks associated with the use of the fixed ER in stabilization, especially if the fiscal measures are not in place. Many of these programs ended in balance of payments crises and resurgence of inflation. Hence, if one

---

<sup>9</sup> It was felt that while economists know a lot about the difference between fixed and flexible exchange rates much less is known about the differences between different variants of the former regime (for example, CB vs. official dollarization).

favors the fixed ER regime one should be convinced of the readiness of the PM to implement the required fiscal adjustments.

For the medium term perspective, if one considers the fixed ER regime on a long-term basis, additional considerations come up. It was pointed out that optimal currency area arguments in favor of the fixed exchange rate are not relevant to individual country policies in Latin America (thus there is no free labor mobility across countries). It was also pointed out that even strong economies found it difficult to maintain a fixed ER in the face of external shocks, so this may turn out to be a doubtful arrangement for weak economies.

In addition, we have to mention that high-inflation-economies which were successful in stabilizing inflation did not achieve a full reduction of inflation to international levels and were forced, therefore, to continue adjusting their exchange rate (this is true for Chile, Mexico and Israel). This is a very important empirical consideration that we have to keep in mind when we think of a permanent fixed ER regime.

The foregoing remarks indicate what is well known, that there is no clear-cut case for preferring the fixed ER regime, especially for the long-term. Recognizing the risks of adopting this regime, we shall proceed on the assumption that these are outweighed by the benefits, at least for the stabilization phase. Our task is then to explore the relative costs and benefits of adopting strong forms of the fixed exchange rate regime as part of the policies of dealing with the issues of high inflation economies.

## 5. Forms of the fixed ER regime

It was pointed out by the participants that there is a spectrum of variants of the fixed ER regime. A weak form is the pegged ER where the peg is changed occasionally, as was the case under the Bretton-Woods system. Then we have the system, adopted recently in Argentina, where the central bank stabilizes the exchange rate, with the understanding that it will not print money to finance domestic credit. In this set-up, the ER is fully convertible and a devaluation requires approval of Congress.

The CB is a strong form of a fixed ER since it takes out the management of the exchange rate from the central bank's authority and puts it under the complete control of an independent institution (the CB), which operates in the manner described earlier. This set-up was implemented, historically, in Argentina and in the colonies (e.g. in the Sterling area), where the CBs used the currency of the mother country as reserves, with the reserve ratio being at least 100%.<sup>10</sup> Currently, only a few CBs are operative (these include Singapore and Hong Kong).<sup>11</sup>

A still stronger form of the fixed ER is the official use of the dollar as a national currency outside the U.S., as in the case in Panama (we have referred to this case as "official dollarization").

---

<sup>10</sup> For the history of currency boards see Alan Walters and Steve H. Hanke (1992), "Currency Boards", working paper in Economics No. 281 the John Hopkins University.

<sup>11</sup> Some participants viewed this as an indication that the CB system does not suit well the modern economic environment, while others thought that it was precisely the abandonment of strong policy rules, such as the CB, which fed the high inflation process.

## 6. Risks and costs of strong commitments to the ER

### a. Loss of flexibility

One of the characteristics of the strength of the fixed ER regime is represented by the degree of commitment to this regime. It is clear that a CB represents a stronger commitment than the peg. This means that reneging on the rules of the CB involves a higher political cost to the PM than reneging on weaker forms. Similarly, it should be still more difficult to renege on official dollarization.

Other things being equal, a stronger commitment to uphold the fixed ER increases credibility in the regime, due to the cost of reneging. On the other hand, a strong commitment entails loss of flexibility when the adjustment to external shocks could have been facilitated by a devaluation. This loss of flexibility is a real cost of attaining quicker disinflation.

### b. Seigniorage

Strong commitments which actually grant legal tender rights to the dollar (as in official dollarization), involve not only loss of flexibility but also loss of seigniorage. Under official dollarization it is the U.S. government rather than the domestic one which collects the seigniorage. Some of the participants viewed this fact as an important advantage of the CB system over official dollarization. Proponents of this view stressed that the loss of seigniorage is larger than it appears to be since we have to take into account that the demand for money (i.e. dollars) under official dollarization is much larger (due to price stability) than in the inflationary economy.

On the other hand, it was pointed out that the loss of seigniorage relates only to cash and not to bank reserves which can be invested in income earning assets. It should also be noted that if initially CS reaches an advanced stage, then the use of dollars may not be diminished substantially for quite a while, even when the CB is in place. This is especially the case since the CB enables full convertibility. Therefore one should not expect a drastic increase in seigniorage when the CB is installed. Thus, in the dollarized economies the loss of seigniorage in the official dollarization regime is a matter which may become important only when long-term considerations carry much weight.

### c. Lender of last resort

Strong forms of the fixed ER regime, such as CBs, or the quasi CB in Argentina, are based on full convertibility (this is automatic under official dollarization). This is a convenient set-up for periods of capital inflows, as is presently the case in Latin America. However, the system may be vulnerable to negative external shocks and to the possibility of runs.

The difficulty of coping with runs is due to the fact that the central bank cannot print dollars and therefore cannot act as a lender of last resort for a banking system operating on a fractional reserve basis. Since the public knows this, the likelihood of a run may increase when the dollar reserves of the country are depleted.

Several solutions have been suggested. One is to require domestic banks to hold a 100% (or close to it) reserve ratio against foreign exchange deposits. Dollar loans can then be supplied by

foreign banks which will be permitted to operate in the home country. Another solution would be for the international organizations to supply a financial safety net, provided, of course, that the fixed ER regime is adequately supported by appropriate domestic policies. Historically, CBs were supported in most cases explicitly or implicitly by external financial sources. For example, the CBs of the colonies derived their credibility from the financial strength of the mother country.

#### d. Public debt

It was claimed by some participants that the existence of a large public debt poses a severe problem for the strong forms of fixed ER regimes. It was argued that with convertibility the domestic debt can contribute to the danger of runs because it can be converted to dollars. This argument assumes implicitly that the government is stabilizing the market value of its domestic bonds. If this is not the case, the government does not have to monetize the debt -- it may let its market value drop and the interest rate rise. The problem will still exist, however, when the average age of the debt is low and the government faces large redemptions in the early phases of the new ER regime.

It is clear that these dangers can be reduced substantially by implementing fiscal reforms which can increase confidence in the ability to service the public debt on a long term basis. However, since the uncertainty about future fiscal policies in the face of shocks is always there, financial stresses may arise even when, objectively, the system is solvent. The interaction of an adverse fiscal shock with a convertible domestic debt may then raise problems for the fixed exchange rate regime.

It was also argued that a large external debt presents a similar confidence problem. When the debt service gets into difficulties it is not clear who has the first claim in the reserves of the CB -- domestic citizens or foreign debtors. This may give rise to runs on the dollar reserves.

#### e. Permanence

We noted that the experience of high inflation economies indicates that successful disinflation takes the form of a transition to moderate rather than to low inflation. This fact certainly poses a problem for strong-commitment variants of the fixed ER regime. The latter are supposed to last a long time, but experience shows that high inflation economies are not successful in eliminating inflation completely. This suggests that a strong commitment to a fixed ER regime will result eventually in an unsustainable real appreciation.

This dilemma leads to the question of whether it is possible to combine a strong commitment, like a CB, with a policy of abandoning the regime without a major crisis. For example, the Chilean Tablita policy of 1978-82 did not succeed in avoiding a severe shock when the fixed ER regime (which was a sort of a quasi-CB) had to be abandoned.

Since the abandonment of the fixed ER regime is likely to take place at some future date, the test of the fixed ER regime is in how long it can be maintained without leading to a severe real appreciation of the type which we observed in the Southern Cone Tablita policies.

#### f. Setting the initial ER

One of the risks of installing a fixed ER regime is in setting the initial level of the ER. It is always difficult to determine what the appropriate level should be – both because the specific conditions which obtain in the present and because of ignorance about the future. This problem becomes more serious when we deal with strong commitments which are supposed to be maintained for a long time. The difficulty stems from the fact that nominal wages and domestic prices are slow to adjust, especially in the downward direction. Lagged wage indexation may exacerbate this problem. Because of these reasons, it was suggested to set the initial ER at an undervalued level, i.e. with some cushion.

The common view that wages and prices are rigid should, however, not be accepted without qualifications. Downward rigidity is obviously not independent of the monetary regime. When the fixed ER regime is credible, wages will become much more flexible because firms which grant wage increases will not be able to count on the government to bail them out by official devaluations.

#### g. Dollar vs. basket

It was pointed out that pegging the ER to the dollar may entail risks because of the changes in its value relative to other currencies. This problem becomes more serious in the case of longer term commitments. The solution to this difficulty is to peg the domestic currency to a basket of currencies which reflects the composition of trade. This approach has been adopted in Israel and other countries and appears to present no special problems for the fixed exchange rate regime.

### 7. The ER regime and the fiscal stance

The fact that a fixed ER regime requires a strong fiscal support and appropriate backing by adequate foreign exchange reserves was taken as self evident by the participants. However, this raised a number of fundamental issues. First, if the supporting conditions (to which we may refer as the "fundamentals") are in place, what is the significance of the institutional commitment to the ER regime? Isn't the robustness of the fixed ER regime derived entirely from the strength of the fundamentals? What is the marginal contribution of the institutional setting over and above that of the fundamentals?

Secondly, given that the institutional form of the ER regime is important in its own right, how should it be coordinated with the other policies? Specifically, should the fiscal adjustment be completed before the CB is put into operation? This is the question of preconditions, or of sequencing of policies related to fixed ER regime.

Thirdly, a related issue which was raised by a number of participants concerns the two-way interaction between the exchange rate commitment and the fiscal policies. In particular, the issue is not only whether fiscal policies can strengthen the exchange rate commitment but also whether a strong commitment with regard to the ER can facilitate the implementation of fiscal discipline.

It seems that the position that the strength of the fixed ER is derived solely from the fiscal stance is exaggerated. It can be argued that the institutional form of the fixed ER regime has a significance of its own. But it is also true that the strength of the institutional commitment is

influenced by the fiscal stance and vice versa, i.e. the fiscal position can be improved by the ER rule. Let us examine the specific issues related to the foregoing questions.

a. Rules vs. discretion

In analyzing the role of the ER commitment we have to realize that inflation is not determined uniquely by the fiscal position. Both experience and theory show that the same fiscal deficit may be associated with different inflation rates. Thus one cannot explain the high inflation in Brazil solely in terms of its fiscal deficit (which is not unusually large).

Recent theory on policy games suggests that the ability of PMs to implement credible policy rules can lead to lower inflation rates as compared with a discretionary regime where the PM tries to extract short term benefits, in terms of seigniorage or a real depreciation, by using surprise-inflation tactics. This difference may arise even with similar fiscal deficits. It is important to stress that this argument is applicable not only for the short run but to the long run as well. This is not intended to diminish the role of fiscal deficits in generating inflation, but rather to stress that the method of conducting the nominal policies is also important.

In the spirit of this argument, some of the participants stressed the role of the CB (or some strong commitment of this type) in imposing a regime of "rules" rather than of gimmicking and daily improvisations which characterize much of the policy-making process in the high inflation economies of Latin America.

It should be stressed, however, that a transition to a rules regime cannot be obtained merely by institutional arrangements. For example, a CB will not be credible if the non-financial public sector cannot convince the public of its ability to balance the budget over the foreseeable future (this is a minimal requirement). However, this requirement by itself is still not sufficient to support a fixed ER since inflation can be accommodated by the central bank. The establishment of a currency board is one way which may help in preventing the foregoing inflationary scenario.

In addition to the fiscal requirement, there is the credibility problem associated with nominal anchors. The public cannot be expected to accept the ER rule at face value. There is always the possibility that firms will continue raising nominal wages, expecting the government to erode the real value of wages by devaluations so as to avoid real appreciation. The PM will not be able to establish credibility in the ER rule unless he is ready to accept the cost of real appreciation or to offset it by appropriate policies (such as the reduction of public sector expenditures on traded goods). In other words, the PM must be able to demonstrate (even at a cost) that there has been a change in the rule of the game between the private and public sectors. This implication of imposing a rules-regime should not be overlooked.

b. Effect of CB on fiscal position

The next question which was brought up by a number of participants is whether a CB-type set-up can facilitate fiscal reforms and contribute to fiscal discipline. While some participants expressed doubts about it, others pointed out various channels through which such an effect can take place.

One line of reasoning is that of "tying one's hands". The argument is that if a program with a high cost of reneging, such as official dollarization, has been put in operation then the government has no choice but to ensure the fiscal balance without which the program will collapse. The counterargument is that politicians can find a way out of any precommitment if the pressures of their constituencies are strong enough.

While it cannot be expected that entering into a strong ER commitment can by itself make a drastic change in the fiscal stance, it is quite likely that it can facilitate the fiscal adjustment when the basic readiness is there. In this connection we may also mention that a CB arrangement may make the fiscal policy more transparent. If the central bank is not allowed to print money to finance the deficit (since only the CB can create base money) then it is easier to monitor the fiscal policies, even though there may be ways to circumvent the rule.<sup>12</sup> Some participants expressed the view that the transparency of the limitations on public spending under a CB regime may reduce the competition among different ministries to increase their budget and thus contribute to fiscal discipline.

It was also pointed out that a CB, which can establish credibility at least for the medium run, can play an important role in reducing the heavy burden of interest payments on domestic debt, which plagued high inflation economies in recent years. These payments increased as a result of a rise in the real interest rate on domestic public debt, which also became very short term. This phenomenon was largely due to confidence problems. Under these circumstances the situation can be characterized by two possible equilibriums: the good one will occur if confidence is restored, leading to a reduction of real interest rates while the bad one will be realized when confidence is low, in which case interest rates are high. The optimistic view is that a CB system may help in dispersing fears of repudiation of domestic debt and thus contribute to a reduction in the interest burden.

#### c. Effect of fiscal stance on commitment

So far we discussed the possible marginal contribution of the ER regime to disinflation and to fiscal discipline. However, there is also the influence of the converse type (which is perhaps clearer) -- i.e. the influence of the fiscal stance on the strength of the institutional commitment with regard to the ER regime.

A theoretical model presented in the conference suggested that enhanced credibility in the fiscal program will induce the PM to choose more binding commitments for the ER. This conjecture is supported by the Argentinean experience, where the convertibility plan was adopted in conjunction with far-reaching fiscal reforms.

#### d. Sequencing

Another question in the framework of these issues was whether the fiscal steps should be completed before the implementation of the ER regime. This is essentially a question of signalling -- i.e., the public has to be convinced by the actual policy actions that fiscal policies, which are consistent with the exchange rate rule, can be expected to persist in the future. This does not necessarily require that the fiscal reforms be completed prior to the implementation of the ER regime.

---

<sup>12</sup> For example, the public sector may finance deficits by borrowing abroad, in ways which are not immediately observable, and convert the proceeds at the CB.



But the signals, in the shape of fiscal reforms and cuts in deficits, must be coordinated with the introduction of the ER regime.

e. Dual currency regimes

While there was a general agreement on the need for supporting fiscal policies it was also recognized that it may require some time to put these policies in place. As a compromise solution for the transition period, some participants suggested the possibility of a dual currency system where a strong currency, backed by a CB, will coexist with a weak domestic currency which will be linked to the former by a floating ER (a fixed exchange rate will activate Greshman's law). As the need for inflationary finance will diminish over time, the strong currency will dominate the public sector transactions and the weak currency will be pushed out of the market.

Upon reflection, this dual system appears to be very similar to the unrestricted currency substitution model, the only difference being that with the CB the government will collect some seigniorage on the hard currency. The chance that the weak currency will slip into hyperinflation will remain and so will potentially the embarrassment to the government. However, as we noted earlier, this is not any worse than allowing unrestricted CS, to which it is hard to object in a high inflation economy.

8. Stabilization in individual countries

a. Argentina

Argentina established a fully convertible fixed exchange rate regime in April 1991 according to which local currency must be fully backed by foreign exchange reserves and gold. The regime enables contracts to be denominated and legally enforced in foreign currency. Receipts from exports no longer belong to the state but rather to the exporters themselves. A devaluation of the exchange rate would require the approval of congress. Fundamental measures of trade liberalization reduced the possibility of tampering with the exchange rate indirectly. While the management of the foreign exchange is still carried out by the central bank, the new regime comes rather close to the concept of a currency board.

The Argentinean ER regime, which seems so far to be remarkably successful, provides some empirical evidence on the issue of preconditions and supportive policies. Minister Cavallo explained that the Convertibility Act was part of a major transformation of Argentina's economic and political regime which has been taking place for a number of years.

On the economic side, major fiscal reforms were undertaken before the Convertibility Act, as well as after it. The fiscal deficits of the non-financial public sector as well as the quasi-fiscal deficit of the central bank were eliminated by 1991. This was done in the framework of far reaching reforms (for example, tax on exports was eliminated).

A special feature of the recent reforms is the quick pace of privatization of state-owned enterprises, which can be regarded as a commitment to maintain fiscal balance in the future. The rescheduling of domestic and foreign debt strengthened the liquidity position of the government for the medium term.

It seems that the Argentinean quasi currency board provides very conservative answers to the various questions raised earlier with regard to preconditions and supportive policies. This experience suggest that fiscal preconditions, reforms and liberalization are indeed essential in securing the success of the fixed ER regime.

However, Mr. Cavallo also clearly stated that the exchange rate regime helped to implement fiscal discipline, making it easier to collect taxes and to restrain expenditures. The price stability enabled the presentation of a budget for 1992, thus establishing an orderly budgetary procedure for the first time in many years.

While the initial results of the convertibility plan are encouraging, some participants reminded the conference that previous experiments, such as the Tablita policy, were also initially successful, but later failed. It is clear, however, that the reforms which accompanied the present plan are of unprecedented intensity and scope.

#### b. Peru

Peru implemented a drastic stabilization-cum-reforms program in August 1990 under the Fujimori administration. This put an end to a chaotic hyper- inflationary period following the failure of the populist heterodox policies of the Garcia regime. On the fiscal side the government followed the principle of financing the budget on a cash basis. This was accompanied by tight-money and a flexible ER policy which raised domestic interest rates and contributed to the real appreciation of currency through capital inflows.

It is not surprising that Peru became a highly dollarized economy, but it is remarkable that this process has not been reversed with the stabilization program which reduced inflation considerably (from hyperinflation levels to about 60% annually). Some economists claim that the small domestic monetary base associated with the CS makes monetary policy ineffective for disinflation purposes. Those who think that a high degree of currency substitution provides a strong case for implementing a currency board system were disappointed with the decision to float the ER. This policy is considered by some to be a major policy error which led to severe problems of real appreciation.

However, the issue is not so clear cut. We note that Argentina, prior to the convertibility plan, went through a phase of tight money and a floating ER while it was laying the formulations for subsequent price stabilization. This led to a severe real appreciation, as is predicted by theory for a regime with capital mobility. This sequencing of macro policies has its advantages, and has been quite common in Latin America. The issue is whether it is desirable to move to a CB system in Peru at a later stage.

It is here that the considerations with regard to preconditions appear. It was argued that the political support for the reforms program is still weak and that there is still the danger of reversal to populist policies. This combines with the fiscal fragility of the current program. Fiscal balance on a cash basis does not provide the required support for a fixed ER regime when the true deficit is substantial. It is especially disturbing that the tax base could not be restored to historical levels. Under these conditions a fixed ER regime may not be sustainable in the event of external shocks to which the economy is vulnerable. Indeed it has been suggested by those who favor a CB for Peru that it should be implemented only in conjunction with adequate fiscal reforms.

### c. Brazil

Brazil is very different from Argentina and Peru with respect to the dollarization process. We noted earlier that instead of providing the real liquidity under inflationary conditions through currency substitution, the Brazilian government has developed since the late sixties a system based on indexed financial assets. These assets became more liquid progressively with the acceleration of inflation and were supplemented in recent years by a system of repurchase agreements of very short duration.

It appeared to some observers that Brazil has succeeded in circumventing the issue of nominal anchors. However, the fact of the matter is that while indexation helped to stabilize the economy in the sixties and seventies it became a source of financial instability in the eighties. The spectacular growth rates of the "miracle years" turned into stagnation, especially in recent years. In fact, Brazil made repeated attempts to abolish indexation (for example in the Cruzado plan of 1986) but this could not work as long as the basic causes of inflation remained.

The latter included not only fiscal imbalances but also lack of control over monetary policy. It was pointed out by the Brazilian economists at the conference that the central bank was completely subordinated to the treasury and that the various states had free access to rediscounts at the central bank. Thus, in Brazil the problem of monetary discipline is no less important than the quantitative size of the fiscal imbalance.

This point is especially relevant for the discussion surrounding the issue of a CB for Brazil. Some participants viewed it as irrelevant on the ground that the small degree of currency substitution makes it difficult to introduce a dollar-linked currency.

The Brazilian economists objected to the idea of a CB on the ground that Brazil has never tried a straightforward, orthodox stabilization policy based on strict fiscal discipline, tight money and a flexible exchange rate. This should include reforms designed to increase the independence of the central bank and to discipline the fiscal policies of the states. The need to run a modest primary fiscal surplus to ensure the sustainability of the debt service under price stability was accepted as a desirable policy goal.

In contrast to this position, the proponents of the currency board for Brazil argued that in this case the consideration of "rules versus discretion" assumes a special significance in view of lack of control, and lack of information concerning monetary behavior of the various government agencies. These participants felt that a CB may help to replace the current confused monetary system by one which is simple to use and easy to monitor. They put great emphasis on the importance of transparent rules as part of a standard orthodox stabilization. A CB which takes over from the central bank the function of creation of base money under the strict rules of the new institution was seen as a promising way of overcoming the shortcomings of the existing system.

Nissan Liviatan



**Opening Statement by Mr. S. Shahid Husain**

This conference will address some important issues on stabilization in the presence of currency substitution. The topic is central to economic stabilization in the countries of Latin America, it will also be of wider interest. We will also examine the relevance of currency boards to stabilization strategy. Argentina's recent experience with currency reform, and a quasi-currency board, makes the subject relevant to other countries facing policy options under similar macroeconomic conditions.

In the last ten years many Latin American countries have been experiencing high rates of inflation, which in some cases reached hyperinflation. The price level increased 20 million times in Argentina, 110,000 times in Bolivia, seven million times in Brazil, 140 times in Mexico and three and one-half million times in Perú. These countries did attempt to stabilize their economies, but followed different approaches.

Bolivia pursued an orthodox plan of monetary and fiscal adjustment and floating exchange rates. The plan managed to reduce inflation to 15% per year. However, monetarization is still very low and the country continues to be highly dollarized. Perú adopted a similar approach in the late 1990s and succeeded in cutting hyperinflation short. Yet, 18 months later its monthly rate of inflation is still 60%, and dollarization has continued to increase, although at a slower pace.

Brazil adopted the well-known Cruzado Plan in 1986. It failed because it did not address fundamental monetary and fiscal issues. In 1990, Brazil tried a completely different strategy; it froze almost 70% of all financial assets, set targets for monetary-based growth and fiscal accounts. It also froze public sector wages and instituted a free exchange rate for financial operations and a managed exchange rate for commercial transactions. In the end, the whole attempt failed and inflation is again 20% per month.

During the 1980s, Argentina made different attempts at stabilization without success. Chronic inflation and hyperinflation led to steady dollarization, which made stabilization increasingly difficult. By 1990 it had become clear that the preference for hard currency had been the driving force behind the sharp bouts of hyperinflation that shocked the country in 1989 and 1990. Prices had been swelled not by previous money-supply growth, but by people turning away from domestic currency in favor of holding dollars. The market had expected the money supply to expand due to the extremely weak fiscal situation. As so often happens in Brazil, this weak fiscal front also caused extremely high interest rates on government bonds. A fiscal situation that would have been strong in the 1960s, had turned out to be weak in the 1990s because of 30 years of demonetization, failed attempts to stabilize the currency and loss of credibility of the monetary and fiscal policies.

The current Argentinean Government first attempted stabilization by deepening the fiscal and monetary adjustment and floating the exchange rate. Nevertheless, the dollarization process continued and prices also increased, on occasions, at an accelerated pace. The fiscal adjustment, relying mostly on the cash management of the Treasury, worked only for a limited time. It seems that the fiscal adjustment that operated on the premise of spending only what had been cashed in, was not sufficient for the market. Finally the Government took a bold step of introducing a quasi-currency board; it initiated a fiscal overhaul and deepened the privatization program. The initial effects have been

impressive. The real interest rate and price inflation have been sharply reduced. The inflation rate, about seven percent per year, is now lower than Chile's, and the economy is recovering. The battle has not been won; questions remain relating to the need for additional fiscal adjustment and the appropriateness of the nominal exchange-rate level.

The initial accomplishments of Argentina and the open support of distinguished economists for full-fledged currency boards as part of an overall stabilization strategy for Perú and Brazil, make the subject a relevant topic for many Latin American countries. Many questions remain concerning the introduction of currency boards. For example, what are the necessary conditions for the success of currency boards? More specifically, why would a currency board succeed when a fixed exchange rate would not? What would be the exchange rate of choice? Should the currency board be full-fledged? or, would it be enough to structure it à la Argentina? What would be the necessary fiscal preconditions? What kind of safety nets would be provided to commercial banks? What would be the optimal currency? Should full dollarization be a preferred option? If so, what would be the seigniorage costs? What would be the economic costs of trying to rehabilitate the domestic currency, since the market would have chosen a different one?

There are many and diverse questions, but we have a distinguished group here. I hope that your discussions during this conference will produce some insights into the issues. Thank you very much.

## I. INTRODUCTORY PRESENTATIONS

### 1. Dollarization in Latin America - Sebastian Edwards

I'd like to thank the organizers for inviting me to this conference, although they have put me in a difficult position. I have been asked to talk about Latin America and to introduce the topic, but I have also been warned that I cannot talk about any of the countries in detail because that would preempt what the other speakers have to say. So, I have to talk about everything and nothing at all. What I have decided to do is to provide a broad perspective about currency substitution in Latin America and raise a number of issues that I think should be addressed in this Conference.

Let me start by saying that currency substitution and dollarization have a very long history in Latin America. Historically, dollarization in Latin America has been characterized mainly by two features: 1) The move out of domestic currency was made mostly into dollars. Those of you with experience in Latin America are probably familiar with the sight of businessmen carrying rolls of hundred-dollar bills. 2) The switch was made mostly for portfolio reasons - people who were moving their savings out of pesos into dollars. Domestic transactions were carried out by and large, if not exclusively, in domestic currency. It was not common to use foreign currency for transactions in the traditional episode. This type of currency-substitution is the one that has made it into the theoretical literature and the one that until very recently, if not even today, graduate students in the United States were taught - for instance, the Calvo-Rodriguez substitution models and a whole family of portfolio models of that kind.

However, anyone who is familiar with Latin American history of the last 10-15 years, is aware that we are now in the process of adopting a very different kind of currency substitution. In addition to the two characteristics that I described before, the new currency substitution that we have been seeing has two important additional characteristics: First, foreign currency is now used for current transactions in many countries. It is no longer true that the dollar is used as a store of value and the peso used for transactions. In fact, an increasing number of transactions are now carried out in foreign currency. What is interesting about this, and what has been observed in many countries, is that currency circuits occur. Here, different types of goods, particularly durable goods, make it into circuits where foreign currency is used. The first one is probably real estate, where houses and apartments are transacted in foreign currency and paid with deposits that are cleared outside of the country. Then you move to automobiles, refrigerators and appliances. A number of these goods, as inflation gets worse and currency substitution becomes more generalized, make it into the realm of those transactions that are carried out in foreign currency. As this progresses, it becomes more and more difficult to get out of this circuit; we have some kind of inertia and there is a degree of irreversibility in the currency-substitution process itself. This is very different from what we had seen in the traditional case and also different from what we have been teaching our graduate students. So, foreign currency is increasingly used for actual transactions in this new characteristic.

The second characteristic of the new currency substitution is that there are now foreign deposits in the domestic banking system. In the old times - in the 1950s - people ran out of pesos into dollars and into deposits in Miami, N.Y., etc. What happens now is that in many countries people are able to go to a local bank and open an account in foreign currency. That brings out a very

interesting situation because, in order for the foreign-currency deposits to be made, the authorities in the respective countries must allow the legal implementation of this kind of financial-system reform.

Regarding the foreign currency in the domestic banking system, the most important case is probably that of Bolivia, where foreign-currency deposits were first allowed in the third quarter of 1973, and were then confiscated in the fourth quarter of 1982. They reappeared after the end of the hyperinflation. What we have seen, and this is particularly important, is that the degree of dollarization - that is, the ratio of foreign-currency deposits to total liquidity - has increased steadily and today stands (depending on what kind of measure we use for broad liquidity) between 60-80 percent of total liquidity. This has happened even though the rate of inflation has been fairly stable. Again, what resurfaces is the issue of irreversibility. Once foreign currency is used, things don't happen the way the old portfolio model said: once inflation goes down, you will get out of foreign currency. It now appears that when currency substitution comes, it's there to stay.

The second case of dollarization, which is also very interesting is Peru. The first foreign-currency denominated deposits were allowed in Peru in the first quarter of 1978, to be forcibly converted into domestic currency in the third quarter of 1984, during the Garcia Administration. They later reappeared during the Fujimori Government and have now become extremely important - standing at between 60-70 percent of total deposits. The Bolivian and Peruvian cases are also important because they show that there is recurrence in this process. These people are forced to convert their deposits back at the official rate at a huge capital loss but then, with a change of government, enough credibility is perceived and people deposit their currency into these kinds of instruments once again. Then there's Mexico, where foreign-currency deposits existed between 1977-82, becoming important only toward the end of the period, just before the confiscation and nationalization of foreign banks.

Uruguay also offers an interesting case: foreign-currency deposits were allowed in the fourth quarter of 1974 and they remained an important feature of the banking system. They had an increasing degree of importance - between 80-85 percent - with all kinds of inflation rates, supporting the view that there is irreversibility. It doesn't matter how high the inflation rate is, the foreign-currency deposits continue to be very important in the financial system.

Let me now tell you what I think are the six important issues that we should address in this conference:

- (1) The issue of reversibility. The traditional answer to this question was: "Well, it is absolutely reversible. You have high inflation; people fly out of the domestic currency and go into foreign currency as a store of value. When inflation comes down, then the whole process is reversed; dollars are not used any more and people go back to using domestic currency." The evidence that I just mentioned and that which is going to be discussed in detail throughout this conference, suggest that this is not the case. What one has to keep in mind, however, is that all the cases that I referred to are very much characterized by the fact that the government and the authorities have decided, at some point, to allow foreign-currency denominated deposits in the banking system. One has to contrast this type of situation with, for example, that of Chile during the Allende period; anyone who is familiar with that period knows that country was 100 percent dollarized, but not in the sense that there



were foreign-currency deposits in the banking system. It was dollarized in the old way: everyone carried dollar bills in his or her pockets. There were very few transactions carried out in pesos. Despite that, today Chile has virtually zero currency substitution and foreign-currency deposits are allowed, but they are not important. So, here we have a case where currency substitution of the traditional type, without foreign-currency deposits, was completely reversed.

This raises the question of the timing when allowing foreign-currency deposits. What happened in Chile was that, during the Pinochet Government, Sergio de Castro and his team set the timing when the domestic financial sector was deregulated and legalized before foreign-currency deposits were allowed. That leads to the second issue.

- (2) Why do governments allow foreign-currency deposits? The answer is that they usually do it when inflation is high, almost getting out of control. What they are trying to do is to stop capital flight and to bring back dollars into the country. They capture some of those dollars for international reserve via a forced and usually very high reserve requirement on those foreign-currency deposits. Now, has it worked? Usually it works in the short run. Miguel Savastano of the IMF has done a very interesting study on this subject. It shows that as foreign-currency deposits are allowed, international reserves do increase ... for a while. There are cases, of course - Peru during Garcia, the first Bolivian case and the Mexican case - where the fiscal stance gets completely out of control, and the reserves are eventually lost. What we have is a crisis at the end of the road when the deposits are confiscated. So, why do governments do it? Is it worthwhile doing it? My opinion is that it is not a good idea to allow foreign-currency deposits if they are based on a loose fiscal stance.
- (3) This deals with fiscal consequences - Nissan already mentioned some of the issues. What about seigniorage? There is little doubt that there is a reduction in the base for the inflation tax. A number of studies have shown that the Laffer curve shifts down once foreign-currency deposits are allowed and currency substitution takes place. How important is this? This is something that we'll have to discuss. It will vary from country to country, but my opinion is that it is not that important in terms of sheer quantity.
- (4) This has to do with income distribution. This issue is usually forgotten. It usually happens that the people who are able to substitute away from domestic currency into foreign currency, are generally those that have a higher income level, making the inflation tax more regressive in the presence of currency substitution than when it is absent.
- (5) This question has to do with macroeconomic management. How is macromanagement affected with the existence of currency substitution? Two things are involved here: a) money-demand instability. It is clear that the demand for money is much more unstable once we have currency substitution, in particular the one that allows domestic banks to issue foreign-currency denominated deposits, and b) the effectiveness of exchange-rate policy under currency substitution - in particular the issue of devaluation.

There is quite a bit of evidence in Bolivia that the pass-through from the exchange rate to the price level is extremely high. Therefore, making use of the nominal exchange rate to adjust the real exchange rate to negative terms of trade shocks would not be a very effective policy. If one were to move, then, into a situation with a fixed exchange rate with currency substitution at the wrong rate (since we don't know what the rates would be), the question would then be: how effective would nominal devaluations be at that time?

- (6) The last issue is, should we join our enemy if we cannot defeat it, or just stand firm and continue the fight? Should we allow full dollarization and maybe go into currency boards? The answers will depend on the country and the initial circumstances that are involved. Countries with mild inflation rates that may be subject to large terms-of-trade shocks should, in general, try to maintain a certain kind of Central Bank flexibility, although my preference is clearly a type of independent Central Bank - where the authorities are completely autonomous and not related in any way to the actual Treasury. Again, the case of Chile provides an interesting example when dealing with this issue. Therefore, during this conference, I would urge the participants to look at Chile's case, which provides a wealth of information and examples not only in terms of complete reversibility out of currency substitution, but also of the function of an efficient and independent Central Bank. The Central Bank has recently seen the first transition of one board member nominated by General Pinochet to a board member nominated by the current Administration and ratified by the Senate in a very smooth, professional and efficient way.

## 2. Currency Boards and Their History - Alan Walters

I was asked to talk about the history of currency boards. I'll touch on a few things that have interested me and that are probably relevant to any country as well as Latin America. A currency board is an institutional arrangement that guarantees the exchange of domestic currency and coin, sometimes only currency but mostly both, at a fixed exchange rate with a small spread, for an anchor or metropolitan currency. Currency boards grew up fairly naturally as a consequence of colonial expansion. At first, of course, sovereigns or other metropolitan currencies were the circulating media of the dominions and the colonies. Whenever metropolitan paper currency got destroyed, however, the value of that currency was lost completely to the colony. Then they thought: "why not substitute our colonial paper currency so that if our paper is lost, it won't be like losing a Bank of England pound note." So colonial bank notes were substituted for the metropolitan currencies. The pound notes could be deposited in London and earn seigniorage. The colonial currency boards were similar in form to the Bank of England after the act of 1944. The Bank of England Act of 1944 established the currency board form for the issue department of the Bank of England. The Bank of England could issue additional currency only if it had 100 percent reserve above the 14 million fiduciary issue. Essentially that Bank was a currency board. They developed in the British colonies (later to become the Commonwealth), and similar institutions also developed in French and German colonies.

Historically they worked extraordinarily well. In Ghana there were no cocoa trees in the early 1900s. With the currency-board regime and fairly open markets, Ghana produced about 40

percent of the world's cocoa by the time (1957) it was independent. The other colonies also grew very rapidly under the currency-board system.

There are many claims for the currency boards; I'll only touch on a few of them. Some of them are quite wrong. Development economists were particularly critical of such restrictions on monetary emissions. They said that the currency boards strangle development because they don't allow money to expand adequately to serve the demands of trade. They said that the currency board simply provides an annual increment of the money supply; that it is simply the mirror image of the surplus on the current balance of payments. That view is not generally correct; it is true only under the most stringent circumstances. If there were no banks or if the banks simply acted as repositories for currency, if there were no imports or exports of capital, then it would be true. But, such conditions do not exist.

On the contrary, a currency board does allow for an expansion in the supply of credit in response to increased demand. What it does is make an institutional arrangement for fixing the exchange rate. Although currency is the only thing that is swapped, by arbitrage, bank deposits and all other financial instruments are swapped at roughly the same rate. One of the great developments of the monetary systems in the colonies was the development of deposit banking, and an enormous increase in money consistent with the needs of trade.

The reasons for the departure from currency boards are many. They were still in operation until the end of the colonial period; then - in the forties, fifties and sixties - countries went off currency boards for a variety of reasons. There were only three countries that stayed the course: Singapore, Hong Kong and Brunei. Hong Kong continued its currency board tied to sterling until 1974. Hong Kong experienced a great degree of instability during the latter part of the 1970s. The political circumstances from 1980 onwards compounded this instability.

Hong Kong returned to a currency board in October 1983. Hong Kong had ample reserves - something like 180 percent reserves/currency ratio. The inflationary pressures that Hong Kong was subject to, as a result of political turmoil and the pending 1997 reversal to China, saw the devaluation of the Hong Kong dollar, during the last week of September or first week of October, 1983, of 40 percent in one week against gold. The decision to return to a currency board on the US dollar soon saw everything reversed. What had happened during the period of floating was that goods had flowed out of the supermarkets. The shelves emptied. Then, in a reverse flow all the goods came back into the shops; the Hong Kong dollar settled into the groove.

The Government decided to fix the Hong Kong dollar at 7.8 to the US dollar and, it was an "unalloyed success" (according to The Economist). Capital flooded back. Interest rates came down to approximately US levels. It is difficult to think of a more open economy than that of Hong Kong or one that is subject to more shocks. Hong Kong is the blunt end of every protectionist operation in the western world and, yet, the currency board has worked remarkably well.

Currency boards under free trade conditions and without capital controls really do one thing for the price level: they approximately equalize the prices of tradeable goods of the two countries at the exchange rate. The currency board could not guarantee that the Hong Kong rate of general inflation would be the same as the US rate of inflation. On the contrary, Hong Kong has had an inflation rate for the past three years of over 10 percent compared with that of the United States of 4

percent. Of course, this is a characteristic of all fixed exchange rate systems. You don't have the same general inflation, even though you get the same inflation in the prices of tradeable goods. Relative productivity changes may throw the general inflation and that of tradables completely out of line and for long periods. The classic cases of fixed exchange rates - not currency boards - are: Japan and the United States. In 1947 Japan fixed the US dollar at 360 yen, I believe. It went off the fixed exchange rate in September 1971.

Japan's general inflation rate during those twenty four years has been twice that of the United States: 3.5 percent for the United States and about 7 percent for Japan. Again, productivity changes in tradeable goods, relative to nontradeable goods, are the main explanation of the difference.

What about money supply? The money supply is endogenous in the currency board system. Interest rates? Well, provided there's complete confidence in the currency board, they will be the same as the interest rates in the metropolitan currency.

Singapore is on what might be called an adjustable currency board. Singapore has adjusted her parities on a more-or-less continuous basis to maintain a low rate of inflation - lower than that of the United States since 1971-3, which has required an appreciation of the Singapore dollar against the US dollar.

That brings us to the question: which basis should one choose? Of course for Latin America the US dollar is a natural; it would be difficult to think of another currency. That can also give rise to great trouble when fixed at a high, as the history of Chile testifies. It can also give rise to a nice, smooth ride when fixed at a low, as the history of Israel and Bolivia testify. Some countries are thinking of having currency-board arrangements with the Ecu, the Deutsche mark, some even with the Yen. When we thought about fixing it in Hong Kong, we thought about all these. We decided Ecus were far too complicated; the Deutsche mark was too distant, too unknown - plus getting into the German market is not an easy job.

In 1983 we flirted with the Japanese yen, but we decided that the dollar was the most open financial market, and the most likely to remain open. It was the international currency of trade. Essentially, Hong Kong was dollarized, and I think it was the right way to go. As far as the rate, we deliberately chose to undervalue. We thought that 7.8 would be on the devalued side. I think we were right, although maybe we went too far. We anticipated more difficulties than actually occurred.

### 3. Seigniorage and Official Dollarization - Stanley Fischer

The perennial fascination with monetary arrangements, such as dollarization and currency boards, is extraordinarily impressive. The best explanation for this obsession was given by Bob Mundell, at a conference on money over twenty years ago. He said that most people have the wrong idea about what the serpent told Adam and Eve in the Garden of Eden. It was not about the obvious subject, but rather the real source of all sin, central banking. If only we could get rid of that sin, we'd be able to live in a more virtuous society.

In talking about dollarization and currency-board systems, we are in the first instance discussing fixed exchange rate systems. There has, of course, been a huge volume of work on the desirability of fixed exchange rate-systems, as well as a huge amount of experience. The analytic arguments suggest many circumstances under which a flexible exchange rate system is better, particularly for countries that have to absorb large fluctuations in the terms of trade; the empirical evidence suggests that even the leading industrialized economies, with stable political systems and strong legal systems, have not easily been able to maintain fixed exchange rates. The advocates of dollarization and currency boards are advocating for smaller countries a system that has been rejected by the larger countries.

There is one major and important exception: the countries of the European Community may be heading towards a single currency. But, they are imposing extremely rigorous convergence conditions on themselves, requiring convergence of fiscal policies, convergence of the stock of debt, and convergence of inflation rates to a low level. These are not the conditions we are looking at in most of the countries now considering dollarization or currency boards.

While the dollarization issue is related to the optimum-currency area, having an optimum-currency area is not the same as having a single country. The difference is factor mobility. We are often told that if one country uses another's currency, it is in the same economic situation as an American state, such as Massachusetts or Texas. It isn't, because factors are not free to move between that country and others in the currency area. Recent research has shown that factor movements are an important part of the adjustment mechanism to local shocks in the United States. We should also recognize that even in the United States there are very prolonged recessions in certain states; for instance, Texas was in recession for 7-8 years in the 1980s as a result of the oil shock.

How would the economy of a country using a foreign currency or a currency-board system operate? Such a country has given up on the use of monetary policy. Nonetheless it can still affect the economy through fiscal policy. Left alone long enough, economists could even come up with ways of taxing money in a dollarized system. So, in principle, a lot can be done through fiscal policy in such an economy. Only one tool of macroeconomic policy -- monetary policy -- would be taken away, or perhaps one and one half, since monetary and exchange rate policy are not quite distinguishable.

Nissan Liviatan asked me to review the arguments in my 1982 JPE paper called "The Case for a National Money".<sup>1</sup> I wrote that paper after visiting the Bank of Israel and wondering whether it made any sense for them to live through the 100 percent inflation that they were having at that time, rather than simply moving to the dollar. I'll review the arguments given there, particularly the estimates of the costs of seigniorage foregone.

The basic argument made in my 1982 JPE paper is that, in considering dollarization - and I'll come to currency boards later - a country faces a choice, in the first instance, between a floating and a fixed-rate regime. Then it faces another choice as to the type of fixed exchange rate regime: one based on a national currency and one based on a foreign currency. Assuming that a fixed exchange rate regime has been selected, then two points are important in choosing between using one's own money and using a foreign money. One would be transaction costs. The transaction costs of

---

<sup>1</sup> S. Fischer (1992), "Seigniorage and the case for a national money", *Journal of Political Economy*, Vol. 90, 295-313.

international trade would be much smaller if a foreign currency were used. This is an argument that has received attention in the European Community, with emphasis being put on the saving in not having to exchange currencies as one of the reasons to move to a single currency in Europe.

The second reason one might want to use a foreign currency is that of discipline, credibility - all those arguments that the game theory literature emphasizes. There is no question that every country for which dollarization is being seriously considered has, at some stage, lost discipline in monetary policy, has or is suffering from high inflation, and cannot clearly be said to have a central bank that is conducting policy in an optimal fashion. This is the main argument for a dollarized system, or for a currency-board system: such a system enables policy-makers to impose discipline on themselves, or makes the government more credible than any other system.

Before discussing that, let me raise the issue of seigniorage costs. In my 1982 calculations, based on data from the 1950s through about 1981, the amount of seigniorage revenue that industrialized country governments typically obtained was between 0.5 and 1 percent of GNP. Obviously, countries growing faster and countries inflating more have more seigniorage revenue. For Latin American countries at that stage, the average was a little bit above 2 percent of GNP. Some very fast growing countries in the Middle East -- this was after the oil price shocks -- were getting 8 and 10 percent per year through seigniorage. Those are evidently not realistic numbers for the long run.

What's happened to those numbers? For 1988, seigniorage proceeds are about the same: wealthy countries receive 0.5-1 percent of GNP, and developing countries generally more, for extreme instances, 3.8 percent of GNP for Greece, 3 percent for Algeria, 6 percent for Peru, 8 percent for Jordan, 6 percent for China and 4 percent for Turkey. These are large numbers relative to other sources of tax revenue.

The other calculation that is worth making if you are going to dollarize is, what is the stock of dollars that you need relative to GNP? That's obviously the stock of high-powered money that would be held in the dollarizing country if the inflation rate were that of the U.S. For the United States, that's about 5-6 percent of GNP. For countries with less developed banking systems it would be around 8-10 percent of GNP. In discussions of Eastern Europe, it is frequently said that the total value of the money supply is only a few billion dollars, so that dollarization would be very cheap. Well, that's not true because if they dollarize, the demand for dollars would correspond to the United States inflation rate, not the dollarizing country's current inflation rate. The stock costs would be somewhere between 5-10 percent of GNP.

Now, it's easy to make a fine argument that there is no cost to the United States of giving those dollars to Russia, Peru or Argentina - that the U.S. should just charge the printing costs and hand the dollars over, and everyone will be better off. However, it's a little hard to see this country being persuaded of that rational argument if you've seen the difficulties of putting together a stabilization fund for Poland or Russia. The chances of this simple-minded economists' view carrying the day are close to zero, especially if you think about what will happen if the dollarization attempt fails.

The 1982 paper emphasized the costs of introducing a foreign money. But a country can avoid most of these costs if it uses a currency-board system, since the currency board holds interest-

earning reserves against the domestic currency. A country using a currency board, and with unfettered access to the world-capital markets, could explain: "Look, all we are going to do with this 10 percent of GNP we are going to borrow, is to put it in reserves. We'll safeguard it; we'll pay you a spread on an annual basis and we'll make a profit on the other side." So, if the country had unfettered access to the capital markets, it could reduce both the flow and stock costs of using a foreign money.

The country does give up the choice of its inflation rate. The optimal inflation rate for most of the countries we are discussing is likely to be above the U.S. rate. The need to accept the foreign inflation rate imposes some loss on the dollarizing or currency board country, but the cost is the same for a currency board as for dollarization.

The argument thus far unambiguously favors a currency board over a dollarized system. Now we come to the heart of the issue, why is it that a currency-board system or a dollarized system would enable a country to do what it cannot do when it has its own currency? The basic problem with maintaining the exchange rate is a fiscal problem. Why can't you maintain the exchange rate you want without going to a currency-board system? Why does a currency board enable your fiscal authority to discipline itself better? Or does it? I'm sure Domingo Cavallo will tell us that it does work better; that it enables you to put pressure on the legislature, and that this pressure is somehow absent when the legislature knows that there is a printing press lever that can be pulled which will break budget discipline.

The theoretical arguments can go either way. What does experience show? We have to think a little about what we've seen in Hong Kong and Singapore. The fact that these countries were able to succeed under the currency-board system may not mean very much about other countries' ability to do so. To say that they have been successful because they have currency boards may be getting the argument backwards. They may have been able to maintain currency boards because they have been successful.

Other countries with currency boards failed. Let me briefly describe a related case, the famous Polish small-change inflation in 1925. The Poles had a law that the central bank could create notes only with the full backing of foreign currency. However, the treasury was entitled to mint coins without that constraint. In 1925, the Polish treasury generated a 100 percent inflation by minting coins - that's the small-change inflation.

What's the point? The point is that governments that are determined to break legal arrangements can usually do so. One way around constraints on money creation is the monetization of other government liabilities; the Treasury starts issuing bills that begin to circulate as money. Similarly in the case of the Bank of England: when after 1844 the Bank of England broke the law constraining note creation, which it did in every crisis, it was always indemnified ex post by the Parliament. So governments that need to break these laws, break them. We cannot expect a foolproof system. Still, we can ask whether discipline is better with a currency board? The answer, I believe, is that a currency board may be a reasonable way of making a transition - as in Argentina - but not a good way of running the currency for longer periods.

A final comment: It's funny how both the literature and branches of institutions don't talk to each other. The currency board and dollarization discussion should be part of the literature on

optimal currency areas and on fixed versus floating exchange rates, and it isn't. Institutionally, this part of the Bank is now thinking about recommending policies that another part of the Bank considers a major problem. The franc-zone in Africa has been in operation for 45 years with fixed exchange rates, which are now thought - since the early 1980s - to be creating severe problems for the countries in that system. The metropolitan power is not enthusiastic about changing the system, but there are good rational reasons for thinking it should be changed because of the difficulties of adjusting with genuinely fixed exchange rates. Now, we all know that that's irrational, it's money illusion or something else we don't understand, but when the problem has been around for ten years, you begin to wonder if there isn't a way out of it by allowing exchange rates to move and whether that wouldn't be a simpler way of doing things.

#### Introductory Presentations - Discussion

##### Sebastian Edwards:

I just want to make a very brief remark regarding what Stanley Fischer said with respect to the African monetary unit. I think that it is very important to consider the costs of having the types of arrangements that we are discussing here with a fixed exchange rate in an institutional sense. Once again, the case of Chile is very illustrative. The 1979-82 experience in Chile is as close as I can remember, in recent Latin American history, to a currency board, where the Pinochet regime reached the conclusion that the only way it would print money would be if it had 100 percent backing from foreign exchange. When the crisis came, the policy was maintained under the assumption that a sort of automatic adjustment would take place. The exchange rate was, of course, fixed at the wrong level. However, in this episode wages had dynamics of their own that was perverse. What happened at the end was a very deep recession that was not necessary in the adjustment process. So, the connection between different policies -- such as exchange rate and wage policies -- has to be taken into account. The fact that there is a currency board does not guarantee that wages will indeed behave in a way that is consistent with that policy.

##### Ricardo Hausmann:

I'm thinking of the seigniorage costs of having a fixed exchange rate with a national currency, versus a fixed exchange rate with a foreign currency. There's a case to be made that welfare would be higher with a national currency if there is uncertainty over the terms of trade. With the national currency you have the option to devalue, and you will exercise that option in states of the world that are more adverse to you. Even if you had an equivalent amount of seigniorage, this would be exercised when it is mostly needed. Pegging to a foreign currency would be eliminating the option to devalue and that may have welfare costs.



Allan Meltzer:

The choice between fixed and fluctuating exchange rates is one on which economists have nothing to say in general. They can choose only, if at all, in specific cases. The review of that was very useful, but I'm not sure what it has to do with the issue at hand other than to remind us that a currency board is a form of fixed exchange rate and has this problem. It seems to me the choice is not between those two systems. That discussion overlooks the issues that Sebastian Edwards began with - whether the economy is to be dollarized and whether a currency board might not be a better way to resolve the problem of capital flight. Those are areas where currency boards appear to have much merit, because they introduce benefits that are much more substantial than the problems that we have been talking about.

We are not discussing countries with a history of low inflation, but about the ones with high inflation. In such countries, the choice is between voluntary dollarization or, in many cases, capital flight, or various plans, as in the case of Brazil. These plans usually impose price and wage controls and distortions of various kinds, because the government doesn't have the credibility to generate much confidence in its statements about ending inflation.

The hard question, it seems, is the one that Stanley Fischer posed: Why is it that people would be willing to believe in a country that has announced that it's on a currency-board system, but would not believe that inflation would be permanently reduced if the currency had been changed or price-and-wage controls introduced? I believe we cannot be very confident about the answer. However, we know from history that currency boards have worked very well and, that by lowering inflation, bringing down the rate of interest, they can have some important impacts on the interest payments and the budget. This makes it possible to reduce the amount of currency that the government is required to issue.

Robert Mundell:

My comment follows along the lines of what Allan Meltzer said. The past experiences with currency boards have come from former colonies. They have been very successful because of the external constraint imposed that takes away the right to devalue. So, you get all the credibility constraints of whatever the mother country is. Apparently, there is a lot of that in Hong Kong today. However, in an independent country, with no external constraint, what reason is there for thinking that a government which can set up a currency board is not going to take it away and change the regime when it becomes necessary to do it? There has to be a confidence-building, legal mechanism that prevents them from doing it. It could be build into the constitution, but constitutions can be changed. So, somehow some external constraint needs to be involved. While I'm an enthusiastic supporter of any currency board that would get us back on a parity system, there is still a need for some external constraint. Under the IMF original articles of agreement with fixed exchange rates, the external parity commitment to a country seemed to act on a large number of countries, even though they had the right to devalue as an important kind of constraint on monetary policy and evolution toward authenticity. So, what mechanism will be used to generate confidence that the currency board will be maintained?

Stanley Fischer:

In answer to the question, whether a fixed exchange rate with a domestic currency isn't better because then you can devalue, that's not a fixed exchange rate. We are talking about situations where you've agreed never to devalue. So, that choice has been already made.

## II. CURRENCY BOARDS AND THEIR RELEVANCE FOR LATIN AMERICA

### 1. Currency Boards for Latin America - Steve Hanke and Kurt Schuler

A strong case can be made for a common currency area in the Americas (Grubel 1970 and 1973). That case is supported by both theory and precedent. Indeed, for most of the period since European colonization, a common currency area, in one form or another, has existed in the Americas.

The dollar has been the predominant unit of account in the Americas. Its value has varied, however. The dollar was first equal to the Spanish silver piece of eight, which circulated throughout the region. In the early 1800s, the dollar became equal to coins containing roughly as much silver as the piece of eight. Those coins were minted by both governments and private parties. In the mid 1800s, some nations began to define the dollar in terms of gold, while others stayed on a silver standard. By the early 1900s, gold had won out over silver. Shortly after that, from 1914 to about 1935, the spread of progressive ideas about monetary management resulted in decreased currency stability, and for lack of a better alternative, the U.S. dollar became the most prominent or key currency in the Americas. Even after the Bretton Woods system broke down in 1973 and generalized floating of currencies began, several small nations in the Americas (for instance, the Bahamas, Panama, and Haiti) chose to keep their currencies pegged to the U.S. dollar. In addition, the U.S. dollar became, through dollarization, the *de facto* national money in many Latin American countries because it served as a relatively good unit of account, medium of exchange and store of value (Melvin 1988). There have been, therefore, forces that have drawn the Americas toward a common currency area of one form or another for some time, and they remain robust today.

The major force working to tear a formal common currency area apart has been inflation caused by governments in the Americas. In the days before central banking, governments created inflation by the direct issue of paper money. Two ways were found to avoid the evils caused by such government issues and to retain some form of a common currency area. The first was the competitive issue of currency by privately-owned banks--free banking. Free banking episodes occurred in every country in the Americas that achieved independence before 1900, as well as most British colonies in the Americas (many of which did not achieve independence until the 1950s or later). Free banking episodes lasted from a few years (Argentina) to a century or more (Canada and Jamaica). With free banking, inflation was eradicated because governments no longer possessed the means to engage in inflationary finance. Private banks competed with one another to supply high-quality currencies. On the whole, free banking was quite successful in preserving the convertibility of bank notes and deposits into silver or gold coin. In every case where convertibility broke down it was caused by the threat of war (Chile) or extensive government intervention in the financial system (Argentina). Free banking systems that were less regulated (Canada and Venezuela) were more stable and experienced fewer breakdowns of convertibility than systems that were heavily regulated (the United States and Argentina) (Schuler 1992).

The other method, which was successfully employed to avoid the evils of inflation, was one in which the government issue of money was subject to extremely strict rules by means of a currency-board system. Most currency boards in the Americas and worldwide existed in British colonies. The first currency board established in the Americas was the Belize Commissioners of Currency, in 1894;

the Falkland Islands followed with a currency board in 1899. Most British Caribbean colonies had currency boards by the 1930s. Currency boards also existed in some independent nations in the Americas. Argentina introduced a currency board in 1899, and Panama established a currency board in 1903.<sup>2</sup>

The record of the central banks that succeeded free banking or currency boards has been very poor. Indeed, Latin America has been synonymous with hyperinflation. Although they have not been plagued by hyperinflation, the Caribbean nations and even the United States have suffered bouts of high inflation under central banks. Excessive money creation by central banks has caused them to break pegged exchange rates and has increased the frequency with which the Americas' common currency area has fallen apart. A common currency area continues to put itself back together, however, in the guise of a key currency system based on the U.S. dollar (dollarization).

Free banking does not exist anywhere in the world today. However, it is enjoying an intellectual revival, and has been proposed as an alternative to central banking.<sup>3</sup> Unlike free banking, the currency-board system has received little consideration as an alternative to central banking, even though the currency-board system still exists in several territories, including Hong Kong, Singapore (which has a modified currency-board system), and two places in the Americas: the Cayman Islands and the Falkland Islands. We fill that void with a discussion of currency boards as a means to provide stable money and a formal common currency area for the Americas.

#### What is a currency board?

A currency board is an institution that issues notes and coins convertible into a foreign "reserve" currency (or commodity) at a fixed rate (in contrast to a pegged rate) and on demand. It does not accept deposits. As reserves, a currency board holds high-quality, interest-bearing securities denominated in the reserve currency (or commodities). A currency board's reserves are equal to 100 percent or slightly more of its notes and coins in circulation, as set by law. (Commercial banks in a currency-board system need not hold 100 percent reserves in reserve-currency assets against their deposits, though.) The board generates profits (seigniorage) from the difference between the interest earned on its reserve assets and the expense of maintaining its note and coin circulation (liabilities). It remits to the government all profits beyond what it needs to cover its expenses and to maintain its reserves at the level set by law. The currency board has no discretion in monetary policy; market forces alone determine the money supply, where the money supply is defined as the public's holdings of notes and coins plus deposits held with the commercial banking system.

The main characteristics of a currency board are as follows.

Convertibility: The currency board maintains unlimited convertibility between its notes and coins and the reserve currency (or commodity) at a fixed rate of exchange. Although the currency board does not convert local deposits denominated in its currency into reserve assets, the board's

---

<sup>2</sup> The Panamanian currency board was for coins only. Since independence Panama has issued no paper money. Panamanians use U.S. dollars as their paper currency.

<sup>3</sup> See Dowd (1990), Friedman (1984).

swap offer on currency will be arbitrated to local deposits at commercial banks. No currency board has ever had problems maintaining its fixed rate of convertibility.

A currency board has no responsibility for ensuring that bank deposits are convertible into currency board notes. As in a central banking system, where notes are issued by the central bank rather than by a currency board, convertibility of deposits into notes is the responsibility of commercial banks. The currency board concerns itself only with the notes and coins that it issues.

The unrestricted convertibility into the reserve currency that characterizes the currency-board system means that both current-account and capital-account transactions are unhindered.

Reserves: A currency board's reserves are adequate to ensure that all holders of the board's notes and coins (liabilities) can convert them into the reserve currency (or commodity). Currency boards usually hold reserves of 105 or 110 percent of their liabilities, so that they have a margin of protection in case the interest-earning securities they hold lose value.

Seigniorage: Unlike either securities or most bank deposits, notes and coins do not pay interest. Hence, notes and coins are like an interest-free loan from the people who hold them to the issuer. The issuer's profit equals the interest earned on reserves minus the expense of putting the notes and coins into circulation. These expenses are usually less than one percent of assets per annum. In addition, if the notes and coins are destroyed, the issuer's net worth increases, because liabilities are reduced but assets do not. Seigniorage generated by a currency board is significant.

Incidentally, the only economic difference between using currency issued by a currency board, rather than reserve currency notes and coins, is that, by using a currency board's currency, the seigniorage is captured by a domestic currency board, instead of the foreign central bank that issues the reserve currency.

In addition to that economic difference (seigniorage), use of a domestic currency board issue, rather than a foreign currency, satisfies nationalistic sentiment.

Monetary policy: By design, a currency board has no discretionary powers. Indeed, its operations are completely passive and automatic. A board's sole function is to exchange its notes and coins for a foreign reserve currency at a fixed rate and vice versa. Unlike a central bank, a currency board cannot act as a tool of inflationary government finance, nor can it act as a means to satisfy state-owned enterprises' soft budget constraints because a board cannot issue a fiduciary money. Under a currency-board system, government expenditures can only be financed by taxing or borrowing.

Interest rates and inflation: Given the local currency's fixed exchange rate with the reserve asset, interest rates and inflation in the currency board country will tend to be roughly the same as those in the reserve currency country.

Historical record: The currency-board system has an excellent record (Hanke and Schuler [forthcoming]). It has existed in over sixty countries; in all cases, convertibility was maintained at a fixed exchange rate. Most currency board countries accommodated money supply growth and strong, non-inflationary economic growth. For example, in Singapore, average annual growth in real GDP

per person was 7.0 percent from 1965 to 1989, and in Hong Kong it was 6.3 percent during the same period. Moreover, Hong Kong and Singapore maintained relatively low inflation rates from 1965 to 1989.

Even though currency boards performed well, most fell victim to the intellectual fashion which favored central banking in the 1950s and 1960s. Their demise was also contributed to because most existed in British colonies, and when the colonies were granted independence, they tended to rid themselves indiscriminately of previously existing institutions.

#### Establishing a currency board

In a number of cases, including the Philippines, Palestine, and Libya, currency boards replaced central banks or other monopoly note issuers. The conversion of a central banking system into a currency-board system is rather easy. Central bank functions that do not directly concern influencing the supply of money can be delegated to other government departments or to commercial banks. The central bank's deposit-creating powers can be abolished; its deposit liabilities can be separated from its note and coin liabilities; and then it can be converted into a currency board, issuing only notes and coins. We sketch the conversion steps. (For more details, see Hanke and Schuler [1991c]).

#### Protecting the currency board

Although the currency-board system was a great economic success, most currency boards have disappeared because they lacked the political independence required to prevent them from being converted into central banks. Suspicion that a new currency board might be reconverted into a central bank would undermine the board's credibility, defeating one of the main advantages of the currency-board system. To strengthen its credibility, therefore, a currency board must be made as independent as possible.

The currency board must be insulated from any possible government manipulation and the threat of conversion to a central bank. To that end, the board's constitution should specify that a majority of the board of directors should be appointed by foreign governments or foreign private institutions. Precedents for such an arrangement exist. For example, only three of the eight directors of the Libyan Currency Board of the 1950s were Libyan nationals; the rest were British, French, Italian, and Egyptian nationals chosen by their respective governments.

The currency board could also keep its assets in a safe-haven country such as Switzerland, and should be incorporated as a private entity under the law of the safe-haven country, independent of the government of the country where the board circulates its notes and coins. (The permission of the government of the latter country would of course be necessary for the board to operate there.) The Burmese and Jordanian currency boards, among others, had their headquarters in London even after Burma and Jordan became independent.

Another way for the currency board to strengthen its credibility would be for its notes to contain a statement that they are convertible into the reserve currency at a whatever fixed rate had been initially established.

The currency board's notes should be printed outside of the country where the board operates, and should be of high-quality to protect from counterfeiting.

Why not a central bank?

To date, most have assumed that central banks are the only way to bring a formal common currency area into existence. It is extremely unlikely that central banks in Latin America will be able to do so, however. After all, central banks are responsible for the dire condition that a number of Latin American currencies are now in: think of the Cuban peso and the Brazilian cruzeiro. Latin American experience accords with the general experience of central banking in less developed countries. For of the 99 nations that the World Bank classifies as low- and middle-income, average annual inflation was 16.7 percent from 1965 to 1980 and 53.7 percent from 1980 to 1989 (World Bank 1991, p. 205).

For a common currency area to work well, people must expect that it will be credible and endure. Credibility means that people believe the institution operating the monetary system will keep its promises. However, central banks in Latin America and in other less developed areas of the world lack credibility. As evidence of that fact, we must only observe the widespread substitution of dollars and other hard currencies for local currencies that occurs throughout Latin America.

In addition to obstructing the establishment and sustained operation of a formal common currency area, the lack of central bank credibility is accompanied by relatively high domestic interest rates, regardless of the type of exchange rate regime that is employed (Hanke and Schuler 1991a and Khor and Rojas-Suarez 1991). In consequence, domestic currencies are often overvalued and economic growth is retarded, particularly in Latin America. The imposition of various government policies that represses financial markets, increases the cost of financial intermediation and promotes capital flight is also associated with the lack of central bank credibility (Hanke and Walters 1991). If that were not enough, exchange controls are often imposed in the name of defending currency stability and establishing credibility. Those controls serve as little more than a ring fence within which governments can expropriate their subjects. Contrary to their intent, exchange controls destroy credibility and foster capital flight as individuals attempt to escape from governments' exactions (Hanke and Walters 1992).

Although many attempts have been made to establish central bank credibility in Latin America, few have succeeded, even for short periods of time. Once lost, credibility is difficult to restore. Indeed, even temporary successes have taken a long period of time to establish.

In contrast to a central banking system, the currency-board system solves the problem of credibility quickly. The money supply is depoliticized because the currency board must hold 100 percent foreign reserves. Such an orthodox currency-board system does not permit a "fiduciary" note and coin issue. In consequence, currency boards have always commanded the highest degree of credibility.

Incidentally, some less orthodox currency boards have operated successfully with less than a 100 percent foreign reserve. In those cases, a small fiduciary issue was allowed because a portion of the 100 percent reserve cover was made up of domestic government securities. For example, the board in North Russia was allowed to hold up to 25 percent of its 100 percent reserve cover in

securities issued by the provisional government of North Russia (Hanke and Schuler 1991b). A less than 100 percent foreign reserve is compatible with an automatic, completely rule-bound monetary policy, provided that the reserve ratio is fixed by law and is higher than the maximum demand to redeem the currency board's notes and coins. Those conditions have been met with the currency-board system.

That is not the case with a central banking system, however. Even when central banks in less developed countries have attempted to establish credibility by imposing a reserve-cover requirement and currency convertibility, they have failed to maintain those monetary rules. Foreign reserves of less than 100 percent tempt central banks to increase their fiduciary issue and ultimately to break their pegged exchange rate. For example, Nigeria, Burma, and many other countries that discarded the currency-board system and installed central banks kept central bank fiduciary issues to a small proportion of total central bank liabilities initially, even limiting their fiduciary issues by law. As time passed, however, governments loosened the restrictions on fiduciary issues, their central banks became agents of deficit finance, and exchange rate crises eventually occurred.

#### The Argentine currency board: why didn't it work?

In addition to the British colonies in Latin America, Panama and Argentina had currency boards. The Panamanian currency board issued coins only. Since Panama became an independent nation it has issued no paper currency, using U.S. dollars instead. The Panamanian currency board operated from 1903 until sometime after 1945 (Diez Morales 1974). It operated quite smoothly, as did the currency boards of British colonies in the Americas.

The Argentine Caja de Conversion was a different matter. It existed from 1890 to 1935, yet it operated as a currency board only from 1902 to 1914 and 1927 to 1929. The government suspended convertibility of the peso into gold twice, in 1914 and 1929. What accounts for this record, which contrasts sharply with the success of the Panamanian and other currency boards in maintaining convertibility into their reserve currencies?

The purpose of the Caja was to restore the fixed convertibility of the Argentine peso into gold. However, through the 1890s the Caja merely served as a conduit for issues of fiat money. No real attempt at fixing an exchange rate was made until Law 3.871 of November 4, 1899 set an exchange rate of 0.6387084 grams fine gold per "paper" peso (44 percent of the old gold parity). The law forbade the Caja from increasing the note issue beyond the fiat issue of about 293 million unbacked paper pesos it inherited, unless the excess was backed 100 percent by gold.

The Caja was virtually without reserves until 1902, when Argentina's increasing prosperity brought an increase in the demand for new notes issued by the Caja. Gold reserves increased from 0.11 percent of circulation in 1902 to almost 73 percent of circulation in 1913 (Caja de Conversion Memoria 1933, p. 86).

Argentina suspended the gold standard on August 3, 1914 and forbade the export of gold with the outbreak of World War I (Quintero Ramos 1965, pp. 147-52). The currency-board system also ceased then, of course. At the time of suspension, the Caja de Conversion had gold reserves of over 60 percent, banks had Caja notes and gold reserves of 33 percent of deposits, and the monetary



system had gold reserves of 31 percent of notes held by the public plus deposits (Caja de Conversion Memoria 1914, p. 49; Universidad de Buenos Aires 1937, pp. 6, 57, 62, 100).

During World War I, the peso remained near its pre-war parity against the U.S. dollar and sterling. The worldwide postwar depression of 1920-1 depressed the value of Argentine agricultural exports, causing the peso to fall nearly 50 percent against the U.S. dollar. In the mid-1920s economic conditions improved, and the peso appreciated steadily, moving closer to its prewar gold parity. Argentina permitted the export of gold again in 1925 and resumed the gold standard on August 25, 1927 (Olarra Jimenez 1968, pp. 70-1, 183; Boletin Oficial de la Republica Argentina, Sept. 15, 1927, p. 2).

Argentina's return to gold convertibility and to the currency-board system was brief, however. Rising interest rates in the United States drew investment capital out of Argentina. From July 1928 to the end of 1929 Argentina suffered a gold outflow of 426 million pesos, which was roughly 40 percent of the combined reserves of the Caja and the banks. On December 16, 1929, the president of Argentina used the power granted by Law 9.506 of 1914 to suspend the gold standard by executive decree. At the time of suspension, the Caja de Conversion had gold reserves of 83 percent, banks had Caja notes and gold reserves of 12 percent of deposits, and the monetary system had gold reserves of 23 percent of notes held by the public, plus deposits (Olarra Jimenez 1968, p. 72; Boletin Oficial de la Republica Argentina, March 26, 1930, p. 1; Universidad de Buenos Aires 1937, pp. 6, 57, 62, 100; Caja de Conversion Memoria 1933, p. 88).

Argentina established a central bank in 1935 to replace the Caja de Conversion. During the 45-year life (1890 to 1935) of the Caja de Conversion, it operated as a currency board for only 14 years (1902 to 1914 and 1927 to 1929). The high reserves that the Caja de Conversion held on the eve of both suspensions of payment indicate that the suspensions were not the result of problems with the currency-board system *per se*, but rather resulted from the unwillingness of the Argentine government to allow the gold standard to operate during periods when outflows of gold created falling prices.

Argentina was a "fair-weather" adherent to the gold standard. So long as the gold standard promised rising prices and a continuing economic boom, the government favored it. As soon as the gold standard required a temporary deflation and readjustment of the economy, the government abandoned it. However, floating exchange rates did not insulate the Argentine economy from depressions: the depression of the early 1920s and the Great Depression both occurred during periods of floating rates. Deteriorations in a nation's terms of trade manifest themselves regardless of the type of monetary system a nation employs. Changes in terms of trade are real phenomena. They cannot be avoided by merely manipulating the money supply.

The currency-board system did not last in Argentina because the government would not allow it to last. Even though currency-board systems are totally rule-driven monetary systems, without discretionary powers, they are not immune from government interference. As the Argentine case illustrates, a government can ultimately revoke a currency board's franchise. That said, we must stress that it is much more difficult for the government to tamper with a currency board, particularly one designed along the lines we suggest, than with a central bank.

## Conclusion

The currency-board system is easy to establish and operate, is transparent to the public, and offers a way to make a fixed exchange rate credible. The excellent record of currency-board systems at maintaining stable, convertible currencies in the Americas and elsewhere contrasts sharply with the poor record of central banks. For the Americas, the currency-board system offers a means to establish sound money in the region and facilitate the regions' natural tendency to evolve towards a common currency area.

In closing, we must mention that a currency board is compatible with more reforms that would permit the competitive issue of currency. Indeed, in the British Caribbean colonies, notes of local currency boards and commercial banks circulated side by side from the 1920s until the 1950s, when the colonial governments decided to monopolize note issue, so that they could increase their income from seigniorage.

## Bibliography

Dowd, Kevin. 1990. The State and the Monetary System. New York: St. Martin's Press.

Friedman, Milton. 1984. "Monetary Policy: Tactics versus Strategy." In John H. Moore (ed.), To Promote Prosperity. Stanford, California: Stanford University Press.

Grubel, Herbert G. 1970. "The Theory of Optimum Currency Areas." Canadian Journal of Economics, v. 3, no. 2, May, pp. 318-24.

Grubel, Herbert G. 1973. "The Optimum Stability of Exchange rates: A Southeast Asian Payments Union." In Herbert G. Grubel and Theodore Morgan (eds.), Exchange Rate Policy in Southeast Asia. Lexington, Mass.: Lexington Books.

Hanke, Steve H., and Schuler, Kurt. 1991. Monetary Reform and the Development of a Yugoslav Market Economy. London: Centre for Research into Communist Economies.

Hanke, Steve H., and Walters, Alan A. 1991. "Financial and Capital Markets in Developing Countries", in: S. H. Hanke and A. A. Walters (eds.), Capital Markets and Development. San Francisco: Institute for Contemporary Studies Press, pp. 25-42.

Khor, Hoe E. and Rojas-Suarez, Liliana. 1991. "Interest Rates In Mexico: The Role of Exchange Rate Expectations and International Creditworthiness." IMF Staff Papers, v. 38, no. 4, December, pp. 850-871.

Melvin, Michael. 1988. "The Dollarization of Latin America as a Market-enforced Monetary Reform: Evidence and Implications." Economic Development and Cultural Change, v. 36, no. 3, April, pp. 543-558.

Olarra Jimenez, Rafael. 1968. Evolucion Monetaria Argentina. Buenos Aires: Editorial Universitaria de Buenos Aires.

Schuler, Kurt. 1992. "Overview: The World History of Free Banking." In Kevin Dowd (ed.), The Experience of Free Banking. London: Routledge.

## 2. Financial Aspects of Currency Boards - Guillermo Calvo

During the discussion we have emphasized that the issue cannot be discussed in general because it depends very much on political and other considerations. There are aspects of the discussion, however, that we have been leaving out of the picture. When we talk about LDCs or countries in need of the stabilization program, we should also keep in mind what the situation is in the rest of the world. I think that what is going on in the rest of the world now is quite different from what was going on ten years ago. We are going through a depression in the United States; interest rates have fallen in the North and there is some evidence that there is capital inflow into the Latin American countries in particular, but also into several other countries. Leo Leiderman, Carmen Reinhart and myself are working on that issue, empirically looking at several countries and we came up with a very strong impression that factors external to LDCs are playing a prominent role.

When we examine the appreciation of the real exchange rate in Peru, one reaction is to say: "Well, it must be due to something that the Peruvians are doing." Then you look at Argentina and try to explain it by the present Plan, but there may be other things going on. My impression is that maybe there is something that is pushing the capital out of the North and into the South. Thus, in discussing this issue, I think it's important to keep that in mind because the potential problems that I see with a currency board don't surface when things are looking up and, in particular, when capital is flowing into a country. Stan Fischer made it very clear this morning that the currency board works when the currency board works, and that has a lot to do with the state of the country; when things are looking well, then the currency board tends to work. When there are capital inflows, it is much easier to manage a currency board than when there are capital outflows.

The experiment with the currency board in Argentina during the early part of the 20th Century is of particular interest. The Historian A.G. Ford covered the period up to about 1914. A currency board was instituted in 1900 and was kept functioning until 1913. According to Ford, in addition to the currency board there was a sizeable amount of foreign exchange in the hands of Banco Nacion; which operated in a way as to stabilize the money supply. When there was a big withdrawal of gold, the currency board and money supply tended to go down, and credit to be contracted. However, the Banco Nacion reacted by putting more gold into the currency board (La Caja de Conversion) and, therefore, money and credit were stabilized. There is a very telling diagram in the book that shows the role of the Banco Nacion to stabilize money supply and credit.

Since there was no Central Bank, apparently commercial banks held relatively large cash-deposit ratios of over 40 percent. Despite the actual success for so many years, there was still a substantial interest-rate differential between Argentina and London. Argentina's rate was about 8 percent, while in London it was 4 percent or less. Obviously, investors were always a little bit nervous. There is evidence that there was a bit of a fiscal deficit in 1913 (unfortunately we don't have the figures on the deficit), but the evidence is that the deficit was nothing like the ones we see today. There is no evidence that there was an appreciation of the real exchange rate either, although the latter could be due to the large immigration flows at the beginning of the century.

In 1913, the first tremors of the war started to be felt in financial markets. Interest rates went up and, apparently, Argentina's short-run credit was not fully rolled over. There was a big outflow of gold from Caja de Conversion; Banco Nacion did not have enough to compensate for that.

Besides, the associated monetary contraction implied a drastic contraction of credit, which was not politically acceptable. Thus, Argentina's currency became inconvertible and it was actually devalued. The Caja de Conversion stopped functioning. I find this to be a very fascinating case because in a ten-year expansion (in which exports grew by about 9 percent per year) one can see the Caja functioning very well; then, there is a bit of trouble in the rest of the world, requiring capital outflows, and the currency board collapses.

When I read this I thought that this was precisely what worried me about currency boards now. One possible advantage that Argentina has is that having gone through a long period of slump, output now is perhaps way below the potential, and hence there is still room for output to grow, without requiring a lot of capital accumulation. If you put that together with the fact that there seems to be a fast capital reflow into Latin America, then a system like the currency board could be quite feasible. It would have the added advantages of credibility and other issues that have already been widely discussed.

I know little about Peru, except that it has had a big inflation and the monetary base is very low. It's another case where a currency board may be useful because there is room for expansion and it is accompanied by capital reflow into the area. The currency board could, therefore, provide some nominal anchor, although that doesn't imply, of course, that the real exchange rate would be stabilized.

I'd like to mention something to put ourselves in the frame of mind that I think we need in order to start thinking about solutions to prevent self-fulfilling crises or crises provoked by external phenomena. The historian Ford points out that while Argentina was having this crisis in 1913, Canada and Australia - which were under the same system - did not have crises. His explanation is that they were more like colonies compared to Argentina, so the City was better predisposed to assume the role of the lender of last resort. That's the factor that's missing from a currency board nowadays. We don't have a lender of last resort. Thus, setting a currency board would be much like having New Jersey set up banks without the benefit of these banks belonging to the Federal Reserve System: it would be unlikely to be deemed a good policy. Thus, an unwelcome characteristic of currency boards is that it makes domestic banks particularly vulnerable to runs. In the midst of a run, increasing interest rates may not be effective if you are a debtor. It may work for a little while only because some people want to speculate, but eventually it kills you from a fiscal point of view.

Thus, a currency-board system should evolve into something a little bit more stable, for example, by exercising some control on preventing a run from being so sudden and large that there is not even time for the Government to react. This could be achieved by, for instance, taxing short-term capital movements, or by increasing the maturity of banking deposits. More drastically, perhaps you would want the banking system to be a part of the Federal Reserve System. If you are pegging, you have to peg all the way, also your banks must be "pegged." Incidentally, I don't think that dollarization is a solution, unless you can have dollarization without domestic banks. You have dollarization and you also use foreign banks; the foreign banks have total backing or the same backing that the American banks have here. Otherwise, these kinds of systems are vulnerable. Are these issues worth worrying about? I think the jury is out on that one. Argentina lived for 13 very successful years that way.

I'd like to finish my presentation by saying that, under the present circumstances when funds appear to be coming back to Latin America, where in some countries output is below potential and the monetary base is very small, a currency board doesn't sound to me like a crazy idea. If, additionally, it helps to augment the credibility and the clarity of the program, it is something that we should take very seriously. At the same time, one should be aware of the limitations and try to devise ways so that when the ax falls, and it will fall because there will be future shocks (interest rates in the United States may shoot up at any moment), we are better prepared to cushion the blow and not generate a costly crisis.

### 3. Currency Boards and Policy Rules - Leonardo Auernheimer

When we discuss currency boards we are discussing simultaneously two elements that are not necessarily related. The first element is the choice of a variable exogenously determined by the monetary authority, i.e., the nominal exchange rate. The second element is the choice of the manner in which the variable is to be determined (i.e., via a strict rule, rather than by discretion), as well as the prohibition of engaging in any operations other than those emerging from passive foreign exchange transactions. I suspect the second of these two elements (rules rather than discretion) to be the most significant, the one that in my opinion makes currency boards attractive, and the one that essentially separates proponents from opponents. It is the second element that frees the Central Bank from the domination of the Treasury, but makes him a slave of predetermined rules.

There are two specific points concerning currency boards points that I wish to discuss in some detail. The first is that a currency board does not preclude the central government, as it shouldn't, from receiving the gains from the creation of money. It is the central government (the "state", if you wish) that ultimately holds the right to produce base money, and unless interest is paid on money, those gains (i.e., the "profits" from the currency board) should accrue to the central government, in the same way as the profits of a corporation are distributed to its shareholders. The important thing is the correct definition of those true net profits to be distributed.

The first component of those profits is the real interest received on the currency board's reserves, presumably originating on the holdings of minimum risk securities denominated in terms of the reserve currency -- World Bank bonds, perhaps. In principle, these reserves should be equal, at the fixed exchange rate, to the monetary base. The second component is the product of the base times the rate of inflation (which of course will be equal to the inflation rate of the reserve currency). A very simple calculation shows that if this distribution of profits is followed at every period, then reserves will be permanently equal to the outstanding monetary base. Notice that this is different than the conventional measurement of the revenues from money creation. In particular, increases in the monetary base brought about by growth of the economy do not generate an immediate "profit" to be distributed to the central government, but go to increase reserves *pari passu* with the base, and it is only the interest on these reserves that should be considered as profit.

The important point concerning the eventual accrual of the revenues from money creation to government, under a currency board, is not so much that those revenues are low, but that the Treasury acts as a passive recipient rather than as a dictator of monetary policy. All the essential properties of a currency board would be preserved if the rule for the exogenous exchange rate would

not be a "fixed" value, but rather a pre-announced path involving a constant rate of devaluation (and inflation), as in the case of the infamous "tablita" enacted in the Southern Cone in the late seventies.

The second point is the need for a careful consideration of the various ways in which the rigor of a currency board can be circumvented by a creative finance minister seeking additional financing. In fact, it would be interesting for somebody to write a critical review of all those possible ways -- there would be a few Latin American former finance ministers who could do an excellent job. I am saying this half tongue-in-cheek, but only half.

As mentioned before, the currency board's net profits, appropriately defined, should be transferred to the Treasury. These profits depend on the size of the base, and under the usual fractional reserve commercial banking system for a given demand for money (say, M1), the latter depends on the required reserve deposits ratio. We should expect, then, a rise in this required ratio as one of the ways for the banking authority to increase the board's profits.

In a similar vein, consider the case of a rule by which the Central Bank is effectively precluded from changing the monetary base except as a result of sales or purchases of foreign exchange, but without specifying an exogenous exchange rate. On the surface this could seem a fairly attractive scheme, almost a "monetarist's dream", assuring (if the distribution of net profits is timed correctly) that the monetary base is equal to foreign exchange reserves, while letting the exchange rate float. It is, nevertheless, a scheme compatible with whatever rate of inflation (devaluation) is necessary for financing government expenditures via the distribution of those profits. Of course, this is not what we define as a "currency board", but in some cases has been considered as a close substitute without realizing that, ultimately, foreign exchange is just another commodity purchased with the revenues from the inflation tax.

#### 4. Currency Boards, Fixed Exchange Rates and Monetary Discipline - Robert Mundell

Lord Robbins once quoted Keynes asking this question of Harry Dexter White, one of the architects of the World Bank and International Monetary Fund: "Why do you Americans insist on calling the bank the Fund and the fund the Bank?" That was amusing at the time because the IMF, which was designated a "Fund," had responsibility over international money and short-term capital, whereas the World Bank, which had responsibility over long-term capital and development, was closer to being a fund than a bank. The secret, of course, was that, back in the 1940s, Congress would not have accepted an International Monetary "Bank" because it would have smacked of supragovernment overtones, which was anathema to conservative opinion in the dominant superpower. I make that comment now because this Conference about money and exchange rates at the World Bank indicates that the Bank is starting to think about money and banking questions, whereas the Fund, with its insistence on flexible exchange rates, has removed itself from the international monetary sphere.

We are really talking about these issues now because of the breakdown of the fixed exchange rate international monetary system in 1971. It so happened that I got involved in the currency board issue in late 1971 and early 1972 when, after the Smithsonian Agreement in December, the United States had devalued the dollar. In 1971, after the August breakdown of the international monetary

system, I had been invited by the Agency for International Development (AID) to give the Panamanian Government some objective advice on questions relating to the Panamanian currency. The Government of Panama had asked me to look into the question of what should be done with respect to the Panamanian currency as a result of the flexible exchange rate. The Panamanian balboa was metallic currency and, of course, the main circulating medium was the U.S. dollar. The Treaty of 1903, in which Panama's independence from Columbia was recognized, had committed Panama not to create a paper currency. The problem for Panama, after the agreement at the Smithsonian Institution in which the dollar was devalued against gold from 1/35 to 1/38 ounces, was whether to keep the balboa's parity against gold (and thus appreciate against the dollar) or to maintain the balboa at parity with the dollar and thus formally devalue.

I spelled out the different options to the reigning General, Omar Torrijos, and I told him that the simplest procedure would be to maintain the existing system by keeping the balboa on the dollar standard, thus changing the gold parity with the dollar. This had the advantage of maintaining the international financial center intact. The alternative policy would be to adhere to gold at the formal parity, create a paper currency (which it could easily do by negotiating a change in its 1903 treaty), and attempt to create a financial center independent of the dollar. A disadvantage of that alternative would be that Panama, with an independent paper currency, might lose its monetary and fiscal discipline, and eventually succumb to the inflationary policies of so many other Latin American countries. Torrijos immediately said that his country was not sophisticated enough to go its own way in matters of international finance, and he correctly, in my opinion, opted to keep Panama on the dollar.

A follow-up of that was the question of how Panama could get a little bit more of the seigniorage from monetary expansion. They wanted to keep the dollar, but they also wanted to get a bit of the seigniorage, if they could. However, they still had that Treaty, which, it is true, they could change at any time, allowing them to create a paper currency. But, in that case, they would have been afraid of capital flight going the way of all the other Latin American countries. I told them that Panama was unique as a country because with the dollar as the circulating medium, it could get some seigniorage merely by issuing an (overvalued) metallic currency. As long as it was overvalued, they would get the full difference between the cost of metal and coinage, and its face value. It would be Uncle Sam that would lose the seigniorage on it. At Panama's request, I made up a plan for a complete metallic currency for Panama. After it was completed, Harry Johnson and I went to see the President (Lakas) about it; he informed us, however, that one of the Colonels had insisted upon a 7.5 percent cut on all the currency that was created. As a result, he and Torrijos had decided to scrap the idea! So, not much more came of that little episode in the monetary history of Panama.

Soon after, in 1973, the unanchored fixed exchange system that had been set up at the Smithsonian Institution broke down into flexible exchange rates, leaving each country to solve the problem of stopping inflation on its own. The external discipline of the anchored fixed exchange rate system that has characterized the Bretton Woods era was supposed to be replaced by internal discipline. Unfortunately, internal discipline proved to be inferior to the external discipline. Rampant world-wide inflation broke out, feeding and aggravated by the explosion in oil prices.

Flexible exchange rate advocates had recommended fixed monetary-expansion rates to replace the balance-of-payments discipline of anchored fixed exchange rates. Few countries could adhere to this discipline and those that did, found that velocities and reserve ratios were unstable. Many



countries began to search for an alternative stabilizing mechanism in the form of a price rule, stabilizing their currencies to one of the major blocs, the SDR or a basket of currencies tailored to individual national specifications. What emerged from the movement to flexible exchange rates was a system of large currency blocs.

The surge of interest in currency boards in recent years is, I think, a reflection of prevailing dissatisfaction with the flexible exchange system. There is a hankering for a kind of monetary discipline imposed by an unbreakable rule, removed from the political jungle.

It is necessary to consider two types of discipline. First of all, there is monetary discipline. A currency-board system automatically provides monetary discipline. With a currency board, the money supply of a country can only be increased when there is a balance of payments surplus, so that reserve backing for it is automatically assured. Like all true fixed exchange rate systems, a currency-board system also means that the country accepts, within some range of temporary variation, the inflation rate of the currency bloc to which its own currency is pegged.

The other kind of discipline is fiscal discipline. A currency board, like the gold standard, implicitly imposes fiscal discipline. There was fiscal discipline under the gold standard because budget deficits would threaten to undermine monetary discipline, leading to a rupture of confidence, outward speculation, devaluation or a breakdown of the monetary standard. This forced countries to follow conservative fiscal policies. The whole of the 19th Century is the story of a fiscal discipline operated systematically in all the major countries, vastly superior to anything that has existed since 1971. Movement to a currency-board system locks a country in not only to monetary but to fiscal discipline.

Make no mistake about it. The adoption of an unabrogable currency-board system is a major step. If it means anything, it means monetary and fiscal discipline. If governments move to a currency-board system (or any other unabrogable fixed exchange rate system), budget deficits become possible only to the extent that the public, at home or abroad, buy government securities to finance the deficit. Of course, movement to an unabrogable currency-board system would enormously strengthen the market for government bonds, up to a point of saturation. If fiscal deficits proceed beyond this point of saturation, a default premium will enter into interest rates. Devaluation risk has been removed by the introduction of the currency board, but default risk replaces it.

National bankruptcy is the suicide of government, and hence its last resort. That is why fiscal undiscipline always breeds monetary instability. Every government would choose to devalue or otherwise to scrap the exchange rate system, including the currency-board system, rather than face bankruptcy. A rule would have to be made that would prevent a country from avoiding the discipline by overturning the system. A constitutional amendment forbidding borrowing from the Central Bank would remove the incentive for any government to overturn the system, and force governments to fiscal discipline.

The connection between fiscal and monetary stability is better known now than it was earlier. The Economic Community, for example, has wisely imposed fiscal provisions as conditions of entry to the final stages of European Monetary Union; the provisions relate not only to a country's budget deficit, but to its ratio of debt to GNP as an index of saturation. Countries with large debt ratios and substantial budget deficits will not be able to join until they have put their fiscal house in order.

Any rational government that decides to adopt a currency-board system (or any other unabrogable fixed exchange system) will automatically plan on fiscal solvency. Once the exchange rate is fixed, the government will no longer have to worry about monetary policy; its sole macroeconomic task is to maintain fiscal solvency.

A currency-board system is a special case of fixed exchange rates. While a currency-board system enables a country to have a distinct currency of its own, it does not allow a country to have a different monetary policy than it would have if it were part of a monetary union. If, for example, Panama were to print a paper balboa, and adopted an unabrogable currency-board system, its monetary policy would not be any different than it is with the present use of the U.S. dollar. In the real world, of course, it may be difficult to create the guarantees that would make it unabrogable.

A close cousin of a currency-board arrangement is a system of fixed exchange rates where the money supply is allowed to increase or decrease automatically with surpluses and deficits in the balance of payments. The gold standard represented an example of this system as did, for many countries, the arrangements under the Bretton Woods system. In my opinion, a fixed exchange rate system, with automatic adjustment, represents the best international monetary system.

I believe that a currency-board system represents an interesting option for small countries which can peg their currencies to a larger neighbor. Small, open countries have a chance to gain far more from stability than they lose from seigniorage. For small countries, international prices are fixed and the exchange rate becomes the most important economic variable, to which other variables can adapt.

It is a less attractive option for larger countries for various reasons. One reason is that the loss of seigniorage becomes more important. A second reason is that international goods represent a smaller share of total output, and it is less clear that all prices should be made to adapt to the international prices. For very large, closed economies, the share of international goods may be so small that a currency-board system would be the famous case of the tail wagging the dog. A third reason is that a country that adopts a currency board loses monetary power unless it achieves a vote on the policy-making boards that determine the currency area's rate of monetary expansion and inflation. I can remember Charles Kindleberger's joke about Canada as the thirteenth district of the Federal Reserve System. Fixed exchange rates or a currency board in Canada would be more popular if Canada had 1/13 of the votes on the open market committee!

I want to emphasize that whenever I have spoken in the past about the desirability of a system of fixed exchange rates, it has always included an automatic mechanism. Fixed exchange rates only work when the authorities commit monetary policies to balance-of-payments equilibrium. There is no point in announcing a currency "peg" when the country is flooded by new money produced by central banks to finance budget deficits. The new ex-bloc Republics should realize that.

A currency board is not an all-or-nothing entity. There are different kinds of currency boards. You can have a 110 percent currency board, or an 80 percent, 50 percent, and even a 40 percent one, depending on the fraction of reserves committed to back the currency and the speed of adjustment; the smaller the reserve level, the faster the speed of adjustment. The bigger the country, the lower the reserve ratio that is consistent with stability and confidence. I think that all the small

Central American countries would be absolutely right with maybe an 80 percent reserve. Even Britain in the 19th Century had its fiduciary issue that was not 100 percent currency. The larger countries don't need to have 100 percent reserves. If its high-powered money is 10 percent of the money supply, then 40-50 percent reserve ratio may be enough to run the system.

In general, I would enthusiastically support a return to a fixed rate system based on a monetary mechanism of adjustment to the balance of payments; I would also laud the initiative of some small countries to move toward currency boards as a considerable improvement over the present system.

#### 5. Fiscal Prerequisites - Allan Drazen

I've been asked to speak about issues of fiscal prerequisites or preconditions for official dollarization or currency boards. What I decided to do was to try to summarize a number of the points that have already been made, rather than to bring up new things. I'll also point out a number of questions, which I think should be discussed some more.

In listening to the discussion today, one gets the sense that there are really two ways in which the question of the optimality of currency boards or dollarization can be used and has been used. One is the issue of whether exchange rates should be fixed. The second is, if it's decided that it's optimal to fix exchange rates, what's the best way to make fixed exchange rates credible? These are different questions. One is really about whether to fix exchange rates; the other is about how to fix them. The second issue is thus whether currency boards, dollarization, or something like that will actually make the fixing more credible and effective. However, the questions are related because the benefits and the costs of fixing the exchange rates will clearly depend on how it's done, how credible it is, and what the possibilities of reversal are.

In talking about the benefit and the cost of fixing the exchange rates, the cost would be loss of flexibility and the benefit would be credibility. Let me start with the issue of loss of flexibility and simply summarize what has been said so far. The basic problem, as many people have said, is the need to adjust the real exchange rate under certain circumstances. The wrong level of the real exchange rate is not simply due to monetary shock, nor to the fact that we don't have a currency board. It is not even due to policy shocks per se. In discussing issues such as fixed exchange rates, I think we have to ask: how can we adjust to the shocks that would require a change in the real exchange rate when a policy tool has been removed? There is no question that adjustments will be needed and the basic issue that has come up today, and the one Nissan asked me to talk about, is the crucial role of fiscal equilibrium when exchange rates are fixed. It is useful to divide this into two parts.

The first part is the need to eliminate the fiscal side as a cause of disequilibrium. If not eliminated, budget deficits themselves will be a reason why the real exchange rate will have to be adjusted. Hence, Stan Fischer's discussion of the loss of seigniorage having to be replaced is really a key question. It's a question that has come up in the EMS; it's the question of fiscal harmonization. A precondition for successful exchange rate fixing is a certain harmonization of fiscal policies between the countries that are doing the fixing.

The second sense in which fiscal equilibrium is necessary is that not only should the fiscal side be eliminated as a cause of disequilibrium, but also the ability of the fiscal system to respond to disequilibria that arise elsewhere should be enhanced. To put it in a slightly different way, it is an issue not simply closing the deficit today, but in making structural changes in the fiscal system to ensure that the deficit remains closed, and also making structural changes that ensure that the fiscal system can adjust. Hence, fiscal prerequisites for dollarization are more fundamental than simply eliminating the current deficit. This might seem obvious, but when we look at an economy where the initial problem was a poorly developed fiscal system (and that is often the cause of the high inflation to begin with), it is too much to expect that the fiscal system will be able to correct the wrong real exchange rate, and to correct it forever in the absence of a monetary tool. I think that the issue of lack of flexibility, and the burden it puts on the fiscal system, is really a very large problem.

To keep my comments short, I'll move on to the other part of the trade-off: credibility. It consists of the fiscal aspects of the game of tying one's hands via a fixed exchange rate system. There are a number of issues here; let me just mention two of them. One that came up before is the fact that the credibility that one gets by tying one's hands may lead to lower borrowing rates. Lower inflation means lower nominal interest rates; lower nominal interest rates mean lower costs of financing borrowing and, hence, there is a clear fiscal connection. The problem one has is that it's unclear what this credibility bonus is. If one looks at moderate-inflation countries, such as the EMS, what is clear is that countries that joined the EMS saw a reduction in the rate of inflation. What's unclear is if the reduction in the rate of inflation came from joining the EMS per se. Whether there was really a credibility bonus, as opposed to the fact that inflation would have come down anyway is unclear.

When we look at higher inflation countries, at first the benefit seems very clear. High-inflation countries that move to fixed exchange rates see very sharp decreases in inflation rates and, hence, very sharp decreases in nominal interest rates. One does not really want to ask whether the nominal interest rate comes down. The question one wants to ask is: does it come down from the existence of a fixed exchange rate or a currency board, per se? Or, does it come down because of other reasons? Would alternative ways of fixing the exchange rate have had the same effect?

The second fiscal aspect of tying one's hands is the issue that tying one's hands via a fixed exchange rate puts a constraint on running the deficit. This is really the key question. If the fixed exchange rate system that we choose reduces the possibility of using seigniorage to finance the deficit, will this lead to greater fiscal restraints? The first thing one can say is that the inability to print money to finance the deficit still allows the issuance of bonds. Countries can still run large budget deficits even with fixed rates. We've seen this in many countries. In fact on the theoretical side, as we know, this could actually work the other way. The inability to use seigniorage to finance the deficit, may in fact make for higher deficits, rather than for lower deficits in the future.

Looking simply at the question of whether the exchange rates are fixed and what the fiscal aspects are, there's no reason to believe that a fixed exchange rate system will put a discipline on the fiscal authorities. If we agree that fiscal restraint is crucial in the whole story, the question one really wants to ask is the next one: can a currency board, or even more extreme, dollarization, put more discipline on the fiscal side than simply fixed rates themselves? Another way to put this is, if one thinks of a currency board or dollarization as a mechanism that appears to be harder to reverse, if

irreversibility seems to be a question here, does having a mechanism that appears to be harder to reverse put more discipline on the fiscal authority? The reason I say that it appears to be harder to reverse is that the first thing we have to ask is: is it really harder?

I think that it is harder to reverse, but one should not take as given. Clearly, there are all sorts of shocks to a system that will lead to the collapse of the currency board, and will also lead to legislation that will abolish the currency board. What sort of legislation supports a currency board may be crucial. In short, one question that should be discussed more is: is dollarization or currency boards as a way to enforce fixed rates really harder to reverse?

When thinking of a currency board or dollarization, as opposed to just fixed rates, would having a no-escape clause or a much harder escape clause in a fixed-rate system be a good or bad thing for the fiscal side? One can draw an analogy. If one looks at something like legal parking, long prison terms for parking illegally would probably be very effective in stopping illegal parking. I think that there's no question about that. Moreover, if we have long prison terms for illegal parking, they will probably induce better behavior in people who decide to park illegally. However, to say that they will induce less illegal parking is not to say that it is a good thing. As we know, sometimes the possibility to park illegally is quite important in an emergency.

Put more generally, when one thinks of fiscal misbehavior or lack of fiscal restraints, fiscal misbehavior reflects not only bad intentions, but also the response to unfavorable shocks. Irreversibility may be a good thing in some situations, but a very bad thing on other occasions. We come to the trade-off. Sure, it enhances credibility, but at times one doesn't want the constraint that it implies. Fiscal misbehavior may simply reflect the optimal response to unfavorable shocks, or it may reflect a political system that makes changes quite difficult. Once again, it is not clear that a currency board would really improve things in that dimension.

It is often argued that a currency board will have a positive effect on fiscal discipline. As Stan Fischer pointed out, that really is a central question. Is there a reason to believe that this more extreme form of fixing - currency board or dollarization - will enforce fiscal discipline? What I want to do is not so much give answers, but simply ask questions. What exactly is the mechanism by which a currency board or dollarization will enforce fiscal discipline? For various mechanisms one can think of empirically, how much of an effect will there be?

When I thought about the question I realized that it's far easier to find mechanisms to get around a currency board, mechanisms by which smart politicians, or perhaps not-so-smart politicians, can run deficits even under a currency board. Moreover, looking at the political problems of reducing spending and increasing taxes, not only in underdeveloped countries, but even in countries like the United States, I would find it very surprising if the mere existence of a currency board, or dollarization, could fix those political problems. One way one might want to look at it to start to get some answers is that the agreement on the institution of a currency board may simply be an indicator that underlying problems have been solved. Either fiscal equilibrium or the existence of a currency board may simply be an indicator that the political climate is conducive to fiscal agreement. Another thing that may be useful to discuss is a suggestion made by Sebastian Edwards. If one believes, as I and probably many people do, that political problems make it difficult to reduce fiscal deficits, one then has to ask more carefully what these political problems are. How exactly does it work? Sebastian made the comment that the problem may be that there are several monetary

authorities and that each of them can issue money. Perhaps we want to see a currency board as a coordinator of these different groups.

I want to conclude by raising another question. It's the question of the transition as it pertains to fiscal issues. Would the credibility that one might gain from the no-escape clause make the transition to fiscal balance less costly? That is, if one says that the problem is that we can't reduce the deficit immediately, but maybe the currency board will help us to reduce the deficit and make the transition to a low deficit easier, then one has to ask the question: how exactly would a currency board help to make this transition? The arguments that come to mind are the arguments of Sargent. In talking about large inflation, Sargent presented evidence that there is a quick adjustment, either measured in terms of unemployment rates or GNP. Later research has shown that it is not really clear whether this is correct in the countries that he looked at and it is, certainly, not clear in a large cross section of countries. If one, in fact, thinks that a move to a fixed exchange rate, or to a very harshly fixed exchange rate such as dollarization, may induce higher rather than lower unemployment, then from the fiscal side it is not at all clear that the transition to a lower deficit would be that much easier. In short, identifying mechanisms by which dollarization makes the transition easier is not so simple.

#### 6. Rules, Real Exchange Rates and Monetary Discipline - Larry Summers

There are many strategies one could take to prevent disastrous results of reckless driving. One could pad cars well so that accidents are less of a problem, as was fashionable in Latin America in the 1970s. One could "lurch away" and put daggers in steering wheels, giving people a very strong incentive to drive safely. Another tactic is to remove car accelerators so that no one can drive faster than sixty miles an hour. Or one could simply put an end to the issue by taking the train. Likening the possibilities for currency substitution to these options for accident prevention, I believe that the currency-board strategy is analogous to removing car accelerators while dollarization is like taking the train.

In the economic sense, I am puzzled by the case for a currency board and against dollarization. A currency board has the benefit of a little more reversibility than dollarization; if you figure things out incorrectly, you can somehow change back. But most of us would agree that in the nations where these issues are discussed, the benefit of being able to pull out is more than offset by the uncertainty that the ability to withdraw creates.

The second and more important argument for a currency board is that it preserves the seigniorage while dollarization does not. This, however, is only a local advantage; when dollarization is pursued, the seigniorage is not lost but transferred. And through international institutions, the seigniorage could be refunded to the countries involved. In the long term, finding ways of bribing people to dollarize, or at least give back the extra currency that is earned when dollarization takes place, ought to be an international priority. For the world as a whole, the advantage of dollarization seems clear to me and I am surprised that it is not a more prominent item on the visionary agenda in this Conference.

The other issue I will raise is the real exchange rate. If you looked at all the exchange rate movements in Latin America over the last two decades, several questions come to mind. How much of the variance in real exchange rates reflects adjustment to long-run fundamentals due to changes in terms of trade? How much of the variance represents adjustment to modifications in the productivity of capital and the desire to save? And how much of it was caused by speculation on things monetary? My guess is that about 92% of the variance can be explained by the last category rather than the first two. This is a strong argument for either a currency board or a dollarization type of strategy over a system of flexible exchange rates.

There is a concern that the exchange rate in Argentina is highly overvalued. I do not know if the people who claim that a haircut is more expensive in Buenos Aires than in Washington are right or wrong. But it seems clear that there is a large risk that these arrangements will begin with some substantial error in the exchange rate. If that is true, then all this brave talk about most of the volatility in the past has been incorrect and the argument that a more fixed exchange rate would be beneficial does not stand up.

I am left a little bit uncertain as to where I come down, but with a sense that there is a need to think about the right institutional arrangements to insure that the initial euphoria does not produce an overvalued real exchange rate. Whether that can be achieved by beginning with a large nominal devaluation is clearly an open question. Perhaps the right answer lies in even more emphasis on initial fiscal stringency; perhaps the right answer lies elsewhere.

#### 7. Cost of Reneging on Exchange Rate Rule - Alex Cukierman

The following remarks are based on joint work in process with Miguel Kiguel and Nissan Liviatan (A related but not identical framework by the same authors appears in "How Much to Commit to an Exchange Rate Rule? Balancing credibility and Flexibility", Revista de Analisis Economico, 7, 73-90 June 1992). The comments made by Alan Walters and Robert Mundell, that various exchange-rate systems should be regarded as a continuum, will be my point of departure. Alternative systems can be considered as institutional devices with different degrees of commitment. For example, an irrevocably fixed exchange rate, to the extent that it exists, is a very strong commitment. The other extreme, a completely flexible exchange rate represents a situation in which there is no commitment. Adjustable pegs and currency boards represent intermediate levels of commitment. Then there are various gradations of currency boards according to how much backing by assets other than foreign exchange is allowed. Full dollarization and monetary unions represent stronger commitment levels.

The commitment level is determined by the political cost of breaking it. For example, in Europe there is a political cost to reneging on the fixed exchange rate partly because the exchange rate also functions as a device for allocating rents to agricultural groups in different countries within the EMS. Basically, one should look at the choice of an exchange rate system or of a monetary stock target as partial commitment devices. The model I have in mind can be applied in either case. In the United States and Germany there is more emphasis on commitment through stock targets and in many other countries via the choice of exchange-rate system.

Different institutions represent different levels of commitment because the different political cost involved in dismantling them. For most, if not all institutions, the commitment is never total in the sense that it is adhered to for some states of nature and broken for other states. A tougher commitment is a commitment such that the range of states of nature in which the commitment is broken is smaller.

The basic trade-off that we have here is one that most people at the conference were thinking about, although they didn't state it in quite the words that I will use. It is the trade-off between credibility on one hand and flexibility on the other. In other words, if you make a tough commitment, you'll get somewhat better credibility. However, you'll lose flexibility. How can you be credible if you don't give up any flexibility? The reputation of whoever institutes a particular commitment device is an important determinant. What are the circumstances that are more or less conducive to a stronger commitment? That is the basic question that I want to focus on.

I will base my answer on the results obtained in the model underlying these observations. It turns out that (although it allows a continuum of commitment levels), the model has an equilibrium solution, in which there is either no commitment or the maximum feasible commitment obtains. It is, therefore, natural to talk about the conditions under which there will be a commitment, versus those in which there will not be any commitment.

It is important to take into consideration that, particularly in situations of high inflation (as is the case in the Latin American countries that have been discussed), the policymaker does not always have good credibility. We postulate, to make it simple, that there are two policymaker types. One who is dependable; meaning that when he chooses a certain institutional device, for instance a currency board, and then reneges on it later on, he incurs a political cost. The other (weak) type does not. But the public does not know for sure which type is in office. The two policymaker types are identical in all other respects. That is, they like inflationary surprises and dislike inflation to the same extent. The dependable or strong type incurs a cost that is a function of the difference between the actual of inflation that is chosen, and the preannounced rate of inflation.

The implication of the model is that when the reputation of the dependable policymaker is sufficiently high, there is always a commitment in equilibrium. If reputation is sufficiently low and there is sufficient variability in objectives, there is no commitment. This runs contrary to intuition that we sometimes have, that a country with very low credibility should put in a system that is very tough in order to gain credibility. It is true that if such a country establishes a very tough system, it will enhance its credibility, but the result above implies that this is not necessarily optimal from the viewpoint of the political authorities.

Furthermore, it also implies that if one builds up sufficient credibility by other means-fiscal means for instance-then there is also sufficient room to put in a commitment device in the form of some kind of nominal anchor, like a currency board. Policy makers must have sufficient credibility to start with to make the erection of such an institution politically desirable. In this sense there is complementarity between other means, like fiscal policy, and means like the introduction of a currency board.

The analytical framework can also be used to analyze some of the previous discussion. For instance, it provides an alternative explanation to the one presented by Alan Walters for the



overvaluation of a currency following stabilization. Within our framework this is a consequence of the fact that the policy maker doesn't have full credibility. Even if he is truly dependable the doubts that the public has about his dependability cause an overvaluation of the currency.

#### 8. Dollarization and Real Interest Rates - Larry Sjaastad

"Dollarization" raises many issues concerning the theory of exchange rate regimes and optimal currency areas. An important issue, and the one of concern here, relates to the effect of dollarization on the behavior of real interest rates in a world in which the major currencies are floating against one another. In such a world of "large" open economies (or currency blocs), the prices of internationally traded goods are determined by the price levels of and exchange rates between the large economies. It has long been known that real exchange rate movements among the major currencies transmit shocks to the international prices of traded goods in general, and particularly to commodity prices.<sup>4</sup> That real appreciation (depreciation) of the U.S. dollar tends to depress (increase) dollar prices of traded goods became evident to all during the intense real appreciation of the dollar from 1980 to mid-1985 when the IMF commodity (dollar based) price index declined by 30 percent and both import and export unit values (which are dollar based) for the developing countries as a group *fell* by about 14 percent. All of this occurred despite a 30-percent rise in the U.S. consumer price index and a 15-percent rise in U.S. producer prices. Obviously, had the developing countries been dollarized at that time, they would have experienced a *deflation*, on average, of about 3 percent per annum; as the average U.S. inflation rate from 1980 to 1985 was over 5 percent per annum, the inflation rate *differential* was over 8 percent per annum - and even greater in developing countries whose exports are heavily dominated by commodities.

While dollarization will only loosely link a country's inflation rate to that of the U.S., it would rigidly tie nominal interest rates to those on dollar-denominated assets which were, on average, 11.7 percent on long term Treasury bonds during the 1980-85 period. Although the *real* rate of interest in the U.S. was rather high during this period (over 6 percent per annum), dollarization would have imposed real rates of interest of at least 15 percent per annum in the developing countries. As developing countries do not produce paper of the same quality as U.S. Treasury bonds, the actual real rates in those countries would have been well in excess of 15 percent.

To develop more precisely the potential consequences of dollarization, it is useful to contemplate a hypothetical dollarization of the Swiss economy. The Swiss case is ideal for this purpose, as it is not only a small economy but one for which the data are of high quality. Moreover, Switzerland is one of the very few small countries that (i) has had a floating rate for the entire post-Bretton Woods period; (ii) has not participated in a joint float (the "snake" or the EMS); (iii) has eschewed both quantitative controls and foreign exchange market intervention; and (iv) has had a stable commercial policy throughout the period. The results of that exercise indicate that a ten percent (permanent) *real* appreciation of the U.S. dollar *vis-à-vis* the ECU leads to a 6.7-percent *decline* in dollar prices of Swiss tradeables *relative* to the U.S. price level, and vice versa. These

---

<sup>4</sup> One of the early studies of this phenomenon was carried out by D. Ridler and C. A. Yandle and reported in a paper "A Simplified Method for Analyzing the Effects of Exchange Rate Changes on Exports of a Primary Commodity", IMF Staff Papers, Vol. 19, 1972.

fluctuations in the dollar-ECU real exchange rate would have been translated directly into fluctuations in the real interest rate in the Swiss external sector (and, very likely, into the entire Swiss economy).

Whether dollarization would be detrimental to dollarized economies in the future, of course, depends upon how the dollar will behave *vis-à-vis* other major currencies and, in particular, upon the degree to which real appreciations and depreciations of the dollar are sustained for long periods. Our exercise with hypothetical dollarization of Switzerland in the 1980s, indicates that this economy may well have experienced extremely high real rates of interest - nearly 16 percent per annum on average - during the entire 1980-84 period as a direct consequence of intense dollar appreciation. This is, of course, precisely what transpired in several Latin American economies whose currencies were tied to the dollar during the earlier part of that period, and which subsequently experienced major economic recessions.

### III. STABILIZATION AND CURRENCY BOARDS IN THE CONTEXT OF SPECIFIC COUNTRIES

#### A. Argentina

##### 1. The Convertibility Plan - Domingo Cavallo

Convertibility of the Argentine currency was fully backed by gold and foreign exchange for the monetary base. It was just one of many institutional changes that have been implemented in Argentina in the last 8-9 years. We stress the fact that the change began in Argentina in 1983 with the recreation of the democratic rules for the political game.

Since 1983, Argentina recreated the representative republican and federal systems of government embodied in the National Constitution of 1853. Since then, we have had a pluralistic democracy with Congress playing an important role in the discussion of the legislation, and the judicial system being very independent with complete freedom of the press. Democracy seems to be improving as time goes on.

That is one aspect. The second aspect is that economic reform, which began with President Menem's Government in the middle of 1989, was parallel to a reform of the adoption of a new foreign policy in Argentina, which means political definition of the views of Argentina *vis-à-vis* the rest of the world. For six decades, beginning in 1930 and until 1989, Argentina was almost isolated from the rest of the world and, in general, did not accept the rules of the game of the world; she defied them. The foreign policy adopted under Menem is a policy that tries to reinsert Argentina in the world. So, that is another important change.

In terms of economic reform, the whole approach is as in the political arena - it's the recreation of basic economic institutions. That is the emphasis, because we did not have a budget nor did we have budgetary control. We did not have competitive, open markets, therefore there were no operational markets allocating resources in an efficient way. We did not have a currency; it had been completely destroyed by the hyperinflation of mid-1989, when inflation was 200 percent in just one month - July 1989.

Some of these institutional changes happened before the reconstruction of the currency as a basic institution, mainly through the recreation of the budget, budgetary discipline and free and open markets. There was a lot of progress in trade liberalization but also in the regulation of domestic markets. Tremendous progress was also made in the privatization of state-owned companies, controlling government expenses and collecting taxes.

Let me refer you to the fiscal figures in Table 1. In the last year of the Alfonsín Administration in 1988, before hyperinflation, the deficit of the budget was 6.1 billion dollars. Last year we had a 200 million dollar surplus. The deficit of 1988 does not take into account the deficit of the Central Bank which was more or less of the same amount. This has also been eliminated by the reforms that have been implemented. This reduction in the deficit took place by a significant increase

in revenues, 5.3 billion dollars, and a reduction in expenditures of 1 billion dollars. It is also important to note that the Federal Government's expenditure went down by 4.4 billion dollars, while the expenditures of local governments have increased by 1.4 billion dollars - and social security benefits by 2 billion dollars. This speaks of a very important change in the composition of social expenditure: health, education, order, justice. These are mainly the responsibilities of local governments. Local governments, therefore, had more resources to pay for those social services. The same happened with the social-security system, which got a greater amount of resources. The reduction in expenditure of the Federal Government was done mainly through the elimination of losses of state companies and by reducing investments that were then financed by the Government and which are now financed by the private sector after privatization. Drastic reductions of Government employees and bureaucracy also took place, as well as reduction in many subsidies that were financed by the federal budget.

**Table 1: MOVEMENT OF THE FISCAL ACCOUNTS**  
(In billions of dollars)

Description	1988	1991	Difference
Deficit(-) or Surplus	-6.1	0.2	6.3
REVENUE	25.7	31.0	5.3
EXPENDITURE	31.8	30.8	-1.0
Federal Government	16.8	12.4	-4.4
Social expenditure by Local Governments	7.9	9.3	1.4
Social Security Benefits	7.1	9.1	2.0

The Convertibility Plan was implemented on April 1. It was discussed in Congress in March, and was approved by a congressional law which established that the Central Bank could print pesos in the amount it had as gold in foreign exchange. It had to have 100 percent backing in gold in foreign exchange. There was a flexibility, however. It could compute governmental bonds - denominated in foreign exchange - at the market price. The budgetary law established a limit of 10 percent of the total monetary base to be backed by governmental bonds. Actually, by the last day of 1991, the foreign exchange in gold was larger than the monetary base, so we were above 100 percent. The same law prohibited indexation. That meant going back to the old civil code which had been modified by laws authorizing indexation. At the same time, we introduced an important change in the civil code, which prevented interest on interest. Now we are allowed to pay interest on interest. This means that the only indexation allowed is the type that uses the interrate as a basis for adjusting the capital - in order to accumulate interest on capital.

The same law allowed that contracts could be denominated, and legally enforced, in foreign currencies. That was banned before. A decree made possible by this law established that wages could only be increased in correspondence with increases in productivity. The same decree established that wage negotiations, collective bargaining, should be made at the firm level, rather than

at the sectoral level, and must be preceded by an agreement on productivity increase. It had to be demonstrated that there was an increase in productivity before approving any wage increase.

The same law solved a sixty-year-old problem in Argentina. When exchange controls were instituted in the thirties, judicial courts decided, in most cases, that the owner of the foreign exchange generated by exports was not the exporter but the Government. That gave the Government the power to force exporters to sell to the Government foreign exchange to buy export at whatever price the Government was willing to pay. For sixty years there were judicial decisions supporting that law. The new law changed that approach completely by deciding that the property rights on the foreign exchange, generated by exporters, belonged to the exporters. The authorities cannot force exporters to bring the foreign exchange to the country; they may keep it abroad. That was a very important legal modification that was introduced in Argentina.

There is no doubt that this change had an effect on different aspects. First of all, it helped to implement fiscal discipline. Stabilization made it easier to collect taxes. In addition, the congressional discussions on tax reform and the 1992 budget, which was approved according to legal terms for the first time in 45 years, were facilitated by the fact that we were dealing with a currency that people believe has a constant value. It helped in rebuilding the idea of the budget as an institution. Presently, we are also discussing a law on budgetary control in Congress. This process is also facilitated because we are talking about a stable currency. It also helped to prevent actions against the Central Bank by domestic and foreign creditors. There is a second law called the Liabilities Consolidation Law. This Law says that when the judicial system has to pay for liabilities generated before April 1, 1991, the Government will not print pesos. These liabilities have to be paid with resources allocated by the Government, or with privatized bonds that do not pay interest for six years - they accumulate interest on the principal and have a ten-year amortization period. This Law, coupled with the commitment to back the monetary base with foreign exchange as a guarantee for people who have pesos, prevents the judicial system from forcing the Central Bank to print pesos in response to claims from creditors. All this was implemented in order to commit annual debt payments which are compatible with the fiscal resources available to the country.

The results were impressive. The inflation rate went down to 2.2 percent per month, for the period April-December, as compared to 11 percent for the same period in 1990, and 58 percent in 1989. In December it was .6 percent. This is the consumer-price index. The wholesale-price index during the period, occurred as a result of the elimination of taxes on exports. Due to this, the price on agricultural products went up in April. It had an immediate effect on the stabilization of the prices of tradeable goods, which are mainly those reported in the wholesale-price index.

It was different in terms of the consumer-price index, which has a lot of nontradeable goods - mainly rent on housing, professional services, restaurants and tourism. The greater increases took place in service prices like food in restaurants and tourism. For instance, in January we are facing a problem because of the huge increase in the prices that hotels are charging to tourists.

The big difference with previous stabilization plans can be seen in the interest rates paid on time deposits. This time, the interest rates on time deposits went down as quickly as the inflation rate - in December it was .8 percent on 30-day time deposits. By comparison, with the Plan Austral - a plan that was also based on the fixation of the exchange rate but without convertibility - interest rates on 30-day time deposits after nine months were still between 4 and 5 percent per month, even though

the inflation rate went down to 1.5-2 percent per month. There was a huge amount of foreign capital coming in to be deposited in these CDs that were paying 4-5 percent. This phenomenon did not happen the second time because interest rates on time deposits went down to 8 percent. You can see signals of confidence in the market value of Bonex 87. Bonex 87 is a ten-year dollar bond that pays the labor rate on a quarterly basis. The market quotation for these bonds was 66 percent in 1989 and the same for 1990. It then went up to 86 percent. This reduction in December, compared to the average of the period, reflects the elimination of a coupon, so it's not really a reduction. It went up, and this reflects a significant reduction in the medium or long-term interest rates for the Government.

There was an increase in industrial production in December—almost 19 percent compared with the average period in 1989 and 1990. There was also a reduction in unemployment, from 7 percent in October 1989 to 5.3 percent in October 1991. In terms of external trade, exports continued increasing slightly from 8.5 billion in April-November to 8.8 billion in April-November of 1991. Obviously, there was a significant increase in imports because of the reactivation of the economy. There was a reduction in the trade surplus, but now the trade surplus is more or less the same as the primary surplus of the budget. The budget could, therefore, purchase with tax resources the foreign exchange generated by trade which, in turn, would be used to service the debt.

There was a very significant increase in tax revenue as a result of some modification in the tax law, but mainly because of the adoption of very strict monetary rules in tax administration. The 43 percent increase in tax revenue for December that you see - compared with the average of 1990 - was much more impressive because, between income tax and taxes on assets, it increased by almost 70 percent. At the same time, we eliminated taxes on exports and also several taxes on financial and exchange rate transactions that were very distorted. We also eliminated taxes on cars and electronic products. Despite eliminating those taxes, the total revenue increased by 43 percent. Finally, there is another indication of confidence. The value of shares in the Buenos Aires Stock Exchange went from 190 in 1990 to 760 in December. If you look at the volumes that were traded on private shares in the Buenos Aires Stock Exchange, the increase was much bigger than the prices. The results are good, although it is not easy to identify what part of the results came from the convertibility - from the monetary rule - because many changes were introduced about the same time.

I want to mention three things that are specific of Argentina. First, we did suffer hyperinflation. It was very dramatic, but it also had a great impact on people's minds and attitudes. It is now a reasonable statement in Argentina to say that it is not good to print money to pay retirees. Before, nobody would have accepted or understood that it would be a bad idea to print money for this purpose. Second, Argentina did have a very important historical period during which a market economy, with a relatively well-managed Government, was well integrated into the world economy. A monetary board produced very good economic results - going from 1890 to 1930. We had a monetary board, which was created by Carlos Pellegrini. This was the President who had to face great crises in 1889-90; this resulted in Argentina's failure to pay her debt because there had been tremendous overspending and borrowing abroad during the 1800s. Pellegrini's monetary board operated very well beginning in 1901. With a brief interruption during the First World War, it continued to operate until the big depression of 1929. Third, in Argentina all these changes are being implemented by a democratic Government with a significant participation from Congress. In addition, we have a Chicago boy in the Central Bank. The peso bill has Carlos Pellegrini, the Congress, and the signature of Roque Fernandez.

## 2. Some Aspects of the Recent Program - Daniel Artana

When a country like Argentina, which has had a long history of high inflation and has suffered two hyperinflations, has to face another stabilization plan, like that of March 1991, how can the private agents be convinced that this will be the last attempt to stabilize the economy? I think that was one of the reasons why the Convertibility Plan was introduced, and explains some of the facts that Minister Cavallo showed for the recovery of the economy. We did not have other alternatives available as a country. Other countries found that kind of backup for fiscal reforms by signing agreements with the IMF. We couldn't have that because Argentina has had a tradition of noncompliance with the IMF; we did not have credibility. Other countries, like Spain, entered into the European Community and complied with EC rules; this "forced" the policy to be a reasonable one. Argentina did not have that possibility because our potential trade-partners in South America were as unstable as Argentina was then. The other possibility was to sign a political agreement, but Argentine politicians are not very credible even now.

When a government decides to put the house in order and to do the "dirty" work, a currency board can be established, as we did in March 1991, in order to convince the private agents that this would be "the last time." There are some interesting things to mention. First of all, it was approved by law and there was unanimity in Congress to approve it. There was political support for the law. Second, indexation was prohibited and contracts denominated in dollars were made enforceable in Argentina, which was not very clear before the change occurred. Most important, however, is the fact that the currency reform was accompanied by other reforms in the economy. I'm willing to bet that explains a big part of the success of the plan.

Another serious stabilization attempt made in Argentina in 1985 was the Austral Plan. Here, the Government also decided to use a fixed exchange rate and improve the fiscal accounts, but there was no obligation to back the monetary base 100 percent with foreign reserves. So, in the short run, the situation for the Government was easier because it could gain not only seigniorage, but could almost cash in immediately the gain from the remonetization of the economy. When moving from a 30 percent-monthly-inflation rate to a very low inflation rate, that remonetization is very important. At that time, it was 4 percent of GDP, concentrated in three or four quarters, so it provided a degree of freedom to adjust the economy. When you opt for a currency board, you lose that gain. You gain from the interest on the foreign reserves, but this is attained in fragments, not at the initiation of the plan. The operation of the 1985 Plan was more or less similar, because there was a commitment from the President of the country not to print money, except to buy foreign reserves.

Comparing the two plans you can see that in both cases there was fiscal primary surplus. The quasi-fiscal deficit that persisted during the Austral Plan introduced some problems, and the total deficit was somewhat lower than the increase in the real money demand. Inflation was higher than in the Convertibility Plan, but there was a serious effort to improve the fiscal accounts. At that time, they used taxes on exports to improve revenues quickly. In this Plan, the Government used revenue from privatization for the same purpose.

By comparing the results of both plans, you can see that the interest rate is far lower in this Plan than it used to be in the Austral Plan. If you take the nominal interest rate denominated in australes and convert it into an interest rate in dollars, the weekly interest rate, in dollars, in the

Austral Plan was 1.5 percent in the best moments. In this Plan, it is below .5 percent. This cannot be attributed to a decline in the international rate; it has to be due to credibility, despite the fact that the country had not suffered from hyperinflation before 1985, but suffered two episodes of it in 1989 and 1990. The law appears to work better than the President's word to induce private agents to accept a lower interest rate.

The inflation rate also came down more sharply in this Plan than that of 1985. The lowest inflation rate in the Austral Plan was somewhat lower than 2 percent per month; we have had .5 percent per month for the last two or three months under the new Plan. The inflation rate measured by the wholesale-price index is very low. That's because the domestic currency is pegged to the dollar, and the tradeables adjust quickly. If we compare the recovery of production (industrial production has to be used to make the comparison because statistics are very poor in Argentina), we can see that the recovery occurred faster under this Plan than under that of 1985. If you compare the industrial-production index that we elaborate in FIEL, you can see that coincidentally, both plans started at the same level. It took three quarters during the Convertibility Plan to obtain the same increase in industrial production that the Austral Plan obtained in five quarters. The same recovery took place in a shorter span; that was probably due to the lower interest rate measured in dollars. The short-term indicators are working better in this Plan than for a traditional fixed exchange rate plan.

Obviously, in this Plan we had not only serious fiscal improvement, but also privatization, deregulation, opening up of the economy and many other structural reforms, which in turn had a beneficial influence on private decision-makers. It is very difficult to determine if the better results are due to the currency board or to the improvement in the fundamentals.

To conclude, I'd like to make a few comments. First of all, the indicators for the first three or four quarters of the stabilization plan are very good. The economy did not have many problems yet, but we still have some potential problems with the currency board. We can have a potential problem with the real exchange rate. Flexibility is lost when the exchange rate is fixed. There is, then, no room to move the exchange rate up, if that's what the market requires, through devaluation. It needs to be said that in Argentina the current real exchange rate is 60 percent below the average of the 1980s. Evidently, there were changes in the economy that justified a lower exchange rate. We have a reversal of capital flight and lower government expenditures, which are essentially done in nontradeable goods. By reducing government expenditures, there should be a higher equilibrium of the real exchange rate. Because of deregulation, we have potential gains in productivity in exportable sectors. On the other hand, the Argentine economy is far more open to foreign trade today than it used to be in the 1980s, which should induce a higher equilibrium real exchange rate. My guess is that the effect of more competition from imports has not worked fully yet. We will see in the second semester of 1992 whether the prevailing real exchange rate is in equilibrium. If there is a serious recession in tradeable goods, the Government will face a problem.

A second potential problem appears in the fiscal side. Although the Government has improved the fiscal accounts of the Federal Government, the provincial and local accounts still need major improvements. Just to give you an idea, the provinces today employ twice as many workers as those employed by the Federal Government. A small wage increase in the provincial governments could complicate the whole situation.



The Government might face some problems during 1992 with the real exchange rate and the fiscal accounts of provincial and local governments. They need to be solved to guarantee the long-run success of the Convertibility Plan.

### 3. Argentina's Quasi-Currency Board - James Hanson

Argentina has had a dramatic success with currency board-type arrangements. The April 1991 Convertibility Law turned the Argentine Central Bank into a close approximation of a currency board. Although there were some differences,<sup>3</sup> many of the benefits of a currency board were realized.

One major benefit of a currency board is a quick decline in inflation and inflationary expectations in response to stabilization measures. By that measure, Argentina's currency board was a great success. In 1990, Argentine consumer prices rose about 1350 percent; in 1991 inflation fell of the Convertibility Law on April 1. Perhaps an even better measure of the achievement on inflation is to compare the last quarter of 1990, when inflation averaged 4-6 percent per month, with the last quarter of 1991, when inflation was less than one percent per month.

A second measure of success along these lines is the drop in interest rates: Interest rates on short term deposits were generally 8-10 percent per month in the last quarter of 1990; they fell to 8-10 percent per year in the last quarter of 1991. The decline in interest rates contributed to the 1991 reactivation--GDP growth is estimated at more than 5 percent for 1991.

It should be made clear, however, that these achievements reflected not only the Convertibility Law but improvements in fundamentals:

- Tax administration and efficiency have improved significantly, with World Bank support; for example, VAT collections (in dollars) doubled in 1991.
- The public sector was reformed and downsized by employment cuts (nearly 20 percent) with Bank support; controls on spending have improved; and social sector spending is being transferred to the provinces.

---

<sup>3</sup> Under the law, the Central Bank became obligated to buy and sell foreign exchange at a legally fixed rate--the same as a currency board. However, two differences existed compared to a currency board. First, although the law severely limited the Central Bank's ability to carry out monetary policy and lend funds to the Government--by requiring that the money base be fully backed by international reserves--it did not eliminate these functions. The Central Bank could still carry out these functions to the extent that international reserves exceeded the money base. Moreover, the law defined international reserves to include dollar- or gold-denominated liabilities of the Central Government. This would have permitted substantial purchases of Government dollar-denominated liabilities of the Central Government. This would have permitted substantial purchases of Government dollar-denominated debt, but a regulation quickly was issued that limited the Bank's holdings of such instruments to ten percent of international reserves. Finally, the law does not prevent the Central Bank from carrying out monetary policy (or changing the ratio of base money to financial sector liabilities) by varying reserve requirements or swap agreements. Second, the Central Bank retains deposit insurance and lender-of-last-resort functions, which are not part of a currency board. However, these Central Bank functions were limited severely in October 1991. The costs of deposit insurance were raised substantially for banks paying or charging high interest rates, which led many banks to leave the deposit insurance system. The amount of deposit insurance is limited to US\$50 million and covers only US\$1000 per depositor. Regarding the lender-of-last-resort function, Central Bank rediscounts can only be provided for 30 days and up to an amount that can be guaranteed by the bank's capital.

- A large program of public sector asset sales was initiated at the end of 1990 with the sale of the telephone company (EnTel) and the airline (Aerolineas Argentinas); the program will generate large capital revenues and potential new tax revenues, while reducing debt obligations and transfers to inefficient public enterprises.
- The maximum import tariff was cut to 22 percent (except for autos and electric products, which had been covered by quotas), quotas reduced, and export taxes eliminated in 1991.
- A massive quasi-fiscal deficit was eliminated by the conversion (Plan BONEX) of short-term local currency deposits bearing high real rates into long-term dollar denominated bonds bearing LIBOR linked rates (BONEX 1989), albeit at the cost of a loss of depositor confidence.
- The potential for monetary destabilization was limited further by the limits on deposit insurance effected in October 1991, and improvements in the still-weak state banks, both of which limited the ability of weak banks to attract funds and drive up interest rates.
- The non-financial public sector's operational surplus (excluding interest) was increased to over US\$1 billion--in 1988-89 the deficits were over US\$1 billion.

Interestingly, one of the main factors in inflation and interest rates--the government's underlying borrowing requirement as measured by the operational primary surplus--was fairly similar in 1990 and 1991, although the "quality" of the primary surplus improved substantially in 1991.<sup>6</sup>

Would a currency board be feasible and/or desirable in other countries? There are a number of preconditions to adopting a currency board. Argentina met the bill of preconditions very well; most other countries are probably less suited.

One key precondition clearly relates to control of the Government deficit (including the deficit of the public financial sector--the central bank and other public banks--as well as the non-financial sector). For the currency board to be credible, whatever deficit exists must be financeable without great seigniorage. The rationale for this precondition is fairly obvious. It is brought home by the experience in Argentina in the late 1970s and early 1980s. As Roque Fernandez and Guillermo Calvo pointed out at that time,<sup>7</sup> the government's deficit must be compatible with the exchange rate policy or expectations will lead to a run on the current and, eventually, a collapse of the exchange rate policy.

---

<sup>6</sup> The 1990 fiscal figures fail to include a lot of the build-up of arrears to suppliers and the underpayments to pensioners. In 1991, the Government stopped running arrears to suppliers and took actions aimed at reducing the underfunding of social security. It also should be noted the most of the Government's debt is dollar-denominated and bears rates linked to LIBOR; the decline in LIBOR thus lowered the overall borrowing requirement in 1991, although proportionately because the partial payment to the foreign commercial banks remained fixed at US\$720 million.

<sup>7</sup> G. Calvo and R. Fernandez, "Pauta cambiaria y deficit fiscal" in Roque Fernandez and Carlos Rodriguez, eds. Inflacion y Estabilidad, Buenos Aires, Ediciones Macchi, 1982, pp. 175-180.

It is important to note the qualification eventually. Argentina was able to run a incompatible *tablita* for over 12 months in 1979-80 before a collapse occurred. The Government borrowed vast sums internationally to support the exchange rate policy in the face of massive private capital flight. A more recent example of apparent incompatibility occurred in 1990. Between March and December 1990, the exchange rate depreciated. Incompatibility occurred in 1990. Between March and December 1990, the exchange rate depreciated only about 15 percent while inflation was about 160 percent. Yet rising capital inflow led to a rise in international reserves of about US\$3.5 million. Of course, in the first quarter of 1991, the capital inflow reversed itself and the exchange rate was devalued nearly 100 percent.

There is a second set of interlinked preconditions related to financial sector. These are very important in the case of a Central Bank that acts as a currency board, but which retains Central Bank functions regarding lender-of-last-resort and deposit insurance facilities; if there is a true currency board, then these preconditions are less of an issue. The financial sector preconditions are:

- (i) large enough international reserves to make the currency board credible;
- (ii) financial liabilities denominated in domestic currency<sup>8</sup> that are small relative to the international reserves, and;
- (iii) relatively strong financial institutions.

These three preconditions are related to the currency board's ability to withstand a run against the currency and thus the currency board's credibility<sup>9</sup>.

When a run against the currency occurs—either because of shifts in confidence or external shocks—the currency board must provide foreign exchange. The potential call on its reserves is the amount of liabilities denominated in domestic currency. But, long before the public sells off all its liabilities in domestic currency, interest rates will begin to bid up. This will put political pressure on the Central Bank to try to lower rates by increasing credit, especially if the economy is not growing satisfactorily. Such pressure may not be a problem and can be resisted, particularly if the Central Bank is independent or if there is no Central Bank, only a currency board. A second problem is that if the government has large liabilities denominated in domestic currency then the rise in interest rates increases the deficit and the need for deficit finance. Again, this may not be a real problem since runs typically are short lived and, if the run proves unsuccessful, then the whole process will unwind. Third, and perhaps the most important, runs against the currency will produce a demonetization and the rise in interest rates will undermine weaker financial institutions. The Central Bank and/or the deposit insurance agency will be under pressure to bail out these institutions. The credit that is granted to them in this way probably will find its way into further pressure on reserves. Hence, enough reserves are needed to defeat a potential run, taking into account the volume of credit that the

---

<sup>8</sup> For reasons discussed below, the volume of dollar liabilities is less important.

<sup>9</sup> Notice that a true currency board cannot use monetary policy to stop a run against the currency. However, a Central Bank that retains monetary policy functions can raise reserve requirements or sell debt (to the extent that it has "excess" reserves compared to its legal liabilities. This of course means trying to reduce the capital outflow by tightening monetary conditions beyond what is implied by strict "gold standard rules", a policy approach the Bank of England often used in the gold standard era. While such policies may stem the outflow of funds, they impugn heavily on weak banks.

Central Bank may need to provide as a domestic lender of last resort, which in turn, is linked to the strength of the financial institutions themselves.<sup>10</sup>

Deciding when the preconditions are sufficiently fulfilled is a matter of art not science. One rationale for currency board is, after all, to benefit from the shift in expectations that should accompany a strong stabilization program, and the resulting drop in inflation and interest rates. Hence, it may be desirable to implement the currency board before the preconditions are fully in place; to lead the market, not necessarily follow it.

If these two sets of preconditions are in place, then the question immediately arises: Why a currency board? Why not a fixed exchange rate if the deficit is really under control and reserves are high, thereby getting the benefit of the seigniorage from the remonetization in the national currency? One answer is that without a currency board, confidence will not be restored quickly enough. Some institution is needed to indicate that inflation really is under control in order to eliminate inflationary expectations and the corresponding unsustainable overshooting of wages and prices that occurs in many stabilization plans.

Some countries have tried to use wage and price controls in this way, in an attempt to adjust expectations quickly to lower inflation. However, in these cases the fiscal program typically has gotten out control, perhaps because governments find it hard to focus on more than one macroeconomic variable at a time, perhaps because the very influx of funds associated with remonetization eases the government's revenue constraints too quickly. In any case, wage and price controls are undesirable because of their negative effects on allocation decisions and the functioning of markets. A currency board guarantees that the government will not run amok again in the near future much better than price controls and avoids their allocational defects.

It is worth noting that the currency board means that although the Government does not benefit immediately from the remonetization, in the longer run its revenues need not fall as compared to the seigniorage associated with low rates of inflation. With a currency board, increased reserves would fully back the increases in the money base. Thus, there would be a larger increase in reserves than if the Government absorbed the remonetization by issuing bonds to the Central Bank. These reserves are invested internationally and in the longer run their yield should be about what a government could expect to earn from seigniorage in a low inflation economy. The only problem is that the public initially has to generate the reserves (run a current surplus or increase net international indebtedness).

Perhaps a more interesting question is: why move only to the halfway house of a currency board. Why not go the whole way and "dollarize" by fiat? If confidence is to be inspired, then what better way than to remove all possibility of monetary creation by adopting a foreign currency as the

---

<sup>10</sup> The situation is complicated when the financial system has a large volume of foreign currency liabilities. To the extent the run leads only to a switch in the currency composition of liabilities in the domestic financial institutions and not a capital flight, then the pressure on the institutions is mitigated (although their exchange risk, and that of any clients who are forced to take new loans in foreign currency, increases).

medium of exchange.<sup>11</sup> One answer is that government revenue truly will be lost. But perhaps the real exchange, the real answer, is not economic but political—countries wish to retain their own currencies for nationalistic reasons.

The benefits of a currency board are clear; what are the defects? Clearly one important set of issues relates to the transition. Most of the theoretical models suggest that in the long run, once flows stabilize to their equilibrium levels, all the real variables will be the same, independent of whether a fixed or a floating exchange rate is used. What isn't modelled very well is:

- a) whether is it better to change one price or fix it and force the others to adjust;
- b) if trade is relatively free and fiscal stability is attained, should producers of tradeables be the main bearers of exchange risks, as under a floating exchange rate, or should the whole country bear the risk by being forced to conform to something like "gold standard" rules.

These two questions are related to two specific issues of the transition to a currency board that can be associated with the capital and the current account respectively.

Regarding the capital account, there is the question of whether the currency board, compared to either a floating or a fixed rate, generates "excessive" capital inflow. Does the additional confidence provided by a currency board initially generate larger capital inflows, lower interest rates, higher non-tradeables prices and larger external debt<sup>12</sup> than would occur with some alternative exchange rate system? Once foreigners complete the associated "portfolio adjustment" to the new exchange rate regime, capital flows will slow down automatically while repatriations of interest and profits will increase. The country then must generate more foreign exchange through the trade balance to cover the gap between the lower levels of capital inflow and repatriations of interest and profits.<sup>13</sup> Expectations may develop that it will be difficult to generate the necessary foreign exchange, because of an unresponsive domestic economy. This may even generate a run against the exchange rate.

Regarding the current account, there is a standard problem to the initial fixing of an exchange rate. Typically, an exchange rate is fixed at a depreciated level, which in turn generates some inflation above world rates and some loss of domestic purchasing power. Moreover, the experience of the Southern Cone in the early 1980s, France in the European Monetary System, and Argentina today suggests that, even after the adjustment to the initial fixing of the exchange rate, inflation in prices and wages does not converge to international rates quickly. To sustain competitiveness, it is therefore necessary to undergo, eventually, a period in which domestic prices rise less than world

---

<sup>11</sup> Note that adopting a foreign currency as the medium of exchange has not prevented serious macroeconomic problems in Panama or the franc zones in Africa, and monetary as well as macroeconomic problems in Liberia. These problems were related to the government's ability to issue non-monetary liabilities and the difficulties in adjusting in order to pay these liabilities in the context of falling terms of trade and rising real interest rates.

<sup>12</sup> The example of Chile in the 1980s suggests that the distinction between public and private external debt may not be important.

<sup>13</sup> This discussion assumes that the new inflows are insufficient to cover interest and profits, i.e. that after full portfolio adjustment, external lenders do not lend enough to cover interest and profits.

prices. This means either that domestic productivity must grow substantially faster than world productivity--which can be encouraged by opening up the economy to foreign goods and investment and by deregulating--or there must be negligible growth or even a fall in domestic nominal wages, depending on the relevant international price index. A period of slow growth and unemployment may be necessary to discipline unions and business that do not fully believe in the new rules of the game. Thus, there may be period of adjustment, with a length dependent on the initial exchange rate and the flexibility of wages and prices, until the "gold standard" rules are accepted by all.

### Argentina - Comments:

#### Marcelo Selowsky:

In discussing the appropriateness of a fixed exchange rate-full convertibility system (FF), it is crucial to specify the context in which such a system is to be introduced. The "cost benefit" analysis is quite sensitive to that context. And that cost benefit analysis has to be probabilistic--it has to take into account the uncertainty of future events. I do believe that there are many situations where, although the probability ( $\alpha$ ) of successfully introducing an FF system may be high the cost of failure (the failure having a "small" probability  $1-\alpha$ ) may be enormous. Hence, the expected gain of introducing the system may be negative.

One context is the one characterizing Brazil today. Inflation is still 20 percent per month--a result of a large part of the public sector deficit being monetized and of a very small monetary base. Although the deficit is not extremely large (around four percent of GDP) significant uncertainties persist on the possibility of reducing it on a permanent basis. Credibility is a major problem. Unless important institutional changes are made to reduce public expenditures, any short-term improvement in public finances will not be seen as sustainable, particularly through the electoral cycle. Accelerating the privatization of public enterprises, legislating the total separation between public banks and the central bank and reducing the size of public employment (particularly in the states) are some of these institutional changes.

What is the probability of success of an FF in this context? What is the cost of its failure? Here the inflationary problem is fully dominated by the "fundamentals;" the "inertial component of inflation issues" is quite irrelevant. The risk of introducing an FF system too prematurely is very high. If the system then has to be abandoned, the loss in credibility for any future stabilization program is enormous.

There is a second context, probably the one that characterizes Argentina today. The FF system has been introduced while important advances have been made on the institutional reforms described above. Privatization and the reduction in central government employment have been significant; so has progress in provincial public finances. Surely risks remain: tax administration has still to improve and the fiscal losses of the social-security system are still high. But, progress in both areas seems possible, and, as important have been many initiatives to deregulate the economy to allow downward flexibility of cost and wages. Eliminating the monopolies of professional associations in setting up professional fees and deregulating trucking are some examples. Such deregulation improves competitiveness under the present parity exchange rate regime.

Finally, we have a third context. It would apply to situations in which deficits are moderate, are expected to remain that way and are financed from a voluntary supply of domestic and external funds at "moderate" interest rates. Panama today and Mexico and the Dominican Republic for many years in the past have been well served by an FF system. I do not know to what extent this was the result of particularly strong personalities leading the Central Bank more than the system itself, but the success of the FF during these periods must be studied more thoroughly. The pros and cons of an FF under the "steady state public finances case" will basically depend on the possibility of the fixed nominal rate imparting "discipline" to nominal costs and wages--maybe we have underestimated the possibility of increasing the downward flexibility of nominal prices as competition and deregulation are being enhanced. I leave this as a future research agenda.

Carlos Bolona Behr:

I've been hearing with great attention Domingo's presentation and the comments. The question that I had in mind was: what are the necessary conditions for the Convertibility Plan to work? At first I heard that Domingo mentioned, among other things, that they were suffering from hyperinflation; they had a democracy and also a Chicago boy in the Central Bank. They were also doing some structural reforms. I look at Peru and see that we have suffered hyperinflation; we are a changing democracy, but we are fighting with Congress every day. We have had some experience with currency boards, especially in the late 1890s. How can we apply this convertibility approach? James Hanson provided some preconditions. However, if we met those preconditions, we would have our problems solved, in one way or another. He left me a bit anxious by saying that the transition period is the key factor. I feel that maybe we are in that transitional period, but we have not yet achieved those preconditions. Marcelo Selowsky also captured those preconditions.

Larry Sjaastad:

During this discussion I was reminded of a lunch in 1981 in Switzerland when Allan Meltzer asked the question: why is a dollar so strong? It was appreciating at about 30 percent per year at that point. Cortez answered: "It's because it's high to the Chilean peso." I suppose that if he were here today he'd attribute the weakness of the dollar, since June, to the fact that it's been tied to the Argentine austral - until last week when it became tied to the Argentine peso.

There's been a lot of comparison between the April First Plan and the Austral Plan. I don't think that that's the relevant comparison, although there are some similarities. We need to remember that the Office of the Austral Plan hedged its bets about not printing any money, but in the weeks before the announcement to the Plan, more money was printed in Argentina than had been printed since Adam. I think the relevant comparison, for more than one reason, is with the Martinez 1978 Plan, which is very similar in many respects, including the fact that Martinez had a Chicago boy in the Central Bank. My comment in the context is twofold: 1) Eight months into the 20-de-diciembre Plan of 1978 things looked very rosy in Argentina, at least as rosy as they do now. Let's not be diluted by short-term successes, rather let's turn our attention to those factors which caused that Plan to fail - and which could cause this Plan to fail. I think this Plan has a much better chance, mainly because Domingo Cavallo can deal with a civilian government and Martinez de Hoz had to deal with

people in uniform. Also, there is a lot more going for Argentina in the international context at this point than there was then. But let us be aware of the failure of the Martinez Plan and the pitfalls that may lie ahead for this Plan.

I have one very minor comment with respect to Larry Summers' comments about the desirability of splitting the seigniorage around. We once had a situation, I think that Bob Mundell would agree with me, in which we had the world dollarized. It was called Bretton Woods. We all saw what happened to that; the inflation tax went the other way. We didn't distribute it back to the member countries; we took it out of them.

Ronald McKinnon:

I have a couple of questions to ask, rather than making a statement. The stabilization of Argentina is really admirable, particularly considering the behavior of interest rates. What is the legal mechanism by which the Government can pledge foreign-exchange reserves to back the monetary base when there is a lot of international debt outstanding? How do people at Chase Manhattan and Citicorps feel about pledging foreign-exchange reserves for this narrower purpose?

I also have a question for Larry Summers on the idea of letting dollarization proceed without currency boards and then getting rebates on the seigniorage. One interesting question that's now arising in Asia is the great success of the Hong Kong currency board. The Hong Kong dollar now circulates in a big way in Southern China. I think that Larry was intimating, and maybe correctly, that some of the agreement for 1997 should be that the Hong Kong Government return some of the considerable seigniorage to the Chinese Government. Would Larry agree with this?

Steve Hanke:

The reference to the Central Bank in Argentina as a currency board has been made several times. It is not a currency board. It's a Central Bank that operates with rules that are very similar, but not as tight as those of a currency board. An orthodox currency board has to have 100 percent reserves denominated in foreign currency, and not issued by the local government that has franchised the currency board. That gets us to the key point: the Chicago boys - the necessary condition for the introduction of one. If you had a currency board in Argentina, we would never be talking about the necessary condition of having a Chicago boy at the Central Bank because it's irrelevant. This is the key thing: a currency board is an institutional arrangement that guarantees all this. In fact, there have been about ten currency boards, and most of them have had about ten employees because all they do is issue local currency and exchange the currency for the reserve currency. So, you don't need to be a Chicago boy to do that kind of thing. My question to the Minister is, since all this is working so beautifully and you have done such a good job, which I completely commend you for, why don't you institutionally lock in these accomplishments? You've made the big step - the transition, so to speak - and the results have been favorable. I think that we could have problems then. A currency-board arrangement would take care of all those potential problems that are bothering me - being a foreign investor in Argentina.



Allan Meltzer:

I'd like to emphasize one comment that Minister Cavallo made, which I think has been overlooked. It is that, in addition to establishing a quasi-currency board, they also introduced convertibility and capital mobility, and changed the law so that individuals could hold foreign exchange. If people want to dollarize under those circumstances, they are free to do it. That's very important, because that's the discipline on the Central Bank and on the currency board. It also answers the question, to a considerable extent I believe, as to which way you want to go. I believe that the answer is: you want to establish a currency board. You collect whatever seigniorage there is, but you also introduce a mechanism for enforcing low inflation.

The simplest way of enforcing discipline is the way Argentina has chosen. They say: "Let those people who are concerned about the currency board hold foreign exchange if they wish." Since we would have to repeal the law, we let them know in advance when we are about to inflate again. That seems to me to be the very important part of the mechanism, which he mentioned and I emphasize. It's one of the important conditions that makes a currency board or a quasi-currency board work in Argentina, and that's the real difference between previous plans and this one. People can hold foreign exchange, take money out of the country freely thereby enforcing the discipline on the Central Bank not to reflate.

Domingo Cavallo:

I'd like to make one comment on currency overvaluation or misalignment of the real exchange rate. All the studies that have been done in Argentina on the determinants of the real exchange rate show that, naturally, some influence is exerted by foreign terms-of-trade policies. Whenever you introduce fiscal indicators like the size of the deficit, the way to finance it, even the size of the Government's expenditures, the nominal exchange rate disappears as an explanation for the real exchange rate. So, you may have overvaluation with fixed exchange rate or with flexible exchange rate. The source of the overvaluation is mainly fiscal, as Roque said. What we can learn from the Argentinean experience is that, without any doubt, having a currency board helps in collecting more taxes and in controlling governmental expenditure more appropriately, especially after hyperinflation. I don't know if that would be true for countries that have not suffered from hyperinflation. So, if there is overvaluation of the peso in the months to come, or if one already exists, clearly that would risk the Plan or prompt its failure.

In answer to Michael Michaely, I think that there is a risk of failure if we really generate the problem of overvaluation, but that will be generated either because the Government is not persevering enough in collecting more taxes, reducing its expenses and generating a surplus, or because Argentineans spend too much. The Argentinean people are cyclothymic. We have a psychological cycle: there are times when we think that everything will go badly and that there will be no future. During those years, we herd a lot of dollars and pesos. Then there are those times when we feel that we have conquered not only Argentina, but the whole world and then we want to spend and spend not only our current income but the future one as well. Of course, that is a risk. Having a tax policy to collect taxes whenever there's excessive spending by the private sector, and reducing governmental expenditure when this happens, is very useful, although implementing it is not very easy. It would entail explaining to the people why there is an overvaluation; that is, if the price of a haircut has

increased too much or if the nominal wages in dollars or pesos are too high. There will be a time when perhaps the possibility of a wage reduction should be discussed between employers and workers.

We are very active in the press. President Menem is very capable of explaining very complex ideas to the people in very simple words. He expresses that, naturally, if wages become too high, they will have to be reduced, and that the same is true for prices.

B. Peru's Stabilization Policies and the Currency Board Option

1. Stabilization Policies in Peru - Carlos Bolona Behr

I have some general statements about what we have been doing in Peru for the past 18 months. Inflation that was running at a 60% rate on a monthly basis, is now 3.5%. That means that we have reduced it from 8,000% in 1990 to 140% in 1991; our target for 1992 is 37%. In terms of growth, it has been negative for years - around an average of -8%. Last year we managed to have 2.5%; this was nothing spectacular because 1990 was so critical, so anything had to be positive after that. As far as international reserves are concerned, we inherited a Government with -100 million dollars. We now have 1.3 billion dollars. In terms of the fiscal-tax incidence - that is, tax revenue over GDP - it was eroded to a level of 3% of GDP. That was our tax incidence; this means that our tax payroll for public employers represented 140% of our revenue. Currently, our tax incidence is around 8%, which is still insufficient. In that sense, I believe that the fiscal side still is very weak and there's still much to be done. Fiscal deficit, in whatever way is measured, was higher than 10% of GDP. We are now at levels around 3-3.5% of GDP.

As far as microvariables, I think that we are headed in the right direction - we are moving toward stabilization, but have not achieved it yet. We have a Congress; we also have a minority in Congress that is very eager to spend because, after one year of adjustment of the microvariables, they think they have the right to spend more than whatever income they can give us. That's a big pressure, even if it comes from a minority in Congress. However, we have been fighting hard with them. Despite hyperinflation, perhaps they have not learned the lesson yet.

With respect to the key price in the economy, the exchange rate has suffered an overvaluation in real terms. That is the subject that Julio Velarde will analyze in much more detail. Our interest rates are positive in real terms, but they are much higher for domestic currency than they are for foreign currency. A dollarization is evidently happening. Dollarization started during the period of instability; it has not been made explicit. It is as simple as that. It is not because with stabilization dollarization is being manifested; it had been building up and now it has been made explicit. Why should we force people to believe in our domestic currency when we have been cheating them for 30 years? It will take time; that's something we must consider as we analyze dollarization. After hyperinflation, people don't believe in their own currency very readily; it takes 5-15 years.

In terms of wages, we've been cutting real wages in the Central Government, but have not been extremely successful in public enterprises. The product of privatization is crucial, and is the

thing we are missing. Deindexation must be considered for private wages. This will be the year of privatization for us. Private organizations have been in the habit of increasing wages and trying to push prices. They are now realizing that they cannot do that anymore with much flexibility. So, wages are in the process of being adjusted; this is something that we need to do rapidly.

As far as other administrative prices, and prices on public services and fuel, I think that we are getting international levels, perhaps high, because of the overvaluation of the exchange rate. We are criticized because we have fuel and gasoline at much higher prices - we have a 144% tax on those items.

When it comes to structural reforms, we have been very aggressive. We have leveled trade; we have reduced tariffs - our average tariff is around 17%. We have eliminated nontariff barriers, a lot of regulations and additional costs in ports and transportation. We freed the tariff for urban transportation. We have a new banking law, which has already liberalized the financial sector. There is a problem, though - there is a natural protection in the financial sector. With terrorists in place, the banks are not too eager to come to our environment. There is also a problem of solvency in the whole system that needs to be tackled very fast. As for labor deregulation, we have made some positive advances, but much more needs to be done in that area. A reduction in the size of the Government also needs to be made; we are doing it with respect to personnel. About 80,000 people have been let go. The Central Government consists of 800,000 employees, so this is another main concern that we have for this year. All in all, I think that we have been very aggressive. We are open to investment; we have defined the principle of privatization as being that everything can be privatized, even education and health. We also have a law that allows the privatization of pension funds. In that sense, the legal framework is in place in order to get started.

As for the reinsertion into the international community, we have also done some interesting things. Mr. Garcia tried to break away from everything, not only foreign investment, but also the international financial community. We have almost settled our problems with the 'multilaterals;' now we are dealing with the commercial banks. That has been in the works for 18 months, but, again, work still remains to be done. With that general view, I'd like for Julio to get into the details of the problems that we are having with interest rates, the exchange rate, and the problems with the monetary and fiscal aspects. In addition, I'd like for him to touch on the fact that some pervasive aspects have appeared in our adjustment and how we can deal with them. We would appreciate any suggestions we can get from you all. We have looked at the Bolivian adjustment case, but we still have some distortions that we need to take into consideration. Your shedding some light on the potential solutions would be very helpful to us.

## 2. Inflation and Stabilization in Peru - Julio Velarde

I will deal more with the promise of the monetary policy and then mix in comments about the possibility of having a currency board in Peru. You can observe that now in Peru, for the first time in probably 15-20 years, the rate of inflation announced by the Government is credible. You can ask businessmen to make projections of the inflation for this year and they will say around 40-45 percent, which corresponds more or less to the one announced by the Government. So, there has been a great gain in confidence that results can be obtained with the program, in contrast to the hyperinflation that

we suffered before. Some of the problems that are there now are, in part, a consequence of the policies that were applied at the beginning. The exchange rate that the Central Bank was applying was the one that prevailed in the market immediately after the stabilization program. The private prices at that time were set at almost 60 percent over the exchange rate, just to calculate the prices after hyperinflation.

During the first two months of the Fujimori Government, we raised the rate of devaluation. We had a deflation of almost 18 percent during the first four weeks after the approval was announced. Many businessmen preferred to sell their merchandise as soon as possible in order to avoid getting rid of their dollars or taking loans at such high interest rates. That had the effect of reducing prices at the beginning. After two months there was fear of engaging in a very big monetary expansion. After almost fifty days we had the same amount of stock that we had at the beginning and the problem was: what to do? There were few options. Continue to devalue? In that case, the advantage would be that you would be introducing some pressures in nominal expenditure, but at the same time the real stock of money and the value of the stock of money in dollars would also be increasing. So, the problem would be less afterwards. We opted for floating--trying to establish some limits to the growth of monetary quantities.

This policy was not followed very closely. Perhaps there was lack of coordination between the Central Bank and the Finance Ministry and also an absence of very clear objectives for this kind of policy. Because the purpose was not clear, following this program was complicated. If the dollar was going down too rapidly, then the issue of money was maybe 10 percent. If the dollar was going up in value, you almost contracted money. Thus, during the first six months of 1991, for example, the monetary policy was rather erratic. What were the reasons to select floating? One of the reasons was that the monetary base was extremely small after hyperinflation - even after remonetization. We are talking about close to 800 million dollars, with inflows of capital per month of close to 200 million dollars. Increasing the monetary value was very hard and made one afraid of the consequences, particularly when there already were very high reserve requirements. At the end of the previous government, the reserve requirements were 80 percent. Then you observed that many of the people who were bringing dollars began to spend soles, and there was no guarantee that anyone would demand that money at the end. So, we were afraid of making a bigger appreciation of the sol.

I believe that the exchange rate has to be managed better, even fixed in some cases. A bigger monetary base is almost required, because there is very little that can be done with such a small monetary base compared to the flows of capital. Another problem before fixing or trying to manage the exchange rate more actively, is having a greater quantity of monetary instruments, and more adequate relative prices. The exchange rate is now close to 65 percent of the average value of the last ten years, so we have a serious problem of overvaluation. The other thing is that we probably need a lower inflation before attempting to fix the exchange rate or to manage it more closely. In addition, we probably need a greater stabilization of the flow of foreign resources. When you have 100 million dollars in one month, with such a small monetary base, or an increase in the flow of capital of 200-250 million dollars, almost any policy to try to fix the exchange rate is rather costly.

We will probably advance with some sort of mixed policy, maintaining some kind of monetary anchor, but introducing a band for the management of the exchange rate, which until now has been almost completely free. Many critiques can be made. One of them is that no one knows where the money demand is, especially after coming out of hyperinflation and when there have

been many structural reforms. The signs for monetary policy are particularly visible, especially those that have to do with nominal spending. Despite the well-known lapse between the policy and the effects of that policy, you can probably manage to avoid the worst problems.

As Minister Bolona mentioned, we have many problems now. Inflation is still very high; we hope to achieve a rate of inflation of close to 2 percent in less than three months. The great problem that we have is that appreciation of the sol would make the implementation of this policy more difficult. With respect to interest rates, they have been going down. There were probably a great number of errors made in macroeconomic policy in 1991. For example, in November 1991 we had almost the same interest rate as we did one year before. This was due mainly to the problems of macroeconomic management during the previous months, that is, after obtaining a 5 percent inflation in November 1990 and a lending rate of interest of almost 10 percent. The rate of interest jumped to 20 percent and the inflation rate also jumped to close to 20 percent in January and February 1991. The process of bringing them down was pretty hard. Now the lender rate of interest is close to 6 percent for businesses in Peru, in soles per month, and although the deposit rate is 4.5 percent per month, most banks are talking about reducing it to 3.5 percent. That is almost zero percent of the real rate of interest for deposits for the next month.

When you say that the savings or deposit rate is almost zero in real terms, you can notice also that most of the savings are in dollars and that soles are only used for transaction purposes. There has not been much change in portfolio regarding deposits, the change has been through the lending rate. That is, people who had a loan and were paying 20 percent per month in soles when the exchange rate was stable were trying to cancel that loan. There are problems of negative expectations, of course, but when you say that the deposit rate is almost close to zero and the lending rate is still pretty high, most of the problems are institutional - competition in the banking sector. We are trying to work it with the development of a secondary market in the Central Bank.

As for the appreciation of the sol, there were some mistakes that were made, particularly regarding the interrate in dollar deposits. Until March of 1991 the rate of interest in soles was completely free, but there was a ceiling on the interrate of dollar deposits that was about 1 percent. Actually, deposits were growing to almost 90 million dollars; I told you that the money base was 850 million dollars, so I think that it was what the country could absorb. When the ceiling was eliminated, the dollar deposits increased to close to 250 million dollars in a few months. That is close to 30 percent of the monetary base. Probably at the beginning the reserve requirements for these deposits were still lower, so there was the creation of the Peru dollar through the money multiplier - in dollars in this case.

Hopefully, the inflow of capital will be a little smaller; that is, if we continue at the rate of capital increase of the last half of the year, in three years we will probably end up with more deposits than Chile and Colombia together, which is almost unbelievable. I'd like to raise one point with respect to dollarization. We have achieved a devaluation of almost 20 percent per month, with an inflation rate of only 4 percent, in a great part of our monetary control. Since we want to obtain a higher exchange rate, that policy will probably have to be restricted so as not to allow such a big increase in nominal spending. That would eliminate the real gain in exchange rate. It is true that dollarization has continued in the form of deposits as a percentage of total liquidity - that is, dollar deposits in banks as a percentage of total liquidity. Dollar deposits are close to 58 percent, compared

to 28 percent in 1980. Those numbers will probably be maintained for some time. Another problem with devaluation is that loans to the private sector are 62 percent in dollars.

I'd like to make some points regarding a currency board as a possibility for Peru. I have some arguments against a fixed exchange rate, and I would extend them to cover a currency board. If the Central Bank were autonomous, it would not be afraid of the pressures exerted by the Ministry of Economy or the executives of the Central Government to finance the deficit. But when you have a monetary policy that is too receptive, with a very high interest rate and a decrease in the GDP, the pressure of all the business groups is so strong that, probably, in those cases there will be greater incentive for the Central Bank to issue more money - definitely more than in the case of deficit financing. One of the problems with currency boards is that when the money stock and the governmental expenditure are rolling, there is a positive attitude. I doubt that the Central Bank would resist in a country that has a very small monetary base or a decrease of 4-6 percent of this monetary base. If the Central Bank faces these deflationary pressures, it would probably prefer to violate its previous promise and proceed to issue some money. Of course, that promise would bring some safety nets for banks, since we are getting out of hyperinflation and would raise the real rate of interest. Evidently, there would be some advantages to having a currency board: it's much more simple, it would reduce the rate of interest faster and, if confidence and credibility could be built, the growth rates of Argentina could be attained. In addition to increasing the money demand, people believe that nominal spending is noninflationary, so that brings the great increase in industrial production that we saw in Argentina. That can certainly be an advantage when you have excess capacity.

The other point made by Minister Bolona was wage discipline. In Peru, businessmen continue to increase wages because they believe that they will be rescued by the devaluation of inflation; that policy continues. One of the disadvantages is that people are now believing in the persistence of the program--just trying to change the program when the first difficulty is encountered would probably be very costly.

### 3. A Currency Board for Peru? - Carlos Paredes

In evaluating whether the proposal to introduce a currency board in Peru now, 18 months after the launching of the current stabilization program, is prudent or reasonable requires the consideration of many factors, among them:

- the precariousness of the current fiscal balance;
- the current degree of exchange rate misalignment;
- the net foreign exchange position of the Central Bank and the need for a currency stabilization fund;
- its potential beneficial effects on reducing domestic interest rates, on inducing an even more rapid disinflation and remonetization of the economy, and in stimulating an earlier economic recovery; and
- if a large initial devaluation is judged to be a requirement, then it is necessary to analyze the potential disruptive effects of such a measure on credibility, inflation and the stability of the financial system.

I will refer to some of these considerations in these brief remarks. However, let me start by placing the question of the soundness of such a proposal within a broader context: the need for the program to succeed within a fairly short time so that it will be sustained.

As in the time of Damocles, we should not forget the fragility of the current state of affairs in Peru. The Garcia sword--or better yet, the populists' sword--is suspended over the program's head by a single hair. The possibility of a significant policy reversal is not small. For example, the Peruvian Congress has already passed legislation which not only undermines the probability of success of the current stabilization program (e.g., the recently approved 1992 budget law) but also reverses some of the progress achieved on the structural reform front (e.g., the agrarian emergency law).

Despite the boldness of the reforms introduced by the current administration, the absence of an outstanding and clear victory on any of the economic fronts where the government is battling problems<sup>14</sup> engenders dissent within the government, and strengthens interest groups that would clearly benefit from the reversal of some of the brave steps undertaken by the Fujimori Administration. A significant policy reversal, therefore, is possible. Even if such a reversal were not to occur in the remaining time of this administration, the probability that it may occur after July 1995 --when a new president should be sworn in--must be minimized.

At this point in time, assuring the sustainability of the reforms should be the most important issue on the policy agenda. In order for the program to succeed, agents must perceive the new rules of the game as permanent. And for this to happen some early successes are needed, since they would severely dampen the plea of populist politicians and wounded protectionists.

Is policy reversal avoidable? And if it is, is Peru condemned to live with economic stagnation for years to come? Is the trap of stagnation, which in so many cases has followed stabilization, avoidable? I think it is, and the introduction of a currency board--or any alternative exchange rate arrangement which would provide an initial large devaluation followed by a credible fixed peg of the exchange rate--would be one of the factors that would help Peru avoid this trap by increasing the probability of early successful outcomes of the program. Such a change in the exchange rate regime--if accompanied by the necessary fiscal and reform measures--would immediately bring about a large depreciation of the real exchange rate (most of which would be sustainable) and a dramatic decrease in domestic interest rates (at least for sol-denominated transactions). In addition, current excessive discretion in the management of monetary and exchange rate policy would be replaced by a transparent rule, thereby eliminating one of the major sources of uncertainty within the system. Therefore, it is hypothesized that this regime change could induce a "virtuous circle" of rapid disinflation, remonetization, investment and growth.

Before presenting the case for a fixed peg system in Peru, however, it is necessary to analyze the current monetary and exchange rate regime and its consistency with the stabilization and reform programs. The reason for this is that if the current monetary arrangements were consistent with the program's objectives, the risk-adverse policy makers could very well decide to preserve the current

---

<sup>14</sup> While output per capita and real wages stopped falling in 1991, inflation still surpassed 100%. Over the preceding three years output per capita had decreased by close to 30% and real wages had fallen by more than 50%. Given this background and the harshness of the stabilization measures introduced in August 1990, one can hardly call the 1991 results outstanding successes. They may be relative improvements but are still disappointing in the absolute sense (particularly that of inflation).

regime. Indeed, even if they consider a currency board to be the first best solution, the potential risks involved with its introduction could lead them to stick to the current "rules." I will argue that the current regime is inconsistent with some of the objectives of the program and, therefore, it is not only a second best solution, but that it is hurting the sustainability of the overall program.

### The Current Monetary and Exchange Rate Regime

In my opinion, the choice of a floating exchange rate regime in August 1990 was the worst design error of the program, an error whose costs we are still amortizing. The combination of an initial monetary crunch (due to corrective inflation in August 1990), a monetary crunch (due to corrective inflation in August 1990), a fragile fiscal equilibrium, and a floating exchange rate brought about extremely high domestic interest rates and a significant real appreciation of the currency. As shown in figure 1, during 1992 the lending interest rate was above 200 percent in real terms and, not surprisingly, this was accompanied by a further appreciation of the currency (figure 2).

The initial choice of regime was a mistake, and the management of monetary and exchange rate policy since then has been even more questionable. Frequent intervention in the foreign exchange market has not been guided by a stable target (real or nominal) for the exchange rate. Two conflicting goals--sticking to an austere money growth target and preventing a further real appreciation of the purchase and sale of foreign exchange by part of the Central Bank. As a consequence, monetary policy has been extremely erratic and the misalignment of the exchange rate has not been corrected. Moreover, despite the dramatic reduction in inflation observed since the introduction of the program, no remonetization has taken place and the economy has been re-dollarized. These processes are closely linked together and are explained by two types of factors: first, monetary policy based on monetary targets that do not allow for remonetization, and second, some institutional changes brought about by the liberalization program that may have reduced the demand for domestic money.

It can be argued, however, that these mistakes in monetary policy are past episodes, that we have learned from them and that the conditionality of the current Rights Accumulation Program with the IMF will ensure that these mistakes do not occur again. Moreover, some may argue that the monetary authorities will not be tempted to use the same instrument to achieve conflicting goals due to the current efforts to develop new monetary instruments by the Central Bank and the IMF's Central Banking Department. Even if all of this is true, it does not mean that the problems of high interest rates and exchange rate misalignment will be solved in the near future.

Let us analyze what would happen if the goals of the current monetary program are achieved. Strict adherence to the program will not allow for any significant remonetization. The program sees monetary aggregates growing less than the inflation target (37 percent). In this context, remonetization can only take place if inflation falls more rapidly than predicted. Let us assume that inflation falls to half of the program's target (18 percent) while the monetary aggregates grow at the target rate of 37 percent. Then, we could have an increase of about 16 percent in the monetary aggregates in real terms. This would lead to levels of financial intermediation similar to those which prevailed before the program was launched in mid-1990.

If the high interest rates registered during the past year reflect--in addition to credibility problems arising from the precarious fiscal conditions--tight conditions in the domestic money market



and, in turn, if the current appreciation of the Peruvian sol is linked to high domestic interest rates, then adherence to the program will not contribute to solving these problems. Indeed, it is not possible that a significant fall in interest rates will occur with a correction of the exchange rate misalignment under the current regime, since tight monetary conditions will not be ameliorated and current fiscal policy (broadly defined) does not allow for a significant increase in tax revenues. In this scenario, a protracted period of stagnation can be anticipated; a period during which interest groups favoring reversals of some of the structural reforms (in particular the opening of the economy) will gain momentum.

A final troublesome aspect of the current monetary and exchange rate regime is the anticipated sources of growth in the monetary aggregates. Under the current program, more than 50 percent of the expansion in the monetary base during 1992 will be due to an increase in the Central Bank's stock of domestic credit. In contrast to the currency-board option--whereby the expansion in growth in money under the current regime is due to the financing of the quasi-fiscal deficit.

### The Case for a Change in Regime in Peru in 1992

Why should the current monetary and exchange rate regime be abandoned? There are multiple reasons, from theoretical considerations--such as the fact that the Peruvian economy is not an optimal currency area and the authorities should therefore peg the currency instead of floating the exchange rate--to the layman's observation that the current regime has led to an extremely erratic monetary policy. Simply stated, Peruvian monetary authorities have not been able to stick to a stable monetary policy rule and there is no indication that they will in the future. Too much discretion, on the one hand, and too few immediate costs attached to breaking the current rules, on the other hand, coupled with huge and sometimes conflicting pressures to intervene in the foreign exchange market, inevitably lead to an unstable monetary policy.

An additional and equally important reason for abandoning the current regime is that it will neither allow for a correction of the exchange rate misalignment nor will it reduce domestic interest rates in the short run. As argued in the preceding section, even if the authorities strictly adhere to the current monetary program, it is not possible to foresee that the current large overvaluation of the Peruvian currency will be corrected and that domestic interest rates will decrease significantly. The current monetary program does not allow for remonetization but surely promotes redollarization.

In the past eighteen months, excessive policy discretion on part of the monetary authorities has prevented a more rapid disinflation and a correction of the overvaluation of the currency. The proper response to the past policy discretion should not be to increase the Central Bank's real discretionary power by means of increasing the number of policy instruments available to the monetary authorities. In the future, rules should prevail over discretion. This would significantly reduce uncertainty and increase efficiency.

In a situation where the demand for money is highly unstable and where the domestic financial system does not display competitive behavior (and, moreover, at a time when financial intermediation is severely affected by moral hazard and adverse selection problems), monetary or interest rate targets are inferior to an exchange rate target. Therefore, the monetary authorities should set an exchange rate-target rule.

### Some Considerations for Modifying the Exchange Rate Regime

In his study of the end of four European hyperinflations in the 1920s, Sargent (1988) stresses the following points: "The essential measures that ended hyperinflation in Germany, Austria, Hungary, and Poland were, first, the creation of an independent Central Bank and, second, a simultaneous alteration in the fiscal policy regime. These measures were interrelated and coordinated." Furthermore, he notes that the "hyperinflations were each ended by restoring or virtually restoring convertibility to the dollar or equivalently to gold" and that "in the months and years after the rapid inflation had ended, there was a rapid rise in the high powered money supply." Moreover, he underscores the fact that these were not isolated actions, but a change in the rules, a change in policy regime.<sup>13</sup>

The rather slow and painful disinflation which has been registered in Peru since August 1990, can be partly explained by the fact that Sargent's required change in policy regime has not clearly taken place. Indeed, tax revenues as a percentage of GDP are still below 8 percent and the Central Bank's quasi-fiscal deficit still accounts for more than half of the expansion in high-powered money. Instead of having a fixed and fully convertible exchange rate, the Peruvian sol has depreciated by almost 250 percent since the launching of the program. As most policy-makers in Peru will concede, Sargent's emphasis on the need of coordinated actions has been absent in Peru.

The first thing to emphasize is that a change in the exchange rate and monetary regime should not be an isolated action. Opting for a currency board or for a fixed exchange rate is not a decision which should be made by the monetary authorities alone. Such an action should be fully coordinated with the Ministry of Finance and may require inputs from other agencies, such as the Superintendency of Banks and insurance companies.

The second thing to remember is the current severe misalignment in the exchange rate. Undoubtedly, if some type of fixed exchange rate system is going to be introduced, a large devaluation will be required at the outset of the new regime. Clearly, the magnitude of the initial devaluation will depend on the system that is adopted. Full dollarization or a currency board with an "infinite time horizon" (in Peru this means more than four years) will require a larger devaluation than a temporary fixed peg would (let us say one year) followed by a crawling peg. It should be noted that there is a trade-off between the sustainability of the new rate and the initial disruptive effects of the devaluation: a larger initial devaluation will increase the sustainability of the new regime and, therefore, its credibility, but will have a larger inflationary cost at the beginning.

Given the recent behavior of the real exchange rate (see figure 2) and the need to foster investment in the tradable sector of the economy (or, at least, to prevent the collapse of the import-competing industries and that of export sectors facing very low prices in world markets or "nature shocks" as in the case of fisheries), I do not think that the required initial devaluation is less than 70 percent (and this may prove to be optimistically low). In any case, the question of the magnitude of the initial devaluation merits serious analysis.

A third consideration is the time horizon of the new regime and the currency or basket of currencies to which the new sol would be pegged. During the past twenty years the Peruvian economy has been subject to a wide variety of external and domestic policy shocks that led to changes

---

<sup>13</sup> Sargent, Thomas (1986): Rational Expectations and Inflation. New York, Harper & Row, Publishers, Inc. The references are to chapter 3: "The Ends of Four Big Inflations" (pp.40-109).

in the equilibrium real exchange rate. Although changes in the real exchange rate are not precluded by the introduction of a currency board (changes in commercial and fiscal policies can still affect the rate), a fixed nominal exchange rate coupled with some degree of nominal price rigidities would certainly reduce the range of change in the real exchange rate in the short run. The introduction of a currency board reduces the extent to which external shocks can be tackled with expenditure switching policies and this may have some significant real costs in the Peruvian case.

This consideration suggests that fixing the exchange rate should be a temporary measure. A convenient rule for monetary expansion during this period is provided by the currency board: changes in base money should solely reflect changes in international reserves. How short or long is temporary? Clearly, this varies from one context to another. While a five-year tax break may be temporary in the industrialized countries, in Peru's experience this would be considered permanent. Almost all economic time horizons in Peru have been progressively and significantly shrunk during the past two decades. Although this has had a toll in terms of the level and quality of investment in the country, it may open the door for institutional innovations which may be temporary but may produce benefits similar to those of a permanent reform in some other context.

It is my opinion that a "serious commitment" to a fixed exchange rate of at least two to three years would produce substantial benefits in the economy today (the intertemporal rate of discount is huge in Peru). Such a commitment would have to be made by passage of a law in Congress which would stipulate the minimum period during which the exchange rate would remain fixed and the way in which the system would be replaced. A large devaluation at the end of the fixed exchange rate period should be explicitly precluded. Probably the best transition mechanism is that of a crawling peg.

What should the Peruvian sol be pegged to? It should be noted that since the breakdown of the Bretton Woods System, the behavior of Peru's bilateral real exchange rate with the United States has, on occasion, differed significantly from Peru's multilateral real exchange rate (particularly during the S). Although pegging the sol to the dollar has clear advantages in the Peruvian case (transparency and dollarization of the economy), it also carries some risks. The U.S. dollar has recently fallen in world financial markets and if it were to appreciate during the period in which the Peruvian sol is fixed to the dollar, this would entail a high loss in competitiveness for the Peruvian economy and generate adverse expectations in terms of the sustainability of the regime. Therefore, I suggest that the sol be pegged to a currency basket. Again, for transparency and credibility reasons, I consider a peg to the SDR to be preferable to a peg to some other unknown ad-hoc basket.

Finally, as stressed above, this should not be an isolated action. I do not believe that significantly increasing tax revenues--let us say to 13 percent of GDP--is a precondition for introducing this change in monetary and exchange rate arrangements. Although a much stronger initial fiscal base would be desirable, it is simply not there. The change in policy regime, however, should not be limited to the rules governing monetary and exchange rate policies. Fiscal actions need to be introduced simultaneously: changes in public sector prices, reduction in marginal tax rates, unification of the sales tax, further progress in identifying tax evaders and enforcing tax laws, and above all, rapid privatization of state-owned firms to absorb the servicing of the Central Bank's debt to the IMF, and other components of the quasi-fiscal deficit.

# Annualized Interest Rates

FIGURE 1

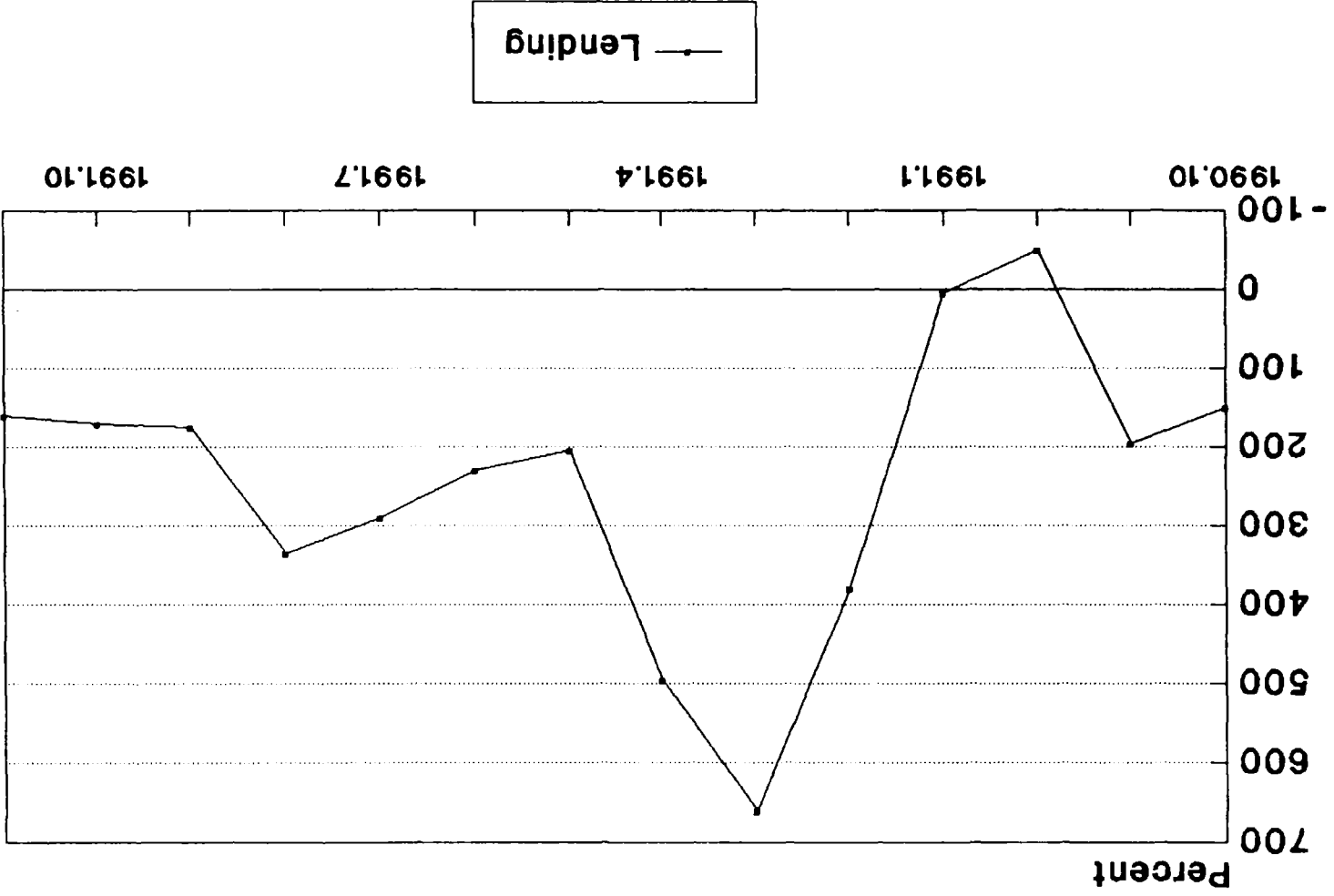
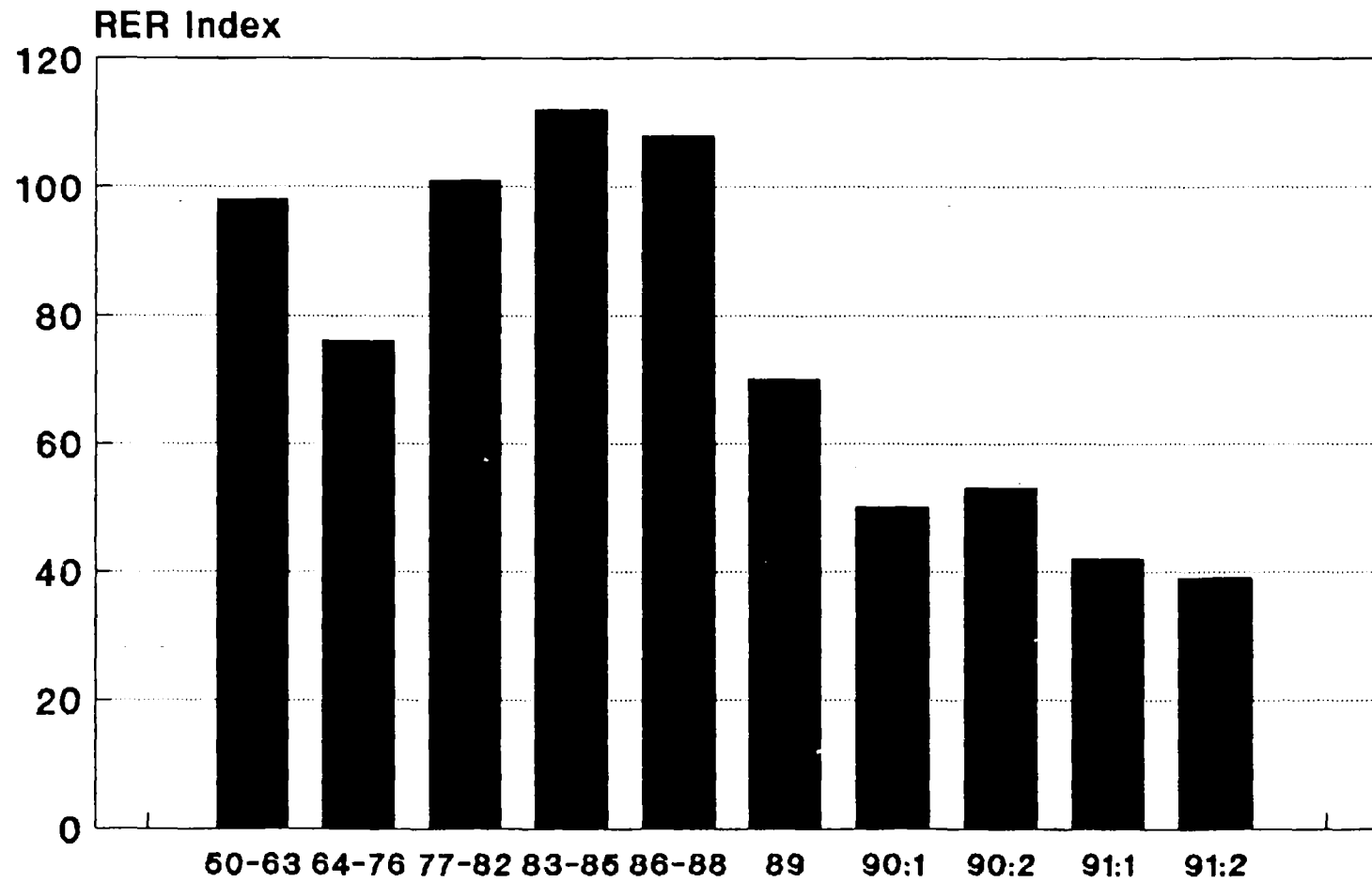


FIGURE 2  
Real Exchange Rate: 1950-91  
Multilateral Index for Exports



Peru's Stabilization Policies and the Currency Board Option - Comments

Matthew Canzoneri:

I have been following the monetary unification in Europe, and I thought that it would be interesting to try to bring out some of the analogies and differences. It's interesting to consider preconditions to a monetary union. In Europe, they are absolutely insistent on various convergence criteria, in particular about inflation and fiscal conditions.

From what I understood, inflation in Peru has not come down anywhere near to dollar inflation rates, and the wage-adjustment process is not converging quickly to an inflation rate of that size. When the Europeans talk about inflation convergence, they worry about what to do with the final exchange rate when going into something like a currency board. It seems very difficult to figure out what the right exchange rate is going to be with a country like Peru. Here the Europeans are worried about two things: if you have too much wage and price inflation, competitive factors come into play. I think there is also the political factor that Michael Bruno was referring to. Some people think that you have to get the inflation rate down in countries like Spain and Italy to see how people like it—do they really want that monetary policy and the fiscal restraints that go along with it? On the fiscal side, I heard that there are adjustment problems, particularly in getting the government-sector wages into line. We have heard the same concerns with respect to Italy. Is Italy really ready for a monetary policy like Germany's?

You don't solve either the inflation-convergence problem or the fiscal-convergence problem by simply creating zero inflation. These problems don't go away. They cause competitiveness problems and political problems. I think that in the European context, they create pressures on the monetary authority. In the Peruvian context, I would guess that they would jeopardize the credibility of the reforms that have been made, and the longer-term credibility of the currency board itself.

I also worry about discipline arguments stated in terms of pegging the exchange rate to something like the dollar. Those arguments, as applied to Europe, have always been missing in some theoretical elements. One reason why an exchange rate commitment is more powerful in Europe than a commitment about the money supply or inflation is that there are extra political costs to breaking an exchange rate agreement. Think of the Common Agricultural Policy and various other aspects of European political integration. Those extra costs are missing when you talk about Peruvian-U.S. relationships; so it's not clear that pegging to the dollar will produce the kind of discipline or benefit that it seems to be producing in Europe.

Stanley Fischer:

Much of what has been achieved in Peru in the last 18 months is extraordinarily impressive, not only with respect to inflation, but especially on the structural side. The macroeconomic problem that is being faced now is that Peru - like other Latin American countries - has an overvalued exchange rate. What can be done about it?

One answer, from Julio Vellarde, was that interest rates have actually come down already, and that the deposit rate is essentially zero in real terms. Implicitly, he is telling us that the sol's lending rate is high because of noncompetitive elements in the banking system. These are the kind of inefficiencies that develop during a high inflation. He is also telling us that interest rates may decline, so that the problem on the interest-rate side is, perhaps, not as bad as we think. As interest rates decline, the real exchange rate would also depreciate.

Another story was told as well, to the effect that by targeting money growth, Peru got more of an overvaluation than if it had had an exchange rate target. I do not follow the mechanism, but it must imply that Peru would have been willing to cause faster money growth with an exchange rate target. There would have been more inflation, but a higher or less overvalued real exchange rate.

Carlos Paredes is also arguing that an exchange rate policy would have been more credible; there would have been more belief in the domestic currency and, therefore, more of a movement into the domestic currency. I don't know if that's true. It is extraordinary that the real money base in Peru has barely increased since the stabilization. This distinguishes the Peruvian situation from other stabilizations, where there was a significant increase in the domestic real money stock. I'm not sure about the credibility argument, but I doubt there would have been less overvaluation, since we have seen significant overvaluations also in countries that used an exchange rate target.

The overvaluation would be reduced if Peru could tighten the budget. There are two possible ways the overvaluation problem may unfold. First, interest rates might come down gradually and, at some point, the currency may begin to depreciate more rapidly than inflation at the same time as inflation speeds up. This has happened in Colombia on occasions--it allowed a significant real devaluation in the mid-1980s. That would be the nice way. The other possibility is that the appreciation of December-January could continue. That will ensure the program cannot be sustained.

There is no easy answer to the overvaluation problem. The problem has bedeviled every country that stabilized from hyperinflation and no one has yet worked out how to solve it. At some point the Israelis imposed taxes on capital inflows. But basically they solved the problem by sweating it out, when Michael Bruno was Governor. The interest rate in Israel is now quite reasonable; the exchange rate is a little overvalued, but not to the extent of Peru's.

I would like to make some points on the currency-board issue. To reiterate the relevance of the CFA-franc zone, the essential feature of a currency-board system is that it is a fixed-rate system, fundamentally a gold-standard system. The reason the CFA-franc zone is relevant is that it has been an irrevocably fixed exchange rate system. In CFA countries in which, for various reasons, domestic wages got out of line, the adjustment mechanism has not worked well at all. So, the CFA zone is not irrelevant. If you compare the high-inflation adjusting countries in Africa with the low-inflation CFA-franc zone countries in recent years but not in the 1970s, the flexible exchange rate countries have done reasonably well compared with the CFA countries.

As to the assertion that currency boards never failed, I would say they failed in the standard sense of survival. They don't exist, so something happened. Maybe they were politically inviable, perhaps they disappeared by mistake; I just don't know. However, there are some intriguing questions, like: Why did the Danzig Board last only two years? What happened to the Argentine experience from 1890-1930? Why did it end in 1930? Presumably because it got hit by a shock that

it couldn't withstand in the same way that the gold standard worked well as long as it worked well, and when it didn't you got rid of it.

On currency boards for Eastern Europe, there really is an issue of how such boards would get the necessary initial resources. Larry Summers was quite right that it's irrational for the West to deny these resources to the East Europeans; after all there's no cost to the West of providing these resources. The same argument applies to stabilization funds, but they haven't been easily forthcoming. If resources were provided to Russia, I believe they'd be better used in a stabilization fund than a currency board. I simply don't believe that a country the size of Russia would benefit from running its currency through a currency board. If it's not good enough for Germany and other western countries, I'm hard pressed to see why it's good enough for Russia, except perhaps as a transitional device for a year or two to bring monetary stability.

I'll make two concluding comments. If I believed that a currency board solved the fiscal problem, then I'd be 97 percent for it. If you could bring fiscal discipline to developing countries by putting them on a currency-board system, this would make a very strong case for doing so. We know that fiscal problems have been at the heart of most of the government-created instabilities that we have seen in these countries. But we have little reason to think that a currency board would achieve that. The fact that there have not been fiscal problems when currency boards have been maintained does not settle the issue. Were there currency boards that did not survive fiscal undiscipline?

The other point that would drive me one way or the other on whether Peru should introduce a currency board, is that of how to change the real exchange rate. If Peru could go into a currency board with a real exchange rate which is 40 percent above the current one, then there would be a much better case for a currency board. If you moved to a dollar system at the current exchange rate, you'd still have very high prices in Peru. I don't know how you can start with a big devaluation. What do you say to the Peruvian workers when they say: "Listen, you have just cut our real wages by 40 percent." Do you tell them that their wage is perfectly reasonable in dollar terms and that \$47 per month is what they should have? There is no nominal anchor to the wage in that system; the workers wouldn't have any idea what their dollar wage should be. It's no good saying that they have to compete with American workers; American workers earn \$20,000 per year. The notion that the dollar is a nominal anchor in that system is correct, but it doesn't solve the problem of how to get the relative price level right.

Miguel Kiguel:

I have not kept up to date with developments in Peru, but what people have been saying here today about the recent developments there reminds me of what was happening in Argentina in 1990. There are many similarities with the process that eventually led to the Convertibility Program. Argentina was essentially under a monetary rule at the time. Starting around December 1989, Argentina left the fixed exchange rate because it was associated with a failed strategy to stabilize, and moved closer to targeting the money supply. The exchange rate appreciated dramatically and was allowed to float. The exchange rate is appreciating substantially in Peru now also; this has been a matter of concern and debate. The Government still has not found a fool-proof solution because, although they have a convertibility, there's still an argument as to whether the exchange rate



continues to appreciate at this moment. The issue of real appreciation also has to do with the phenomenon of stabilization, especially after hyperinflation.

The other similarity is that in 1990 the fiscal deficit was not a major problem in Argentina. It's difficult to know precisely what the fiscal balance was in 1990, but one does not see an overwhelming fiscal problem. The impression was that the fiscal situation was about to be solved, but inflation continued to be significant. Perhaps there was a problem establishing whether the fiscal situation was sustainable in the future, because the quality of the fiscal adjustment is as important as its size. There were doubts because many of the taxes were highly distortionary taxes - taxes on checks, on exports and on a number of things that people knew had to be eliminated if stabilization was to stay. In these two respects, Argentina's situation in 1990 was similar to Peru's today. The debates as to what to do were also very similar. Argentina was more successful, because in 1991 it adopted a fixed convertible currency. Could we say that perhaps six months from now Peru could be in that situation? It's difficult to predict, of course. My feeling is that this is not likely for a number of reasons.

The first one is that tax revenues in Peru are still too low. It's difficult to think that tax revenues in the order of 8-10 percent of GDP are enough to make any fiscal adjustment credible. The other element is that Argentina went through a number of experiments before getting to where it is right now. In my view, much of what was finally achieved in 1991 really started in 1985. Minister Cavallo said today that the stabilization process started in 1983, but I think that the Austral Plan marked the beginning of a learning process; the public and government officials began to learn about all the mechanisms that were causing and/or accommodating inflation. First they discovered that there was a large quasi-fiscal deficit, then they discovered the problems of the provincial and local governments; then came the social security and the public sector enterprises. Although some of these things should have been clear to everyone, they were not in this case. There is significant learning by doing in the process of stabilization. Perhaps it will take a little more time for Peru to learn about all the loopholes in fiscal expenditure. I tend to agree with what Michael Bruno, Stan Fischer and others have said about a monetary board seeming like a premature adventure for Peru right now, since it's unlikely that creating the monetary board would impose enough of a constraint on the Government to maintain the fiscal system in order.

Before concluding, I'd like to say two things. I fully agree with what has been said before regarding the idea that the monetary boards, if one goes for that option, should be a two-stage process. The first stage would be as a way to enhance credibility on the nominal side; once stabilization were attained, the country would probably go back to functioning like a low-inflation, developing country. Most countries in Central America had low inflation for many years, and Venezuela also had low inflation for a long time. Inflation is a phenomenon that only appeared in the 1980s in Venezuela. The point of it being a two-stage process is related to the fact that the credibility about the maintenance of the fixed exchange rate has two different components. One is the typical fiscal problem, the idea that once it gets working on the monetary rule, the Government will have a balanced budget and money will only be printed to buy foreign exchange. In that respect, having clear rules, a convertibility plan, a monetary board, etc. help to create credibility on the fiscal side. The other entails balance of payment problems. Governments devalue because there are external shocks and sometimes they don't want to accept the costs of unemployment associated with solving the external imbalance through a recession. Stan Fischer mentioned that in the case of the CFA zone, perhaps a devaluation would have made the adjustment easier.

If one considers those kinds of situations, perhaps it would make sense to keep the system flexible and not become locked in a monetary board. While a monetary board might be useful to countries like Peru and Argentina in creating credibility on the fiscal side, they don't eliminate the possibility of a devaluation because of external reasons. In a country like Peru, which has very little access to external financing, one could not rule out that the exchange rate system would collapse, not because of fiscal undiscipline, but because of the possibility of an external shock or any other major problem. I would, therefore, question the soundness of moving all the way into a rule that bound people so tightly that they could not part from it.

#### Comments on Argentina and Peru

##### Michael Bruno:

Having heard Steve Hanke, I must react at least in one respect. If countries have not chosen currency boards in the past, there must be a reason. I agree with what Stan said this morning; I think that a currency board must be regarded as a transitional regime, not as a terminal one. I would regard it as something that, in a sense, is a desperate move; when nothing else helps to commit yourself to the two major parts of any stabilization program, namely that you commit yourself to budget balance and you commit yourself, credibly, to an exchange rate. That's the common feature of any successful stabilization. What I stand to be convinced of is, in a particular situation, why a currency board or dollarization would be a better way of committing yourself to these two or any other alternative. I think what we learned this morning that the Argentinean case, from that point of view, is very successful. You have to be ready in two ways. There are three fundamental parts that were mentioned this morning. Do you have a budget in place? Is your financial system in place? Can you fix up your domestic debt? Do you have sufficient foreign-exchange reserves? Domingo suggested that in 1985, Argentina was not ready for a currency board. The reason is that none of these things were in place. The next one, and this may be more important, a country has to be ready in a political sense. Having exhausted all other possibilities and made mistakes on all other alternatives - in the end you opt for a currency board. That is how I interpret what Argentina has done - and very successfully.

From what I have heard so far, my judgement is that Peru is not ready for a currency board. I understand that there is a fiscal problem on the tax side, that the fiscal balance is not sustainable and, if this is so, one has to prove that the option of taking a currency board will fix the budget balance in a way that something else wouldn't. That the politicians or Parliament, would in that case, be forced to balance the budget, still needs to be proven. The other thing that I sense is that here is a strategy that was running for a year and one-half and is not running all that badly. In fact, it has been doing reasonably well. If it's doing reasonably well, I don't think that you should change horses in midstream, unless you have exhausted your present set of policies. That's my sentiment and that's as far as I can go.

Armeane Choksi:

I have heard something about the preconditions for what would constitute an appropriate monetary board: you have to get your fiscal house in order; you have to get your financial system in order; you have to have adequate reserves; you have to be politically ready and you have to have the right exchange rate. If all of this is true, is a currency board purely icing on the cake? I think that Stan has put his finger on the button when he said: "Do currency boards fix the fiscal problem?" What is the role of currency boards in creating credibility in governments and in altering expectations? What I and, I'm sure, Carlos Bolona would like to hear is, is it actually correct that all these preconditions have to be in place? If they all have to be in place, then the argument for a currency board is rather weak. If you believe that you don't need any of these preconditions or very few of them, then it might be useful to explain to those of us who are not familiar with this situation how the currency board would work without these preconditions.

Alan Walters:

The discussion about Argentina and Peru is interesting because of the problem of an overvalued exchange rate and going into a currency board with an overvalued exchange rate, which essentially Chile did. Of course, that Chile was caught by the appreciation of the dollar relative to other currencies from 1979 onwards was quite important. It is my understanding that much of the appreciation is caused by the stabilization process itself, so this is transitory.

The other question is: fixing the exchange rate in a currency board to what? The dollar has been up and down relative to all other currencies. There has been a massive appreciation; real appreciation has been about 35 percent from 1979 to February 1985. This creates difficulties; it's difficult to operate a currency board with an SDR. What about the idea that everything has to be swimming before you can introduce a currency board and Stan's point about the currency board inducing fiscal discipline? It does have an effect on fiscal discipline. Does it stop public spending? That's a joke, surely. Did it do that in Liberia, for instance? Of course it didn't.

It seems to me that one of the things we could do would be to institute a currency board and have a new peso - have a one-to-one swap and just gather in the notes and collect the seigniorage. We can then have a parallel currency, with no fixed exchange rate between the existing peso and the new peso. If we don't fix the exchange rate, those three currencies can circulate happily together. If we fix the exchange rate, then Gresham's Law becomes active; with no fixed exchange rate through those currencies, Gresham's Law becomes inoperative. That seems to me a way of getting about it. It's not a great leap forward; it doesn't eliminate inflation, but at least it takes the old currency as it is and it introduces a parallel currency. It gives a lot of freedom to people of the country; they can now negotiate or hold new currencies, fixed to the dollar or whatever, or the old currency. They can negotiate in both. I think that you are right; ultimately, the old currency will go. However, it is really surprising how long the old currencies hang on to small transactions. There would be seigniorage going on and it would help in the budget-balancing exercise.

Don't wait to solve any fiscal problem; you'd wait forever. Don't wait until you've solved all the problems of your nationalized industry before you privatize it, otherwise you'll never privatize. You have to go ahead. The systems I talked about with parallel currencies would be one way of

doing it. The other thing I'd like to emphasize has not come up in this discussion, but it is a very important distinction and Stan Fischer's exposition reminded me of it. There is a very important distinction between a fixed exchange rate, pegged exchange rates and floating exchange rates. Fixed and floating are both good systems. By fixed I mean absolutely fixed. The trouble with the CFA and the pegged exchange rate in the European Community is that they are not fixed; they are pegged. Pegged means that they might move at any time; they might move a little bit or they might move a lot. We are in trouble with floating exchange rates; economists can never guess on those. I think that it is very important to distinguish these. With CFA, the likelihood of going off is always there; it's like a pegged exchange rate. I think that there is a lot to be said for absolutely fixed-exchange rate regimes. Absolutely floating-exchange rate regimes are good; pegged are the worst.

Stan Fischer is right about the fact that you never get to an absolutely fixed exchange rate in a currency board, but you get near to it. I think that the Hong Kong Currency Board at least up to 1988 is close to it. Stan mentioned that none of these things is pure, not even the Bank of England, and I entirely agree with him. There is an order-of-magnitude distinction between the fixed exchange rate, such as the Hong Kong dollar since 1983 and before 1972, and the pegged exchange rate as the lira, sterling and the peseta. Everyone knows that the peseta has only one way to go.

Sebastian Edwards:

I must say that I got a bit confused with the remarks this afternoon. Michael Bruno said that the currency board was a good idea under desperate situations. Miguel Kiguel said that Peru was not quite ready for a currency board. I think that the problem is, and I agree with Armeane, that we have been talking here about all these preconditions. If we have all these conditions, then it becomes completely uninteresting. Wouldn't we all be discussing, instead of having coffee, whether or not Switzerland should go on a currency board? The real issue is one of transition. Should the Peruvians, without having all the preconditions, go into a currency board? That is what makes this an interesting question. Then we have to step back and ask ourselves, again, what is a currency board? A currency board is a particular institutional form of having a fixed exchange rate. I could also say that it's a pegged exchange rate, Alan, because you can always get out of it, the same way you get into it. The question first and foremost should go back to: should we have fixed exchange rates as a way of bringing about a transition from a higher rate of inflation into a lower one? If the answer to that question is positive, then the next question would be: what is the best way to do it institutionally? Is it enough to have an independent Central Bank? There are people who would say, "No." Is it enough to have a law at a constitutional level? Some people would say, "Maybe." Then, I would remind them of the Dominican Republic. It had a one-to-one exchange rate, since it was invaded by the Marines, by a constitutional law, and what happened to it? All official transactions were at the one-to-one rate for accounting purposes, but all other spare transactions were done at a different rate. The change was made exactly the same way it was done before. Should we move toward fixed exchange rates during the transition, not when we have met all the conditions? If the answer is yes, then, is the currency board the best way of doing it?

There are three questions, including one that already has been talked about here: does a fixed exchange rate help to reduce the fiscal deficit? As Alan said, on its own it doesn't. However, if one goes and looks at the political economy of fiscal deficits, it may help. In particular, what we see is that fiscal deficits are fueled by competition among different groups and ministries. Once you have a

fixed exchange rate, and perhaps a currency board, it may be easier to realize that it can't be done unless taxes are raised. There is one possibility that this would be the case. Nevertheless, the history of Latin America is replete with instances where countries have gone into a fixed exchange rate and promised they would never change it - the way General Pinochet promised in 1979 and three years later he changed it.

The second question, which was overlooked in the Argentinean discussion this morning, is that if you go into a fixed exchange rate it is absolutely essential to ask: what happens to inertia and other contracts? I think that one of the points that Domingo Cavallo made this morning that is crucial is that the elimination of indexation was among the structural changes in Argentina. If Venezuela decided to go into a fixed exchange rate tomorrow, even if they solved the fiscal deficit, with the new inertia that has been built into the system there would be a big real appreciation, which could be quite costly.

The third question is: if you go into a fixed exchange rate, how do you make sure that you don't fix it at the wrong level? One way to do it, which Stanley Fischer mentioned, would be to build in a cushion by devaluing up front. Evidently, that can disrupt expectation and create a serious problem. The issue of going in at the wrong rate, as Chile did in 1979, has to be interpreted in a broad sense, taking into account that you can even go at the correct rate but this can later become the "wrong" rate, for reasons that cannot be predicted when the fixed exchange rate is adopted. This can happen particularly if there is a very serious shock in the terms of trade. It doesn't matter that currency contracts are fixed legally, if you are hit with a major terms-of-trade shock, you need to adjust the real exchange rate. If you cannot adjust the nominal exchange rate, then you are in for a period of big depression.

### C. Alternative Stabilization Policies for Brazil

#### 1. The Inflation Process in Brazil - Affonso Pastore

The first thing I would like to address is one feature of the indexation on financial assets that was adopted by Brazil until the early 1980s, and that produced an important stabilizing result. That was the creation of indexed assets in cruzeiros that were less risky assets and prevented flight of capital from the country, at least to a large extent. This flight of capital has been increasing recently. One reason that Argentina had to adopt this quasi-currency board system was that Argentina had an economy informally dollarized. The flight of capital was produced by the combination of high rates of inflation and financial repression over many decades. The only alternative for the residents of the country was to invest their savings in dollarized assets, such that part of those assets became dollars - notes - that were used as substitutes for CDs or other financial assets. That process went on until people realized that they had two currencies. One was taxed by inflationary tax and had a negative real yield equal to the rate of inflation, the austral or the peso, and the dollar, which was not taxed by inflationary tax.

There were legal restrictions to the use of the dollar as means of payment, but the inflationary taxation on australes was so big that people started to use dollars as means of payment. In this

situation even if the Government controls the fiscal budget and the printing of australes, there is an inflation due to the increase of income velocity of money, because the dollar expels the austral and the real cash balances in australes tend to go to zero. At this point, the country has three alternatives. One is to eliminate the austral and to dollarize completely, as in the case of Panama. The other is the impossible one of trying to eliminate the dollars. The third is to adopt a fixed exchange rate regime and full convertability between the austral and the dollar.

I am discussing that because I think it was financial repression combined with lack of sound macroeconomic policies in Argentina that produced the spontaneous dollarization. Until the beginning of the 1980s, Brazil was not facing that type of problem because indexation of financial assets had a stabilizing effect on the economy. When Brazil decided to eliminate indexation and adopt price control, the country adopted the path that Argentina had taken many decades ago. A strong flight of capital began and if it is not corrected, Brazil will also become dollarized economy. I don't know how long it will take, or if it will reach that stage, but it is moving in that direction.

I won't concentrate too much on the need for fiscal reform in Brazil because this has been discussed before. Fiscal deficits have been high in the past. The tax system has deteriorated in the sense that we are creating more and more taxes that are more distorting than the previously existing ones. I refer to the taxation of financial intermediation, not the taxation of income from capital gains and financial holdings, but transactions. The loss of revenue has happened partly because of inflation and partly because of a deterioration or lack of a mechanism to administer the tax system. Spending - cost expenditure - has been increasing. Inefficiency in the Government has been growing; the states and municipalities have been increasing their deficits. The states have state banks. These banks go to the Central Bank to rediscount and they have free access to the printing of money. This is the kind of fiscal problem that had to be solved.

I'd like now to concentrate on the monetary system. Brazil created a Central Bank in 1965. Before that the functions of a Central Bank were exercised in part by Banco do Brazil. When the Central Bank was created, it was not created as an independent Central Bank, Brazil stayed with a Hybrid monetary authority, composed of the Central Bank and Banco do Brazil dividing the responsibilities of monetary policy. The Treasury deposits its revenues in Banco do Brazil, which has access to the Central Bank's vaults. To control this access, the law created a national monetary council whose chairman is the minister of finance. There is the president and 3-5, depending on the times, directors of the Central Bank sitting on this monetary council, but we do have the presidents of all the state federal banks - Banco do Brazil, Banco do Nordeste, National Saving Bank, National Bank of Economic Development, Northeast Bank, and the Amazon Bank - we also have ministers in the council - the minister of planning when the ministry existed, the minister of industry and commerce, the minister of the interior and the minister of agriculture. There are also representatives from the private sector: two from the banking system, one from industry, one from agriculture, one from commerce and, recently, one from the workers' union.

The National Budgetary Council approves the budgetary money we execute. I don't think that I need to go any further then to say that we don't have anything that resembles a central bank. It is a very dependent Central Bank; it is not independent at all. When the treasury has a deficit it draws money directly on the Central Bank. It is not the method that the Treasury sells bonds and the Central Bank goes into primary auction and buys the bonds. The matter is that the treasury really gets the money from the Central Bank; it writes the check and prints the money. The director of monetary

policy has to go out and sell some bonds in order to sterilized what has been expended. That's the game that the Central Bank has been playing. The Central Bank is, therefor, subordinated to the fiscal authorities. I never really saw another system like this in the 20th century.

When the fiscal deficit started to grow, the government had to find systems to sell more bonds. With higher inflation and people not holding enough long term bonds, the maturity terms of bonds started to be shortened. This started back in 1976 but evolved over time until we reached the situation that I will describe.

When the treasury has a deficit, it draws money on the Central Bank. The Central Bank, on behalf of the Treasury, immediately goes to the market and calls for a primary auction for bonds and sells the bonds. The bonds are not sold to the public; they are not held until maturity. They are sold to financial intermediaries that hold these assets financing them with overnight deposits from the non-financial private sector. If there is an increase in the stock of bonds equal to the increase in overnight deposits, then the process works as if bonds was sold to the ultimate holder until maturity. If that doesn't happen, the financial intermediaries go immediately to the Central Bank and they exercise a repurchase agreement. The Central Bank automatically repurchases the bonds and prints money.

A situation like that is not one in which it is possible to have the control over the money supply. Despite of that, until 1984, there are no important signals of endogeneity of money. Causality tests between money and prices, show money causing prices until the beginning of the 1980s, but in the later period, prices are causing money. If you look at the demand for money, you see that it became unstable after the adoption of these repurchase agreements. If you monitor the demand for money you see that it had been shifting to the left, such that the Laffer curve for the steady-state inflationary tax shifts downwards.

If we estimate the steady state rate of inflation that maximizes the inflationary tax, it can be seen that before the repurchase agreements a steady state seigniorage of 6% of GDP could be collected. After 1986-87 when the shifts in the demand reached their maximum, that maximum seigniorage declined to 2,5-3% of GDP.

Historically, the seigniorage in Brazil has been 1.5% of GDP. In 1988-89, during the period in which inflation exploded, the seigniorage had reached 3.5-4%. That is the point at which you cannot collect that seigniorage unless money is printed at a faster rate than the rate of inflation. That's what happened in 1989 and 1990.

This is a classical case of a hyperinflation produced by the lack of base to collect the inflationary tax. What I am trying to stress is that it is easy to stabilize Brazil. One is to have a very decent fiscal reform, and the other one is to create a new institutional monetary arrangement, such that the government can reacquire the control of the monetary base. If these two conditions are met, Brazil will be in a position, for the first time in twenty years, to have a monetary policy.

## 2. Inflation And the Currency Board Option - Adroaldo Moura

After decades of inflation and many frustrated attempts to implement "heterodox" anti-inflationary programs we are now coming back to the very basic principles of monetary economies in

Brazil: money creation can not be a source of financing of the public sector borrowing needs and we have to put in place a sound fiscal regime to avoid permanent budget deficit of the public sector. These are very simple policy recommendations indeed. I will summarize what Pastore just said. Though very simple, these principles are very hard and politically difficult to implement. A currency board sort of proposal to impose discipline on the public sector is even simpler. It is however a bit naive from a political point of view: it cannot avoid the colonialist flavor attached to it. That is why I am skeptical about the idea of currency board as a policy instrument to face inflation in Brazil.

Now let me turn to some important characteristics of the Brazilian inflation. As in Argentina, Peru and other Latin American cases, decades of high inflation rates dramatically reduced the monetary base (or high-powered money). It was only 0.95% of GDP in 1989. It certainly would be very difficult to collect inflationary tax in such a base; however, this does not tell the whole history of inflation in Brazil. Despite a long-lived inflationary process and a history of financial repression -- culminating with the financial freezing imposed by the Collor Plan I -- voluntary financial savings are rather high in Brazil when compared to other Latin American inflationary experiences. Savings are over 30% of GDP over the last five years. Even more striking is the high level of the public sector's domestic securitized debt, greater than 15% of GDP in the same period. No other Latin American inflationary experience exhibits such performance. In this particular sense, the inflationary experience in Brazil is different, thanks to a long-lived and widespread regime of indexation of financial assets and contracts. Thus, the so-called process of dollarization did not occur in Brazil as it did in Argentina.

Equally important is the performance of the Brazilian tax system. Tax collection is over 20% of GDP, a high mark when compared to Latin American standards. However, the Brazilian tax system has shown great instability. Not only tax rates have been changing over time (of income tax and of value added tax, among others) but new taxes have been levied over the last decades. The taxation of financial assets, for instance, has been changing almost every year over the last five years. In short, thanks to the inflationary process we now have an unstable and inefficient tax system.

Oddly enough, the question of credibility of the whole policy-making process, if any, is still subject to ups and downs. Speculative movement with real and financial assets is the core of the inflationary process and sometimes represents indicators of credibility of the economic policy. The foreign exchange market provides a good illustration of this point. During the first quarter of this year we have been running a speculative and bullish wave: foreign exchange was trading in the black market at a rate below the official rate of exchange; a sizable capital inflow (over 2 billion a month for 5 months in a row) did take and still is taking place, and both volume and prices were and still are skyrocketing in the stock-exchange market. For an uneducated observer, these developments seem to indicate a high degree of credibility in the policy-making process. And yet, inflation is running at a rate of 1000 percent a year!

It is obvious that we *are not* experiencing a problem-free inflationary process in Brazil. We just want to emphasize that our experience has not yet run the full course of the Argentine inflationary experience. Pastore just said that we have been playing too much with the markets during the past ten years in quest of a painless inflationary program. Soon this process, he seems to think, will lead us to a process of currency substitution (dollarization) à la Argentina. This process is not yet a visible reality in the Brazilian economy.



Certainly we face significant inflationary problems. The public-sector borrowing needs are skyrocketing (over 30 percent of the GDP). The inflationary tax base has been severely eroded over time; the monetary base (high-powered money) is only 1 percent of GDP but expanding, as one should expect, at a rate close to 1000 percent a year. And the public sector securitized debt (below 15 percent of GDP in the first quarter of 1992) is growing at an explosive rate and at a cost (real rate of interest) of no less than 20 percent a year. No doubt the inflationary experience in Brazil is running out of stamina. It is high time to have a consistent anti-inflationary program in place.

Would the implementation of a full-fledged currency board do the trick? I think not. I simply cannot see how discipline in the money-creation process imposed by a currency board would by itself also impose discipline on the budget deficit of the public sector or reorganize the tax system. Nor can I find positive answers to the following questions:

- a. Would the Brazilian Congress vote for and implement a currency board? How to face the colonialist political flavor attached to this idea? (Recall that it was suggested in this Conference that a truly independent currency board would require a board run by professionals, non-nationals and to be situated either in London or Zurich!)
- b. How long would it take to impose fiscal discipline, if any?
- c. Under the present circumstances (heavy external indebtedness), would the country be in a position to borrow the amount of international reserve required for the transition period?
- d. To what extent would the Brazilian Congress be willing to face the hardship in terms of employment and output contraction imposed by a sudden and isolated contraction of monetary expansion imposed by a currency board?

One should not forget that the authorities that would be setting the rules of the game for the currency board are the same that now set the rules of the policy-making process in Brazil. Thus, I cannot see a political environment in Brazil for the creation of a monetary regime run by an independent currency board.

But, somehow we have to face the problem of inflation. My idea of how to go about stabilizing the Brazilian economy would be to follow the very basic principles of macroeconomic theory:

- e. The very first requirement would be to put in place a consistent tax regime and redefine the rules of the game that now drive the expenditure of the public sector. This is a monumental task in Brazil. The social-security system as well as the tax system are crying for reform in Brazil. Inflation, as one should expect, has destroyed the efficiency and functionality of the tax system and many tax distortions are now obvious.
- f. Deregulation as well as privatization programs have to be put in place to ease and reduce the cost of adjustment required by the anti-inflationary policy. From the rules that now guide the indexation process to the guidelines that rule the foreign exchange

and the financial markets, we have a lot to do to create a market-oriented economy. We now have too much intervention and too much regulation reducing the growth potential of the Brazilian economy and imposing an inflationary bias on the working of the monetary institution in Brazil.

- g. It is also obvious that we have to redefine the codes that today rule the process of money creation. A new monetary regime is now under discussion in Congress. It is expected that from 1993 on, the Central Bank of Brazil would be run under very strict rules of money creation.

An anti-inflationary program cannot dispense a set of reform in the fiscal area. Once fiscal discipline is in sight then we can move to monetary austerity. These are the needs of the Brazilian economy.

### 3. Inflation and Stabilization in Brazil - Arminio Fraga

I will start with a very brief review of the policies we are implementing in Brazil. Then, I'll talk a bit about anchor-throwing and other questions of that nature. One of the good things I should mention at the start, and I think that Professor Sjaastad would agree with this, is that there has to be some degree of consensus at the political level in order to get things moving. Brazilians are sick of the quick-fix, gimmicky approach to things that we have had to live with in the last ten years; that's something that's working in our favor. Additionally, the world has given us good examples to follow: we've seen the Berlin Wall crumble; we've seen Chile and Mexico do very well, and Argentina is now off to a very good start. Thus, we are lucky that the outside is pointing in the right direction.

Our approach is to work on the fundamentals. The last decade was characterized by lack of macro control, too much micro control and constantly changing the rules of the game (not only were they bad but they were changing all the time). We are after reversing this without reinventing the wheel.

The main four pillars we are pushing are all at the structural, fundamental level. First, privatization. Second, fiscal reform - broadly-based tax reform in particular, because we have a tax system that is totally unbearable. The third pillar would be to review the constitution. Fourth, we want to be a part of the world, that is, to normalize our relationship with the international financial community.

I have to disagree with some of the commentators who said that everything has been tried in Brazil before. We don't think that the simple, fundamental, down-to-earth approach has been tried in Brazil before for any length of time, and we believe that that's what we are going to do and that it will work. When I say that, I mean that we have to have, for example, one budget. It sounds like a pretty simple idea, but we haven't had that in Brazil. We also need a clean, more independent Central Bank. We have consolidated the state enterprises with the Federal Government and we basically got rid of the monetary budget; it no longer exists.

Looking at inflation, we need to get to a point where we have a sustainable primary surplus that is sufficiently large to compensate for what some of you have been talking about, which is basically the need not to increase the ratio of debt to GNP. We are fortunate that our stock of debt is quite small as a proportion of GNP - 16 percent of GNP - of which about 10 percent pays a market rate. In order to achieve credibility, we have to proceed in the fiscal-reform front with something that is clean not only from a macro, but also from a micro standpoint. This is the main project that we are undertaking in 1992. For the time being, we have been pretending that we are an independent Central Bank and quite successfully so far. Pedro Bodin will address some of those issues here.

The question that remains, but we don't think we are ready for, is the question of throwing an anchor. We have learned in Brazil that throwing anchors is very easy. But you have to imagine first, "Well, am I in the right place to anchor and are the conditions right?" You can think that in Brazil in the past we have thrown lots of anchors at the wrong time and the crew stopped rowing. Well, immediately after the anchor is thrown, people stop rowing; they start spending and you are in big trouble. You can also think of throwing an anchor in the middle of a storm and that your rope is very thin. This has also been done in Brazil before. So, a little fiscal overshooting is probably necessary, and we need a system that is robust. What we have now is not robust yet; we have many potential problems. Obviously, Brazil is a poor country; people have strong needs everywhere and we have to be very careful about that. You've heard from the experience of Israel that sometimes they had to leave patients out in the street. It took people long to learn the discipline of a budget; it's a very difficult task, but we are ready to face it.

Additionally, there is no doubt about the importance of having a clean, independent Central Bank as compared to what we have now. We actually have in Congress a project that will reform the Central Bank. It is not ready yet; it still calls for a lot of improvement, but it's a good start.

#### 4. Inflation and Stabilization in Brazil - Allan Meltzer

To begin, let me say that there shouldn't be a question at this late date about whether a country requires fiscal or monetary reform to control inflation. Much of our discussion, I believe, is beside the point. It has been known for a long time that to have successful monetary reform, the fiscal system must support that reform. If a country doesn't reform its fiscal system, no monetary reform can possibly last.

The issue that we started on yesterday, whether we wanted fixed or fluctuating exchange rates, should not be at issue either. The central issue is the institutionalization that makes reform credible. The difference between discussion of economic-policy issues in the 1980s is not that there has to be fiscal reform to have a monetary reform - that's an old story. Nor did we discover recently that there was a difference between fixed and fluctuating exchange rates; that's also an old story. Institutionalization now receives more attention. At issue here is whether reform can proceed by what are essentially discretionary policies or whether reform requires rule-like behavior.

At a theoretical level, the issue has been settled, for the present, by the Kydland-Prescott analysis, which showed that if people are forward-looking, the choice is between types of rules or rule-like behavior. That doesn't mean a fixed rate of growth of the money stock. The rule may be

complicated; it may have a feedback mechanism, but to be an optimal policy it must allow people to understand today what the future is likely to bring.

That isn't true in Brazil. One of the things that I hope to do in this part of the discussion is to show that in Brazil much of what passes for policy is haphazard. This is the only way to describe government decisions to rely on periodic price controls and many types of heterodox policy, including some that were not imaginable before they were implemented. Most of them succeeded, at best, in slowing the rate of inflation temporarily. The most recent one succeeded in preventing very high inflation from becoming hyperinflation. However, none of them succeeded in ending the inflation, and for good reason.

One of the discussions that is perennial in Brazil is whether prices cause money or whether money causes prices. This question is badly miscast; you can't learn from doing regressions what the causal mechanism is because of the institutionalization in Brazil. In recent years, the Brazilian Government ran big deficits. It sold bonds and until March 1991 gave guarantees that holders of bonds wouldn't lose any money from inflation. People and institutions bought bonds as long as the bonds were profitable to hold. As soon as the expectation of inflation implied that the bonds would decline in price - that they were going to be worth less than the holders anticipated - they put the bonds to the Central Bank. The only open issue was at what price the Central Bank would buy them. Of course, the Central Bank paid for the bonds by issuing money. Inflation--actual and anticipated--came first. When the inflation began to occur, people put their bonds in the Central Bank, and the Bank created money.

The timing patterns are not informative about causation. So-called causality tests can establish temporal precedence, but timing is not the same as causality. Causality is not established by showing that money-growth preceded the rate of change of prices; the institutionalization made it necessary, given the fiscal position, that the debt would be monetized once inflation was expected to increase.

There are several interesting facts about the Brazilian inflation. Chart one of my presentation shows that the rate of growth of the monetary base, money, and debt are all between 153 percent and 159 percent average annual rate of increase for the period 1981-1990. The rate of change of prices is 161 percent average annual rate; the GDP is 158 percent average annual rate. The second line looks at the period of high inflation. The average moves up to the range of 190-210 percent; this same range (approximately) is found for prices and the growth rate of nominal GDP. What's interesting about the Brazilian inflation is that, on average, money per unit of output does not change much. It is a very unusual inflation in that respect. There was no sign of an important flight for money, on average, during this period.

'On average' can conceal things which one might like to see revealed, so it is useful to look at what was happening, broadly speaking, from year to year. Here, I have different measures of monetary velocity.<sup>16</sup> Until we get to the Collor Plan in 1990, which produces some new wrinkles in

---

<sup>16</sup> At the conference, some participants noted that I used end-of-the-year money to compute velocity. They prefer to use average money balances for the year. For velocities of  $M_2$ ,  $M_1$ , and  $M_0$ , the principal difference is that average velocity is higher. The negative trends remain until the Collor Plan arbitrarily reduced the level of deposits. The variances of these measures of velocity are about the same as before. The two measures of  $M_2$  velocity are shown in a chart. The revised measure for  $M_1$  velocity has greater variance and a more pronounced positive trend. (Note the difference in scales for the  $M_1$  and  $M_2$  velocity charts). The measure shows that after 1986, in particular,  $M_1$  velocity shows the pattern found in countries experiencing high inflation -- a flight from money. This pattern is more pronounced when the average is used. The two charts are shown at the end of the remarks.

the set of innovations making up the haphazard policy action, what we see is that velocity falls during this period for broad measures, and rises very little for narrow measures of money. What the chart also brings out is that every once in a while there is a big increase in velocity. This is followed by shock treatment--the 1986 Cruzado Plan and the 1990 Collor Plan. Both plans had substantial effect on the measures of velocity. On average, velocity of broader money shifts downward; that is, people hold more money per unit of income. There is a flight not from money but from narrow money, which doesn't pay indexed deposits. Indexation is important for understanding why inflation in Brazil and Argentina differed.

A third chart illustrates the shift among categories of deposits in Brazil. People left demand deposits to go into various interest-bearing deposits; that changes the relationship of different definitions of money to base money. For the whole period the ratio of narrow money,  $M_1$ , to monetary base remains about 2. This ratio practically doesn't change; these are monthly data. The principal changes are between various types of deposits. The chart shows that the 1986 and 1989 Plans had big effects. The 1989 Plan wiped out many deposits by fiat. Of course, that had a big effect on measurement, but the effect is temporary because there's a promise that, beginning in September 1991, the deposits will be released gradually. The 1986 Cruzado Plan did have some effect. The several plans in 1988-89 are hard to distinguish from random movements.

When price and wage controls are put on and taken off, people begin to anticipate controls. When they think that the Government is about to impose a price-and-wage controls, they raise prices. Because these freezes usually last 6 to 8 months, if they expect the inflation rate to be 10 percent per month, prices rise by 80 percent to 100 percent in anticipation of the freeze. This kind of behavior was common in Brazil during that period.

In thinking about a currency board for Brazil or any rule-like behavior, which would break or reduce the power of the Government to institute haphazard policies, one of the first questions that we need to ask is: would there be a large change in the demand for money? The evidence suggests that there would be some shifting back from time deposits into demand deposits, reversing what had happened over the earlier period. But there have not been large changes in velocity of broad measures of money during the inflation.

The second question to ask is: what about the budget? This raises several issues about the accounts. There is a long history in Brazil of financing fiscal actions off budget. In the past, the Banco de Brazil could draw on the Central Bank without limit to finance agriculture. Later the state banks assumed the role of lender, and the Central Bank financed the loans or spending by the state banks. These examples suggest that all government spending does not appear in the budget.

I am very uncertain about the numbers that one sees for the Brazilian budget. I have been assured, both when I was in Brazil and here, that the numbers are comprehensive. Nevertheless, I am very uncertain about these figures, and I am not alone. I present the budget numbers with some caution. They are not mine; they were computed by Carlos Rodriguez. What they tell us is the following: in March 1990, at the beginning of the Collor Plan, there clearly is a cut in spending. The data are in dollars and the paper shows the exchange rate at which I converted them from cruzeiros.

You can see that the level of spending has been reduced. By the winter of 1991 it was running at about U.S.\$3-3.5 billion. During this period, tax revenues also fell because of the recession. I tried to do some calculations, using Rodriguez's and some other numbers, as to what the budget position would be if the economy recovered and spending was held down. Remember that these spending numbers include interest payments on the government debt.

One of the advantages of a currency board would be that the interest payments on the government debt would fall substantially as the rate of inflation fell to U.S. levels. Hence, there is clearly going to be an improvement in the budget position. According to my calculation, there's \$1.2 billion per month, or \$14 billion per year, in budget surplus without allowing for the reduction in interest rates and interest payments. We have to add the saving of interest payments and subtract several payments or obligations. One is, of course, the repayment of the deposits that were frozen. At the same time that the Government froze some financial assets, they also froze payments to government suppliers, so they have a liability to those suppliers that has to be paid also. The payments on the international debt also have to come out of the \$14 billion surplus.

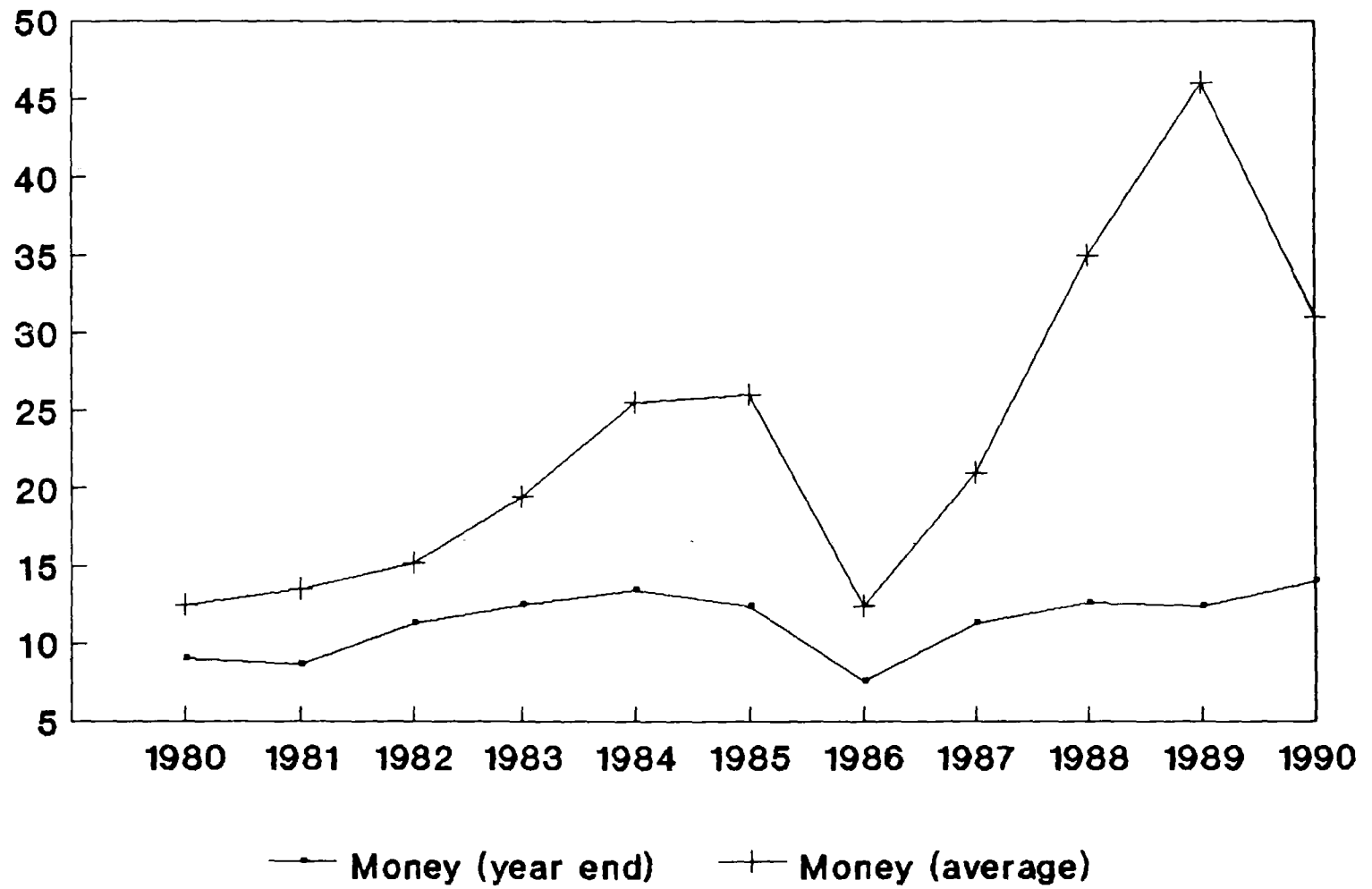
I do not have enough confidence that my numbers are accurate to be certain, but it appears that Brazil is close to the point at which, without very much additional fiscal change and perhaps none, a lowering of interest rates could produce sufficient change in the budget position so that the reform would be credible. We didn't talk about this yesterday, but it is very important. It helps to lower the rate of inflation, the interest rate and even the real rate of interest, which is now about 35 percent on the debt. This could be done with a policy that people expected to be sustained. A currency board is one type of policy rule that could produce that result by lowering interest rates. That is a main reason for a currency board or some other institutionalization which would permanently reduce people's anticipations of inflation.

A currency board is not the only way to establish credibility, but a currency board is a very good way to do it. It is important to emphasize that people would be free to hold as much foreign currency as they wished. This would provide an enforcement mechanism for the currency board. The enforcement mechanism permits people to protect themselves when or if the Government starts to inflate. Argentina found a simple way to do that. They permit people to hold dollars or other currency. I suggest having a rule that restricts changes in the currency board or other monetary rule without a 30-day notice. The right to hold dollars and to have warning that the rule would be changed enforces the mechanism of the currency board or other rule.

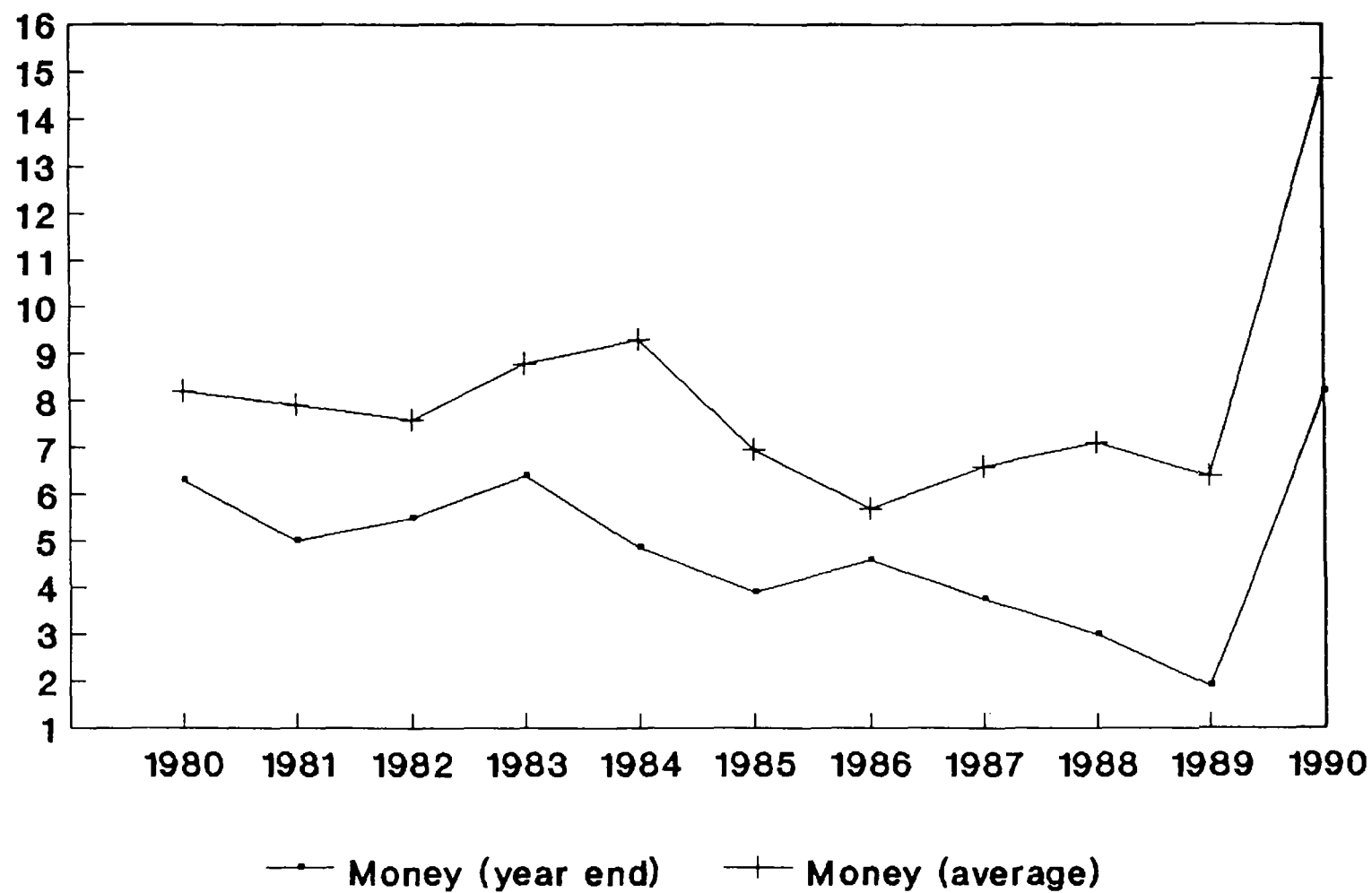
Let me summarize the point of my talk. I don't want to argue that a currency board is always optimal because it isn't. We can't argue that any fixed-exchange rate system is, in general, going to be optimal. Economic analysis doesn't permit us to say that any particular exchange rate system is optimal. We have to look at the conditions in each case. To discuss issues of this kind in the general way that we did yesterday, is beside the point. We want to consider the context in countries like Brazil or Argentina where many reforms have been tried - heterodox, orthodox, mixed - and most of them have failed; people no longer believe that the Government is capable of reform.

Several specific questions must be addressed about Brazil, Peru and Argentina. Are the fiscal conditions required for the functioning of a currency board or some other institutionalization in place, or are they not? If not, is it possible to put them in place? What other institutionalization would enforce credibility on the Central Bank and the Government?

# M1 Velocity



# M2 Velocity





A main reason for a currency board is to reduce the costs of lowering inflation. A credible institutionalization lowers the budget deficit or produces a surplus because interest payments on the internal debt would come down. This helps in the stabilization plan in a way that other orthodox or heterodox policy could not achieve at equivalent cost.

Finally, the Kydland-Prescott model tell us that there is a problem called time-inconsistency. This speaks to those who think that a currency board may be useful only during the transition to lower inflation. Time inconsistency implies that a change expected to be temporary will raise the cost of reducing inflation. The improvement that results from a currency board (or some other system of credible rules), depends on the belief that the rule will be followed consistently. The policy will lead to lower inflation if people believe that they will remain at the lower inflation rate. If people believe that the policy is time-consistent, they will go to a lower rate of inflation than they would if they believed that the policy was going to be abandoned at some point. The reason is that if they anticipate a higher rate of inflation in the future; they will act in a way that raises the current rate of inflation above the time consistent rate.

I believe that a currency board for Brazil is, among the institutionalizations, a good system. It can reduce the cost of lowering inflation to U.S. or European levels. It contributes to a budget surplus and, if the public is allowed to hold foreign currency, encourages the belief that the reduction in inflation will persist.

#### 5. A Currency Board for Brazil - Leonardo Auernheimer

A few months ago the World Bank commissioned three works (by Allan Meltzer, Carlos Rodriguez and myself) on the inflationary process in Brazil. There are, of course, differences of opinion about the interpretation of numbers and events, but all three reports recommend the institution of a currency board. Allan Meltzer is here, and he is explaining his reasons, which I suspect are not very different than mine. I will try to summarize.

Our chairman asked a question that is very relevant as a starting point. As I interpreted it, his question was: "There are a series of conditions that need to be met for a currency board to be successful: that the primary deficit be well under control, that the legal and institutional framework be strong in assuring the independence of the board, that the commitment be believed, and so on. But if all these conditions are met, do we need the currency board?" The question could be paraphrased as the following problem: "If you can have it, you don't need it, and if you need it, you can't have it".

Brazil has had all the imaginable inflationary episodes, with most heterodox recipes being attempted, including, at times, simultaneous actions that were contradictory. What has somewhat mitigated the effects on resource allocation has been the lack of financial repression, and the same phenomenon that sometimes is blamed for the "inflationary inertia", i.e., widespread use of indexation. I believe, incidentally, that conventional thinking about "indexation" as a contributor to inflation, or as an important obstacle to stabilization (interpreting indexation as using something else than domestic money as the unit of account in contracts involving time) needs to be substantially revised. After all, in most of the models we use to analyze inflation this is indeed the case. I was

very pleased to hear Affonso Pastore discussing the Brazilian economy without making indexation the culprit.

Brazil does not have, at this point, a *primary* deficit of a magnitude that would make unrealistic a program to eliminate it. It does have, though, a level of domestic debt at a positive real interest rate (i.e., a *quasi fiscal* deficit) that is important, so that stability would require either the generation of a primary surplus or an outright repudiation of part of the debt. There are, nevertheless, two points that are important even when the elimination of the total deficit is attainable.

The **first** is that a commitment as strong as the establishment of a currency board does create an additional incentive for the branches of the Central Government to tighten their belts, as well as an argument for the Central Government when dealing with local governments, and for the monetary authority in dealing with both. We have heard a few minutes ago one of the directors of the Central Bank describing his current policy towards deficit financing: "No, no, no". Certainly, his job would be a lot easier if he could say "I cannot" rather than "I do not want".

The **second** point related to the question posed by our chairman is the possibility of the typical case in which "dreams become reality" or, in the technical jargon, the possibility of multiple equilibria. This is the case in which the stabilization effort is consistent, and hence feasible, if there is credibility, but inconsistent, and hence unfeasible, if credibility is lacking. Here, the elimination of the total deficit, perhaps over a period of time, is a necessary but not a sufficient condition for stability to be achieved. It is also a necessary condition for a currency board to be successful, but the clear and strong commitment of a currency board may be required to provide the additional sufficient condition.

It is precisely because of these two considerations that I think of a currency board as an appropriate arrangement for Brazil. It is not necessarily because I think that a fixed exchange rate system is intrinsically superior to a floating system. A credible commitment to a fixed rate of growth of the monetary base would, in principle, be equally appropriate. It just happens that an exchange rate rule is easier to understand, easier to implement and easier to monitor than a monetary rule.

Finally, I wish to address an additional, fairly specific point concerning a fixed nominal exchange rate. The main concern that a fixed nominal exchange rate invariably raises is that during the adjustment to stabilization the **real** exchange rate may get "out of line" for too long a period of time--more concretely, be "too low". This is not the time to elaborate on the argument of the real exchange rate being a real magnitude with a nominal instrument. But I would like to suggest that if indeed government believes that there is a desirable level of the effective real exchange rate that transitorily is not being achieved by the market, a more natural way to proceed is to state the desirable level and use a well defined scheme of uniform taxes *cum* subsidies to achieve it.

There is another way, if a devaluation is deemed necessary to realign relative prices (and that if is a big "if"). A devaluation does two things: it changes relative prices (the real exchange rate) and destroys the value of money, so that the Central Bank can profit from a new "sale" of money--essentially, the same reason why your tailor may have an incentive to burn your suits, so that you need to order some new ones. The reason why Latin American countries devalue is mostly because of the second reason. If the currency board gives up this gain, it can devalue for the first purpose and avoid the capital loss to the private sector in a variety of ways. For example, announcing the

devaluation, re-purchasing the monetary base and selling it back in exchange for foreign exchange at the new rate. Credibility problems are eliminated, and those who want to manipulate the real exchange rate can have their way. The only problem with the idea is to persuade policy-makers (and economists) to think about it.

6. Fiscal Aspects and the Currency Board - Michael Michaely

All of the speakers have emphasized the role of fiscal policy and adjustment. I think that it is obvious: without fiscal adjustment there is no stabilization. But what do we mean by fiscal adjustment, or fiscal discipline? An answer could be given, but we would have to go back to look at the source of inflation, which is the size of the Government's domestic debt. If you observe the more recent past, up to the Collor Plan, and try to explain inflation, the only variable that would indeed explain its rate and its acceleration would be the changes in the Government's short-term debt. The size of the fiscal deficit, past or present, is not an explanation. The size of the fiscal deficit is smaller in Brazil than in many stable countries, and was quite stable while inflation was dramatically accelerating. The crucial variable is the size of the debt.

Now, the size of the debt in itself, today, is not that much: 16-18 percent of the GDP. Nevertheless, it seems to be a level that Brazilians are not willing to accept, or are willing to accept only at a strongly increasing price, that is fast increasing real interest rates on that debt. That was obviously the case in the year that led to the near hyperinflation in 1989-90. It appears that the debt cannot be sold except at high and rising real interest rates.

Well, if that is true, and this is indeed the crucial variable, I think we infer from it the indication about the nature of fiscal adjustment. What would seem to me to be fiscal adjustment, or the appropriate size of the fiscal stance, is something that would lead to containment of the domestic debt, meaning either its constancy or reduction. This would mean, more or less, a zero operational deficit; I say more or less because we have a few other factors. How much is monetized rather than becoming debt depends upon the accumulation of reserves and so on, but it is more or less an operational stance of zero. I think this gives us a magnitude and we have to go a step beyond that. Today, if the government had announced a planned budget with this fiscal stance, this would not be credible. To be credible, to make the public believe that indeed the deficit would be more or less zero, the planned fiscal stance would have to be substantially more positive. I don't know whether that would mean a planned surplus of 2 percent, 3 percent or 4 percent, but a few percentage points of GDP have to be planned as a budgetary surplus.

I think this is more or less the nature of the fiscal adjustment required now - a change from a plan with a 3 percent deficit to one of the same size but as a surplus of the operational budget rather than a deficit. It would require a change of 5-6 percent of GDP in the budgetary stance. This, of course, has to be accompanied by clear monetary rules and clear monetary targets. This does not mean necessarily that the targets have to be achieved through an exchange rate mechanism, but targets have to be established. Brazil has the capacity to establish monetary targets, unlike some other economies. The Brazilian institutions have the capacity of doing it; there are no external factors that would prevent the implementation of monetary targets.

This leads me to some short comments about the viability or desirability of a currency board in Brazil. I agree with those who think that the currency board has no room in Brazil. If instituted at the moment, it will have no chance of surviving. First of all, the Brazilian economy is not heavily influenced by the size of foreign assets. It is different in this sense from Argentina or Peru. Foreign exchange itself or foreign-exchange denominated currency plays almost no role in Brazil - probably less than in almost any other country. So, that factor that sometimes leads economies to consider full dollarization or a currency board, doesn't exist in Brazil. As I mentioned before, Brazil has the capacity to establish monetary rules and monetary targets without a currency board, unlike some other economies.

Another point is that Brazil, maybe more than many other economies, has to retain the capacity of changing the real exchange rate in the long term. Fluctuations in real variables like capital inflow and repayment of the debt may be substantial. The Brazilian economy has demonstrated in the past that it can easily respond to such fluctuations or shocks by changes in the real exchange rate, and the capacity of using this variable should be left in the system.

Finally, I would like to mention why I think that, if instituted, a currency board could not survive for any length of time. This is, once more, due to the size of the government debt. Let's not forget that the public's claim on the foreign exchange reserves in the currency-board system would consist not only of the monetary base, but also of the short-term government debt. This could be monetized and then be a claim on the foreign exchange reserves. I stand to be corrected, but I think that the short-term debt is about 7-8 times the size of the monetary base. So, in order to start with a monetary board that has some chance of survival and some credibility from the beginning, you'll need foreign exchange reserves that are more or less the size of the monetary base plus something that is 7-8 times this magnitude. This is not what Argentina did; this is something on an entirely different scale, which I don't think is feasible at all in the foreseeable future.

I will take two minutes just to discuss one topic: the initial exchange rate. Suppose we introduce a fixed exchange rate - whether just fixed as an anchor or through a currency board - preferably for a long-transition period, what should be the initial exchange rate and the permanent exchange rate for that transition period? Everyone agreed, of course, that it should be a high rate. Now let's see what happens and why. We have a real exchange rate equilibrium in the system. If we fix below nominal, in principle, we'll achieve the equilibrium exchange rate, but we'll achieve it through such an amount of unemployment that nobody would be willing to allow. Therefore, nobody in the system will believe that it is bound to happen. Obviously, if we fix a too-low nominal exchange rate to start with, the system will not be credible. To believe that we can just hit on the right one, of course, is to believe in miracles. Therefore, we have to aim at what we think is too high a nominal rate, but let's not forget that the system will achieve an equilibrium rate. There is an equilibrium rate and it will be achieved through an inflation. Thus, we need to take into consideration that by fixing this system, we determine beforehand that we will have an initial period of inflation through capital imports that will be induced. This should not be considered a failure of the system; it should be recognized and acknowledged beforehand.

## ROUND TABLE ON STABILIZATION AND CURRENCY BOARDS

### Opening Comments by Panel

#### Alan Walters:

I'd like to go back to some basic points that we looked at during the conference and emphasize what I think are the critical issues. First, I think it's important to recognize that you've got the possibility of using a fixed exchange rate or a floating one. I would argue that anything in between - the pegged exchange rate, the one that is temporarily pegged and wobbles in a band - gives rise to perverse monetary policies. The first critical choice, then, is between a fixed and a floating rate. If you choose to have a floating rate, then you need some monetary rule - some plausible, believable monetary rule. I will leave that aside now. I should say that my own preference for most sizeable countries would be to have a floating exchange rate and a monetary rule, but, of course, institutional arrangements in different countries lend themselves to different things. As you know, in Europe we are in the form of the pegged-exchange rate system now, apparently going on to a fixed one by 1997-99 and then to a monetary union. I want to stress that the fixed and the floating are the two real choices.

If you are going to have it fixed through a currency board or some other arrangement, is a currency board in any way superior to arrangements where the Treasury or the Central Bank announces that it's going to hold the exchange rate at a particular value and will support this through normal interventional arrangements? I would like to argue that a currency board has a lot to be said for it under these circumstances when you are holding a fixed rate. I think Nissan Liviatan used one right word to describe it: it's "transparent." It is understandable; people can understand it not at the level of central-bankers and financial intermediaries and so on, it's understandable right down the line to the little man holding the notes in his hot little hand, standing at the exchange window. It's very important to have that in mind; that this is something that he can understand.

As I investigated currency boards, the characteristic of generating enormous confidence is very much there; there is a great confidence generated by this institution. Confidence is something that economists usually do not model, but it is enormously important. You find that currency boards have been created after periods of considerable turmoil. I have to remind you that in the case of the Hong Kong Currency Board, it was created when the Hong Kong dollar fell 40 percent in one week.

When we talk about the preconditions for a currency board, one of the preconditions is said to be some stability in the exchange rate. This is not true at all. It is the institution of the currency board which created the stability, the transparency and the confidence that went with it. The only reason for believing that a currency board gives rise to confidence is its institutional form. I investigated about twenty currency boards in some detail, and none of them failed in the sense that they were unable to redeem their obligations on specified rates. Now, how many other occasions can you imagine when a government has claimed to set a fixed exchange rate and then went off it suddenly with a shock? There's the rub. If people have confidence in this, and they certainly did in Hong Kong and in the other examples I looked at, isn't that a manifestation of the history of currency boards? They have delivered. Incidentally, Schuler has investigated 60-70 joint currency boards and

found the same characteristic. The nearest one to reneging, as he will tell you, was the Russian one, and it didn't renege. The good, old British Treasury stepped in.

I think that characteristic is extremely important and is worth very much consideration when you are thinking about a fixed exchange rate system. A fixed system on the basis of a currency board has a lot to recommend. It is on the side of the small man; he is not left with having to go to the banking system and all that sort of thing. Complicated financial institutions do his currency swaps; he can swap directly with the currency board. What governments object to and central banks object to in the currency board system is that it enables capital flight on the part of the small man. He can pack his bags with money and drive to the airport or go over the border. However, that is one of the great characteristics of the regime; it enables capital flight by the small man, not by the big boys who are moving money around all over the place. This is one of the things I supported in Hong Kong; it enables the Chinese small trader to pack his bags with greenbacks and get out. It is very important to have capital flight. Alan Meltzer emphasized that and I'd like to stress it too; it's very important for the small man. This is on all grounds - equity, efficiency and discipline.

I don't think the introduction of a currency board depends upon the size of the deficit. The deficits that have been mentioned here are of the order of 3-4% of GDP. The point is that what the currency board does is, of course, to stop the deficit from being financed by the Central Bank. You have to find other ways of financing the deficit. I think that the arguments that deficits are necessarily behind inflations is quite wrong. In Britain, for instance to give you an illustration, we had a public sector surplus of 3.5% of GNP in 1987, yet we had a big expansion of inflation during that period.

Let me come back to the other side of it. Does a currency board help with the collection of revenue? Does it assist in this collection? This is a critical issue. Does it help with fiscal reform? I think it must if it gets rid of the inflation. I cannot see how Mr. Moura can have a major fiscal reform if there is 20% inflation per month. It seems very difficult to me and I have not seen an effective fiscal reform under conditions of inflation of that magnitude.

#### Ronald McKinnon

Even Alan would agree that a currency board isn't generally an optimal method of monetary control, and maybe we could all agree that it could be useful in some narrowly specified circumstances. The debate is to try to understand the circumstances where it could be useful. Let me mention what I think the principal conditions are.

First, despite what Alan has just said, I think that if you have a current deficit, the government is borrowing from the central bank to pay the civil servants and army, you can't suddenly say: "Well, we are introducing a currency board and you have to find an alternative way of financing the deficit". The government must have a fiscal program in mind to begin with, which in fact will support the currency board. Of course, achieving price stability, even if you don't have a currency board, will greatly help the process of tax collection; we all agree on that. But the current fiscal deficit cannot be ignored.

Second, there is one aspect of the fiscal problem that people have not stressed, although Michael Michaely mentioned it. Even if the government does not have a current deficit which it is covering by borrowing from the central bank, suppose there exists an overhang of public debt. What is the position of that relative to the currency board? This second problem, and this is still my problem with the current Argentinean stabilization, is how do you pledge the foreign exchange assets of the country to support the currency issue when you have a large public debt outstanding with people who presumably have claims on the foreign currency assets of the country? Who is the senior creditor if you started out with a large public debt? Pledging the foreign exchange assets to the currency board is a problem - in my mind at least.

But there is a third issue which affects Western European countries at the present time in considering whether or not to adopt a common currency. A common currency has one thing in common with a currency board, the government gives up control over the central bank. I would argue that most European countries, say those with public debt to GNP ratios of 60% or higher, which are very easy to find, really can't give up control over the central bank. Only by controlling its own central bank can a government actually build up a debt of that magnitude.

The mechanism is very clear from considering the following question. "Look at the American securities markets; we know that Treasury bills and bonds are the lowest-yield securities. Why is it that the U.S. Treasury can borrow at a much lower interest rate than any private borrower?" The answer is: because the U.S. government owns the Fed. By owning its own Central Bank, the government gets preferred access to the national capital market for issuing bonds denominated in the national currency. Bondholders know that the government need never default on paying the face value of the bonds. This makes it easier for building, and then carrying, a much larger debt than otherwise be the case. If the debt becomes very large, this advantage also shows up during a huge debt rollover - as in Italy where the amount rolling over every month is even larger than in the United States. The Italian government can't possibly give up control over the bank of Italy and still manage the rollovers. Otherwise, the Government, instead of being the preferred creditor in the Italian capital market, would have to pay a very high rate of interest. There is evidence now that this is happening. Because there is some finite probability that Italy will have to give up control over the Bank of Italy to Eurofed, the interest rates on Italian government securities are now beginning to creep up relative to high quality private securities denominated in lira and sold in Italian capital markets. Many Italian economists have been studying this phenomenon.

Starting with a large debt overhang, a government could actually provoke a run on itself by giving up control over its central bank, which is the agent that enabled the government to build up the overhang to begin with. This government debt problem is a major barrier to moving towards a common currency in Europe, but it could also be a barrier to adopting a currency board system as well.

A fourth important issue is the openness of the economy to foreign trade. In order to get the full advantage of using an outside reserve currency in the fixed exchange rate regime associated with the currency board, you have to have very free commodity and financial arbitrage with the outside world. The outside world really dominates the internal price structure of the country that you are considering for the currency board. Thus, it's no accident that currency boards have been established in entrepot centers like Hong Kong, Singapore and Panama.

A currency board ran well in Panama until the U.S. government got mad at Noriega and froze Panama's foreign exchange assets; the outside guarantor wrecked the system, which is something that we have not discussed. That was very bad for Panama.

Nicaragua is another example; if Nicaragua adopted a completely free-trade regime- no convertibility restrictions- its natural openness would make it a good candidate for a possible currency board solution, provided that you get rid of its huge government debt. Nicaragua has a tremendous external debt overhang at the present time, and external creditors would have to decide how to rationalize their positions on that debt overhang. Then you have to ensure that the United States did not seize the Nicaraguan Currency Board's foreign exchange assets once the Sandinistas return to power! However, Nicaragua would be a potential candidate for a currency board. I can think of some African economies where implementing a currency board system might also be desirable, in addition to the small Central American ones.

In contrast, Brazil is a large continental economy. Although Brazil has made some progress in moving to free trade, it is by no means complete. Even if you have some kind of fixed exchange rate and free trade, international commodity arbitrage would be insufficient for Brazil to be a good candidate for a currency board- even if Brazil's public debt problems could be resolved.

Let me just finish with a comment on Hong Kong's currency board which is called the "Exchange Fund", and which was established in its present form in 1983. Hong Kong did not have a fiscal problem in the sense of an ongoing flow of current government deficits nor a debt overhang. In the early 1980's, the only thing it had was a credibility problem, a very acute political anxiety about its future and a lack of transparency as to what the true role of the Hong Kong and Shanghai Banking Corporation should be in the note issue. Once a transparent currency board in otherwise favorable circumstances was put in place, it was very successful. The conditions in Hong Kong were right, they were almost ideal for the currency board to be credible.

But note from the Hong Kong experience that a currency board is literally associated with note-issue only. In a colonial setting with primitive economies, the Board backed the note issue, not the deposits. But Hong Kong is now the center of a very sophisticated financial system with offshore trading. This had forced the Exchange Fund of Hong Kong to begin evolving into a Central Bank in order to manage the superstructure of deposits in the economy. In particular, it turned out that the currency board by itself was not sufficient to peg the Hong Kong dollar at 7.73 to the U.S. dollar: the official parity rate. Currency issue was too small relative to the total number of foreign exchange transactions, when you had multi million-dollar transactions between deposits in U.S. dollars and Hong Kong dollars in the interbank market. Initially, the exchange rate moved away a great deal from 7.7; the arbitrage from the note-issue were not sufficient to constraint the interbank exchange rate on deposits. So, the Hong Kong Exchange Fund has been intervening in the interbank market or manipulating interest rates in order to keep the interbank exchange rate within a narrower range.

In the 18th century, we started off with the Issue Department of the Bank of England which was analogous to a currency board; and as the economy became sophisticated, naturally, you got the Banking Department becoming more predominant as a lender-of-last resort: the role of a more modern central bank. A "pure" currency board is most useful when the deposit base of the banking system is small, and one is mainly interested in securing the note issue of a highly open, but financially unsophisticated economy.



Michael Michaely:

Although this is the concluding session, I will raise more questions rather than try to give answers or opinions. I'll refer to issues that I think we have not discussed enough; Nissan Liviatan has mentioned a few of them in his introduction, but somehow they eluded us.

First of all, we discussed dollarization, but we really did not define it. There is a separation to be made here too. One type is a dollarization that has to be introduced into the system, and the other is a de-facto dollarization. A newly introduced dollarization is something that has rarely been seen, certainly not in recent times; dollarization exists in Panama, but one can barely remember when such a system was introduced. I doubt whether there is really much promise in discussing the possibility of an economy free of dollars, free of the use of foreign exchange, that then decides to go into dollarization. This is an empty box. The interesting case is where we already have a de-facto dollarization which is only partial: if it is complete, there is again no reason to discuss it.

The first question, one that has been raised but not adequately discussed is whether this is a reversible process. We know why the economy has gotten into it: it must have had high inflation with no financial indexation of domestic financial assets. Suppose that these conditions are no longer there, will the process of dollarization be mostly reversed? If not, should we move to 100 percent dollarization? What would be the advantage of that? That's a set of issues that we have not really addressed, and a discussion is needed if for no other reason than for the fact that we have a relevant country in mind, Peru, to which these issues apply.

We are using the term "currency board" mostly to designate a system where we have an institution that dictates the gold-standard rules of the game. Is it good or is it bad? I'll venture an opinion here. In the long run, I don't think that it's a good system. Rather than discussing concepts, I'll mention one example. Palestine is a very interesting case. It was a British mandatory possession in the interwar period. From 1917 or 1918 to 1927 it was a fully dollarized economy; it used the Egyptian pound as legal tender. From 1927-47, until Israel was thrown out of the sterling area, it had a full-fledged, pure currency board. I think that it was a dismal experience. Business cycles were unusually large, with periods of large-scale unemployment, which would have been even much higher were it not for the effect on emigration. It was larger than in most other economies. The business cycles in Palestine were not determined by the world business cycles but by fluctuations in the size of money, which were, in turn, determined by capital movements and a currency board playing by the rules of the game. That was more or less the process. Maybe this experience has more weight than experiences in most other economies which practiced the currency board.

If we contemplate a currency board as a transitional measure rather than a permanent one, what is the length of the transition that we have to specify, explicitly or implicitly, as the duration of the transition needed to make the system credible, in the sense that beyond it we may depart from the rules without suggesting a betrayal or a failure of the system? Again, these are questions that I am raising; I don't have answers for them.

Suppose that we have a currency board and that for one reason or another there is a rush on the board, and people fully convert their local money into foreign exchange. When the domestic currency is fully backed, then the worst that might happen is that we'll change all the local currency

into foreign exchange, but the system will remain intact. If this is what people believe, then that system becomes credible. If in such situations the system cannot be sustained, then, of course, credibility is reduced. One reason why it cannot be sustained is probably the implication of a run on the currency board for the domestic financial system.

Peru is an economy where dollarization may legitimately be discussed now. By that I do not mean that this solution would be desirable, or even possible, but that, at least, this might be contemplated. It is an economy that is mostly dollarized; and it is an economy where, at least temporarily, fiscal discipline has been achieved. The Government works more or less on a cash basis and, probably, if it keeps doing so for another year, people would believe that this is the way the Government actually behaves. This is thus a case where dollarization, or a currency board, may seriously be considered. As we discussed before, I don't think that a currency board would be applicable to Brazil and probably not to any other economy in our region of interest.

Allan Meltzer:

Well, I hear a lot of things being said about currency boards - why one wants them or doesn't want them. If I may say so, I think that many of the reasons have very little relevance to the subject. I thought that there were two reasons why one wanted a currency board or any monetary system at all. One was that you would like to maintain the internal and external value of money as best as you could. A fixed-exchange system pegged to a system with low inflation is a way of maintaining the internal and external value of money. Capturing the welfare gains that come from having internal and external value of money by that system is not perfect, but that is really all that we can have. Of course, one could have a monetary rule, which would maintain the internal value of money and a floating exchange rate, but then one would not have the stability of the external value of money.

For a small country the welfare gains come from having a maximum amount of internal and external stability. All these questions, like concerning real shocks, should really be put aside. Those are questions about whether you want a fixed-exchange system and have nothing to do with the question about a currency board. A currency board is simply a device for capturing the welfare gains that come from that. Why, then, does this question keep coming back? Because, economists are divided into two groups: there are piano players and symphony conductors. The piano players like a big keyboard; they like a lot of keys. Delfin Neto was the preeminent pianist; he did not want 88 keys - he wanted 176. If he had 176 keys, he wanted 352, so that he could play them all. With any number of keys that one could imagine, he would want still more. Symphony conductors want to have the orchestra playing in harmony; they want to capture the gain that comes from having the internal and external welfare benefits. That's really a large part of the issue here - whether or not you are a piano player. The pianist says: "Well, anything like this should only be transacted temporarily," because after that he wants a bigger piano on which to play. Why does he want a bigger piano?

Many of the objections that are made here are not entirely relevant. For example, people say: "Well, there were times when we wanted to fix the real exchange rate." A currency board doesn't prevent you from changing the real exchange rate. You can change the real exchange rate if, for instance, you decide to postpone Government expenditure or to admit Government expenditure. You can still use fiscal policy to change the real exchange rate. All a currency board does is to maintain the real value - the internal and external value of money - provided you are pegged to somebody who

shares that objective. That's very important. Of course, some of the difficulties can come in any pegged system if you are pegged to the wrong currency.

Let me take up what I think is another question that is raised. Many people say: "Well, if you have a fixed exchange rate and, in particular, a currency board with sticky wages, you could get into trouble because you now have two fixed prices in the system. It is true, of course, that there can be costs. On the other hand, one of the advantages of a currency board, presumable, is that how sticky wages are is not a question that is God-ordained. Systems differ in the degree to which wages are flexible, and one of the reasons why they are going to be different in different systems is going to depend upon how credible is the monetary policy in that system. That is, what is the expected rate of inflation that people have? The reason that wages are more sticky, for example, in the United States than they are in Germany is not because somehow the United States has bad institutions, but because in Germany there is no provision for indexation; there are no provisions for multi-year contracts and there is low inflation. People bargain on the basis of an expected rate of inflation, which the Bundesbank, at the moment, is trying to insure them will be low.

Another objection to a currency board, that is to a certain extent a valid objection, is that there is no lender of last resort in the system. That is one of the costs and, presumably, a country that wanted to have a currency board would like to line up some standby line of credit, just the way a business would want to line up a standby line of credit in the event that it has to borrow under some of these emergencies.

In the end, this topic divides people into those who like rules or rule-like behavior and those who do not. I believe that is what lies behind the decision. Piano players don't like rule-like behavior and they believe that, somehow, optimality is going to be assumed either after the transition or at some other time by having the Brazilian or Peruvian Government run the monetary policy. I believe that any objective reading of the facts would be against that. That is, you could not do too much worse than what has happened in Argentina, Brazil and Peru with discretionary monetary policy and piano players. That's really what the argument about the currency board comes down to.

## Discussion

### Sebastian Edwards:

I find myself for the first time in these meetings in disagreement with Allan Meltzer. I think that our disagreement has everything to do with fixed versus flexible exchange rates. Unless we resolve that issue ahead of time, there's nothing to be discussed. The question is that there are a number of people and policy-makers that are not convinced that they should go towards fixed rates. Once we go fixed, the question is, where are there escape clauses? If we have a fixed rate, it's fixed until it stops being fixed. I mentioned the Dominican Republic yesterday; it was in the Constitution until it stopped being in the Constitution. They devalued; today it's 12 to 1. It used to be one to one in the Constitution since they were invaded by the Marines.

I think that we have to resolve the fixed-versus-flexible conflict. One of the big problems that we have today is that for ages we have been telling these countries: "You have to maintain a

competitive real exchange rate. In order to have a competitive real exchange rate, you have to crawl." Now we want to have them adopt a fixed rate. The first step, then, is resolving fixed versus flexible. I think that there are a lot of things to be said for fixed rates, but unless that debate is clarified, we are not going to make progress. Once we clarify that debate and go for fixed, we then want to address the issue of escape clauses. Are you going to have lots of possibilities and contingencies to get out of fixed or are you going to limit them?

Kurt Schuler:

I'd like to speak about the conditions necessary to establish a currency board that people have been talking about. First of all, I want to reemphasize what Alan Walters and Larry Sjaastad have been saying: there are no fiscal preconditions for establishing a currency board. If the Latin American countries have the political will to establish a currency board, it can be done tomorrow. The budget deficit will either have to come down or they'll have to issue interest-bearing obligations, which people will voluntarily hold. So, I think the currency board enforces a hard-budget constraint on economic agents on these economies. The other issue I'd like to address is in respect to the issue of openness. I don't think that the openness or closeness of the economy has any bearing on whether a currency board is desirable or not. If you look at the British colonies where currency boards were established, in East and West Africa and elsewhere, they were extremely closed when the currency-board system first came in. The currency-board system encouraged openness by encouraging capital inflow and making foreign investment easy. Thus, I don't think that openness is any more relevant for the currency-board system than, say, for a gold standard. I don't think that you can argue that with the gold standard openness or closeness particularly matters.

James Hanson:

Let me just add something to what Sebastian Edwards said. I think he is right that there is one set of issues related to the long-run choice of a flexible or fixed exchange rate regime, and another in deciding if the currency board is the right choice. Alan Meltzer laid out some of the long-run issues. For example, to what extent are wages flexible? That's really a long-run issue.

A third set of issues, which we have touched on only briefly, is the transition to the currency board, in particular, the initial fixing of the exchange rate. One example of such an issue is whether the initial rate should be more depreciated for different countries, depending on differences in their wage and price fixing institutions. In a given country, the real exchange rate may or may not be or get out of line, depending on how quickly wages and prices adjust to the new exchange rate regime. Most likely the country will not fix the initial exchange rate perfectly. As a result there probably will be some kind of real exchange problem and some costs of transition, particularly taking into account possible speculative, short term capital movements that may reverse themselves. It's likely to be a while before the wage institutions and the price institutions adjust to the new circumstances. Unlike the situation prior to the currency board, domestic wages and prices rather than the nominal exchange rate will have to bear the burden of adjusting the real exchange rate and they may be sticky downward, implying a recession may be required to reach a real exchange rate compatible with a sustainable current account deficit. The transition will be eased, as Ron McKinnon said, if it's an open economy and there's some arbitrage. To some extent the transition may be offset if the country

jumps quickly to a fixed exchange rate and takes advantage of the improvement in confidence that otherwise might develop more slowly. Nonetheless, it is quite possible that the real exchange rate will need to be adjusted by variations in wages and prices and this will entail some costs of transition.

To put it another way, the currency board is a way to signal a new approach to inflation policy. In this respect, as I said earlier, the currency board is an alternative, but a much better one, to wage-and-price control. It is better than wage and price controls because there is none of the misallocation that develops with wage-and-price controls. Nonetheless, there is likely to be a cost of transition to the new regime, related to a possible exchange rate misalignment initially and the country has to be prepared for those costs.

It seems to me that Argentina decided that it is going to pay such costs; Argentina may not have fixed at the right rate and there may be some transitory relative price problems, but Argentina has declared its willingness to pay whatever cost is involved in the adjustment of domestic wages and prices so as to support a sustainable current account deficit. Argentina decided to move to a different system - a more open one, one in which the wage and price institutions are somewhat different - but there may well be a transition cost in moving to that system.

I'd now like to raise a point related to what Michael Michaely said: a major issue of the currency board is the potential for runs on the currency. A country can fix the nominal exchange rate, it can set up a currency board, it can do anything it wants with the exchange regime. The question is: Is that exchange regime going to be credible or not? Otherwise there will be a run on the currency. I would like to amplify this point as it relates to the financial system. I think that the seminar has not talked enough about the financial system under a currency board. We have talked about the currency board as being different from a Central Bank. A Central Bank has a number of functions--lender of last resort, bank supervisor, maker of monetary policies--not associated with a currency board. Countries, in deciding to adopt a currency board, have to decide on how, if at all, these functions will be handled. For example, who will be the domestic lender of last resort? In Argentina, the Central Bank is explicitly not a currency board; it retains a number of these functions. These are important issues, because, as Michael Michaely said, when there's a currency run, the country will be left with shell-banks. Is that likely to happen and what is the implication of the functioning of the economy? Is someone going to bail these banks out or not? Will the government be liable for the deposits? Less dramatically, as a run starts, are interest rates going to go up? What's going to happen to the financial system and the economy in that situation? We have not talked about these issues enough.

Alex Cukierman:

I want to take as a point of departure the seeming disagreement between Allan Meltzer and Sebastian Edwards. I think they both agree that in some circumstances you would want to fix some nominal anchor. If we take that as given, you still have the leeway to choose the seriousness of the commitment as to this nominal anchor. It seems to me that this is the main issue here. What is the strength of the commitment? The currency board is one certain way to achieve some level of strength of commitment; dollarization is another, etc., etc. Let me just summarize three elements that have been formalized and seem to induce politicians to get into a stronger commitment. One is that the larger the inflationary bias is, the larger is also the tendency of politicians to commit. The second is

that the smaller the variance of shocks to relevant variables -- like the real exchange rate -- the larger the willingness to commit is. Finally, the larger the reputation the policy-maker has for nominal stability - in any case independent of whether he wants to commit or not - the larger his willingness to commit is.

Let us apply that to the case of those countries like Brazil and Peru. Those countries have a large inflationary bias; that, by itself would push them to make a more serious commitment. When you have a large rate of inflation, the short-run variations in the real exchange rate and other real variables are tremendous because of the nominal instability. In other words, when you have a very large rate of inflation, some of the nominal instability gets translated into real instability. If you take that situation as a point of departure, it actually pushes the politicians, according to this model, to maintain discretion. However, and if I'm right, that point of the real instability is itself endogenous, so once you stabilize in a credible manner and everybody sees that the system works for a certain period of time, it may turn out to be the case that the variability that those politicians are concerned about is going to be smaller. There will then be a free launch; they will move to the good equilibrium in the multiple-equilibria system of the type that we are talking about.

The last point is the effect of reputation. If the policy-maker has good or reasonable reputation, then he is more inclined to commit. This comes back to the question of why fiscal preconditions are really necessary, particularly in a country like Brazil, where it seems that the connection between the fiscal deficit and monetary irresponsibility is very close. It's clear that one way to raise monetary credibility is to, first of all, see to it that there is some degree of fiscal responsibility. Plugging that into the model, one gets the result that if the fiscal side (for example, some of the loopholes in the Constitution that allow expenditures) are taken care of, that will enhance - perhaps partially - the reputation of policy-makers. This will make it more desirable endogenously, from their own point of view, to commit themselves to something like a currency board or some other kind of a regimen.

### Concluding Comments by Panel

#### Allan Meltzer:

I'm going to make two very brief points. First is one issue that has been on the table here several times: the question of whether you need to have fiscal preconditions. Of course you do. It's true that the budget does not have to be balanced, but it has to be credibly financeable with foreign and domestic saving and non-inflationary money growth. A country can declare that it has a currency board today, but tomorrow if it has a large deficit, monetary finance is not likely to be avoided. The choice would be: either you have to cut the budget deficit, or you absorb all the domestic saving and all the borrowing that you can get from abroad, or you print money. There has to be a government budget constraint in the system, and the budget constraint has to be satisfied. If money growth is to remain unaffected, the budget deficit must be restricted.

I come to my second point. In Brazil the real rate of interest is around 30-35%; the nominal rate of interest is around 200%. This tells you a lot; it is not because the expected return to capital is 35%. It's because of risks in the system. The Government removed a rule that allowed debt can be monetized on a daily basis at the option of the holder of the debt. The Government sensibly got rid

of it and replaced that rule with a rule that prevents monetization for 90 days. This transferred risk to the holders of those debts. The rate of interest includes a risk premium as a result. If the country could get the real rate of interest down to a modest 10%, Brazil would benefit. That's an issue that we have not talked about.

Michael Michaely:

I'll take two minutes to discuss one other topic: the initial exchange rate. Suppose we introduce a fixed exchange rate system -- whether through a currency board or as an announcement of a fixed rate for a long period. What should be the initial exchange rate (which is the fixed nominal exchange rate for that period)? Everyone agrees that it should be a high rate. Now let's see what happens and why. We have some equilibrium real exchange rate in the system. If we fix a low nominal rate we will achieve in principle the equilibrium real exchange rate, but only through a size of unemployment that society would not be willing to tolerate. Hence, we cannot expect a prevalent belief that this equilibrating process is bound to happen. Thus, if we fix a too low nominal exchange rate to start with, the system would not be credible. To believe that we can just hit on the right nominal rate is to believe in miracles. Therefore, we have to aim at what we think is too high a nominal rate. But let's not forget that the system will achieve an equilibrium real rate; and it will do it through an inflation. Thus, we need to take into consideration that by fixing such a system, we determine beforehand that we will have an initial period of inflation, through the impact of capital imports. This should not be considered a failure of the system; it should be recognized and acknowledged beforehand.

Ronald McKinnon:

Alan disposed of the fiscal problem and Michael disposed of the problem of the beginning exchange rate; I agree with what he said. I'd like to come back to the issue of openness and something that Kurt Schuler said. I believe that having an open economy is very important for fixing the exchange rate, in general, but for going to a currency-board system in particular. Michael mentioned the unfortunate experience of Palestine from 1927 to 1947. I can't say that I ever heard about that experience before, but let me hazard a guess that they didn't have free arbitrage with the outside world because of the state of the international economy. If nothing else, all kinds of restrictions on trade by countries other than Palestine disrupted trade on commodity account. Nevertheless, Michaely noted the disruptive flow of capital movements in and out of Palestine - and that would be enough to generate a business cycle, which was unfortunate.

This brings me to the idea of whether a gold standard is an advantage, even if your country is the only one on it. I think this is what Kurt referred to as the absence for any need for openness. When the United States was alone on the gold standard from 1914-25, the American price level was very unstable. There was a big inflation from 1914-18 and then a very sharp downturn in the price level in 1921; it was cut in half. One reason the United States was so anxious to lend money to the British so that the U.K. could go back to the gold standard in 1925, was that the Americans wanted an international standard to do a better job of stabilizing their own price level. Openness and having a stable international economy play the role of a monetary anchor is extremely important here. Only if a gold standard is international it is worth considering.

In the case of Peru, which is highly dollarized anyway, the desirability of making a full, fledged fixed-exchange-rate currency commitment would hinge on whether the economy was really opened to trade: the traditional kinds of protectionism that you see in Peru were eliminated. That's one condition that I'd like to see satisfied. Then I am quite happy to go ahead with a fully credible fixed exchange-rate regime if Peruvian fiscal conditions permit.

Alan Walters:

Going back to the budget issue, a zero-budget deficit is not required. Quite a big budget deficit may be consistent if you expect it to go down again, as you would be. Interest-rate falls are enormously important; real interest-rate falls from 20-30% down to 3-5% are the sort of things one would envision. With much more than that, however, your whole fiscal, tax-collection regime would look different with a stable price level.

The coexistence of a currency board and a central bank worries me; they can't coexist. You have to have either one without the other. That's a straight forward exclusion criterion.

Nissan Liviatan:

I find it very difficult to summarize the discussion that has been going on because there have been so many issues and so many diverse views that I cannot do justice to everything that has been said. I'll mention a few of these things and, perhaps, bring up some considerations that were not discussed. I feel that there really is a continuum of exchange-rate regimes, of which we picked a particular type - the currency board - and also discussed official dollarization to some extent. There is the flexible exchange rate; there is the adjustable peg; there is a pegging to a basket of currencies or that of one currency; there's a convertibility of the current account, convertibility of the capital account and a full dollarization currency board. There is a continuum of regimes and we are not really in a position right now to pick out one of them as being the most appropriate. We are essentially talking about moving towards a more fixed exchange rate, but there are many possibilities and we did not define them precisely, as Michael Michaely noted. We also did not examine all the implications of all of them, but we were presupposing that the fixed exchange rate was what we wanted to talk about.

What is the purpose of a stronger commitment to a fixed exchange rate? I would say that one of the main purposes is to use it as a tool, coupled with the proper fiscal measures, to restore the traditional roles of money - as store of value and means of exchange. One of the purposes that has not been mentioned, which in the context of Latin America is extremely important, is to create some regime that is conducive for repatriation of capital to Latin American countries. In situations where foreign finance has been cut off after a debt crisis, it is extremely important to tap this source of finance. One of the reasons for strengthening this institution, especially from the point of view of convertibility, is to be able to create a regime where people can bring in capital and also take capital out. This is one of the major sources to generate new resources for growth in Latin America. In talking about currency boards and dollarization, we presuppose that we'd go for the fixed; we think that there is only a question of how fixed we want to get it. It can be argued whether this is the right



thing to do or not; Sebastian Edwards raised that question. However, it seems that the tendency is to think that we should really go more in this direction at the current state.

One of the problems is that with a very small monetary base, as is the case in Brazil and other countries, it is virtually impossible to control the money supply. This is one of the reasons to adopt a regime like the currency board. The transparency of the rule is another reason; with all the tremendous complexity of the Brazilian monetary system, who knows what's going on there. If we applied the fixed exchange rate, or some version of it, then we would be able to monitor the policies. Maybe it would not be sustainable, but at least things would be transparent, not only on the exchange-rate side, but also on the fiscal side.

What it boils down to is that we have to examine the costs and benefits of two main features of the fixed exchange-rate regime, the currency board or something that moves in this direction. One important property is full convertibility; this is an extremely important feature, which has great benefits from various points of view - from the point of view of strengthening the nominal anchor to providing favorable conditions for repatriation of capital. On the cost side of this, there are problems when things get bad, as was mentioned by a few of the people present here. If things get bad, capital flight may start. There is also the issue of the internal debt, which becomes like an external debt. What happens in these kinds of situations? These are certainly important problems, but if we talk about a regime that would be conducive for repatriation of capital to Latin America, then this sort of thing should not arise. There should be sufficient guarantee to reduce the risk of runs. That is, the adjustments made would have to be very severe in order to create this climate. Not enough has been said about the financial safety net that this requires, but I think that this is feasible provided other things are in place.

The other side of it is the commitment. Arrangements such as a currency board provide a stronger commitment. Here I'd like to refer to a point made by Armeane and others to the effect that if everything is in place and all the preconditions are met, what do we need a currency board or a stronger commitment on the exchange rate for? The latter is just the result of the preconditions. We have to take into account, though, that fiscal credibility is never complete because it involves the future and no one can make a full commitment for that. In addition, the exchange-rate commitment is never complete. Another factor that we have to take into account is that the fiscal side is not the only determinant of inflation. If this were the case then we would only concentrate on the fiscal side; but this is not the case, as has been mentioned by various speakers.

When we talk about the commitment, I can only repeat briefly what Alex Cukierman said. There is a benefit in making a stronger commitment: it reduces inflationary expectations. However, there is also the cost of reneging on the commitment. When credibility is low, it is not clear that it is useful to make this commitment. We have observed that in cases where credibility increased, like in Argentina, they found it useful to make the commitment. In the case of Peru, perhaps there is not enough basis for this commitment.

I'd like to conclude with something that has not been discussed. This is the fact that very major changes have to be made in order to support the currency board or something similar to it. The question is: are these economies ready to make these big changes? On many occasions fixed exchange rates were practiced in the past and they usually failed. What is different now? I would say that there is a very big difference: the whole situation in Latin America has changed in that the

basic development-model that has been followed in the major countries in this continent have failed - both on the growth and the inflation sides. Therefore, there is much greater readiness to make the changes towards a market economy. This is part of the general trend in the world and, as Domingo Cavallo has noticed, it is not only on the economic side, but on the political side as well. The deteriorating situation brought a new readiness to make very big changes. The question is then: is the currency board a part of the transition process that is about to take place under these tremendous changes? I would say that, generally, the answer would be affirmative. If there is such a great readiness to make changes, the readiness may appear in one country this year, and exhibit itself in a different country next year. For the big economies in Latin America that have failed on such major issues of economic development, the readiness is growing. Once the readiness is there, part of the transition phase will include a currency board or something of this nature to bring the house into order.

**APPENDIX I**

**List of Participants**

Daniel Artana	Fundación de Investigaciones Latinoamericanas Buenos Aires, Argentina
Leonardo Auernheimer	Department of Economics Texas A & M University
Suman K. Bery	Country Operations, LA4 The World Bank
Pedro Bodin	Monetary Policy Department Central Bank of Brazil
Carlos Bolona Behr	Minister of Finance and Economy Lima, Peru
Michael Bruno	Department of Economics Massachusetts Institute of Technology
Guillermo Calvo	Research Department International Monetary Fund
Matthew Canzoneri	Department of Economics Georgetown University
Domingo Cavallo	Minister of Economy Buenos Aires, Argentina
Armeane M. Choksi	Country Department I The World Bank
Alex Cukierman	Department of Economics Tel Aviv University
Allan Drazen	Department of Economics University of Maryland
Sebastian Edwards	Department of Economics University of California at Los Angeles
Stanley Fischer	Department of Economics Massachusetts Institute of Technology

Arminio Fraga	External Affairs Division Central Bank of Brazil
Valeriano García	Country Operations, LA1 The World Bank
Steve H. Hanke	Department of Economics The Johns Hopkins University
James A. Hanson	Country Department IV The World Bank
Ricardo Hausmann	Banco Central de Venezuela Caracas, Venezuela
S. Shahid Husain	Latin America & The Caribbean Regional Office The World Bank
Miguel Kiguel	Country Economics Department The World Bank
Nissan Liviatan	Department of Economics, Hebrew University and Country Economics Department, The World Bank
Ronald McKinnon	Department of Economics Stanford University
Allan Meltzer	American Enterprise Institute Washington, D.C.
Michael Michaely	Country Department I The World Bank
Adroaldo Moura	Silex Sao Paulo, Brazil
Robert Mundell	Department University Columbia University
Demetris Papageorgiou	Country Operations, LA1 The World Bank
Carlos Paredes	Research Department, Brookings Institution Washington, D.C.
Affonso Celso Pastore	University of Sao Paulo Sao Paulo, Brazil

Larry Sjaastad	Department of Economics University of Chicago
Lawrence H. Summers	Development Economics Department The World Bank
Kurt Schuler	Department of Economics George Mason University
Marcelo Selowsky	Latin America & The Caribbean Regional Office The World Bank
Julio Velarde	Banco Central de Reserva Lima, Perú
Alan Walters	AIG Trading Corporation Washington, D.C.

## Distributors of World Bank Publications

**ARGENTINA**  
Carlos Hirsch, SRL  
Galeria Guemes  
Florida 165, 4th Floor-Oto. 453/465  
1333 Buenos Aires

**AUSTRALIA, PAPUA NEW GUINEA,  
FIJI, SOLOMON ISLANDS,  
VANUATU, AND WESTERN SAMOA**  
D.A. Books & Journals  
648 Whitehorse Road  
Mitcham 3132  
Victoria

**AUSTRIA**  
Gerold and Co.  
Graben 31  
A-1011 Wien

**BANGLADESH**  
Micro Industries Development  
Assistance Society (MIDAS)  
House 5, Road 16  
Dhanmondi R/Area  
Dhaka 1209

*Branch offices:*  
156, Nur Ahmed Sarak  
Chittagong 4000

76, K.D.A. Avenue  
Kulna 9100

**BELGIUM**  
Jean De Lannoy  
Av. du Roi 202  
1060 Brussels

**CANADA**  
Le Diffuseur  
C.P. 85, 1501B rue Ampere  
Boucherville, Quebec  
J4B 5E6

**CHILE**  
Invertec IGT S.A.  
Americo Vespucio Norte 1165  
Santiago

**CHINA**  
China Financial & Economic  
Publishing House  
8, Da Fo Si Dong Jie  
Beijing

**COLOMBIA**  
Informalace Ltda.  
Apartado Aereo 34270  
Bogota D.E.

**COTE D'IVOIRE**  
Centre d'Édition et de Diffusion  
Africaines (CEDA)  
04 B.P. 541  
Abidjan 04 Plateau

**CYPRUS**  
Center of Applied Research  
Cyprus College  
6, Diogenes Street, Engomi  
P.O. Box 2006  
Nicosia

**DENMARK**  
Samfundslitteratur  
Rosenørns Allé 11  
DK-1970 Frederiksberg C

**DOMINICAN REPUBLIC**  
Editores Taller, C. por A.  
Restauración e Isabel la Católica 309  
Apartado de Correos 2190 Z-1  
Santo Domingo

**EGYPT, ARAB REPUBLIC OF**  
Al Ahram  
Al Galaa Street  
Cairo

The Middle East Observer  
41, Sherif Street  
Cairo

**FINLAND**  
Akateeminen Kirjakauppa  
P.O. Box 128  
SF-00101 Helsinki 10

**FRANCE**  
World Bank Publications  
66, avenue d'Iéna  
75116 Paris

**GERMANY**  
UNO-Verlag  
Pöppeladorfer Allee 55  
D-5300 Bonn 1

**HONG KONG, MACAO**  
Asia 2000 Ltd.  
46-48 Wyndham Street  
Winning Centre  
2nd Floor  
Central Hong Kong

**INDIA**  
Allied Publishers Private Ltd.  
751 Mount Road  
Madras - 600 002

*Branch offices:*  
15 J.N. Heredia Marg  
Ballard Estate  
Bombay - 400 038

13/14 Asaf Ali Road  
New Delhi - 110 002

17 Chittaranjan Avenue  
Calcutta - 700 072

Jayadeva Hostel Building  
5th Main Road, Gandhinagar  
Bangalore - 560 009

3-5-1129 Kachiguda  
Cross Road  
Hyderabad - 500 027

Prarthana Flats, 2nd Floor  
Near Thakore Baug, Navrangpura  
Ahmedabad - 380 009

Patila House  
16-A Ashok Marg  
Lucknow - 226 001

Central Bazaar Road  
60 Bajaj Nagar  
Nagpur 440 010

**INDONESIA**  
Pt. Indira Limited  
Jalan Borobudur 20  
P.O. Box 181  
Jakarta 10320

**IRELAND**  
Government Supplies Agency  
4-5 Harcourt Road  
Dublin 2

**ISRAEL**  
Yozmot Literature Ltd.  
P.O. Box 56055  
Tel Aviv 61560

**ITALY**  
Licosa Commissionaria Sansoni SPA  
Via Duca Di Calabria, 1/1  
Casella Postale 552  
50125 Firenze

**JAPAN**  
Eastern Book Service  
Hongo 3-Chome, Bunkyo-ku 113  
Tokyo

**KENYA**  
Africa Book Service (E.A.) Ltd.  
Quaran House, Mfangano Street  
P.O. Box 45245  
Nairobi

**KOREA, REPUBLIC OF**  
Pan Korea Book Corporation  
P.O. Box 101, Kwangwhamun  
Seoul

**MALAYSIA**  
University of Malaya Cooperative  
Bookshop, Limited  
P.O. Box 1127, Jalan Pantai Baru  
59700 Kuala Lumpur

**MEXICO**  
INPOTEC  
Apartado Postal 22-860  
14060 Tlalpan, Mexico D.F.

**NETHERLANDS**  
De Lindeboom/InOr-Publikaties  
P.O. Box 202  
7480 AE Haaksbergen

**NEW ZEALAND**  
EBSCO NZ Ltd.  
Private Mail Bag 99914  
New Market  
Auckland

**NIGERIA**  
University Press Limited  
Three Crowns Building Jericho  
Private Mail Bag 5095  
Ibadan

**NORWAY**  
Narvesen Information Center  
Book Department  
P.O. Box 6125 Etterstad  
N-0602 Oslo 6

**PAKISTAN**  
Mirza Book Agency  
65, Shahrah-e-Quaid-e-Azam  
P.O. Box No. 729  
Lahore 54000

**PERU**  
Editorial Desarrollo SA  
Apartado 3824  
Lima 1

**PHILIPPINES**  
International Book Center  
Suite 1703, Cityland 10  
Condominium Tower 1  
Ayala Avenue, Corner H.V. dela  
Costa Extension  
Makati, Metro Manila

**POLAND**  
International Publishing Service  
Ul. Piekna 31/37  
00-677 Warszawa

*For subscription orders:*  
IPS Journals  
Ul. Okretna 3  
02-916 Warszawa

**PORTUGAL**  
Livraria Portugal  
Rua do Carmo 70-74  
1200 Lisbon

**SAUDI ARABIA, QATAR**  
Jarir Book Store  
P.O. Box 3196  
Riyadh 11471

**SINGAPORE, TAIWAN,  
MYANMAR, BRUNEI**  
Information Publications  
Private, Ltd.  
Golden Wheel Building  
41, Kallang Pudding, #04-03  
Singapore 1334

**SOUTH AFRICA, BOTSWANA**  
*For single titles:*  
Oxford University Press  
Southern Africa  
P.O. Box 1141  
Cape Town 8000

*For subscription orders:*  
International Subscription Service  
P.O. Box 41095  
Craighall  
Johannesburg 2024

**SPAIN**  
Mundi-Prensa Libros, S.A.  
Castello 37  
28001 Madrid

Libreria Internacional AEDOS  
Conseil de Cent. 391  
08009 Barcelona

**SRI LANKA AND THE MALDIVES**  
Lake House Bookshop  
P.O. Box 244  
100, Sir Chittampalam A.  
Gardiner Mawatha  
Colombo 2

**SWEDEN**  
*For single titles:*  
Fritzes Fackboksföretaget  
Regeringsgatan 12, Box 16356  
S-103 27 Stockholm

*For subscription orders:*  
Wennergren-Williams AB  
P.O. Box 1305  
S-171 25 Solna

**SWITZERLAND**  
*For single titles:*  
Librairie Payot  
1, rue de Bourg  
CH 1002 Lausanne

*For subscription orders:*  
Librairie Payot  
Service des Abonnements  
Case postale 3312  
CH 1002 Lausanne

**TANZANIA**  
Oxford University Press  
P.O. Box 5299  
Maktaba Road  
Dar es Salaam

**THAILAND**  
Central Department Store  
306 Silom Road  
Bangkok

**TRINIDAD & TOBAGO, ANTIGUA,  
BARBUDA, BARBADOS,  
DOMINICA, GRENADA, GUYANA,  
JAMAICA, MONTserrat, ST.  
KITTS & NEVIS, ST. LUCIA,  
ST. VINCENT & GRENADINES**  
Systematics Studies Unit  
#9 Watts Street  
Curepe  
Trinidad, West Indies

**TURKEY**  
Infotel  
Narlabahçe Sok. No. 15  
Cagaloglu  
Istanbul

**UNITED KINGDOM**  
Microinfo Ltd.  
P.O. Box 3  
Alton, Hampshire GU34 2PG  
England

**VENEZUELA**  
Libreria del Este  
Aptdo. 60.337  
Caracas 1060-A

## **Recent World Bank Discussion Papers** *(continued)*

- No. 177 *The Regulatory Impediments to the Private Industrial Sector Development in Asia: A Comparative Study.* Deena Khatkhate
- No. 178 *China: Reforming Intergovernmental Fiscal Relations.* Ramgopal Agarwala
- No. 179 *Nippon Telegraph and Telephone Privatization Study: Experience of Japan and Lessons for Developing Countries.* Yoshiro Takano
- No. 180 *China's Reform Experience to Date.* Peter Harrold
- No. 181 *Combatting AIDS and Other Sexually Transmitted Diseases in Africa: A Review of the World Bank's Agenda for Action.* Jean-Louis Lamboray and A. Edward Elmendorf
- No. 182 *Privatization Problems at Industry Level: Road Haulage in Central Europe.* Esra Bennathan and Louis S. Thompson
- No. 183 *Participatory Development and the World Bank: Potential Directions for Change.* Bhuvan Bhatnagar and Aubrey C. Williams, editors
- No. 184 *Agricultural Research in Southern Africa: A Framework for Action.* Andrew Spurling, Teck Y. Pee, Godwin Mkamanga, and Christopher Nkwanyana
- No. 185 *Military Expenditure and Economic Development: A Symposium on Research Issues.* Edited by Geoffrey Lamb with Valeriana Kallab
- No. 186 *Efficiency and Substitution in Pollution Abatement: Three Case Studies.* Dennis Anderson and William Cavendish
- No. 187 *The State Holding Company: Issues and Options.* Anjali Kumar
- No. 188 *Indigenous Views of Land and the Environment.* Shelton H. Davis, editor
- No. 189 *Poverty, Population, and the Environment.* Stephen D. Mink
- No. 190 *Natural Gas in Developing Countries: Evaluating the Benefits to the Environment.* John Homer
- No. 191 *Appropriate Macroeconomic Management in Indonesia's Open Economy.* Sadiq Ahmed
- No. 192 *Telecommunications: World Bank Experience and Strategy.* Bjorn Wellenius and others
- No. 193 *Information Systems Strategies for Public Financial Management.* Hywel M. Davies, Ali Hashim, and Eduardo Talero
- No. 194 *Social Gains from Female Education: A Cross-National Study.* K. Subbarao and Laura Raney
- No. 195 *Towards a Sustainable Development: The Rio de Janeiro Study.* Edited by Alcira Kreimer, Thereza Lobo, Braz Menezes, Mohan Munasinghe, and Ronald Parker
- No. 196 *Eastern Europe in Transition: From Recession to Growth?: Proceedings of a Conference on the Macroeconomic Aspects of Adjustment, Cosponsored by the International Monetary Fund and the World Bank.* Edited by Mario I. Blejer, Guillermo A. Calvo, Fabrizio Coricelli, and Alan H. Gelb
- No. 197 *Korean Industrial Policy: Legacies of the Past and Directions for the Future.* Danny M. Leipziger and Peter A. Petri
- No. 198 *Exporting High-Value Food Commodities: Success Stories from Developing Countries.* Steven M. Jaffee with the assistance of Peter Gordon
- No. 199 *Borrower Ownership of Adjustment Programs and the Political Economy of Reform.* John H. Johnson and Sulaiman S. Wasty
- No. 200 *Social Infrastructure Construction in the Sahel: Options for Improving Current Practices.* Bernard Abeillé and Jean-Marie Lantran
- No. 201 *Urbanization, Agricultural Development, and Land Allocation.* Dipasis Bhadra and Antônio Salazar P. Brandão
- No. 202 *Korean Industrial Policy: Legacies of the Past and Directions for the Future.* Danny M. Leipziger and Peter A. Petri
- No. 203 *Poverty Reduction in East Asia: The Silent Revolution.* Frida Johansen
- No. 204 *Managing the Civil Service: The Lessons of Reform in Industrial Countries.* Barbara Nunberg
- No. 205 *Designing a System of Labor Market Statistics and Information.* Robert S. Goldfarb and Arvil V. Adams
- No. 206 *Information Technology in World Bank Lending: Increasing the Developmental Impact.* Nagy Hanna and Sandor Boyson

## **The World Bank**

### **Headquarters**

1818 H Street, N.W.  
Washington, D.C. 20433, U.S.A.

Telephone: (202) 477-1234  
Facsimile: (202) 477-6391  
Telex: WUI 64145 WORLDBANK  
RCA 248423 WORLD BK  
Cable Address: INTBAFRAD  
WASHINGTON DC

### **European Office**

66, avenue d'Iéna  
75116 Paris, France


Telephone: (1) 40.69.30.00  
Facsimile: (1) 40.69.30.66  
Telex: 640651

### **Tokyo Office**

Kokusai Building  
1-1 Marunouchi 3-chome  
Chiyoda-ku, Tokyo 100, Japan

Telephone: (3) 3214-5001  
Facsimile: (3) 3214-3657  
Telex: 26838



12521 FID 100  
0-8213-2521-3  
PROCEEDINGS ANNUAL CONF  
  
400000009452  
\$7.95

ISBN 0-8213-2521-3