UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

G-24 Discussion Paper Series

Post-war Experiences with Developmental Central Banks: The Good, the Bad and the Hopeful

Gerald Epstein

No. 54, February 2009

UNITED NATIONS

UNITED NATIONS
UNCTAD

G24
INTERGOVERNMENTAL
GROUP OF TWENTY-FOUR

G-24 Discussion Paper Series

Research papers for the Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development

UNITED NATIONS
New York and Geneva, February 2009

Note

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UNITED NATIONS PUBLICATION

UNCTAD/GDS/MDP/G24/2009/1

PREFACE

The *G-24 Discussion Paper Series* is a collection of research papers prepared under the UNCTAD Project of Technical Support to the Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development (G-24). The G-24 was established in 1971 with a view to increasing the analytical capacity and the negotiating strength of the developing countries in discussions and negotiations in the international financial institutions. The G-24 is the only formal developing-country grouping within the IMF and the World Bank. Its meetings are open to all developing countries.

The G-24 Project, which is administered by UNCTAD's Division on Globalization and Development Strategies, aims at enhancing the understanding of policy makers in developing countries of the complex issues in the international monetary and financial system, and at raising awareness outside developing countries of the need to introduce a development dimension into the discussion of international financial and institutional reform.

The research papers are discussed among experts and policy makers at the meetings of the G-24 Technical Group, and provide inputs to the meetings of the G-24 Ministers and Deputies in their preparations for negotiations and discussions in the framework of the IMF's International Monetary and Financial Committee (formerly Interim Committee) and the Joint IMF/IBRD Development Committee, as well as in other forums.

The Project of Technical Support to the G-24 receives generous financial support from the International Development Research Centre of Canada and contributions from the countries participating in the meetings of the G-24.

POST-WAR EXPERIENCES WITH DEVELOPMENTAL CENTRAL BANKS: THE GOOD, THE BAD AND THE HOPEFUL

Gerald Epstein

Professor of Economics and Co-Director
Political Economy Research Institute (PERI)
University of Massachusetts, Amherst

G-24 Discussion Paper No. 54

February 2009

Abstract

In the last two decades, there has been a global sea change in the theory and practice of central banking. The "best practice" now commonly prescribed by the international financial institutions such as the International Monetary Fund (IMF), as well as by many prominent economists, is best characterized as the "neo-liberal" approach to central banking. The main components of this recipe are: (1) central bank independence, (2) a focus on inflation fighting (including adopting formal "inflation targeting") and (3) the use of indirect methods of monetary policy (i.e., short-term interest rates as opposed to direct methods such as credit ceilings).

This recipe is dramatically different from the historically dominant theory and practice of central banking, not only in the developing world, but, notably, in the now developed countries themselves (Epstein, 2007).

It is now time for a re-assessment of this historical experience. In this paper, I begin to make that assessment. I first report on cross-country statistical analysis to assess the impact of measures of central bank developmental effort on economic growth. The main findings are that central bank efforts to promote private investment can promote economic growth, and that, in general, there is no negative relationship between developmental effort and economic growth.

To get more information on central bank developmental effort and economic outcomes, case studies will be more useful than cross-country econometrics. This paper presents a set of case studies from Latin America and Asia which show that developmental efforts by central banks can have an important impact on economic development. The countries studied are: Brazil, China, India, Mexico, the Republic of Korea and Thailand.

The paper then describes specific tools and policies that central banks can undertake, in conjunction with other institutions to promote development. These include loan guarantees, asset backed reserve requirements, direct lending, and capital management techniques.

This paper argues that one place to look for models is the history of developmental central banks and financial policies in both the developed and developing countries. Of course, there is not simple return to the past. But there are plenty of models and institutional structures to learn from. The cross-sectional data presented in this paper suggest that central bank developmental efforts to promote real investment does contribute to economic growth, but do not indicate other broad conclusions of success or failure. Much is to be learned from country case studies and the implementation of developmental tools in concrete circumstances.

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POST-WAR EXPERIENCES WITH DEVELOPMENTAL CENTRAL BANKS: THE GOOD, THE BAD AND THE HOPEFUL

Gerald Epstein*

I. Introduction

In the last two decades, there has been a global sea change in the theory and practice of central banking (Blinder, 1998). The "best practice" now commonly prescribed by the international financial institutions such as the International Monetary Fund (IMF), as well as by many prominent economists, is best characterized as the "neo-liberal" approach to central banking. The main components of this recipe are: (1) central bank independence, (2) a focus on inflation fighting (including adopting formal "inflation targeting") and (3) the use of indirect methods of monetary policy (i.e., short-term interest rates as opposed to direct methods such as credit ceilings).

These principles have far reaching implications. Central bank independence implies, first and foremost, that the central bank should not be subject to pressure from the government to finance government activities (deficits). The focus on inflation means that the central bank should not be concerned with other goals such as promoting full employment, supporting industrial policy or allocating credit to sectors of special social need, such as housing. Neither should the central bank attempt to manage exchange rates through monetary policy, and certainly not through using controls on capital flows. The pursuit of indirect tools of monetary policy means that the central bank should not use credit allocation techniques such as subsidized interest rates, credit ceilings, and capital controls to affect either the quantity or the allocation of credit. These tenets are being promoted not only in developed countries, but also with great vigour in the developing world.

This recipe – no support for the government expenditure, reluctance to manage exchange rates and opposition to use of capital controls, and a refusal to engage in credit allocation policies to support economic sectors – is a highly idiosyncratic one in the sense that, as a package, it is dramatically different from the historically dominant theory and practice of central banking, not only in the developing world, but, notably, in the now developed countries themselves (Epstein, 2007). Throughout the early

* This work was carried out under the UNCTAD Project of Technical Assistance to the Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development with the aid of a grant from the International Development Research Centre of Canada.

and recent history of central banking in the United States, the United Kingdom, the Continental Europe, and elsewhere, financing governments, managing exchange rates, and supporting economic sectors by using "direct methods" of intervention have been among the most important tasks of central banking and, indeed, in many cases, were among the reasons for their existence. The neo-liberal policy package currently proposed, then, is a departure the history and dominant practice of central banking throughout most of its history.

For developing countries, this change has been, perhaps, the most dramatic. After the Second World War, there was a major transformation of central banking in the developing world. As described by renowned monetary historian of the New York Federal Reserve, Arthur I. Bloomfield reported in 1957:

> During the past decade there has been a marked proliferation and development of central banking facilities in the underdeveloped countries of the world, along with an increasing resort to the use of monetary policy as an instrument of economic control. Since 1945, central banks have been newly established and pre-existing ones thoroughly reorganized, in no less than some twenty-five underdeveloped countries. In other cases the powers of pre-existing central banks have been broadened … nearly all underdeveloped countries today have central banks, most of which are equipped with the full panoply of central banking powers ... in large part the recent growth of central banking in the economically backward areas has also reflected a desire on the part of the governments concerned to be able to pursue a monetary policy designed to promote more rapid economic development and to mitigate undue swings in national money incomes (Bloomfield, 1957: 190).

Bloomfield goes on to describe the functions, powers, and goals of these central banks.

> Many of the central banks, especially those established since 1945 *with the help of Federal Reserve advisers* (emphasis added) are characterized by unusually wide and flexible powers. A large number of instruments of general and selective credit control, some of a novel character, are provided for. Powers are given to the central bank to engage in a wide range of credit operations with commercial banks and in some cases with other financial institutions. … These and other powers were specifically provided in the hope of enabling the central banks … to pursue a more *purposive* (emphasis added) and effective monetary possible tan had been possible for most … that had been set up … during the twenties and thirties … (that) for the most part (had) been equipped with exceeding orthodox statutes and limited powers which permitted little scope for a monetary policy *designed to promote economic development and internal stability* (emphasis added) and which were sometimes poorly adapted to the primitive financial structures of the countries concerned (ibid: 191).

Bloomfield describes the same tools of credit manipulation that were widely used in Europe, Japan and even the United States, following the Second World War: "...through selective credit controls applied to the banking system, through help in establishing and supporting special credit institutions catering to specialized credit needs, and through influence over the lending policies of such institutions, it can help to some degree to re-channel real resources in desired directions, both between the public and private sector and within the private sector itself" (ibid: 198). Of course, Bloomfield cautions that; "Such measures would for the most part be justified, however, only to the extent that they do not conflict with the overriding requirement of financial stability or involve the central bank in details of a sort that might distract its attention and energies from the effective implementation of a policy aimed at stability" (ibid:197).

Writing about the same issue almost fifteen years later (in 1971), another prominent Federal Reserve official, Andrew F. Brimmer, a member of the Federal Reserve Board of Governors, looked back on the experience with "developmental" central banking in the developing world. Brimmer and his associates describe a variety of techniques that central banks pursued in the 1960s: these included: providing capital to development institutions, such as industrial and agricultural development banks; extending credit to development banks an purchasing their securities; buying a small part of the equity of development banks; establishing a "securities regulation fund" to create a market for the securities of various development finance institutions, by using the profits from the ordinary operations of the central bank (ibid: 785); using differential discount rates to allocate credit to capital development projects; the establishment of portfolio ceilings on activities having a low priority; various types of reserve requirements, including differential reserve requirements to influence the allocation of credit; using import deposit requirements,

(primarily intended to deal with balance of payments difficulties) to also influence the allocation of bank credit (Brimmer, 1971).

In contrast to Bloomfield, however, Brimmer on the whole was somewhat negative about the effectiveness of many of these techniques.

In light of the current wide-spread promotion of the "neo-liberal central banking" as the "best practice" in central banking, it is now time for a re-assessment of this historical experience. However, since Brimmer's study of the experience with "developmental central banking" there has been no serious attempt to revisit these experiences to assess their impacts, to study what worked and what didn't and to compare their results with that of the currently popular "neo-liberal" central banks.

My earlier study *Central Banks as Agents of Development*, commissioned by the World Institute for Development Economics Research (WIDER) (Epstein, 2007) set out these general issues, but the case study material focused mainly on the currently developed economies. In this paper, I extensively extend the analysis of the earlier paper to focus experiences with developing country central banks. I also extend the analysis to suggest in a more detailed fashion some tools that developmental central banks, along with other institutions, can use to promote widely-shared growth.

In light of the financial crisis that began in 2007 and is deepening and spreading as this paper is written, I will also pay attention to the roles that central banks in developing countries can play in protecting their economies from the forces promoting financial instability.

The rest of the paper is structured as follows: in the next section, as a prelude to the historical discussion of developmental central banks, I first discuss the neo-liberal approach to central banking. In section III, I describe some simple statistical attempts to assess on a comparative basis the impact of developmental central banking on economic growth. Section IV presents some case studies on developmental central banks in developing countries. Section V presents some concrete alternatives on how developmental central banks can implement a more socially useful approach to central banking, including tools for protecting developing economies from financial instability. Section VI concludes.

II. The neo-liberal approach to central banking

Central bank policy has become more important and more difficult in many parts of the world. It has become more important because fiscal policy no longer plays much of a role in short-term and medium-run macroeconomic policy management. It has become more difficult because, not only is central bank policy the only remaining tool of stabilization policy, but also because the economic and financial environment in which central banks must operate has become more complicated. This complexity is due to several factors. Among the most important are the increased tendency toward domestic financial liberalization and increased international financial capital mobility. Both of these mean that the central bank must contend with increasingly rapid, potent and often fickle financial market expectations and reactions to monetary policy.

In this environment, it is not surprising that many central banks, and the governments and societies they are connected to, have been re-evaluating and searching for new modus operandi. The central questions motivating this search are: What are the best institutional structures, goals and operating procedures for central banks? Considering that central bank policy has simultaneously became more important and more challenging one would think that central bank structures and operating procedures would increasingly become objects of policy debate and political struggle. Moreover, one would think that given the importance, complexity and politicized nature of these issues, that economists and policy makers would develop a wide variety of answers, tailored to fit the broad array of political, institutional and economic circumstances in which different countries find themselves.

However, on the contrary, a powerful ideological view – "neo-liberalism" – has led economists and policy makers increasingly to the view that fundamentally, there is one and only one central bank structure that is optimal for all circumstances: I will call this the "neo-liberal" central bank. The neo-liberal central bank has the following characteristics: (1) it should be highly independent of the democratic political process to enhance its credibility and (2) its main goal should be maintaining a low level of inflation.

Proponents of the neo-liberal approach argue that central banks which adhere to these two planks

will deliver low inflation with no negative impacts on output, investment, unemployment or any other important macroeconomic variable. Indeed, by reducing and stabilizing inflation it will create a macroeconomic environment in which the economy will flourish and from which all can benefit. This view has crowded out virtually all serious debate about the fundamental questions such as what should be the proper goals of central bank policy.

In a fascinating survey, Alan Blinder, former vice-chair of the Federal Reserve Board of Governors, makes clear just how strong is this consensus in favour of a "neo-liberal central bank" (Blinder, 1998). Blinder sent out a survey to the heads of 127 central banks – the entire membership of the Bank for International Settlements, and to a "representative" sample of macro and monetary economists – that is, the members of two NBER programmes on macro and money. The response rate was extraordinarily high for the central bankers, 66 per cent, and respectable for the economists – 46 per cent. The survey asked questions concerning the nature and role of "credibility" and thereby indirectly on the importance of inflation, the costs of disinflation, and the nature, or lack there-of, in the trade-off between inflation and unemployment, among other things.

"How important is the credibility of the central bank?" On a scale of 1 (unimportant) to 5 (of the utmost importance), the mean response among the 84 central bankers was 4.83 with a standard deviation of only 0.37. Economists' mean response was 4.23 with a standard deviation of 0.85; so they too see credibility as extremely important.

Why do they think credibility is important? The respondents ranked 7 possible reasons for the importance of credibility. The central bankers' first choice was that it would lead to "less costly disinflation", that is, a lower sacrifice-ratio. Their second choice was that it would help them "to keep inflation low". The economists agreed that these are the top two reasons, though they reversed the order.

Amusingly, the central bankers' last choice as to why credibility is important was "Public servants should be truthful". Blinder speculated, "Perhaps, as one central banker wrote in his survey, central bankers do not like to think of themselves as 'public servants' " (Blinder, 1998: 12–13).

"What makes a central bank credible?" Central bankers and economists agreed on the ranking of the seven choices offered. The top three were "history of honesty", "central bank independence", and "history of fighting inflation".

Blinder also presents interesting information on central bankers view of the Non-Accelerating Inflation Rate of Unemployment (NAIRU). Blinder notes based on his personal experience as a central banker, that "As far as I can tell, all central bankers accept the notion that there is no long-run (his emphasis) trade-off between inflation and unemployment – despite the fact that the natural-rate Phillips curve fits the data poorly in most countries other than the United States" (Blinder, 1998: fn.16).

Considering that there is apparently such a strong consensus among experts that these principles and their applications are the best approach to central bank policy, one would expect that there must be very strong theoretical and, probably more importantly, very strong empirical evidence in support of this view. However, the neo-liberal approach to central banking is riddled with myth. The myth result from the surprising lack of rigorous, general theoretical foundations and even more importantly, its lack of empirical support. For example, in the study described above, Blinder notes that, despite the consensus that more "credibility" reduces the cost of disinflation, "Unfortunately, the empirical evidence is squarely against the credibility hypothesis" (Blinder, 1998: 9). How does one then explain the paradox of the enormous popularity of the neo-liberal approach to central banking along side such weak evidence in its support? The answer probably is that the neo-liberal approach enhances the power, wealth and prerogatives of certain powerful groups in society at the expense of others in the guise of being in the general interest.

The justification for the approach is based on two pillars: the theory of rational expectations and natural rate of unemployment or NAIRU. These lead to the idea of time inconsistency: the idea governments, to gain a political advantage, will try to pursue strategic expansionary monetary policy. Since economies are always at their NAIRU's that implies that there is an inflationary bias to monetary policy. The second key idea is that societies can get a free lunch by enhancing the "credibility" of central banks, often by making them "independent" of the political process. Enhancing credibility, it is argued can reduce inflation with lower costs in increased unemployment or reduced economic growth. In other

words, central bank rules or central bank independence can reduce the "sacrifice ratio" associated with contractionary monetary policy geared to reducing inflation (Cukierman, 1992).

There is virtually no support for any of these basic theoretical propositions: the relevance of rational expectations; the existence of a time invariant NAIRU; the importance of "time-inconsistency"; or the existence of credibility free lunches from independent central banks or simple policy approaches such as inflation targeting.

Inflation targeting (IT) is the latest and most popular version of this neo-liberal approach.[1] Under inflation targeting, central banks use a small number of direct monetary tools to target a low inflation rate, usually in the mid single digits for developing countries, to the virtual exclusion of other targets. The so-called Taylor rule finds empirically that central banks target both inflation and unemployment (or economic growth), but this is what one would expect in an inflation targeting framework: unemployment or economic growth is a predictor of inflation so just because these variables have a significant coefficient in a reduced from regression equation does not mean they are valued as a goal in and of themselves.

Much of the recent literature on the record of IT has focused mostly on whether systemic risks and accompanying volatility has been reduced in the IT economies, and whether inflation has come down actually in response to adoption of the framework itself or due to a set of "exogenously welcome" factors. On the one side, there is a fair amount of agreement that IT has been associated with reductions in inflation. Furthermore, exchange rate *pass-through* effects were reportedly reduced and consumer prices have become less prone to shocks (Mishkin and Schmidt-Hebbel, 2001). Yet, existing evidence also suggests that IT has not yielded inflation below the levels attained by the industrial non-targeters that have adopted other monetary regimes (Ball and Sheridan, 2003; Roger and Stone, 2005; Mishkin and Schmidt-Hebbel, 2001). Moreover, even if domestic monetary policy *has* reduced inflation, the hoped for gains in economic growth and employment have, generally, not materialized.

Moreover, little is known about the true costs of IT on potential output growth, employment, and on incidence of poverty and income distribution. Bernanke et al. (1999) report evidence that inflation targeting central banks do not reduce inflation at any lower cost than other countries' central banks in terms of forgone output. That is, inflation targeting does not appear to increase the credibility of central bank policy and therefore, does not appear to reduce the sacrifice ratio. Per contra, based on an econometric study of a large sample of inflation targeters and non-targeters, Corbo et al. (2001) concluded that sacrifice ratios have declined in the emerging market economies after adoption of IT. They also report that output volatility has fallen in both emerging and industrialized economies after adopting inflation targeting. This position is recently complemented by a study of the IMF economists, who, using a complex econometric model and policy simulations, report findings that inflation targeting economies experience reductions in the *volatility* in inflation, without experiencing increased *volatility* in real variables such as real GDP (Batini et al., 2006). According to these estimates, inflation targeting central banks do enhance economic "stability" relative to other monetary rules, such as pegged exchange rates and monetary rules.

However, in the assessments of "stability", these papers do not consider the issue of the stability of asset prices, including exchange rates, stock prices and other financial asset prices. As the ongoing financial crisis shows, true macroeconomic stability requires the sustainability of asset prices and debt levels, something which a focus on commodity price inflation will not insure, and indeed, might make worse. Asset price stability aside, while intriguing, these results are only as strong as the simulation model on which they are based and are only as relevant as the relevance of the questions they pose. Moreover, they are only as broad as the alternatives they explore. On all these scores, these results are problematic. First, they do not simulate the impact of inflation targeting relative to other possible policy regimes, such as targeting the real exchange rate as discussed below. Second, the model is based on estimates of potential output that are themselves affected by monetary policy. Hence, if monetary policy slows economic growth, it also lowers the rate of growth of potential output and, therefore reduces the gap between the two, thereby *appearing* to *stabilize the economy*.

Equally, if not more important, is the issue of setting the *targeted rate of inflation itself.* Even if the advocated requisites of the IT regime are taken for granted, it is not yet clear what the practically targeted rate of inflation should be. Even though there

Table 1

IMF FINANCIAL PROGRAMMING BASED ON NET DOMESTIC ASSETS CEILINGS AND NET INTERNATIONAL RESERVES FLOORS

		Net domestic assets (NDA)	
		Higher than programmed (Threatened)	*Lower than programmed (Not threatened)*
Net international reserves (NIR)	*Higher than programmed (Not threatened)*	Only the NIR target has been met Policy: tighten	Both targets have been met Policy: no need for tightening
	Lower than programmed (Threatened)	Neither target has been met Policy: tighten	NIR has not been met Policy: tighten

Source: Epstein and Heintz (2006), adapted from Blejer et al. (2001: table 1).

appears to be a consensus among the advocates of the IT regime that the inflation target has to be "as low as possible", there is no theoretical justification of this assertion; and as such, it sounds more of a recommendation than a careful calculation.

Finally, is the issue of the role of *IT* in the context of *supply shocks*, which periodically affect individual economies and, indeed, is the dominant cause of inflation in most developing countries. Rigid inflation targeting rules can prove highly problematic in the context of supply-shocks, where the main problem facing countries is too little supply, not too much demand. To increase supply, a more developmental approach to central banking, as we describe below, can be helpful.

A. Inflation targeting and IMF financial programming

The problems associated with inflation targeting are exacerbated when they are combined with the standard restrictions the IMF imposes on developing country borrowers' monetary policy. These standard restrictions are called *financial programming*.

The IMF financial programming approach has been subject to a number of significant criticisms (Epstein and Heintz, 2006; Easterly, 2004). Easterly (2004) shows that there is significant empirical slippage in virtually every stage of the programming analysis, so that hitting ultimate targets becomes extremely problematic. As a result, the framework either routinely produces wrong results, or must be supplemented by other analyses that are not part of the programming framework. Partly as a result, the IMF has recently been imposing (or strongly recommending) additional targets, especially inflation targets (IT). Blejer et al. (2001) argue that inflation targets are redundant and sometimes inconsistent with the other IMF programming targets; Epstein and Heintz (2006) show that inflation targets enforce a contractionary bias on the regular programming targets, making it less likely that the central bank will accommodate economic growth and credit creation when desirable. Table 1 is reproduced from the Epstein and Heintz (2006) paper. In the traditional financial programming exercise, the main targets are net domestic assets ceilings (NDA, sometimes called "domestic credit ceilings") which limit the amount of credit that the central bank can create, and the net international reserves floor (NIR), which require that monetary and fiscal policy are set to maintain a minimum level of international reserves. If either target is threatened – that is, if international reserves are too low or if net domestic assets are too high – then the programme calls for tightening monetary policy, raising the target interest rate, cutting down on credit to the government and banking sector, and/or raising reserve requirements.

Table 2

FINANCIAL PROGRAMMING WITH NET DOMESTIC ASSETS, NET INTERNATIONAL RESERVES AND INFLATION TARGETS

		Inflation target (IT)	
		Higher than programmed (Threatened)	*Lower than programmed (Not threatened)*
Net Domestic Assets (NDA) relative to programme requirements	*Higher than programmed (Threatened)*	NDA and IT give the same signal Policy: tighten	NDA and IT give different signals (NDA – tighten; IT – don't tighten) Policy: tighten
	Lower than programmed (Not threatened)	NDA and IT give different signals: IT – tighten; NDA – no tightening needed Policy: tighten	NDA and IT give the same signal Policy: no tightening needed

Source: Epstein and Heintz (2006), adapted from Blejer et al. (2001: table 2).

A key and troubling implication of this approach is that there is no clear set of conditions under which expansionary monetary or credit policies are called for, even in a situation of slow growth. Even if both targets are met, programming does not call for expansionary policy. This is largely because there is no explicit operational target for economic growth, employment creation, or poverty reduction. The bias of financial programming is therefore contractionary.

If explicit inflation targets are added to the traditional financial programming exercise, then this bias becomes even worse, especially in a situation of supply-side inflation shocks, as Madagascar and many other countries are experiencing now. Table 2 illustrates the problem. An inflation ceiling essentially adds an additional restriction on policy. Table 2 adapted from Blejer et al. (2001), illustrates this point. For example, in the situation where the NIR floor is met and NDA ceiling is met, but, say, because of a supply shock, the inflation target is not met, this approach would call for restrictive policy. Again, there is no situation which explicitly calls for looser policy because, as before, growth or employment generation does not have explicit targets within the monetary programming framework.

None of this is meant to imply that we believe maintaining a moderate and stable inflation rate is unimportant; nor are we arguing that the macroeconomic authorities in can ignore supply-side inflation. But it does suggest that unless economic growth targets are explicitly incorporated into the making of macroeconomic policy, there will be a bias against growth and employment in the formulation of policy as it is currently structured.

B. Alternatives to inflation targeting

Fortunately, there are alternatives to inflation targeting that hold out the promise of a more employment friendly monetary policy and that can be tailored to the particular circumstances and needs of different countries. A team of researchers working on a PERI/Bilkent project on alternatives to inflation targeting, as well as a United Nations Development Programme (UNDP) sponsored study of employment targeting economic policy for South Africa (see Epstein and Yeldan, 2008). The countries covered in this project are Argentina, Brazil, Mexico, India, the Philippines, South Africa, Turkey and Viet Nam. One

size does NOT fit all. A range of alternatives were developed in these papers, all the way from modest changes in the inflation targeting framework to allow for more focus on exchange rates and a change in the index of inflation used, to a much broader change in the overall mandate of the central bank to a focus on employment targeting, rather than inflation targeting (see table 3 for a summary). Some of the alternative policies focus exclusively on changes in central bank policy, while for other countries, changes in the broad policy framework and in the interactions of monetary, financial and fiscal policy are proposed. Some incorporate explicit goals and targets, while others prefer more flexibility and somewhat less transparency. But all of the studies agreed that the responsibilities of central banks, particularly in developing countries, while including maintaining a moderate rate of inflation, must be broader than that, and should include other crucial "real" variables that have a direct impact on employment, poverty and economic growth, such as the real exchange rate, employment, or investment. They also agree that in many cases, central banks must broaden their available policy tools to allow them to reach multiple goals, including, if necessary, the implementation of capital management techniques.

All of these approaches, including employment targeting, are **real targeting** approaches to central banking.

This *real targeting* framework has a number of important advantages.

(i) First and foremost, it places front and centre the economic variables that have the most immediate and clearest association with social welfare. The central bank will be forced to identify this target and then reach it, and if it doesn't do so, both explain why it failed and how it will improve in the next period.

(ii) Given the public pressure to reach this target, the central bank will have significant incentives to invest in research and other activities, to improve its understanding and tools to reach this real target.

(iii) Given that it will need to reach this target amid other constraints, it will need to develop new tools of monetary policy. For example, if a central bank must hit an employment target subject to an inflation and balance of payments constraint, then – in addition to interest rate policy - it might explore asset allocation strategies to encourage banks to lend more to high employment generating uses, and capital control techniques to manage balance of payments problems.

(iv) A real targeting approach lends itself naturally to a more democratic, transparent and accountable central bank policy that serves the genuine needs of the majority of countries' citizens, rather than the minority that typically benefits from the combination of slower growth, low inflation, and high real interest rates.

(v) The framework is much more conducive to tailoring monetary policy to the specific needs of different countries. For example, if a country has a particular problem with generating good jobs for women, or more jobs in a particular region of the country, then the real targeting approach can target women's employment or more employment in a specific region (along with more employment generally) and devise instruments to achieve those objectives.

In short, the *real targeting approach* to monetary policy is likely to be more relevant, flexible and effective than inflation targeting. As a particularly relevant example of real targeting, below I describe in somewhat more detail employment targeting.

Implementing a real targeting approach is one pathway for a *central bank to become an agent of development.* This usually involves developing a broad set of tools, a range of targets, and cooperating closely with other institutions in government and the private sector to foster broad based economic development.

PERI/Bilkent alternatives to inflation targeting project

I now describe in more detail the alternatives to inflation targeting developed in the PERI/Bilkent project on alternatives to inflation targeting. Table 3 summarizes these approaches.

In section V we describe in more detail what some of these tools and approaches are. But first we look at some statistical evidence (section III) and case study evidence (section IV) on the impact of a more active central bank on economic development.

Table 3

PERI/BILKENT ALTERNATIVES TO INFLATION TARGETING PROJECT

Summary table

Country	*Ultimate targets*	*Intermediate targets*	*Strict target or discretion*	*Additional tools/ instruments*	*Central Bank: independent, integrated or coordinated?*
Argentina	SCRER, inflation, activity level	Same as ultimate targets	Discretion	Sterilization, reserve requirements (other prudential requirements), capital management techniques	Coordinated
Brazil	Inflation, exports, investment	Inflation rate, SCRER, real interest rate		Asymmetric managed float (moving floor on exchange rate), bank reserves, bank capital requirements, bank capital requirements	NA
India	GDP Growth, inflation, slightly undervalued exchange rate	Same as ultimate targets	Discretion	Capital management techniques, if necessary	Integrated
Mexico	Inflation, SCRER	Domestic inflation measure, SCRER, "sliding floor" on exchange rate	Discretion	Capital management techniques	NA
South Africa	Employment, inflation, exchange rate instability	GDP Growth, employment intensity of production	Strict employment target (coordinated with other institutions), looser inflation constraint	Credit allocation techniques (e.g. asset based reserve requirements, loan guarantees, etc.), capital management techniques	Integrated
Turkey	Inflation, SCRER	NA	Discretion	NA	NA
Philippines	Inflation, SCRER		Discretion	Capital management techniques, prudential supervision of banks, targeted credit, incomes policies	Integrated
Viet Nam	Growth, SCRER, inflation		Discretion	Capital management techniques, prudential supervision of banks, targeted credit, incomes policies	Integrated

Source: See text.

Note: SCRER: Stable and Competitive Real Exchange Rate. NA: no answer, i.e., the issue was not directly addressed. Central Banks: *integrated* means integrated into governmental macroeconomic policy-making framework; *coordinated* means independent but committed to close coordination with other macroeconomic policy-making institutions.

III. Some empirical evidence on the impact of developmental central banks on economic performance

Advocates of a developmental role for central banks argue that central banks that use a variety of tools such as credit allocation policies, regulated interest rates, direct lending to priority sectors, and so on, can play a more effective role than can neo-liberal central banks. In the next section we discuss some case study evidence on this issue. Here we present some simple statistical evidence.

As an initial attempt to assess the impacts of more active central banks on economic outcomes, we assembled a data set based on statistics from the World Bank's Financial Sector Database and the International Financial Statistics (IFS).[2] The data include a sample of developing and developed countries and the data bracket the period 1950–2007, with most of the data available after the mid-1980s. These data – highly imperfect as they are – attempted to measure "developmental effort" of central banks by their balance sheet behaviour: in other words, we looked at the level of lending by the central banks to the private sector (primary, secondary and tertiary), as well as to quasi-public institutions, such as development banks. We then looked at the impact of this developmental effort on economic growth, both through panel level regressions and through more informal descriptive statistics.

Figures 1–4 below show scatter diagrams of the relationship between central bank credit operations in the economy, defined in four different ways, and 10-year averages of real GDP growth for each economy (please see data annex for more information on data sources and definitions). Figure 1 measures central bank intervention effort by "central bank assets/GDP". Figure 2 measures activity by total central bank lending to the government/central bank assets relative to GDP. For figure 3, the measure is central bank claims on the private sector relative to central bank assets; and figure 4 is central bank claims on the financial sector, relative to total central bank assets.

The data provided little support for either the opponents or critics of developmental operations of central banks. There seemed to be little overall correlation between developmental effort and economic growth. The only relationship which is somewhat positively correlated is the relationship between central bank lending to the private sector and real

Figure 1

CENTRAL BANK ASSETS/GDP AND GDP GROWTH

(Decade averages)

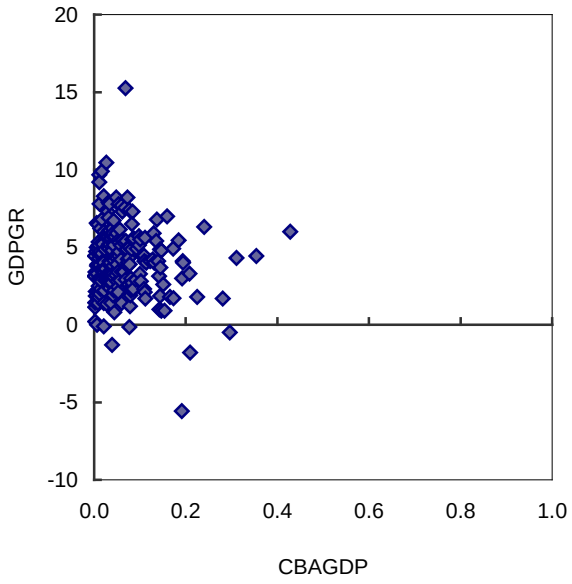


Figure 2

TOTAL CENTRAL BANK CLAIMS ON GOVERNMENT INSTITUTIONS/TOTAL CENTRAL BANK ASSETS AND GDP GROWTH

(Decade averages)

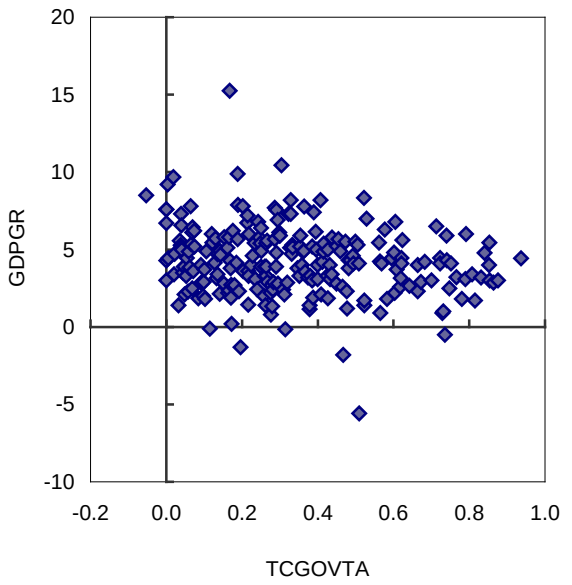


Figure 3

TOTAL CENTRAL BANK CLAIMS ON THE PRIVATE SECTOR/TOTAL CENTRAL BANK ASSETS AND GDP GROWTH

(Decade averages)

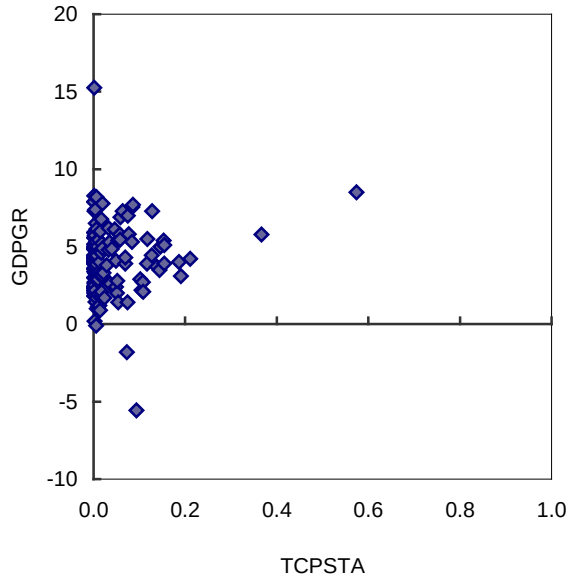
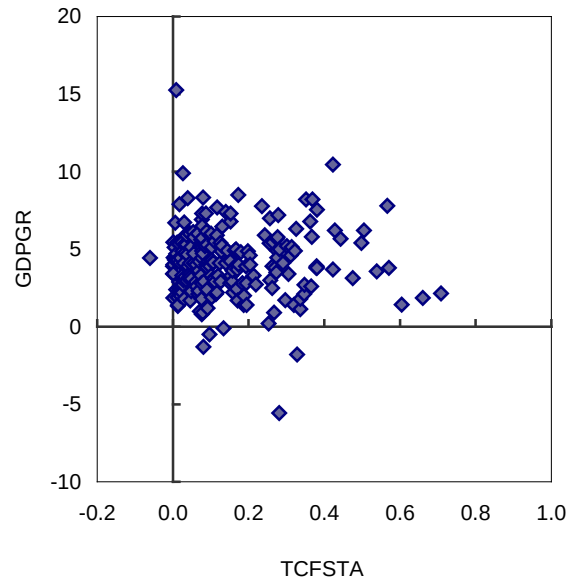


Figure 4

TOTAL CENTRAL BANK CLAIMS ON THE FINANCIAL SECTOR/TOTAL CENTRAL BANK ASSETS AND GDP GROWTH

(Decade averages)



economic growth (figure 3). But this relationship is weak.

To test this relationship more formally, we ran panel regressions, both fixed and random effects, lagging the variables one period to try to control for simultaneity bias. As the graphs indicate, there is an imprecisely estimated positive relationship between central bank lending to the private sector – an aspect of developmental banking – and real economic growth.[3] Still, these results are rather weak. They lead us to suspect that country case studies might be a more valuable way of learning about the relationship between developmental central banking and economic development.

IV. Some developing country case studies

A. Central banks as agents of development in developing countries

The history of the evolution of central banks in developing countries will, in some ways, be quite familiar to students of central banking in the now developed world. Still, as Gerschenkron (1962) emphasized, the different world in which they came into being required some significant variations as well. Perhaps the most important differential contextual factors were the rise and fall of colonialism, and the rise and fall of Communism, both of which gave them a variety of inherited institutions and role models.

A full history of central banking in the developing world is obviously beyond the scope of this essay, but in this section, I want to briefly describe some of the aspects of this development in a subset of developing countries, most of whom belong to the "rest" as defined by Alice Amsden in her important study, *The Rise of the Rest; Challenges to the West from Late Industrializing Countries* (Amsden, 2001).[4] The countries of the rest, according to Amsden, acquired a manufacturing base in the years prior to World War II and then, after the war, industrialized rapidly, moving, eventually into mid-level and even high-technology production. (ibid: 1–2). Among many other factors, Amsden stresses the important role of finance in the success of these countries, and especially the mobilization and allocation of medium term and long-term finance for industrialization. Along with the mobilization and allocation of finance, Amsden stresses the control and monitoring mechanisms that

sought to ensure that these investments were used productively to promote industrialization. In this regard, the key role of development banks as part of a "developmental state".

> The developmental state was predicated on performing four functions: development banking; local-content management; "selective seclusion" (opening some markets to foreign transactions and keeping other closed); and national firm formation … Two principles guided developmentalism: to make manufacturing profitable enough to attract private enterprise through the allocation of intermediate assets (subsidies) and to induce such enterprises to be results-oriented and to redistribute their monopoly profits to the population at large. Step-by-step, governments groped toward a new control mechanism that replaced the invisible hand. The new mechanism ultimately shared credit with private initiative for a Golden Age of industrial expansion (Amsden, 2001: 125).

In the post Second World War ("post-war") period development banking filled the void left by absence of other financial institutions, investing first in key infrastructure that often generated demand for local labour and inputs which created business groups and local knowledge. Development banks themselves learned important skills such as project appraisal in the process (ibid.: 126). Foreign direct investment played a relatively minor role in this post-war push; instead the big player became the public sector. Public investment as a share of gross domestic investment in the period ranged from a high of 58 per cent in Mexico to a low of 25 per cent in Brazil (Amsden, 2001: 127). For most countries of the rest, the share declined over the post-war period, but still the public sector was by far the single most important player in capital formation.

The state's agent for financing investment was the development bank. The government's role in long-run credit allocation was substantial even in part of the rest where development banks were of relatively minor importance (Malaysia, Thailand, Taiwan Province of China and Turkey). Sometimes, the whole banking sector in these countries was mobilized to direct long-term credit to targeted industries, thereby "acting as a surrogate development bank" (Amsden, 2001: 129).

Development banks raised capital at home or abroad and then used it either to buy equity in private or public firms or to lend to such firms at below market interest rates. Lending terms of development banks were almost always concessionary (Amsden, 2001: 132). Effective real interest rates were often low, even negative. The public finance behind the rest's development banking was often "off-budget" and related to non-tax revenues. It derived from foreign sources, deposits in government-owned banks post office savings accounts, and pension funds. In East Asia especially, these often occurred outside the general budget and parliamentary process, strengthening the hand of professional bureaucrats, as in post-war France and Japan. Governments in the rest also controlled non-tax related sources of funding such as foreign borrowing (through loan guarantees), ownership of financial institutions and the disposal of private savings (for example, through post-office savings banks) (Amsden, 2001: 133, 135).

According to Amsden, the major weakness of development banks was *not* that they spent on the wrong industries, but that, in some cases, they spent too much overall.

1. The role of central banks

What was the role of central banks in this process? As one might expect from the experiences in the now developed countries, the role varied from country to country. In India and China, for example, Central Banks played a crucial role as part of the planning apparatus and were key players in the allocation of medium and long-term credit to industrial sectors. In Mexico and Thailand, the role was less important. In Brazil and the Republic of Korea, the role of Central Banks occupies a middle ground between these two groups' roles.

2. India and China[5]

Mr. P.C. Bhattacharyya, a former Governor of the Reserve Bank of India (1962–1967), describes the role of central banking in India in the 1960s:

> India has consciously chosen a policy of planned economic development … The traditional objective of a central bank is the maintenance of price and exchange stability. However, this is but a means to achieve economic progress rather than an end in itself. In the context of the developing countries, these objectives … have to be fitted into the

> broader and more compelling urge for furthering economic growth … A country must have an appropriate degree of monetary expansion to met the increasing requirements of a growing economy … The aim of a central bank in a developing country has, therefore, to be the adoption of adequate policies which aim at bringing about an appropriate degree of monetary expansion along with price and exchange stability … Further, monetary policy in such a country has also to provide for mobilization of resources to the maximum possible extent, as well as provide for the most efficient investment of the same for purposes of development (Bhattacharyya, 1971: 1–2).

This monetary manifesto provides a rather stark contrast with that of the neo-liberal central bank, but does not seem that far different from the post-war practices of Belgium, France, Italy and Japan as described above.

India at the time of independence faced serious gaps in institutional structures for the mobilization of savings and investment. The banking system was mostly urban and short-term oriented, providing mostly working capital of a short term nature (Bhattacharya, 1971: 3). The stock market was the mechanism for raising long-term capital, but, like most stock markets, these rationed out new firms. Thus, "it was only natural that the Reserve Bank of India…turned its attention at the very outset, to the development of various types of new institutional facilities to fill in the gaps. This became one of its main role in pursuance of the broader objective of the promotional aspect of central banking policy" (ibid.: 3). The Reserve Bank had to establish agricultural co-operative banks, helping with raising funds and providing technical assistance; in the industrial field, the Reserve Bank helped to set up the Industrial Finance Corporation of India, which was intended to supply long-term capital needs of industry; the Reserve Bank also contributed substantially to the capital structures of various State Finance Corporations which were supposed to support the financial needs of the small industrial sector. In 1964, it also set up the Industrial Development Bank of India as a wholly-owned subsidiary of the Reserve Bank to "function at the apex of an integrated structure of industrial finance as well as to provide resources for large-sized projects of industrial development …" (ibid.: 5). The Reserve Bank also promoted branch banking to mobilize savings, and developed a system of industrial subsidies and preferences for targeted industries (ibid: 6–8).

Bhattacharyya emphasizes that monetary policy is only one part of economic policy and, as a result, the central bank cannot be an independent entity from the government, unto itself (Bhattacharya, 1971: 15), a statement from a central banker that would shock today's promoters of the neo-liberal recipe. Bhattacharyya further notes that direct instruments of monetary control have an important place in the tool kit of monetary policy: they can protect important sectors from credit tightening and allow for more direct monitoring of credit use (ibid.: 14), again a viewpoint similar to those employed by French and Japanese central bankers.

As in the case of post-war European countries, India deployed a broad set of capital and exchange controls, and, initially, controls over current account transactions as well (Epstein, et. al, 2005). These complemented the mobilization and credit allocation techniques employed by the Reserve Bank and associated institutions. Bhattacharyya further notes, that price and exchange rate stability cannot be ignored, but are part of the fundamental development process (ibid.: 15).

Since the 1970s, India has been engaged in a process of financial liberalization. There have been several reforms of the banking and financial sectors, liberalization of interest rates and exchange controls and an external financial liberalization as well. While elements of the old regime still exist, the context within which they operate has been radically altered. (Saez, 2004). The recent increase in economic growth in India has led some observers to hold liberalization and globalization to be responsible. Observers who agree with Amsden would suggest that it was during the post-war years, where planning and credit mobilization and allocation, of which the Reserve Bank of India was a key part, that the foundation for recent growth was laid.

3. China

In China, until recently, the central bank has been entirely subsumed into the state planning apparatus. The banking industry has been entirely state owned since the revolution, and is highly concentrated. The Chinese economy has been characterized by exchange and capital controls, as well as strong controls over interest rates and financial markets. (Saez, 2004; Epstein et al., 2005a). Since the late 1970s, this system has undergone steady reforms along with the

increased role of markets, private investment and foreign investment in the Chinese economy.

From 1949 until the late 1970s, China was dominated by one bank: the People's Bank of China (PBOC). Its role was to help mobilize and allocate savings in accordance with the state plan. In the late 1970s the government started to reform the banking system. By the early 1980s the PBOC was separated from the Ministry of Finance and its monopoly position was ended. Eventually, four major commercial banks were created, all state owned. Competing with the four state banks is a second tier of state owned commercial banks. A third tier includes shareholding smaller regional banks, many of which were established as part of the special economic zones that led economic reforms in the 1980s and early 1990s. In addition, since 1994, there have been three policy banks: the State Development Bank, the Export Import Bank and the Agriculture Development Bank. These banks handled policy related lending to in association with government plans. In addition to these banks, China has a series of urban and rural cooperative banks (Saez, 2004: ch. 15). Finally, there are a series of non-bank financial institutions, including insurance agencies, credit unions and savings and loans. The presence of private and foreign banking in China is still marginal. The Chinese accession to the World Trade Organization (WTO) is expected to change this considerably (Saez, 2004: 31).

One of the important features of Chinese banking has been its close association with state owned enterprises (SOEs). This has now become a source of significant banking problems, with large numbers of non-performing loans connected with these SOEs. Among the major issues facing the financial sector is the management of these non-performing loans and the reform of the SOEs.

The interpretation of these loans and the role of SOEs in China's development is highly contested. Some argue that these indicate large scale waste, inefficiency and corruption. Li argues, on the other hand, that these SOEs were much more efficient than is generally realized and have played a significant role in China's industrial development and stabilizing aggregate demand. Given China's phenomenal industrial success and the large role of SOEs in the Chinese Economy, it would hard to make a case that they played no role in China's stunning development.

The Chinese Central Bank was created out of the People's Bank of China (PBOC) in 1983. The PBOC acted primarily as an agent of the Government's plan and did not exert a significant independent effect on policy. As such, the Central Bank is best seen as a supporter of the overall plan and of credit allocation that accompanied China's post-war growth, including the strengths as well as the weaknesses of those developments.

Maintaining a low value of the exchange rate has been a crucial component of China's development strategy and capital and exchange controls have been a crucial component of that strategy. More recently, as interest rates, financial markets and capital controls have become more liberalized the People's Bank of China has begun to take on more traditional macroeconomic roles typical of "modern" central banks. Still, it relies heavily on credit controls to conduct monetary policy, as it attempts to keep the Renminbi at an undervalued level for purposes of export promotion. The central bank's management of these exchange controls has been amongst its most important developmental contribution in the last several decades.

4. Republic of Korea and Brazil[6]

Sylvia Maxfield has stressed that in their founding and early development, the Central Banks of the Republic of Korea and Brazil were profoundly influenced by strong governments and industrial sectors that had significant need for finance, and relatively weak and dependent domestic financial sectors, that were uninterested or unable to create a central banks that would operate primarily to support them (Maxfield, 1994). As a result, the Republic of Korea and Brazil both ended up with Central Banks that were tied to the requirements of government and the requirements of industry, and lacked the financial constituency to become highly independent of both. We will see that the role of these central banks as "agents of development" in the early post-war period stems from this set of relationships.

5. Republic of Korea

As we saw in our discussion of Amsden's work, crucial to post-war success of the Republic of Korea as one of the "rest" was a strong planning and control mechanism combined with institutions to channel long-term resources to targeted infrastructure and productive industrial uses. As part of this mechanism, the government retained strong controls over the

financial system, particularly in the period 1961–1979 (Nembhard, 1996: 90). As one economist put it, "Except for in times of war, only a few nations have used policies of selective credit control as widely and thoroughly as has Korea" (quoted in Nembhard, 1996: 91). The government used the banking system to channel credit by setting low interest rates on loans to targeted borrowers, and directing loans to particular enterprises. Amsden emphasized that monitoring and performance requirements were associated with these loans. The government used "policy loans" to direct lending for preferred purposes. Lending rates and lending conditions were strictly controlled according to the type of preferential fund. This allowed the government to effectively ration credit for certain purposes and ensure a plentiful supply for others.

What was the role of the Central Bank in the Republic of Korea's development miracle? The Minister of Finance supervised and regulated all the activities of the banking system, including the Central Bank (the Bank of Korea). As in France and China, the Central Bank in the Republic of Korea was subservient to these planning institutions and performed its assigned roles which evolved over time. Although the central bank was established with some degree of independence under the guidance of two experts from the New York Federal Reserve in the 1950s, the Bank was quickly put under the de facto control of the Ministry of Finance, until this subservience was formally enshrined in legislation in 1962 (Maxfield, 1997: 113). At that time, the powers of the Bank were divided up among a number of entities, and the Bank of Korea itself was left only with credit policy. "This left a central bank that over the next several decades did little more than implement credit policies in line with policies designed by the Economic Planning Board and the Ministry of Finance. In fact, the bank was commonly called the "Namdaemun branch of the finance Ministry" referring to the Seoul district in which the bank is located" (Maxfield, 1997: 113). Over the two decades following, the central bank remained politically weak. The Bank oversaw the commercial banks' implementation of credit distribution plans drawn up by the Economic Planning Board in accordance with overall industrialization goals. The government controls also limited the development of the financial sector, so a strong financial constituency did not develop to oppose the credit market policies (Maxfield, 1997: 115).

Complementing the controls over the financial sector has been an extensive set of exchange and capital controls (Nembard, 1996: 85–92.) These controls allowed the Government of the Republic of Korea to keep interest rates low when they wanted to and to allocate credit to desired purposes without much spillage overseas. They also helped to prevent financial instability at a macro level arising from unstable inflows and outflows of capital, and from excessive short-term borrowing.

As with other countries, in the 1990s, the Republic of Korea liberalized its financial system, eventually leading to the crisis of the late 1990s. Since that time, the Bank of Korea has been much more preoccupied with overall macroeconomic policy, and has had fewer tools and less of a mandate to act as an agent of development.

6. Brazil

Like many European Central Banks, the Brazilian Central Bank started off as a private bank, the Banco do Brasil, which in the early 1900s financed coffee growers and industrialists. (Maxfield, 1997: 123). Over the 1920s, Banco do Brasil became a quasi central bank, continuing its policies of supporting these same sectors. British creditors preferred to have a "real" central bank that was not so tied to domestic borrowers, but the political power of the coffee growers and industrialists prevented the creation of a central bank to the creditors liking. A half-way institution, the Superintendence of Money and Credit (SUMOC) was created in 1945 to manage foreign exchange and credit, while the Banco do Brasil continued to actual make exchange rate and credit *policy*. It was also the recipient of legal mandatory reserves by commercial banks, but was exempted from having to keep them itself. Hence, it was privileged, as, we have seen, were previous central banks in their early years, despite being profit oriented. The political battles over the creation of a full, public central bank continued and a central bank was not formally created until the military coup of 1964. But as soon as it was created, its independent authority was undermined and the central bank of Brazil was brought under the close authority of the central government (Maxfield, 1997: 136).

In this context, the Brazilian Central Bank has been tasked with implementing central government policy. This policy itself has varied over time. When the government was focused on reducing inflation (1965–1967) the government pursued more liberal

and outward oriented policies. When the government wanted to encourage rapid industrialization (1950s, 1967–1974, 1985–1987) more inward oriented policies were pursued and the central contributed in classic fashion, helping to direct finances and favoured treatment to local industries, while implementing strict controls on inflows and outflows of capital (Nembhard: 145).

Yet, the implementation of these policies were not nearly as effective as in the case of the Republic of Korea. There were many factors at play. Among the most relevant for our purposes was the highly decentralized nature of the country's financial system, which made it difficult for the central bank and related institutions to monitor and control the allocation of credit. Thus, while the Central Bank, under the direction of the government, tried to act as an agent of development, the relative lack of a coherent planning process and the difficulties dealing with a more dispersed financial system, meant that it was not as successful as industrial policy in the Republic of Korea (Nembard, 1996: ch. 5).

7. Thailand and Mexico

The cases of Thailand and Mexico present an interesting contrast with China and India and the Republic of Korea and Brazil (Maxfield, 1994 and 1997). In these cases, relatively strong and independent private financial systems, along with a stronger need to borrow from foreign creditors, led both domestic and foreign creditors to support the creation of relatively independent central banks (Maxfield, 1994). In Thailand and Mexico, the Central Banks were much less closely tied to financing industry and the governments than in the cases of China and India, or Brazil and the Republic of Korea. And while their positions changed over time depending on both domestic and political factors, over all, these central banks played a larger role in attracting credit from abroad and supporting the domestic financial sectors, than they did in promoting industrialization. In the 1990s for example, in the case of Thailand, the Central Bank and the Government supported efforts to make Bangkok into a regional financial centre as part of development plan, reminiscent of the roles of the Federal Reserve and Bank of England. With the crash of 1997, the result was not a happy one, however.

Arguably, then, these Central Banks were more oriented to finance and to international creditors than to domestic industrial development, and, therefore, these central banks did not act as much as agents of development as had been the case in the other countries.

8. Conclusion

The mobilization, allocation and monitoring of medium- and long-term credit was crucial in the success of the "rest" in the post-war period. However, the role of central banking in supporting these policies varied from country to country, as a function of an array of complex factors, including inherited financial and industrial structures, the need for international finance, and various idiosyncratic factors that affected the politics of central banking. In some countries, such as China, India and the Republic of Korea, conditions were ripe for Central Banks to play a key role as agents of development. In others, such as Brazil, the Central Bank played its role, but the overall structure was highly imperfect. In others, such as Thailand and Mexico, the Central Bank was not as firmly a part of the planning apparatus, and tended to be more oriented to the needs of the domestic and international financial interests than to that of the government or industry.

In all cases, where central banks played a crucial role, their connection with the state, with credit allocation and their use of capital and exchange controls to manage the international sector were absolutely critical to their success. This is hardly following the recipe of a neo-liberal central bank.

V. Developmental tools for central bankers

The developmental approach to central bank discussed in previous sections, requires quite specific policy tools to be implemented.

A. Some financial solutions

The previous case studies discussed industrialized countries. Still there are a vast number of very poor countries that may be able to benefit from a more developmentally oriented role for central banks. In many of these countries, there is a dual financial sector: a "modern" sector that significant access to funds, but holds huge amounts of excess reserves

and charges very high lending rates relative to deposit rates, and funds mostly the government a very large business. Meanwhile, small and medium size enterprises are starved for credit. Micro-finance is often seen as a solution to this problem, but these are usually too small to make a large difference.

Another approach is to combine the resources available to formal sector financial enterprises and government financial institutions such as the central bank with the access, innovation, and lending experiences of microcredit institutions (Atieno, 2001; Aryeetey, 2003; Pollin, Githinji and Heintz, 2008). There are several ways to do this that have been suggested in the literature, and also put into practice. For most of these to work, the central bank must play a key role.

Among the most promising are those that involve programmes in which formal sector institutions such as commercial banks or central banks take positions in cooperative, microcredit and other development-oriented financial institutions, either by lending to them and or by taking equity positions in them. To be successful, these programmes usually involve government regulations and subsidies that generate carrots and sticks for formal sector institutions to extend credit to these smaller institutions that then on-lend to poor and/or small borrowers with good potential.

Another way to raise lending and investment to scale so that it can have a transformative impact is to create *development banking institutions* that take direct positions in final borrowers who are engaged in activities that will generate large numbers of good jobs and high value- added, and contribute to the structural transformation of the economy. The Government of Madagascar is considering this approach, as we discuss in more detail below.

Mobilizing financial resources and allocating them to productive units in key sectors could be a crucial component of the development strategy for developing countries.

Building on work I and my colleagues at the Political Economy Research Institute (PERI) have undertaken in Ghana, South Africa, Kenya and Madagascar, we suggest financial policies and innovations that could be implemented, such as asset-backed reserve requirements, development banking, and loan guarantees, that can help generate more investment in key sectors to increase employment and incomes for the poor (Pollin, Epstein, Heintz and Ndikumana, 2006; Epstein and Heintz, 2006; Pollin, Githinji and Heintz, 2008; Epstein and Grabel, 2007). The central bank can play a key role in managing and directing many of these programmes.

Here we outline several policies along these lines that can be used to help re-deploy and transform the financial sector to facilitate achieve more good jobs, raise productivity, and reduce poverty. In particular we will focus on three: (1) asset-backed reserve requirement (ABRR); (2) loan guarantees; and (3) development banking.

B. Formal sector banks

Carrots and sticks need to be applied to formal sector banks to get them to lend more to high-priority sectors, or that can be identified by the type of input-output analysis we described above. Here we present two examples of carrots and sticks that can be used to encourage formal sector banks to become so engaged. The first is asset- backed reserve requirements; the second, more extended example, is loan guarantees.

1. *Example I: Asset-backed reserve requirements*

As discussed in more detail in Pollin et al. (2006, 2008), with a system of asset-backed reserve requirements, banks are required to hold reserves against their income-earning assets. However, they are allowed to hold smaller required reserves on assets that are identified as contributing to employment generation and poverty reduction, perhaps using the type of analysis we describe below. This would encourage banks to lend directly to high-priority sectors. Similarly, securities issued by smaller institutions that are experienced in making loans to small/poor borrowers or small and medium sized enterprises, microfinance institutions, and rural banking cooperatives can have preferred reserve requirements as well.

2. *Example II: Loan guarantees – loan guarantee scheme*[7]

A loan guarantee programme could help to mobilize resources from commercial banks for on-lending

to microcredit and other institutions who have the knowledge and experience to on-lend to cooperatives, small entrepreneurs, and businesses for productive activity, or to make direct loans to the final borrowers, if the commercial banks so choose. The basic idea is that the government would guarantee a certain percentage of the loan, thereby reducing the default risk faced by the bank; this can help to substitute for collateral which most borrowers in the target group will not be able to provide. This would also help keep the interest rate charged to the final borrowers lower.

The programme works as follows. The government chooses to guarantee a certain portion of loans from commercial banks or other lenders to borrowers who will achieve programme goals, such as generate more decent jobs, increase productivity, and improve the quality of jobs, or invest in innovations or infrastructure to reduce the cost of inputs or consumption goods consumed by the poor, and thereby have strong multiplier effects through the economy to raise the standard of living of the poor. The guarantees may also underwrite a programme by commercial banks to lend to microcredit institutions who will then lend to final borrowers.

In setting up such a programme, there are several issues that must be addressed:

(a) How to determine to whom to lend.

(b) What should be the rate of loan guarantee?

(c) How to monitor the programme to avoid corruption, excessive moral hazard, and inefficiency.

3. *How to determine to whom to lend*

Indirect lending to development institutions. The key here is to start with development finance institutions that have the knowledge, track record, and experience to identify final borrowers that can use the credit productively to create decent jobs, directly or indirectly, for themselves and, on a larger scale, for others in their community. The point will be to raise the scale and reach of these institutions. Careful attention will have to be paid to the organizational structure of the programme, and it may vary from region to region. But the key will be to pool the resources to be able to benefit from economies of scale and knowledge, without so much centralization that the programmes bypass small borrowers that can both benefit directly and have the possibility to help create value for their locales and communities.

Direct lending by commercial banks. If the large banks want to start lending directly to such borrowers, then, since they do not have a track record of doing so, it would work best if they were to develop a business plan and a "Decent Employment Impact Statement" that makes clear how many jobs, and at what wages and benefits, would be generated by their loans, and, if possible, some clear idea of the domestic linkages and multiplier effects. Such direct lending, especially to small and medium enterprises, would be highly desirable, but to receive the loan guarantees, they would have to demonstrate the likely employment effects.

4. *What should be the rate of loan guarantee?*

In choosing the rate of loan guarantee, there are a number of considerations that must be taken into account, including moral hazard, and the cost of the programme to the government. The problem of moral hazard dictates that the government guarantee must be less than 100 per cent of the loan, and possibly significantly less. To reduce moral hazard (and the cost to the government), other mechanisms that substitute for collateral should also be developed, as we describe below. As we see momentarily, the cost to the government will also depend on the rate of guarantee. The higher the rate of guarantee, all else constant, the higher the cost to the government and the greater the problem of moral hazard. However, the lower the rate of government guarantee, the less attractive will be the programme to lenders and to borrowers.

5. *Monitoring and anti-corruption protection*

As discussed in detail in Pollin, Githinji and Heintz (2008), a potential problem with any programme is corruption. In business as well as government, monitoring and accountability issues will be crucial. In the case of the loan guarantee programme, it is quite easy to see the form that corruption could take, especially in cases where the government guarantees a large percentage of the loan: the lender and borrower could arrange a false loan; the borrower could default, receive the payment from the government, and split the proceeds.

Of course, close monitoring and accounting could, in principle, prevent such corruption from occurring. But monitoring itself has costs and there

are advantages to add complimentary measures to monitoring schemes to reduce the incentives for corruption. Pollin et al. (2006, 2008) have designed an anti-corruption system based on escrow accounts and "whistleblower" awards that can help cut down on the likelihood of significant corruption. We will briefly outline these arrangements here.

6. Incentive-based monitoring

Escrow accounts. To reduce the incentive for corruption, the government could implement a system of escrow accounts. The account would work as follows: The lender places a certain percentage of the loan in an escrow account with the government or central bank. If there is a default, the lender will receive the amount placed in escrow only after a thorough investigation of the case to establish there was no corruption involved. If there is no default, then the borrower receives the amount at the end of the period, which can then be rolled over as part of the new loan with minimal administrative interventions (forms, filings, etc.) or can be repaid to the lender. Such escrow accounts will clearly cut down on incentives for corruption, but at some cost in terms of the available funds available to the borrower.

Whistleblower incentives. This is another incentive-based monitoring measure suggested by Pollin et al. (2008), based on an idea promoted by Dean Baker. His idea is to create large penalties for fraud, combined with high rewards for "whistleblowers" (combined with strong penalties for fraud on their part). For example, defrauding the loan guarantee system would involve large civil and possibly even criminal penalties. Bank employees or others with key information who provide key information that could be used to prove or to lead to investigations that would prove the fraud would receive a sizeable financial reward.

Corruption and inefficiency can plague all economic endeavours, be they private or public. Having sensible, serious policies in place to reduce the incentives for corruption and to identify and penalize it can make a key difference between a successful and an unsuccessful programmes.

One objection to these types of mechanisms is that they might seem to be similar to the "directed lending programmes" that have failed in earlier periods. However, the programmes here are designed to incorporate strong monitoring and anti-corruption mechanisms and are also part of development programmes that are embedded in strong market-based initiatives.

(a) Exchange rates and capital management in an era of financial instability

International financial markets have once again become treacherous for developing countries. Even in the best of circumstances, developing countries, by virtue of their size and location in the global economy, cannot help but be buffeted by major swings in the markets. Still, developing countries can undertake policies to protect themselves to some extent from the exigencies of global prices, commodity and financial flows. And in calmer times, these countries still need tools to best manage their macroeconomic needs within a global context, especially if they want to achieve better outcomes for decent employment, poverty reduction and financial stability. In this section we focus on themes that have mostly emerged from our earlier discussion: as we have seen an employment oriented monetary and financial policy framework needs to be able to have a stable and competitive real exchange rate, the ability to mobilize and allocate credit to desired sectors, reasonable real interest rates and inflation rates, and financial stability.

Managing the real exchange rate and international debt and capital flows hence become crucial to achieving these outcomes. These are difficult to do even under the best of circumstances, and as we have discussed above, these become extremely difficult to achieve in a context of wide-spread financial liberalization, as unstable and pro-cyclical inflows of capital can lead to inappropriate real exchange rates, but also, when the capital suddenly stops and the leaves ("sudden-stops") it can leave a trail of debts and problems that are difficult to cope with.

Hence, *capital management techniques*, widely used by successful countries such as China, India, the Republic of Korea, Taiwan Province of China, Singapore and others, need to be employed to deal with these swings in capital and debt flows, as well as for managing the real exchange rate.

In this section we discuss how capital management techniques have been used by a variety of countries to supplement the macroeconomic policy *tool-box*, in light of our earlier discussion of targets

and instruments available to central banks and financial authorities in general. As we discussed earlier, central banks need more tools if they are to achieve a larger number of objectives. Capital management techniques are among the most important tools they can use to help them deal with the exigencies of the international financial markets.

(b) Capital management techniques [8]

Capital management techniques, to refer to two complementary (and often overlapping) types of financial policies: policies that govern international private capital flows and those that enforce prudential management of domestic financial institutions. Regimes of capital management take diverse forms and are multi-faceted. Capital management techniques can be static or dynamic. Static management techniques are those that authorities do not modify in response to changes in circumstances. Capital management techniques can also be dynamic, meaning that they can be activated or adjusted as circumstances warrant. Three types of circumstances trigger implementation of management techniques or lead authorities to strengthen or adjust existing regulations--changes in the economic environment, the identification of vulnerabilities, and the attempt to close loopholes in existing measures.

Some types of capital management techniques have a proven track record, not just in the decades that followed the Second World War, but in the current environment as well. This latter fact is increasingly recognized today, even by many prominent economists and the IMF who have recently written rather positively – though nevertheless cautiously – about the role of certain types of market-based, temporary capital management techniques. The problems associated with unfettered international private capital flows have become quite obvious, particularly in light of the current financial crises Capital management techniques played critically important roles during the high-growth eras of Japan and the Republic of Korea and were successfully employed in Brazil in the 1950s and 60s. (e.g., Nembhard, 1996). Chile and Colombia successfully used capital management techniques during the 1990s. The Malaysian Government successfully employed stringent capital management policies in 1994 and 1998. India, Singapore, China and Taiwan Province of China employed diverse strategies that could be termed (even if not by the government itself) capital management techniques during the 1990s.

Epstein, Grabel and Jomo (2005) presented seven case studies of the divers capital management techniques employed in Chile, Colombia, Taiwan Province of China, India, China, Singapore and Malaysia during the 1990s. The cases reveal that policymakers were able to use capital management techniques to achieve critical macroeconomic objectives. These included the prevention of maturity and locational mismatch;[9] attraction of favoured forms of foreign investment; reduction in overall financial fragility, currency risk, and speculative pressures in the economy; insulation from the contagion effects of financial crises; and enhancement of the autonomy of economic and social policy. The paper examines the structural factors that contributed to these achievements, and also weighs the costs associated with these measures against their macroeconomic benefits (see Grabel, 2003).

The general policy lessons of these seven experiences are as follows. (1) Capital management techniques can enhance overall financial and currency stability, buttress the autonomy of macro and micro-economic policy, and bias investment toward the long-term. (2) The efficacy of capital management techniques is highest in the presence of strong macroeconomic fundamentals, though management techniques can also improve fundamentals. (3) The nimble, dynamic application of capital management techniques is an important component of policy success. (4) Controls over international capital flows and prudential domestic financial regulation often function as complementary policy tools, and these tools can be useful to policymakers over the long run. (5) State and administrative capacity play important roles in the success of capital management techniques. (6) Evidence suggests that the macroeconomic benefits of capital management techniques probably outweigh their microeconomic costs. (7) Capital management techniques work best when they are coherent and consistent with a national development vision. (8) There is no single type of capital management technique that works best for all developing countries. Indeed our cases, demonstrate a rather large array of effective techniques.

(c) Managing real exchange rates

Exchange market intervention, supported by capital management techniques can be helpful, and indeed might be essential to help maintain a stable and competitive real exchange rate as I discussed earlier. China, the Republic of Korea, Taiwan Province

of China, India and many other countries have used capital management techniques for this reason as an additional tool to support employment and growth policies undertaken by governments, including the central bank.

For example, Galindo and Ros (2008), as part of Epstein and Yeldan's project on alternatives to inflation targeting, proposed utilizing such a policy. In the case of Mexico, Galindo and Ros find that monetary policy was *asymmetric* with respect to exchange rate movements –tightening when exchange rates depreciated, but not loosening when exchange rates appreciated. This lent a bias in favour of an over-valued exchange rate in Mexico. So they propose a "neutral" monetary policy so that the central bank of Mexico responds symmetrically to exchange rate movements and thereby avoid the bias toward over-valuation without fundamentally changing the inflation targeting framework. In their own words, "the central bank would promote a competitive exchange rate by establishing a sliding floor to the exchange rate in order to prevent excessive appreciation (an 'asymmetric band'…). This would imply intervening in the foreign exchange market at times when the exchange rate hits the floor (i.e., an appreciated exchange rate) but allows the exchange rate to float freely otherwise". They point out that such a floor would work against excessive capital inflows by speculators because they would know the central bank will intervene to stop excessive appreciation. If need be, Galindo and Ros also propose temporary capital controls, as do some of the other authors from the PERI/Bilkent project as a way of helping to maintain a stable and competitive real exchange rate.

(d) Policies toward foreign borrowing to help maintain financial stability [10]

As I mentioned above, in the current crisis, excessive foreign borrowing has made some countries especially vulnerable to "sudden stops" in the flows of financial resources.

One way of dealing with such problems is for developing countries to consider drastically reducing their reliance on foreign bank loans. For example, policymakers could enforce strict ceilings on the volume of new foreign loans that can be incurred. Such ceilings might involve strict limits on the allowable ratio of foreign to total loans, or might require that firms finance only a certain percentage of their projects with foreign loans that have a certain maturity and/or locational profile.

Restrictions on foreign borrowing could be deployed dynamically as circumstances warrant, following the trip wire-speed bump approach. Under this approach, policymakers would monitor a trip wire that measures the economy's vulnerability to the cessation of foreign lending. This involves calculating the ratio of the government's holdings of currency reserves to private and public foreign-currency denominated debt (with short-term obligations receiving a greater weight in the calculation). If this ratio approached an announced threshold, policymakers would then activate a graduated speed bump that precluded new inflows of foreign loans until circumstances improved (Grabel, 2004).

Policy can also discourage – rather than prohibit – the use of foreign loans as a source of finance. The tax system can be used in a number of ways to discourage domestic borrowers from incurring foreign debt obligations. Domestic borrowers might pay a fee to the government or the central bank equal to a certain percentage of any foreign loan undertaken. This surcharge might vary based on the structure of the loan, such that loans that involve a locational or maturity mismatch incur a higher surcharge. Alternatively, the surcharge might vary based on the level of indebtedness of the particular borrower involved, such that borrowers who already hold large foreign debt obligations face higher surcharges than do less-indebted borrowers. This tax-based approach could encourage borrowers to use domestic sources of finance since these would not carry any surcharge. Another strategy might involve varying the surcharge according to the type of activity that was being financed by foreign loans. For instance, borrowers might be eligible for a partial rebate on foreign loan surcharges when loans are used to finance types of production that are highly employment intensive.

To the extent that borrowers assume at least some foreign loan obligations, it is imperative that the allocation and terms of these loans be managed by the government. Careful management of the allocation of foreign debt can ensure that it is used for productive, developmental purposes. Prior to financial liberalization in the 1990s, many governments in East and Southeast Asia tightly coordinated allocation and access to foreign loans. Until quite recently, policymakers in China and India maintained

tight restrictions on foreign borrowing through a variety of means.

In general, authorities should avoid widespread *maturity* and *locational* mismatches. A Maturity mismatch occurs when borrowers finance long-term obligations with short-term credit, leaving them vulnerable to changes in the supply and cost of credit. A locational mismatch occurs when borrowers contract debts that are repayable in foreign currency, leaving them vulnerable to currency depreciation that increases the cost of debt service.

In addition to the ceilings, surcharges or approval processes discussed above, policymakers can design trip wires and speed bumps that are designed to keep the levels of maturity and/or locational mismatch below the critical thresholds. A trip wire for locational mismatch is the ratio of foreign-currency denominated debt to domestic-currency denominated debt (with short-term obligations receiving a greater weight in the calculation). A trip wire for maturity mismatch is the ratio of short-term debt to long-term debt (with foreign-currency-denominated obligations receiving a greater weight in the calculation). A graduated series of speed bumps that require borrowers to reduce their extent of locational or maturity mismatch would be implemented whenever trip wires revealed the early emergence of these vulnerabilities.

In those cases where foreign loans have been significant, economic reforms that promote growth could replace the resources initially lost if there is a reduction in foreign borrowing due to the measures described above. Governments and central banks that take steps to restrict foreign borrowing can replace at least some of the finance that is forgone by implementing measures that increase their ability to mobilize and channel domestic saving to projects that are central to a pro-poor growth agenda as we have discussed above. In this connection, measures that restrict the exit options of domestic savers and businesses would increase the pool of capital available domestically.

There is a strong case for restricting the access of domestic savers to foreign capital markets. The flight of domestic investors can induce financial instability, and reduce the tax base and the pool of domestic savings available for allocation by domestic financial institutions. For these reasons, there is a strong case for restricting the ability of domestic investors to hold foreign savings accounts and engage in capital flight.

There is plenty of evidence that when properly implement, management of inflows and outflows of portfolio investment can enhance the ability to undertake macroeconomic policy and help achieve developmental goals. The success of blunt restrictions on portfolio investment in China, India, Chile and Colombia suggest that foreign investors do not necessarily shun countries with minimum-stay requirements on foreign investment or other types of capital management techniques. We have also seen that the tax system can be used to influence the composition and/or maturity structure of international capital flows. The potential for flight by domestic investors and savers can be reduced via implementation of exit taxes, prohibitions on flight, or restrictions on access to foreign currencies. Finally, Malaysian experience suggests that speed-bump style management of portfolio investment can be effective as well.

VI. Conclusion

The current economic crisis, more than previous ones this past decade, has called into question the whole neo-liberal approach to financial management, including the approach the neo-liberal approach to central banking. Central banks focused on commodity inflation miss asset bubbles and credit crises, and with liberalized financial markets, they often lack the necessary tools to deal with these crises. Thus, academics and policy makers must seriously search for alternatives to the current neo-liberal models of financial management. This paper has argued that one place to look for models is the history of developmental central banks and financial policies. Of course, there is not simple return to the past. But there are plenty of models and institutional structures to learn from. The cross-sectional data do not indicate broad conclusions of success or failure. Much is to be learned from country case studies and the implementation of developmental tools in concrete circumstances.

Notes

1 This section draws heavily on Epstein and Yeldan (2008).
2 Please see data annex for more information on data sources and definitions.
3 Full statistical results are available from the author upon request.
4 Amsden's "rest" consist of China, India, Indonesia, Malaysia, the Republic of Korea, Taiwan Province of China and Thailand in Asia; Argentina, Brazil, Chile and Mexico in Latin America; and Turkey in the Middle East. (Amsden, 2001: 1). Here I only have space to discuss six of these countries.
5 Saez (2004) is an important source for the material in this section.
6 This section draws heavily on Nembhard (1996) and Maxfield (1994, 1997).
7 This section draws extensively on Pollin et al. (2008), especially chapter 9. Also see Atieno (2001), who discusses such a programme for Kenya.
8 This section draws extensively on Epstein, Grabel and Jomo (2005); Epstein and Grabel (2007); and Grabel (2005).
9 Maturity mismatch occurs when borrowers finance long-term obligations with short-term credit, leaving them vulnerable to changes in the supply and cost of credit. Locational mismatch occurs when borrowers contract debts that are repayable in foreign currency, leaving them vulnerable to currency depreciation that increases the cost of debt service.
10 This section draws heavily on Epstein and Grabel (2007); and Grabel (2003).

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DATA ANNEX

The time-series dataset used in figures 1–4 includes annual data for the 1960–2006 period and was compiled for fifty-two countries (Australia, Bahamas, Barbados, Belgium, Belize, Bolivia, Brazil, Canada, Colombia, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, Greece, Guatemala, Honduras, India, Indonesia, Jamaica, Japan, Jordan, Democratic People's Republic of Korea, Malawi, Malaysia, Mexico, Morocco, Namibia, Netherlands, Nigeria, Norway, Pakistan, Paraguay, Peru, Portugal, Republic of Korea, Rwanda, Saudi Arabia, Singapore, Solomon Islands, South Africa, Spain, Sri Lanka, Thailand, Tonga, Trinidad and Tobago, Tunisia, Turkey, United States, Venezuela (Bolivarian Republic of), Zimbabwe). This set of countries was primarily chosen due to its representative nature (both in geographic and socioeconomic terms), but also due to the consistent availability of data from the sources cited.

The scatter plots of figures 1–4 are based on "decade" moving averages for the period in consideration (i.e. 1960–1969, 1970–1979, 1980–1989, 1990–1999, 2000–2006). While the last period includes only seven years, we have decided to include it for the sake of comparison. Thus, each observation represents a decade average for a single country. In cases where data for one of the variables is missing for *all* the years in the decade, the respective observation is dropped altogether from the analysis. As a result, the coverage in terms of the number of observation varies among the figures (i.e. figures 1, 2, 3 and 4 include 218, 233, 132 and 220 observations, in that order). Partial averages were used for observations having at least two (but less than 10) years of data. A detailed description of the variables under consideration is included below.

Variables

CBAGDP: Central Bank Assets/GDP

Source: Beck et al. (2000).

Description: Claims on domestic real nonfinancial sector by the Central Bank as a share of GDP, calculated using the following deflation method: $\{(0.5)*[F_t/P\_e_t + F_{t-1}/P\_e_{t-1}]\}/[GDP_t/P\_a_t]$ where F is Central Bank claims, P_e is end-of period CPI, and P_a is average annual CPI.

GDPGR: GDP Growth

Source: World Bank, *World Development Indicators.*

Description: Gross Domestic Product annual rate of change.

TCGOVTA: Total Central Bank Claims on Government Institutions/Total Central Bank Assets

Source: Aggregates based on data from the IMF, *International Financial Statistics* Database.

Description: Total claims by monetary authorities (i.e. central banks and other institutions that undertake monetary functions like issuing currency, holding foreign reserves, etc.) on domestic government institutions as a percentage of all monetary authorities' assets. Figures for the total claims on government institutions is obtained by aggregating Claims on Central Government (line 12a), Claims on State and Local Governments (line 12b), and Claims on Nonfinancial Public Enterprises (line 12c). Total Monetary Authorities' Assets comprise all domestic claims plus foreign assets held by these authorities. The IMF defines Nonfinancial Public Enterprises as "government-owned and/or -controlled units which either sell industrial or commercial goods & services to the public on a large scale, and/or they are corporate".

TCPSTA: Total Central Bank Claims on the Private Sector/Total Central Bank Assets

Source: IMF, *International Financial Statistics* database.

Description: Total claims by monetary authorities (i.e. central banks and other institutions that undertake monetary functions like issuing currency, holding foreign reserves, etc.) on the private sector (households and firms) as a percentage of all monetary authorities' assets. Figures for the total claims on the private sector are obtained from line 12d of IFS. Total Monetary Authorities' Assets comprise

all domestic claims plus foreign assets held by these authorities.

TCFSTA: Total Central Bank Claims on the Financial Sector/Total Central Bank Assets

Source: Aggregates based on data from the IMF, *International Financial Statistics* Database.

Description: Total claims by monetary authorities (i.e. central banks and other institutions that undertake monetary functions like issuing currency, holding foreign reserves, etc.) on financial institutions as a percentage of all monetary authorities' assets. Figures for the total claims on financial institutions is obtained by aggregating Claims on Deposit Money Banks (line 12e), Claims on Other Banking Institutions (line 12f), and Claims on Nonbank Financial Institutions (line 12g). Total Monetary Authorities' Assets comprise all domestic claims plus foreign assets held by these authorities. The IMF defines Other Banking Institutions as "institutions that do not accept transferable deposits but that perform financial intermediation by accepting other types of deposits or by issuing securities or other liabilities that are close substitutes for deposits". Examples of Other Banking Institutions include Savings and Mortgage Loan Institutions, Post-Office Savings Institutions, Development Banks, and Off-Shore Banking Institutions. Moreover, Nonbank Financial Institutions include institutions such as Insurance Companies, Pension Funds, and Superannuation Funds.

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