

DOCUMENTO DE TRABAJO 43

Banco Central de Chile

Diciembre de 1998

Macroeconomic Policies, Instability,
and Growth in the World

Ibrahim Elbadawi
Klaus Schmidt-Hebbel



BANCO CENTRAL DE CHILE

Documento de Trabajo es una publicación del Banco Central de Chile, que da a conocer los trabajos de investigación en el ámbito económico, teórico o empírico, realizados por profesionales de esta institución. Su objetivo es entregar un aporte al debate de ciertos tópicos relevantes, o bien, presentar nuevos enfoques en el análisis de los mismos.

La publicación de los Documentos de Trabajo no está sujeta a la aprobación previa de los miembros del Consejo del Banco Central de Chile, por lo que no representa en ninguna forma la opinión de esta institución ni de sus Consejeros. La difusión de los mismos, en consecuencia, sólo intenta facilitar el intercambio de ideas y dar a conocer investigaciones con carácter preliminar, para su discusión y comentarios. Por esta misma razón, tanto el contenido de los Documentos de Trabajo, como también los análisis y conclusiones que de ellos se deriven, son de exclusiva responsabilidad de su(s) autor(es).

DOCUMENTOS DE TRABAJO DEL BANCO CENTRAL DE CHILE.

Gerencia de Investigación Económica - Departamento Publicaciones

Huérfanos 1175, Santiago de Chile

Teléfono: 670 2000 - Fax: 670 2231

MACROECONOMIC POLICIES, INSTABILITY, AND GROWTH IN THE WORLD

Ibrahim Elbadawi
Klaus Schmidt-Hebbel

DOCUMENTOS DE TRABAJO DEL BANCO CENTRAL
N° 43
Diciembre 1998

MACROECONOMIC POLICIES, INSTABILITY, AND GROWTH IN THE WORLD

Ibrahim Elbadawi
Research Director
African Economic Research Consortium

Klaus Schmidt-Hebbel
Gerente de Investigación Económica
Banco Central de Chile

Resumen

La mayoría de las economías en desarrollo se caracteriza por una alta inestabilidad y un bajo crecimiento. La causa de este magro desempeño es frecuentemente la aplicación de políticas inadecuadas. Este artículo revisa las regularidades empíricas que caracterizan la relación entre políticas macroeconómicas y financieras, por una parte, y el crecimiento, por otra parte, tanto en países desarrollados como en economías en desarrollo. No son muy frecuentes las transiciones exitosas hacia una baja inestabilidad y un alto crecimiento; sin embargo, ellas han sido observadas en una docena de países en desarrollo. Transiciones como las mencionadas requieren de la existencia de instituciones y reglas que cambien los incentivos de los gobiernos, al escoger entre políticas que responden a intereses particulares o conflictos sociales -- contribuyendo a generar más inestabilidad y menos crecimiento -- y políticas maximizadoras del bienestar social que facilitan el crecimiento y hacen a las economías más resistentes a la inestabilidad residual.

Abstract

High instability and low growth characterize the macroeconomic performance of most developing countries. Inadequate policies are often to blame. This paper documents the empirical regularities that characterize the relationship between macroeconomic-financial policies, instability, and growth across developing and industrial nations. While successful transitions to low instability and high growth are not frequent, they have been observed in a dozen of countries. Such win-win transitions require to put into place institutions and rules that change government incentives in choosing between policies that reflect narrow interests or social conflict -- contributing to more instability and less growth -- and social welfare-maximizing policies that help growth and make economies more resilient to residual instability.

We are much indebted to Michael Gavin, Norman Loayza, Luis Servén, and Rodrigo Valdés for their generous provision of specialized cross-country data. We thank Claudio Soto for very efficient research assistance. We are also indebted to Jean-Paul Azam and participants at the Plenary Session of the December 1997 AERC Workshop in Nairobi (Kenya) for very useful comments to a previous draft. All remaining errors are our own.

MACROECONOMIC POLICIES, INSTABILITY, AND GROWTH IN THE WORLD*

Ibrahim Elbadawi**
Klaus Schmidt-Hebbel***

Abstract

High instability and low growth characterize the macroeconomic performance of most developing countries. Inadequate policies are often to blame. This paper documents the empirical regularities that characterize the relationship between macroeconomic-financial policies, instability, and growth across developing and industrial nations. While successful transitions to low instability and high growth are not frequent, they have been observed in a dozen of countries. Such win-win transitions require to put into place institutions and rules that change government incentives in choosing between policies that reflect narrow interests or social conflict -- contributing to more instability and less growth -- and social welfare-maximizing policies that help growth and make economies more resilient to residual instability.

JEL classification: E63, F43, O57

* We are much indebted to Michael Gavin, Norman Loayza, Luis Servén, and Rodrigo Valdés for their generous provision of specialized cross-country data. We thank Claudio Soto for very efficient research assistance. We are also indebted to Jean-Paul Azam and participants at the Plenary Session of the December 1997 AERC Workshop in Nairobi (Kenya) for very useful comments to a previous draft. All remaining errors are our own.

** Research Director, African Economic Research Consortium

*** Chief, Economic Research, Central Bank of Chile

Outline

- 1. Introduction**
- 2. Cross-Country Evidence on Macroeconomic Performance and Instability**
- 3. Cross-Country Evidence on Macroeconomic Instability and Growth**
- 4. Do Macro-Financial Crises beget Adjustment and Growth?**
- 5. A Tale of 12 Successful Growth Takeoffs**
- 6. Institutions that Work**
- 7. Conclusions**

Tables and Figures

- Figure 1.1: Long-Run Growth and Macro Instability in the World
- Figure 2.1: Per Capita GDP in 1990 by World Regions and Countries
- Figure 2.2: Long-Run Macro-Financial Policy Performance (MFPOP) by Countries and Regions
- Figure 2.3: Long-Run Macro-Financial Volatility (MFVOL) by Countries and Regions
- Figure 2.4: Long-Run Macro-Financial Crises Volatility (MFCRI) by Countries and Regions
- Figure 2.5: Long-Run Country Risk by Countries and Regions
- Figure 2.6: Long-Run Macro-Financial Instability (MFINS) by Countries and Regions
- Figure 3.1: Long-Run Per Capita GDP Growth by Countries and World Regions
- Figure 3.2: Long-Run Macro-Financial Policy Performance and Growth by Countries
- Figure 3.3: Long-Run Macro-Financial Instability and Growth by Countries
- Figure 4.1: Inflation Crisis Indicator and MFPOP Differential before and after Stabilization in 16 Crisis Episodes
- Figure 4.2: Macro-Financial Crisis Indicator and MFPOP Differential before and after Stabilization in 35 Crisis Episodes
- Figure 4.3: Inflation Crisis Indicator and Growth Differential before and after Stabilization in 20 Crisis Episodes
- Figure 4.4: Macro-Financial Crisis Indicator and Growth Differential before and after Stabilization in 38 Crisis Episodes
- Figure 5.1: MF Policy Performance, MF Crises, and Growth in 38 Non-Takeoff Countries, 1961-94
- Figure 5.2: MF Policy Performance, MF Crises, and Growth in 9 Takeoff Countries, 1961-94
- Figure 5.3: Growth and Macro-Financial Policy Transitions in 8 Takeoff Countries, 1960s - 1990s
-
- Table 2.1: Macro-Financial (MF) Variables
- Table 2.2: Long-Run Individual Indicators of Macro-Financial Policy Performance, Volatility, and Crises in the World and in Sub-Saharan Africa
- Table 2.3: Long-Run Aggregate Indicators of Macro-Financial Policy Performance, Volatility, Crises, Risk, and Instability: World and Regional Averages
- Table 2.4: Partial Correlation Coefficients between Individual Indicators: Cross-Country Time-Series World Sample
- Table 2.5: Partial Correlation Coefficients between Individual Indicators: Cross-Country Long-Term World Sample
- Table 2.6: Partial Correlation Coefficients between Aggregate Indicators: Cross-Country Long-Term World Sample
- Table 3.1: Long-Run Per Capita GDP Growth and Growth Volatility in the World and Regions
- Table 3.2: Partial Correlation Coefficients between Long-Run Growth Levels and Aggregate Macro-Financial Indicators in the World and Regions
- Table 3.3: Partial Correlation Coefficients between Long-Run Growth Volatility and Aggregate Macro-Financial Indicators in the World and Regions
- Table 3.4: Cross-Country Growth Regression Results
- Table 4.1: Average Macro-Financial Policy Performance before and after Stabilization (Regression Results for Equations 4.1 and 4.2)
- Table 4.2: Average Real Per Capita Growth before and after Stabilization (Regression Results for Equations 4.3 and 4.4)
- Table 5.1: Growth, MF Policy Performance, and MF Instability in 12 Takeoff Countries, 1961-94

1. Introduction

Growth and macro-financial instability are negatively correlated in any world sample of long-term country observations, as in the scatter diagram represented by Figure 1.1. A similar negative relation is observed between growth and growth volatility. In fact, most developing countries -- but not all -- have grown less and have experienced higher growth volatility and macro-financial instability than most industrial economies during the last decades.

While luck may have had a role in this outcome (as argued by Easterly, Pritchett, Summers and Kremer (1993) it is likely that domestic institutions and policymakers are most to blame for bad policies, high instability, and growth stagnation. If institutions and government incentives are such that government policies reflect social-welfare maximizing objectives, the economy is able to reach its efficient risk-return frontier. In terms of Fig. 1.1, this is equivalent of attaining the RR^* frontier of maximum growth for given levels of MF instability. Then the government's choice of a growth-instability combination will reflect social objectives embedded in preferences W^*W^* , selecting a first-best point such as A.

Few countries in the world have been able to attain the preferred combination of high growth and low MF instability -- the lucky few belong disproportionately either to the industrial world or to a small set of successful developing or takeoff countries. Most other developing countries display dismal combinations of high MF instability and low growth. In the world at large, MF instability and growth are negatively correlated.

In our view this is a reflection of weak institutions and lack of policy rules causing profound divergences between social welfare-maximizing objectives and actual goals pursued by governments in many countries in the world. The pursuit of private objectives by governments gives rise to a policy selection -- both in the MF realm and other areas of policies -- that generate social bads such as MF instability, distortions in resource allocation, and corruption. In terms of Fig. 1.1, the preferences between MF instability and growth revealed by policy actions of such governments take the form of a negative relation, as reflected by the WW schedule. Governments obviously do not like instability per se -- but they often choose policies (such as high public spending or an overvalued exchange rate) that allow them to attain their own objectives, even at the cost of higher MF instability. And the latter has a negative impact on growth. This implies that the original non-distorted risk-return frontier bends downward as reflected by the RR schedule. Non-social welfare maximizing governments reveal their preferences by choosing a point like B, corresponding to a mix of high instability and low growth that is far away from the non-distorted social best.

A growing theoretical literature is providing answers to why governments reflect socially undesirable policies that impose real costs on their populations. One reason is the dominance of discretion over rules, as in the by now classical papers by Kydland and Prescott (1977) and Barro and Gordon (1983). In the more recent political-economy literature, sub-optimal policies reflect asymmetric information about government competence (Rogoff and Sibert 1988), war-of-attrition situations among competing groups that attempt to shift the costs of stabilization to their competitors (Alesina and Drazen 1991, Drazen and Grilli 1993), or restrictions imposed by governments on their successors (Alesina and Tabellini 1990,1992). Theoretically less appealing but nonetheless wide-spread situations of government inefficiency and corruption that result from outright absence of the rule of the law, division of power, and stable institutions and rules, appear to be the main cause of high instability and low growth.

This paper describes and analyzes empirical regularities on the relationship between macroeconomic and financial policies, instability, and growth in the world. We do this in four dimensions. First, we provide new and broader country measures of macroeconomic and financial policy performance and macroeconomic and financial instability, as well as of their correlations (section 2). Then we look at partial and multivariate cross-country correlations between MF policies, MF instability, and economic growth. In the next two sections we analyze selectively the time dimension of these relationships. In section 4 we revisit the hypothesis that “crises beget reforms” (Bruno and Easterly 1995) by testing for the significance of inflation and MF crises in post-stabilization policy and growth performance. In section 5 we look more closely at the experience of a dozen developing “takeoff countries” that have made a successful transition from low to high growth and assess the contribution of MF policy improvements to their transition. Drawing from country experience, we infer about institutions that contribute to better policies, lower instability, and higher growth in section 6. Section 7 concludes.

2. International Evidence on Macroeconomic and Financial Policy Performance and Instability

A recent and growing literature is providing international evidence on the links between macroeconomic policies, macroeconomic volatility, and growth performance. This literature has emphasized the effects of bad policies (reflected in high first moments of policy indicators) on growth. More recently, a stronger emphasis has been put on second moments of policy input and output variables, as measures of instability that tend to depress growth (E.g. Hausmann and Gavin 1995, Servén 1996).

The data used in this and subsequent sections broadens the empirical focus of the preceding literature in five dimensions:

- (a) our focus is on broad measures of macroeconomic and financial (MF) policy performance and instability that comprise measures for 4-5 different macroeconomic and financial policy areas,
- (b) a distinction is made between measures of policy performance and measures of resulting macroeconomic and financial instability,
- (c) three alternative sets of measures of MF instability are considered, corresponding to ex-post volatility, ex-post crises, and ex-ante country risk, and
- (d) five recently available data bases and new data for other variables constructed for this paper are exploited, in addition to existing data bases, and
- (e) data coverage comprises a large number of OECD and developing countries (other than former socialist economies) for the 1961-1994 period.

Using this data, the focus of this section is to provide new evidence on cross-country and cross-regional measures of macroeconomic and financial (MF) policy performance and MF instability.

Our new sets of relevant macroeconomic and financial (MF) policy performance indicators and MF (in)stability variables ought to satisfy two conditions: they should be representative of major policy areas and observable for a large sample of countries and time periods. Currently this task is made easier by the mushrooming supply of large cross-country time-series data bases put together by international organizations and specialized researchers, frequently made available on web sites.

An overview of our individual and aggregate measures of MF policy performance and MF instability -- defined next and used throughout this paper -- is provided in Table 2.1. We focus on five (and sometimes four) areas of macro-financial policies: fiscal policy, monetary policy, exchange-rate policy, foreign payments, and domestic payments. We select one key **MF policy performance** variable in four areas: the public sector deficit ratio to GDP (pubdef), adjusted base-money growth (mongro), real-exchange rate misalignment (rermis), and the current account deficit ratio to GDP (cacdef).¹

These flow (or policy control) variables reflect inversely the current strength of policy stance in each of the four areas -- as opposed to alternative stock (or state) variables that -- because they are predetermined at any point in time -- reflect the cumulative effect of past policies (such as monetary and debt stocks). However our set of flow variables has drawbacks, too. While pubdef and mongro summarize reasonably well the actions of fiscal and monetary policy makers, rermis and cacdef are also the result of private-sector actions -- in particular, they reflect aggregate spending by both public and private sectors. Nonetheless, we included the latter variables in the absence of better candidates.

Detailed data definitions and data sources are provided in Appendix 1. Country coverage of the data comprises all OECD and developing countries with relevant data reported in the corresponding data bases. Post-socialist transition economies (with the exception of China) are excluded. Data frequency is annual and time coverage is 1960-94 or relevant sub-periods.

Next we introduce a simple **aggregate measure** of MF policy performance -- and below we do the same for our indicators of instability. The advantage of having aggregate measures is both representational (we want to have summary MF measures for each country) and statistical (we want to relate these summary measures to growth). The disadvantage of using aggregate measures is, of course, the choice of weights used for aggregation. Short of a well-specified behavioral model that provides welfare-based weights for the individual variables that comprise an aggregate index, we follow much of the empirical literature by using equal weights.²

A simple aggregate measure of MF policy performance (MFPOP) is defined as a weighted average of the four individual MF policy performance variables:

$$(1) \quad \text{MFPOP}_{i,t} = 0.25 \{ \alpha_1 \text{pubdef}_{i,t} + \alpha_2 \text{mongro}_{i,t} + \alpha_3 \text{rermis}_{i,t} + \alpha_4 \text{cacdef}_{i,t} \}$$

where subscripts i and t denote country and time period, respectively, and the weights α_j ($j=1, \dots, 4$) are set equal to the inverses of the time-series country sample means of each individual variable

¹ We searched for a suitable indicator of domestic financial-sector policies -- an analogue to our cacdef used to represent international financial policies. The obvious candidate (the ratio of bank credit to the private sector used as a proxy for the quality and effectiveness of bank regulation and supervision) is a useful indicator of excessive bank lending during over-borrowing cycles that often lead to banking crises but has the drawback of reflecting also the longer-term trends of financial deepening. Hence it is an inadequate signal for the stance of domestic financial policies, as discussed in more detail by Caprio and Klingebiel (1996a,b).

² Three weighting procedures used frequently by the empirical literature are the following equal weights (same weight for each variable), equal-impact weights (the inverse of the standard deviation of each variable), and subjective weights (based on surveys conducted among specialists or market participants). For a discussion see Gwartney et. al. (1996).

(reported in Table 2.2A below), in order to normalize the time-series cross-country sample mean of MFPOP to 1. Therefore each individual variable is given the same weight in MFPOP.

Now we introduce three sets of **MF instability variables** that reflect the influence of MF policies on the economy's MF (in)stability. The first set is comprised by four individual indicators of **MF volatility** (denoted $xvol$ for any variable x ; see Table 2.1). They are period measures that reflect the second moment of a country's variable x for 1960-94 or a relevant sub-sub-period. Second moments are the most frequently used measures of volatility or instability in the empirical literature (e.g. Hausmann and Gavin 1995). The specific volatility measure we use here is the standard deviation.

Our four individual variables of MF volatility relate directly to the four policy areas introduced above. To measure instability caused by fiscal and foreign-payments policies we use directly the standard deviation of the public deficit ratio to GDP and the current account deficit ratio to GDP, respectively. However for monetary and exchange-rate policy we use different measures that better reflect the effect of policies on volatility in the latter areas. For monetary policy we use the standard deviation of normalized inflation and for exchange-rate policy we use the standard deviation of the real-exchange rate (not of real-exchange rate misalignment).

Our **aggregate measure** of MF volatility (MFVOL) is defined as a weighted average of the four individual MF volatility variables. Analogous to equation (1), individual weights are set equal to the inverse of the time-series country sample means of each individual variable (reported in Table 2.2A).

Our second set of instability variables attempt to represent **MF crises**, understood as measures of severe macroeconomic and financial disequilibria. We focus on five individual crisis indicators.

For the three macroeconomic policy areas we define annual crisis variables (denoted $xcri$ for variables $x = pubdef, inflat, rerlev$) as one-sided deviations of macroeconomic outcomes beyond threshold levels:

$$(2) \quad xcri_{i,t} = (x_{i,t} - \bar{x}) D_{i,t}$$

where \bar{x} is a threshold level (that is constant over time and across countries) for any variable x in period t , and D is a dummy variable that takes value 1 when the term in parenthesis is positive, and zero otherwise.

For fiscal policy one would ideally use threshold values given by estimates of sustainable public-sector deficit levels. However such measures are frequently based on questionable assumptions and specific conditions that change significantly over time or space. As an alternative we prefer to use a threshold determined by the 80th percentile value of the distribution of observed 1960-94 public sector deficit ratios across countries and time, equal to 8.62% of GDP. For monetary policy we use measures of inflation crises that follow Bruno and Easterly's (1995a, b) annual inflation threshold of 40%. For exchange rate policy we use as a RER crisis threshold one

of Goldfajn and Valdés' (1996) measures of exchange rate crisis, that is, a 15% appreciation that is subsequently corrected.³

Now let's turn to the two remaining financial-policy areas of foreign and domestic payments. As opposed to the preceding measures of macroeconomic crises, here we focus directly on indicators of payment disruptions reflected by evidence of balance-of-payments crises and domestic banking crises. For the former we construct a cross-country time-series dummy variable based on the existence of foreign payments arrears as reported by the International Monetary Fund in "Annual Report on Exchange Arrangements and Exchange Restrictions" since 1980. For annual measures of banking crises we construct a cross-country time-series dummy variable based on the banking-crises data assembled by Caprio and Klingebiel (1996a, b).

Our **aggregate measure** of MF crises (MFCRI) is defined as a weighted average of the five individual MF crisis variables. As above, individual weights are set equal to the inverse of the time-series country sample means of each individual variable (Table 2.2A).

As opposed to the two preceding ex-post indicators of MF instability (volatility and crises) we turn next to an ex-ante measure of instability, based on the quantitative measures of country risk reported in Institutional Investor. To make our variable (termed RISK) consistent with our preceding instability measures, we invert the ranking reported by Institutional Investor (which attaches higher points to less risky countries) and normalize the data by dividing them by the time-series cross-country sample mean.

Finally, our **measure of overall macro-financial instability** (MFINS) is defined as a simple aggregation over the three preceding aggregate instability measures:

$$(3) \quad \text{MFINS}_i = 0.33 \{ \text{VOL}_i + \text{MFCRI}_i + \text{RISK}_i \}$$

Now let's turn to the long-term cross-country evidence. Countries and regions are ordered according to 1990 per capita real GDP levels (Fig. 2.1).⁴ We consider the standard country groupings according to their level of development (OECD and developing countries) and, within the latter group, we distinguish four geographical regions (LAC for Latin America and the Caribbean, EMENA for Europe, Middle East and North Africa, ASIA, for Asia other than the Middle East, and SSA for Sub-Saharan Africa).

Regional averages and selected distribution measures of our individual indicators of MF policy performance, volatility and crises are reported for the world including SSA and for SSA separately (Table 2.2). The sample size varies between 5 and 36 country-year observations for

³ More specifically, an exchange rate crisis is defined as the percentage appreciation (misalignment) from the real exchange rate equilibrium (defined as the trend levels for the 1960-94 sample period) beyond a benchmark appreciation of 15%, that lasts at least 2 years, and is corrected by a subsequent RER depreciation. The latter RER correction is defined as a return of the RER level to a level that is either depreciated or appreciated to a maximum 15% with respect to trend RER, as calculated by Goldfajn and Valdés (1996).

⁴ Long-term country averages for each variable are unweighted sample means for 1960-94 or sub-periods of available data. Cross-country averages for regions or the world are unweighted sample means. Countries are listed by 1990 per capita real GDP rankings within each region in Appendix 2.

annual variables. Consider, for instance, the ratio of public sector deficit to GDP (pubdef), one of the four components of MFPOP. Its world-wide 1961-94 mean at 5.31% exceeds its median value (indicating skewedness toward higher values), in a sample that varies between an annual surplus of 5.03% and an annual deficit of 38.72%. The cross-country average of each country's 1961-94 volatility of public-sector deficits (measured by the sample standard deviation) is 3.92% of GDP. The cross-country average of each country's 1961-94 average public-deficit crisis indicator (measured by the average excess above 8.62%) is 1.34% of GDP.

The interpretations of all other individual MF variables is analogous. In the case of banking and balance-of-payments crisis captured by qualitative (dummy) variables, these indicators reflect the average occurrence of crises. In the world sample, there is a 10% chance that a banking crisis is observed in any given year and country. This likelihood is much larger -- equal to 29% -- for the event of a balance-of-payments crisis.

In general, the Sub-Saharan sample (comprised from 28 to 45 countries) shows a worse performance than the world at large (including SSA) in regard to most indicators of MF policy performance, volatility, and crises -- but the same is also true in most other developing regions. The exception is monetary policy and inflation outcomes, where Africa roughly matches the world performance. Payments arrears are twice as likely to occur in SSA (54%) than in the world at large.

Now let's shift from individual to aggregate indicators of MF policy performance and MF volatility, crises, risk, and overall instability. Their world and regional averages for the 1961-94 period (or subperiods) are reported in table 2.3 and country values ordered by world regions are depicted in figures 2.2-2.6. All five indicators show a large regional dispersion around world means which by construction are close to 1. The industrial nations grouped in the OECD dominate each of the four developing regions for every aggregate indicator. The MF policy performance indicator (MFPOP) is 0.41 for the OECD and ranges between 0.86 in ASIA and 1.32 in LAC. Similar disparities between the OECD and the four developing regions are observed for the three instability indicators (MFVOL, MFCRI, and RISK) and hence also for our measure of overall instability (MFINS). Within developing regions, LAC shows the worst policy performance and the highest degree of instability. SSA holds a close second place (although its country-risk measure is much worse than that of LAC). EMENA follows. ASIA -- a region that includes 8 of the successful takeoff countries in the developing world -- shows a better record of MF policy performance and lower levels of MF instability -- but still at quite a distance from the OECD countries. While the reported differences between regions are large, one should note that country dispersions of MF policy and MF instability measures within each region are also high.

How much are individual and aggregate measures of MF performance and instability correlated across time and countries in the world? We distinguish between the combined cross-country time-series correlation and the purely cross-country (long-term average) correlation between individual coefficients (Tables 2.4 and 2.5). The cross-country time-series correlation between individual variables is frequently low, as exemplified by the low correlation between public deficits and normalized inflation. However there are two exceptions: the correlation of adjusted normalized money growth and inflation is 0.61 and the correlation between public-sector and current-account deficits is 0.50.⁵ Balance-of-payments crises are moderately correlated with public deficits and inflation. By contrast, banking crises are not correlated with anything. It is

⁵ These findings confirm the results found by Easterly and Schmidt-Hebbel (1994).

particularly surprising that our measures for banking crises and balance-of-payments crises are not at all correlated.⁶ Standard errors vary between 0.016 and 0.025, reflecting correlation sample sizes that vary between 1654 and 3798.

In the cross-country dimension (Table 2.5) almost all correlations are larger. This reflects the fact that short-term noise and business-cycle perturbations vanish from long-term country averages. The cross-country correlations among MFPOP and its four individual components are obviously high, and so are the correlations between MFCRI and two of its five individual components (bankincri and balpaycri). The standard error for these correlations is 0.120.

Finally we turn to the cross-country correlation between our aggregate measures (Table 2.6). Bad MF policies (as reflected by high MFPOP levels) are highly correlated with our three indicators of MF instability, with correlation coefficients that range from 0.59 to 0.75. Interestingly, the correlation between MFPOP and our measure of overall MF instability (MFINS) is higher than any of the previous correlations. This may indicate that MFINS is a better measure of the effects of bad policies on MF instability than any of its three individual components. However, this assertion has to be qualified by recalling that we have focused only on correlation and not on causality among variables.

3. Cross-Country Evidence on Macroeconomic Instability and Growth

Now we focus on the effects of MF policies and MF instability on growth in the world. We start by looking at partial correlations observed in the world and major regions. Then we test for the contribution of MF policy performance and MF instability to growth in a multivariate context, reporting results from cross-country growth regressions that control for the contribution of other growth factors.

Long-term per capita real GDP growth rates are depicted by countries and regions (Fig. 3.1), suggesting large inter and intra-regional differences in growth performance. Long-term growth and growth volatility are negatively correlated in the world (Table 3.1), but not necessarily within each major region. The world's average 1961-94 per capita growth is 1.80% per annum, with a standard deviation -- at 5.37% -- that is three times as large. Growth performance in the OECD dominates that of LDCs in regard to both first and second moments. Hence poorer countries not only show on average lower growth rates than richer nations but suffer in addition from twice as much volatility. A case in point is Sub-Saharan Africa whose growth tragedy (the lowest regional growth at 0.76% per annum) is compounded by very high growth volatility (at 6.14% per year). However, a large dispersion of both moments is observed across different developing regions. At the higher end is Asia (where growth rates are higher than in the OECD) while both EMENA and SSA show little growth and record growth volatility.

A special group of countries is comprised by our sample of 12 successful takeoff countries (noted TCs) that are a result of intentional sample bias. We have selected the latter by choosing the developing countries that have been able to change their growth performance for the better at some point between the fifties and the eighties. Here we follow Schmidt-Hebbel and Servén (1997)

⁶ This difference with the findings by Kaminsky and Reinhart (1996) reflects significant differences between their and our definition of BOP crises and their and Caprio and Klingebiel's (1996a,b) banking crises database.

in their identification of a small set of developing economies that were able to break away from a vicious cycle of low saving, investment, and growth to achieve a virtuous cycle of high saving, investment, and growth. Here we add Uganda to their set of 11 TCs comprised by eight East Asians (Korea, Singapore, Taiwan, Hong Kong, Indonesia, Malaysia, Thailand, and China), one Latin American (Chile), and two Sub-Saharan Africans (Botswana and Mauritius).⁷

The TCs have grown on average at 4.78% per annum since 1961. Note that the relatively high growth volatility in this group -- as well as the positive correlation between long-run growth and volatility within this group -- reflects the fact that these countries have accomplished a transition from low to high growth, reflected in a large standard deviation of growth.

How is growth correlated with our aggregate measures of MF policy performance and MF instability -- both in the world at large and within specific regions? For the world at large, the partial correlation coefficients are negative and significant and range from a low of -0.24 (MFVOL) to a high of -0.51 (RISK) (Table 3.2). The correlation between MFPOP and g is -0.41 and the correlation between MFINS and g is slightly higher at -0.46. This result reflects that bad MF policies and high macroeconomic instability go together with low growth across the world at large.

However, the partial correlations between these variables vary a lot across specific regions. For the developing world at large the negative correlations are still observed. But they change to the opposite sign within the OECD and EMENA. LAC shows mixed results. In SSA all correlations less one continue to be negative. In ASIA and TCs (largely comprised by Asian countries) the partial correlations are mostly negative and reach very high levels. While this large regional dispersion is somewhat puzzling, it is important to recall that the number of countries within many regions is either moderate or small, impairing the significance of these results.

The scatter diagrams for MFPOP and growth (Figure 3.2) and for MFINS and growth (Figure 3.3) in the world sample illustrate two points: negative correlation and regional concentration. OECD countries and successful takeoff countries are largely concentrated in the preferred first quadrant (high growth and low MFPOP or low MFINS) that underlies much of both negative correlations. By contrast, the 23 (14) SSA countries are predominantly located in the lower and lower-right part of the figure.

How are our aggregate measures of MF policy performance and MF instability correlated with growth volatility? For the world at large, the cross-country correlation coefficients are positive (Table 3.3), although their absolute magnitudes are typically lower than those of the reported correlations with growth levels. However, within the OECD and LDC groups the opposite to the preceding pattern is observed now. For OECD countries the correlations are large and significant while for LDCs they are not significantly different from zero.

Now we focus on the possible contribution of MF policy performance and MF instability to growth in the world in the context of a multi-variate cross-country growth regression. We follow the large empirical new-growth literature that specifies cross-country growth as a process determined by initial conditions that determine the extent of growth convergence as well as by domestic policies, political and socio-ethnic conditions, and the international environment. We

⁷ Taiwan and Hong Kong drop out of our TC samples whenever we report results based on MF data because of lack of data for individual MF indicators.

differ from preceding studies that have included macroeconomic variables among the list of growth regressors (see Easterly and Rebelo 1993, Fischer 1993, Corbo and Rojas 1993, Schmidt-Hebbel 1996, Easterly and Levine 1996, among others) by testing for the contribution of our broader measures of MF policy performance (MFPOP) and MF instability (using either MFINS or its three individual components).

In addition to the latter variables, our cross-country long-term growth equation includes a set of variables that control for initial conditions and growth convergence: the log of 1960 per capita GDP (lgdp); the 1960 primary school enrollment rate (enpri); the 1960 secondary school enrollment rate (ensec); an index of civil liberties (civl); an indicator of financial depth, the log of the ratio of liquidity to GDP (lly); foreign terms-of-trade shocks (totsh); the ratio of foreign transfers to GDP (fortra); and a dummy variable for Sub-Saharan Africa (SSA):

$$(4) \quad g = \gamma_0 + \gamma_1 \text{MFPOP} + \gamma_2 \text{MFINS} + \gamma_3 \text{lgdp} + \gamma_4 \text{enpri} + \gamma_5 \text{ensec} + \gamma_6 \text{civl} + \\ + \gamma_7 \text{lly} + \gamma_8 \text{totsh} + \gamma_9 \text{fortra} + \gamma_{10} \text{SSA}$$

with expected coefficient signs: $\gamma_4, \gamma_5, \gamma_6, \gamma_7, \gamma_9 > 0$; $\gamma_1, \gamma_2, \gamma_3, \gamma_8 < 0$; $\gamma_0, \gamma_{10} \gtrless 0$.

The sample comprises long-term country averages for a variable number (49 to 56) of developing and OECD countries. The data sources for variables other than those introduced in preceding sections are the World Bank, the IMF, and the Barro-Lee data base. Long-term averages cover the 1960-1994 period or shorter subperiods. Estimations are based on OLS regressions with a heteroskedasticity-consistent covariance matrix of residuals.

Table 3.4 reports the results based for our parsimonious specification. For the most general specification, the results in columns (1) and (2) suggest that long-term cross-country growth is significantly influenced by the stance of MF policies (MFPOP) while overall MF instability does not exert a significant effect. However, one of its components (RISK) reduces growth significantly. The coefficients of MF volatility and MF crises show signs opposite to our priors. Conditional growth convergence is confirmed by the significant negative effect of initial income levels but human capital endowments (as reflected by initial levels of primary and secondary school enrollment) do not achieve conventional levels of significance. Financial depth matters for growth and so do foreign terms-of-trade shocks. However, domestic political conditions and foreign grants (including aid) do not help in explaining cross-country growth differences. Finally, we were not able to reject a non-explained structural growth difference between Sub-Saharan Africa and the rest of the world, reflected in a significant dummy of around 2% lower growth per annum.

As so often observed in cross-country growth regressions, also here the results are very sensitive to changes in sample size and specification. Collinearity among regressors is pervasive; we reported above the high collinearity of MFPOP and MFINS as well as its individual components. Here a large collinearity between financial depth (proxied by lly) and MFINS is added. Hence we run even more parsimonious specifications that include only initial income, the terms of trade, the SSA dummy variable, and different combinations of our MF variables. The results (in columns 3-6) show a change in sign of overall MF instability that turns significant when MFPOP is excluded.

One should avoid to stretch too far the interpretation of these mixed results. However, we conclude tentatively that MF policy performance contributes significantly and MF stability contributes weakly to growth across countries. This finding is consistent with the evidence obtained by Hausmann and Gavin (1995) who show a negative relationship between long-run growth rate and the volatility of real GDP for a sample of about 130 countries. These authors also find that terms of trade volatility, monetary policy volatility, and pegged exchange rate regimes, in addition to capital flows volatility and political instability, tend to exacerbate volatility of real GDP.

4. Do Macro-Financial Crises beget Macro-Financial Adjustment and Growth?

Up to now we have mostly focused on long-term cross-country evidence regarding the relations between policies, instability, and growth. Now we will exploit the time-series dimension of the country data by revisiting a recent hypothesis espoused by a number of researchers: macroeconomic (inflation) crises beget reforms and higher growth. In the recent political-economy literature it has been argued that extreme macroeconomic disequilibria (or high inflation) act as an equivalent of war in eliciting change (Hirschman 1987), prompt an end to war-of-attrition situations among competing groups that attempt to shift the costs of stabilization to their competitors (Alesina and Drazen 1991, Drazen and Grilli 1993), promote the start of trade reforms (Rodrik 1994), contribute to more economic openness and lower public-sector and current account-deficits (Bruno and Easterly 1995a,b), and raise growth (Bruno and Easterly 1995a, Easterly 1996).

Bruno and Easterly (BE for short) present the most systematic analysis of the empirical links between inflation crises, stabilization, and growth. Easterly (1996) -- using a sample of 28 crisis-stabilization episodes -- presents statistical support of the notion that countries which stabilize after high inflation usually have output expansions in the first and subsequent years of stabilization.

Here we generalize the crises-beget-reforms hypothesis as tested by BE in two dimensions. First, we break down the policy-growth link through macro crises into its two components: the link from policy performance to crisis, and the link from crisis to growth. Second, we extend the measure of macroeconomic crisis beyond the use of the BE inflation crisis measure (our *inflatcri* variable defined above) to consider also our MF crisis indicator (MFCRI), comprised by five individual MF crisis measures (of which one is *inflatcri*).

We follow the BE definition of an episode of inflation crisis with subsequent stabilization as a period where inflation is above an annual rate of 40% or more; the crisis period ends when inflation is below 40% for two periods or more. For our more general MF crisis variable we apply an analogous definition of at least 2 years of positive MFCRI values followed by at least two years where MFCRI is zero. Obviously a positive value of *inflatcri* is a sufficient but not necessary conditions for a positive value of MFCRI -- i.e., macro-financial crises may manifest in four dimensions other than an inflation crisis according to our definition of MFCRI.

Figures 4.1-4.2 depict average levels of crisis intensities and MF policies before, during, and after stabilization. Year zero is the last year of crisis or the first year of stabilization. *Inflatcri* is a truncated variable that reflects normalized annual inflation for inflation rates in excess of 40%,

or a zero otherwise. MF policy is reflected by the difference between each country's own MFPOP level and the world's average MFPOP value for any given calendar year.

The correlation between MFPOP differential and inflatcri is on average very high extremely high in the 16 represented episodes (Fig. 4.1). MF policies deteriorate systematically (as compared to world MF policies) until year -2 and inflation reaches a peak of 30% (above the 40% inflation crisis threshold level) in year -1. In year 0 stabilization is reflected by a significant improvement of MF policies and inflation declines to 13.8% (above the threshold level). In years 1 and 2 -- by the very definition of the sample -- the inflation crisis is overcome, supported by a strong improvement of MF policies that do not differ by much from those followed in the rest of the world. However, a slight deterioration of policies is observed in this sample in subsequent years.

Similar results are obtained for our more general MFCRI indicator and its relation to MF policies, for a much larger sample of 35 crisis-stabilization episodes (Fig. 4.2). The correlation between both measures is very strong before, during, and after stabilization. As opposed to the preceding measure, now both policies and crisis outcomes peak in year -2, with a slight improvement in year -1 and a larger turn to the better in year 0. Interestingly, while policies are somewhat stronger than in the rest of the world starting in year 1, on average sample countries revert to slightly positive levels of MF crises after year 2.

Now let's turn to the relationships between crisis indicators and the difference between crisis country and world per capita real GDP growth, depicted in figures 4.3 - 4.4. For our sample of 20 crisis episodes (Fig. 4.3), and during the 9 years before stabilization, inflation grows monotonically to attain a peak of 27.7% (above 40%) in year -1. During the entire crisis period -- less 1 year -- growth is 1-2% lower in crisis countries than in the world at large. During the first stabilization year (year 0) growth recovers to almost reach world levels. A strong additional output recovery is observed in years 1 and 2, with growth rates that exceed world growth by 1-1.8% per annum. However, in subsequent years 3 to 6 (and beyond, although not depicted in the figure) growth in stabilization countries does not exceed world growth levels. This result -- which is the most comparable to the inflation-growth results and figures reported by Easterly (1996) -- actually contradicts the latter study that found that stabilization after inflation crises raised growth rates.

Does our result hold when using our wider MFCRI indicator and a larger sample of 38 crisis episodes? (Fig. 4.4). The answer is yes: growth is higher in years 1 and 2 of stabilization, but is on average not different from world growth levels in years 3 to 6 (and subsequently).

Having reported our graphical evidence, now we test for the significance of changes in MF policy inputs and growth output in our data sample comprised by **both** crisis and non-crisis country-years. We run four regressions to test for the significance of MF policies and growth before, during, and after crisis-stabilization episodes, using alternatively the inflatcri and MFCRI indicators. We control for year-specific world growth and separate the "after" period into two subperiods (years 1-2 and years 3-6) in order to distinguish between post-stabilization recovery and longer-term growth.

The four regressions, following the order of the evidence depicted in figures 4.1 - 4.4, are the following:

$$(1) \text{MFPOP}_{it} = m_{94} + \sum_{s=61}^{93} m_s \cdot Ds_t + mb \cdot \text{DBSIC}_{it} + md \cdot \text{DDSIC}_{it} + ma \cdot \text{DASIC}_{it} + ml \cdot \text{DLSIC}_{it}$$

$$(2) \text{MFPOP}_{it} = m'_{94} + \sum_{s=61}^{93} m'_s \cdot Ds_t + mb' \cdot \text{DBSMC}_{it} + md' \cdot \text{DDSMC}_{it} + ma' \cdot \text{DASMC}_{it} + ml' \cdot \text{DLSMC}_{it}$$

$$(3) g_{it} = g_{94} + \sum_{s=61}^{93} g_s \cdot Ds_t + gb \cdot \text{DBSIC}_{it} + gd \cdot \text{DDSIC}_{it} + ga \cdot \text{DASIC}_{it} + gl \cdot \text{DLSIC}_{it}$$

$$(4) g_{it} = g_{94} + \sum_{s=61}^{93} g'_s \cdot Ds_t + gb' \cdot \text{DBSMC}_{it} + gd' \cdot \text{DDSMC}_{it} + ga' \cdot \text{DASMC}_{it} + gl' \cdot \text{DLSMC}_{it}$$

where Ds are dummies for years $s = 1961$ to 1993 , g_{94} is the intercept that reflects average world growth in 1994, DBSIC (DMSMC) is a Dummy for the years Before Stabilization of an Inflation (Macro-financial) Crisis, DASIC (DASMC) is a Dummy for the year zero During Stabilization of an Inflation (Macro-financial) Crisis, DDAIC (DDSAC) is a Dummy for the years 1-2 After Stabilization of an Inflation (Macro-financial) Crisis, and DLSIC (DLSMC) is a Dummy for the years 3-6 Long after Stabilization of an Inflation (Macro-financial) Crisis.

The statistical results in tables 4.1 and 4.2 confirm the graphical evidence shown in Figures 4.1-4.4. MF policy performance is much worse in crisis countries than in the rest of the world before and during stabilization. Indeed MFPOP in crisis countries exceeds by high and significant levels average world MFPOP. Crises do not contribute to better policies in this sample: MFPOP is still higher shortly (1-2 years) and long (3-6 years) after an inflation crisis, although this difference is not statistically significant. However, for the larger sample of crises countries based on our wider MFCRI indicator, our results suggest that crisis countries show a significantly worse MF policy performance than that observed in the rest of the world, both short and long after a MF crisis.

With regard to growth performance before, during, and after inflation crisis and stabilization episodes, our statistical results show that the growth loss compared to the rest of the world that is due to an inflation crisis is very large and significant. During stabilization year 0 the growth loss is lower and not significant anymore. The results show also a large growth gain in the 2 years after stabilization but it is not significantly different from zero. This confirms the comparable finding by Easterly 1996 (cf. his Table 1, third column). However, for subsequent years 3-6 we do not find a significant growth dividend of stabilization -- as opposed to Easterly's results.

When using our larger sample of crisis countries based on our MFCRI measure, the stabilization year shows a large and significant growth loss that exceeds in magnitude the average annual growth loss before MF stabilization. Shortly after stabilization -- in years 1 and 2 -- the growth gain difference with the rest of the world is positive but not significantly different from zero. The difference with our preceding result -- based on inflation crises -- is that growth in years 3-6 is slightly lower than (but not significantly different from) growth in the rest of the world.

We conclude that inflation and macro-financial crises are strongly correlated with bad MF policies before stabilization is started. Crises, however, do not beget MF reforms reflected in MF policy improvements beyond the quality of contemporaneous policies adopted by non-crisis countries. Possibly for the same reason, we also show that crises do not beget permanent growth improvements either. Long-term growth is not higher in crisis than in non-crisis countries after stabilization.

5. A Tale of 12 Successful Growth Takeoffs

In this section we generalize the preceding analysis of the time-series dimension that has focused on the relation between MF crises, reforms, and growth. Here we describe if and how MF policy performance, MF instability, and growth have changed from the 1960s to the 1990s, focusing on the experience of takeoff countries (TCs). Our sample period covers from 1961 through 1994, well before the 1997 start of the ongoing Asian crisis that is affecting the East Asian members of our TC group.

In order to assess the success of TCs it is useful to focus first on growth in a comparator group that represents the rest of the world. In fact, average annual per capita growth rates have been falling in non-takeoff countries since the 1960s. In a sample of 38 non-takeoff countries comprising 14 OECD and 24 developing countries, trend per capita growth rates have decreased from close to 3.0% per annum in the 1960s to around 1.0% since the mid-1980s (Fig. 5.1). Both MF policies and MF crises have not improved since the late 1970s (the earliest years we have data on MFPOP and MFCRI for a sample of 38 countries) and actually reflect a temporary deterioration during the second oil shock and the onset of the debt crisis in the early 1980s. The overall combination of poor policies, high instability, and low growth in this large set of countries confirms -- in a cross-country and time-series dimension -- the world-wide correlations between the latter variables that were established for the cross-country dimension in section 3 above.

A very different pattern of policies, instability, and growth emerges in a subsample of 10 takeoff countries (Fig. 5.2).⁸ Table 5.1 presents available country data for 12 TCs by selected sub-periods that have been roughly chosen by structural breaks in country growth rates. Figure 5.3 complements the latter data by showing the pattern of transition in 10 of the 12 TCs during the last three decades. This evidence suggests the following six stylized facts about successful takeoffs and the role of good policies and stable macroeconomic outcomes in their achievement.

- **Transition to persistently higher growth rates**

TC growth performance is the opposite of what is observed in non-takeoff countries: average per capita trend growth increases quickly from low levels in the early 1960s to 5% in the 1970s and early 1980s, rising further to close to 6% in the late 1980s and early 1990s.

The transitions to high growth plateaus have been quite remarkable in all 10 countries. Korea stands out as the most spectacular, where annual per capita growth averaged more than 7.7% for 20 nine years (1966-94); followed by Singapore with an annual average growth rate of 8.2% for 17 years (1966-82) and another average 6% for thirteen years (1982-94). Botswana's

⁸ Taiwan and Hong Kong were excluded from the averages reported in this figure because of lack of data.

performance is exceptional by showing a decline from its world-record growth rate of 11.2% -- sustained for eleven years (1969-79) -- to 6.8% during the following eleven years (1980-1990), and a further decline to 1.6% in 1991-94. Other countries achieved major turnarounds from negative or very low to high and sustained growth: Indonesia from -0.2% in 1961-67 to 5.1% in 1968-94; Chile from 1.0% in 1971-86 to 5.2% in 1987-94; Mauritius from 0.9% in 1961-71 to 5.9% in 1972-79 and 3.9% in 1980-94; and Uganda from -2.6% in 1971-87 to 3.5% in 1988-94. The remaining countries (China, Malaysia, Thailand) have managed to graduate from fair to spectacular performance by almost doubling their initial growth rates (of 3 to 4%) between the two periods. In terms of regional performance among TCs, one may conclude that the East Asian growth performance has dominated the growth performance of the 3 SSA countries and the 1 LAC country in terms of persistence, length, and growth levels.

- **Lower growth volatility**

A large decline in growth volatility tends to come after completing the transition from low to high growth. This success in reducing growth instability is apparent in the large decline in growth swings observed after 1975 for the TC group at large (see Fig. 5.2) as well as in most individual countries (Table 5.1). Excepting Thailand, Botswana, and Korea (for the 1961-65 and 1966-82 comparison), the impressive transitions in terms of growth levels have been matched by considerable declines in growth volatility. In fact, the reduction in growth volatility between the two phases ranges from around 50% in Korea (from 1966-82 to 1983-94), Singapore, Mauritius and Uganda; to more than 60% for Chile; more than 70% for China; and almost 80% for Malaysia. In Indonesia -- which achieved a major transition from an average per capita growth rate of -0.23 during 1961-67 to more than 5% during 1968-94 -- growth volatility fell only modestly from 2.5% to 2%. On the other hand, compared to other transition cases, growth has been relatively stable in Indonesia since before the transition period. The above results suggest that most successful transitions have been achieved by limiting the frequency of very low or negative growth outliers that had contributed to both low growth levels and more volatile growth during pre-transition periods.

- **Improved macro-financial policies**

Since 1986 our indicator of aggregate MF policy performance is only slightly positive in TCs -- reflecting a strong MF policy stance -- that contrasts with levels close to 1.0 in non-takeoff countries. Good macro policies (low MFPOP values) are associated with high rates of growth across different subperiods in most TC growth transitions. In terms of Fig. 5.3, countries typically move from lower-right to upper-left combinations of MF instability and growth.

- **Less macro-financial volatility**

The high quality of MF policies has contributed to lower overall macro-financial instability in general and lower MF volatility in particular.

- **Less macro-financial crises**

Excepting Uganda, our MF crisis indicator stands at zero for all other TCs since 1989, a factor that contributes to achieving or maintaining high growth rates. However, within this sample the evidence on the hypothesis that MF crises beget reforms (and higher growth) is mixed.

On one hand there are various takeoff experiences that support the notion that crises are cleansing experiences that help in building a socio-political consensus in favor of radically improved MF and structural policies that pave the way toward a higher growth plateau. One extreme example of this experience is Chile whose MFCRI index during 1971-86 was very high at 1.552, but has managed to reduce it to a level of zero, consistent with overall equilibria during 1987-94. Less spectacularly, Malaysia and Thailand were able to substantially control pre-transition crisis tendencies of their economies by reducing their corresponding MFCRI indexes from 1.4 to 0.3, and from 1.0 to 0.6.

Even in less spectacular cases, the decline in the incidence and extent of crises has been quite significant. Moreover, for countries where data is not available to allow comparison of our MFCRI indexes in the initial periods with subsequent periods, such as Korea and Indonesia, there is evidence that considerable economic and political crises have impacted these countries during their pre-takeoff periods in the 1950s and 1960s (e.g. Haggard 1994).⁹

However, on the other hand there are other countries that have achieved a successful takeoff without the “benefit” of a cleansing MF crisis (including Singapore, Hong Kong, Mauritius, and Botswana). Uganda has been able to reduce the MFCRI measure from a staggering 3.6 level in 1971-87 to a still high level of 2.2 in 1988-94, while at the same time achieving high rates of growth during 1988-94.

We conclude that avoiding MF crises tends to be a necessary condition for maintaining sustained high growth -- but achieving the latter does not necessarily require to go through a “cleansing” crisis experience.

- **Better country risk ratings**

With the exception of Uganda, all TCs exhibit high country risk ratings (i.e., low MFCRI indexes) after attaining high growth. For the most recent periods, MFCRI varies from a low of 0.3 in Singapore (equal to the OECD’s average risk rating) to a high of 0.9 in Mauritius, the latter being still significantly below the average MFCRI value (at 1.1) in 24 non-takeoff developing countries. Uganda’s very low rating during 1988-94 reflects its still fragile combination of mediocre MF policies, high volatility and MF crisis levels that could imperil its successful but short growth performance.

6. INSTITUTIONS THAT WORK

In this section we discuss the relation between macroeconomic policies and growth from a wider development perspective, focus on institutional underpinnings of successful transitions, and derive some policy lessons for SSA.

6.1 Macroeconomic Policy and Growth

⁹ Haggard argues that severe economic and political crisis have not only triggered good policies in several East Asian countries during the 1950s and 1960s, but have also shaped the institutions in these countries as well facilitated some of the major strategic initiatives, such as land reform in Korea and Taiwan. This latter aspect of the Asian initial conditions is believed to be the missing ingredient that eluded many developing countries attempting to do an “Asian Miracle” of their own (Rodrik 1994).

The discussions about the extent and quality of macroeconomic adjustment have dominated policy-oriented debates attempting to explain the varied records of economic performance across developing region. Elbadawi (1996) compares Africa's macroeconomic policy stance to the policy frontier of three high-performing East Asian countries (Indonesia, Malaysia and Thailand)¹⁰ and argues that Africa needs further adjustment (see also World Bank 1994). A sustainable-deficit analysis taking into consideration GDP growth rates, saving rates, and debt ratios should show that the fiscal policy stance in SSA is substantially below the Asian frontier.¹¹

It has been argued that macroeconomic reforms are more important than microeconomic and structural reforms, both for improving and reducing the likelihood of a crisis. Rodrik observes that "except for a handful of countries in East Asia, most developing countries did combine illiberal trade and price policies with (at least occasional) fiscal profligacy and overvalued exchange rates" and adds that "the trouble is that failures were often misattributed to microeconomics policies, when their sources lay either with unsustainable macroeconomic policies or bureaucratic or institutional shortcomings" (Rodrik 1996, pp. 14). Furthermore, evaluating the policies adopted by two of the most successful East Asian miracle countries according to the "Washington consensus" (Williamson 1994), Korea and Taiwan, reveals that their records were far from outstanding in the areas of regulation, trade liberalization, privatization, elimination of barriers to direct foreign investment, and financial liberalization. However, they truly excelled in establishing macroeconomic stability, maintaining macroeconomic competitiveness, and securing property rights (Rodrik 1996, Table 3).

The upshot of the above analysis is that macroeconomic stability and macroeconomic competitiveness should be secured and maintained on a sustained basis. However, other microeconomic and sectoral reforms constitute a development strategy, and hence could be applied with varying degrees of intensity, sequencing, and policy mix, depending on the nature of institutions and the external environment. On the other hand, the ongoing East Asian crisis suggests that failures to provide adequate, transparent, and market-based regulation of financial institutions may substantially derail the growth path of an otherwise stable macroeconomic environment.

The reform experiences of the twelve countries reviewed in the preceding section show very clearly that these countries managed to achieve the transition to low instability and high growth on a sustained basis, while almost all other developing countries could not. The key question as to why only a small subset of developing countries achieved this "win-win" outcome rests with the role of institutions. Almost all of these successful transitions have been effected by relatively capable, sufficiently mandated, and adequately insulated institutions, subjected to some measures of accountability. The key challenge in the process of institutional design is to strike the appropriate and delicate balance between "rules" and "discretion". While rules are necessary for ensuring transparency, accountability, and policy credibility, excessive rules could lead to sub-optimal executive discretion, stifling flexibility and responsiveness to internal and external shocks. Understanding the nature of the institutional designs that underlie these successful transitions is critical for drawing policy lessons for current and future reforming countries, special those in SSA.

¹⁰ Elbadawi (1996) compares East Asia in 1980-90 to SSA in 1991-92, in an attempt to capture the latter and more consolidated stages of the African economic reforms.

¹¹ For a review of the literature on assessing sustainability of fiscal policy see Schmidt-Hebbel (1996).

However, an “effective” institutional design is a product of and contingent upon the broader socio-political context, which appears to be very much shaped by initial conditions and history.

6.2 Institutional Underpinnings of Success

The dominant view in the literature on the high-performing Asian economies (HPAEs) -- at least before the onset of the 1997 crisis-- is that their success in developing the right institutions could be credited to a combination of four factors.¹² First, clever institutional design that allowed concentration of key policy functions in the hands of independent bureaucratic organization, providing much needed insulation for the technocratic elites from political capture. Second, an overarching strategic commitment to the principle of “equally shared” growth, supporting the objective of bureaucratic insulation by reducing the payoffs to pressure groups and lobbies. Third, the presence of a highly motivated and capable civil service, sustained by “merit-based recruitment and promotion, competitive remuneration, and generous rewards to those who make it to the top” (Rodrik 1994, pp. 43). Fourth, the creation of modalities (“deliberation councils” in the terminology of the World Bank 1993 report) for overall consultation and exchange of views and information between the government and the private sector. These councils help to address market imperfections by acting as a signaling device and pressure government bureaucracies to be accountable for their performance.

These institutional characteristics of the HPAEs may seem to be the outcome of an a priori abstract “winning” institutional framework. However their “winning” institutional choice is very much a result of their initial economic conditions and their socio-political history.¹³ In addition, the policy institutions in the HPAEs appear to be orthogonal to the mainstream principles of economic theory (e.g. dynamic inconsistency in policy, investment under irreversibility, and rent seeking) that generally favor “rules” over “discretion”. Indeed, throughout the history of the HPAEs many of the government interventions have been at the firm level, highly complex and non-uniform, where bureaucracies have been accorded considerable executive discretion (Rodrik 1994).

However, an important distinction needs to be drawn between institutional underpinnings for implementation of macroeconomic as opposed to sectoral and microeconomic policies. In implementing macroeconomic policies, successful Asian bureaucracies have in fact been operating under fairly explicit rules, buttressed by both traditions and politics (e.g. Haggard 1994). For example, as early as in the late 1940s -- following the hiperinflation crisis -- substantial independence was granted to the Central Bank of Taiwan, in the context of an overall policy emphasis on economic stability. This orientation is further strengthened and extended to other areas of economic policy making institutions in the late 1950s, when it became clear that the generous levels of U.S. aid would be cut down. In Indonesia, a key stabilization plan introduced in 1966 included a constitutional balanced-budget provision, which decreed that expenditure could not exceed the sum of revenue plus counterpart funds from foreign aid. The salient feature of macroeconomic policy institutions in Malaysia has been the independence of the Central Bank

¹² See for example World Bank (1993) and Rodrik (1994).

¹³ For example Rodrik (1994) argues that deliberation councils have been used in many countries as an instrument of repression to impose government policies on a reluctant private sector. Like the HPAEs, many countries have attempted to implement centralized policy making, but, to say the least have not been able to achieve the same success. And finally, other countries (such as India) have inherited a well-educated civil service with deep traditions of professional excellence, yet have failed to deliver a level of performance comparable to that of the HPAE’s bureaucracies.

since the post-independence period, which grew out of the currency-board tradition established under British rule. In Thailand, the bureaucratic discretion “was circumscribed by a number of rules that limited the government’s capacity to spend, and by a central bank with a long tradition of independence” (Haggard 1994, pp. 90).

However the ongoing financial crisis has hit these countries makes clear that having sound macroeconomic fundamentals is not sufficient for avoiding a financial crisis in an era of increasing international capital flows. The current difficulties of East Asian countries could, at least in part, be attributed to premature financial liberalization when adequate and transparent regulation is lacking. Indeed the performance of the financial sector linked with possibly overvalued currencies, implied a major institutional weakness of the East Asian model.

6.3 The Experience of Other Successful Countries

The evolution of institutions in two successful non-Asian countries (Chile and Uganda) appears to be much more influenced by the concern for establishing policy credibility following a deep economic crisis that hit both countries prior or during the start of economic reforms. In the case of Chile the emerging model calls for more emphasis on “rules” than “discretion”. Corbo provides a succinct description: “...the new model has strengthened the role of the state in setting the rules for the development of a competitive market economy in the form of incentives, private property laws and their enforcement, and contractual law. As the government is moving out of the production of private goods it is taking also an increasing role in insuring equality of opportunities in primary education, nutrition and primary health as well as in reducing extreme poverty” (Corbo 1996: pp. 1). The institutional reforms consistent with this vision in Chile included deep structural reforms of tax and revenue institutions and a change in the rule of operation of the central bank allowing it to run an independent monetary and exchange rate policy, explicitly aimed at maintaining low and stable inflation. An important point to note is that, like the Asian economic program, the new Chilean development model is very much committed to the principles of “shared growth” even though it did not benefit from the initial conditions of relatively equitable income and asset distribution that prevailed in East Asia.

The Ugandan reform program mainly reflects the mainstream institutional structure prescribed by the Washington consensus where a statutory independent revenue authority and an independent central bank are the main institutional components of the program. Their setup -- combined with a strong commitment by the political leadership to low and stable inflation -- must be credited for the quick and decisive elimination of hyperinflation suffered before 1986.

Botswana represents a case of a generally conservative -- if not minimalist -- state that was not put into place in response to a major crisis. The key test of the authorities’ macroeconomic prudence was provided by the challenge of managing the boom in the mining sector (diamonds). In the words of Norberg and Blomstrom: “... the spending effects of the diamond boom have been small, something which is mainly due to government policy. Since the diamond industry is state owned, the government controls the revenues. The revenues have mainly been used to promote national income, rather than to subsidize different sectors (such as import-substituting manufacturing) and support various interest groups. To maximize national income, a large proportion of the revenues from diamonds have been invested, not in Botswana, but in foreign banks and firms. By sterilizing revenues abroad and executing a non-expansive monetary policy at home, the inflationary pressure has diminished and the negative effect of the diamond boom have been reduced” (Norberg and Blomstrom 1993, pp. 176-177).

Finally, Mauritius is the closest African example of the East Asian model. Unlike Uganda, for example, structural adjustment-type conditionality did not play a major role in shaping Mauritius' policy-making institutions. Mauritius did not either experience a major crisis like those experienced by Uganda or other African countries. While there is no formal or informal independence of policy institutions, the country's strong private-sector tradition has led the public sector to adopt a conservative macroeconomic stance.

6.4 Lessons for Sub-Saharan Africa

Conventional wisdom suggests that "successful programs are likely to:

- apply simple and uniform rules, rather than selective and differentiated ones;
- endow bureaucrats with few discretionary powers;
- contain safeguards against frequent, unpredictable alteration of the rules;
- keep firms and other organizational interests at arm's length from the policy formulation and implementation process" (Rodrik 1994, pp. 44).

These principles are motivated by concerns over excesses of executive policy institutions as well as strong desire to establish credibility of economic policy. In terms of the institutions entrusted with the design and implementation of macroeconomic policy, even the East Asian countries have adhered to some institutional measures that ensures macroeconomic stability, albeit in a context that allows considerable discretionary initiatives.

However, more recent evidence suggests that external and policy-induced volatilities have been on the rise in Latin America (as well as in SSA) and that they have substantial economic cost in terms of growth, investment, and social welfare (e.g. Hausmann and Gavin 1995, Servén 1996). This evidence have prompted some authors to recommend even further tightening of some rules, such as: minimizing the risks faced by the fiscal accounts through much more regimented tax and revenue policy; setting of precautionary fiscal targets; institution of "contingent fiscal rules" that specify automatic fiscal response to large macroeconomics shocks; in addition to several other measures in the areas of public debt management and adjustment to terms of trade shocks (Hausmann and Gavin 1995). However, the policy recommendations from this literature also emphasize the importance of designing policy institutions that allows sufficient flexibility and executive discretion in response to shocks. Hausmann and Gavin discuss some institutional designs along these lines, specially in the area of monetary and exchange rate policies. Based on their finding that pegged exchange rate regimes are associated with substantially higher volatility in real GDP growth than are more flexible regimes, they appear to favor the more flexible Chilean model over the more rigid Argentinean approach. The latter model ties the hands of the central bank by requiring it to maintain a fixed exchange rate, hence the choice is decidedly for "discipline" at the expense of "flexibility". According to the authors, however, this model is based on the unduly pessimistic view that only unbreakable monetary rules could solve the problems of time inconsistency in monetary policy. Moreover, as the Argentine's experience suggests, the defense of a fixed exchange rate regime may require a very determined and politically costly fiscal response to external shocks.

The East Asian countries have a rather unusual background of initial economic conditions and socio-political history. Many of these countries emerged from extreme political crises that facilitated or triggered major strategic measures (such as land redistribution in Korea and Taiwan)

that contributed to relatively more equitable income and asset distribution in comparison to other developing countries. Moreover, these countries inherited a more educated labor force (relative to their income levels) in the early 1960s. It has been argued that these initial conditions have been critical for the emergence of capable institutions that are relatively free from political capture. The strategic measures were made possible by the relatively well-educated civil service, while the relatively equitable income and wealth distribution reduced the payoff for pressure-group politics (Amazonas 1995, Haggard 1994). Moreover, the presence of intense military and ideological threats faced by these countries up to the 1980s have facilitated the emergence of “developmental” states in the East Asian region (Gunaarsson and Lundahl 1996).

From this review it is clear that the East Asian institutional model may not be generalizable. Specially in SSA, where institutions as well as states are particularly weak, too much discretion along the East Asian model can be quite risky.¹⁴ Indeed, the concern about the fragility of Africa's states and institutions may have provided the motivation for proposals that call for Africa to “tie its hands” and recommit itself to a reciprocal threat-making trade and policy coordination arrangements with dominant trading partners (such as the European Union), as a means for ensuring national policy credibility (e.g. Collier 1991). However, we would like to conclude by agreeing with Haggard (1994, pp. 98) in that “rather than warn that such policies cannot work in other settings because of administrative weakness, it makes more sense to emphasize the importance of a strong and competent state for the formulation and implementation of coherent public policy.”

7. Conclusions

This paper contributes to the recent and growing literature that focuses on the association between both the level and volatility of macroeconomic and financial (MF) policies and economic growth. The paper deploys extensive sets of data to construct partial and multivariate measures linking growth to indicators of MF policy, MF volatility and MF crises. The evidence gleaned from the analysis of this paper broadly agrees with the received wisdom from the literature; in that “bad” and volatile MF policies, and specially MF crises, are very harmful for economic growth. Unlike the evidence from the previous literature (most notably Bruno and Easterly), however, our results do not suggest that crises beget reforms, in the sense of causing policy improvements beyond the quality of contemporaneous policies adopted by non-crisis countries. Possibly for the same reason, we also show that crises do not beget permanent growth improvements either. Long-term growth is not higher in crisis than in non-crisis countries after stabilization. Therefore one main conclusion of this paper is that overcoming crises is a necessary but not sufficient condition for achieving high and sustained growth.

These and other conclusions obtained in this paper are based on detailed empirical analysis, which significantly broadens the focus of the preceding literature. The performance of MF policy is measured by four indicators: public sector deficit, monetary growth, real exchange rate misalignment, and current account deficit, as well as an aggregate measure of MF policy defined as a weighted average of the four preceding policy performance variables. Three additional

¹⁴ For example, a composite measure of equality of institutions during the 1980s assigns (based on a scale from 1 to 10) a score of more than 8 to each of Hong Kong, Taiwan, and Singapore (and a median of 6.5 for East Asia), compared to a median score of 4.5 for SSA.

indicators of MF (in)stability are constructed. The first is a weighted average of volatility measures related to the four variables described above. The second set of measures represents MF crises, understood as severe macroeconomic and financial disequilibria in the areas of fiscal, monetary, and real exchange rate policies, in addition to qualitative (dummy variable) indicators for balance-of-payments and banking crises. The third measure is a country risk rating. The aggregate measure of MF crises is then defined as a weighted average of the five individual MF crisis variables. Finally, a measure of overall MF instability is defined as a simple aggregate over the two preceding aggregate instability measures (MF volatility and MF crises) and the country risk ranking.

The above ensemble of partial and aggregate indicators of MF policy performance and MF instability allows extensive analysis of associations between the latter variables and growth, for individual countries and across countries and country groups. The evidence based on these measures suggests that SSA's performance is worse than that of the world at large in regard to most MF policy performance, volatility, and crises, but the same is also true for some other developing regions. The exception is in the realm of monetary policy and inflation results, where SSA roughly matches the world performance. External payment arrears are twice as likely to occur in SSA (54%) than in the world at large.

The results of the endogenous-growth model reported in the paper generally confirms the main conclusions of the literature about conventional growth determinants (including the contribution of catch-up effects, human capital, external shocks, and financial depth). In addition our results show that long-term cross-country growth is significantly influenced by the quality of MF policies, while overall MF instability does not exert a significant effect. However, in a more parsimonious model that does not include MF policy performance, the effect due to overall MF instability turns out to be significant and negative. These somewhat inconclusive results -- mainly due to pervasive collinearity among MF variables -- allow reaching the tentative conclusion that MF policy performance contributes significantly and MF instability contributes weakly to growth across countries.

The final set of issues addressed in the paper describe if and how MF policy performance, MF instability, and growth have changed from the 1960s to the 1990s, with a particular emphasis on the experiences of twelve takeoff countries (TCs). The paper also discusses the institutional design that underpins a "win-win" transition to low MF instability and higher growth, as achieved by the TCs. The pattern of transition in eight of the twelve TCs during the last three decades suggests six stylized facts. The transitions were characterized by persistently higher growth rates; lower growth volatility; improved macro-financial policies; less macro-financial volatility; less macro-financial crises; and better risk ratings.

The reform experience of the twelve countries reviewed in the preceding section show very clearly that they managed to achieve the transition to low instability and high growth on a sustained basis, while almost all other developing countries could not. The key question as to why only a small subset of developing countries achieved this "win-win" outcome rests with the role of institutions. The key challenge in the process of institutional design is to strike the appropriate and delicate balance between "rules" and "discretion". While the former is necessary for ensuring transparency and accountability, and hence policy credibility; too much reliance on rules could lead to sub-optimal executive discretion, which will necessarily stifle flexibility and responsiveness to uncertain and changing internal and external environments. The policy institutions in the high-performing Asian economies appears to be orthogonal to the mainstream principles of economic theory that generally favors "rules" over "discretion". However, an important distinction needs to

be drawn between institutional underpinnings for implementation of macroeconomics as opposed to sectoral and microeconomics policies. According to the literature reviewed in this paper, when implementing macroeconomics policies, successful Asian bureaucracies have in fact been operating under fairly explicit rules, buttressed by both traditions and politics. However, the ongoing financial crisis in East Asia shows that explicit rules and institutions at the level of the financial sector is indeed an additional requirement, beyond sound macro fundamentals, for avoiding major financial crises in an era of quickly integrating world markets for private capital. Lacking this is perhaps the major weakness of the East Asian development model.

The paper emphasizes the uniqueness of the East Asian institutional model and suggests, therefore, that it may not lend itself to replicability in other regions. Specially in SSA, where institutions as well as states are particularly weak, the paper argues that too much discretion along the East Asian model can be quite risky. However, the main lesson of the East Asian experience is that rather than emphasizing the negative by warning that East Asian policies cannot work in other settings because of administrative weakness, it makes more sense to emphasize the importance of a strong and competent state for the formulation and implementation of coherent public policy.

References

Alesina, A. and Drazen, A. (1991), "Why are Stabilizations Delayed?", American Economic Review 81 (5): 1170-88.

Alesina, A. and G. Tabellini (1990), "Voting on the Budget Deficit", American-Economic-Review 80 (1): 37-49.

Alesina, A. and G. Tabellini (1992), "Positive and Normative Theories of Public Debt and Inflation in Historical Perspective", European-Economic-Review 36 (2-3): 337-44.

Amazonas, A. (1995), "A Reassessment of the Relative Economic Performance of Brazil and Korea", paper presented at the Development Studies Association Meeting, City College, Dublin, 7-9 September.

Barro, R. and D. Gordon (1983), "A Positive Theory of Monetary Policy in a Natural Rate Model", Journal of Political Economy 91 (4): 589-610.

Bruno, M. and W. Easterly (1995a), "Inflation Crises and Long-Run Growth," NBER Working Paper No. 5209, Cambridge, MA.

Bruno, M. and W. Easterly (1995b), "Inflation's Children: Tales of Crises that beget Reforms", American Economic Review 86 (2): 213-7.

Caprio, G. and D. Klingebiel (1996b), "Bank Insolvencies: Cross-Country Experiences", Policy Research Working Paper No. 1620, The World Bank, Washington, D.C., July.

Caprio, G. and D. Klingebiel (1996a), "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking?", paper presented at the World Bank ABCDE Conference, April 25-26, Washington, D.C.

Caselli, F., G. Esquivel and F. Lefort (1996), "Reopening the Convergence Debate: A New Look at Cross-Country Growth Empirics", Journal of Economic Growth 1(3): 363-89.

Collier, P. (1991), "Africa's External Economic Relations 1960-90," African Affairs.

Corbo, V. (1996), "The Market and the Government in Latin America: The Emerging Model," paper presented at the International Conference on the World Economy in Transition, Hitotsubashi University, Japan.

Corbo, V. and P. Rojas (1993), "Investment, Macroeconomic Stability and Growth", Revista de Análisis Económico 8 (1): 19-35.

Drazen, A. and V. Grilli (1993), "The Benefit of Crises for Economic Reforms", American Economic Review 83(3): 598-607.

Easterly, W. (1996), "When is Stabilization Expansionary? Evidence from High Inflation", Economic Policy 22, April.

Easterly, W. and S. Rebelo (1993), "Fiscal Policy and Economic Growth: An Empirical Investigation," Journal of Monetary Economics 32 (3): 417-57.

Easterly, W. and K. Schmidt-Hebbel (1994), "Fiscal Adjustment and Macroeconomic Performance: A Synthesis", in W. Easterly, C. Rodriguez and K. Schmidt-Hebbel (eds.): Public Sector Deficits and Macroeconomic Performance, Oxford University Press.

Easterly, W. and R. Levine (1997), "Africa's Growth Tragedy: Policies and Ethnic Divisions", The Quarterly Journal of Economics 112(4): 1203-50.

Easterly, W., N. Loayza and P. Montiel (1996), "Has Latin America's Post-Reform Growth been Disappointing?", manuscript, The World Bank, Washington, D.C., August.

Easterly, W., L. Pritchett, L. Summers and M. Kremer (1993), "Good Policy or Good Luck? Country Growth Performance and Temporary Shocks", Journal of Monetary Economics 32(3): 459-83.

Elbadawi, I. (1996), "Consolidating Macroeconomic Stabilization and Restoring Growth in Sub-Saharan Africa," (Forthcoming) in B. Ndulu and N. van de Walle (editors), Policy Perspectives on African Development Strategies, Overseas Development Council., Washington D.C.

Fischer, S. (1993), "The Role of Macroeconomic Factors in Growth," Journal of Monetary Economics 32 (5): 455-511.

Gavin, M. and R. Hausmann (1996), "The Roots of Banking Crises: the Macroeconomic Context", Working Paper Series No. 318, Inter-American Development Bank, Washington, DC, January.

Goldfajn, I. and R. Valdés (1997), "The Aftermath of Appreciations", Working Paper Series N°2, Central Bank of Chile, March.

Gunnarson, C. and M. Lundahl (1996), "The Good, The Bad and the Wobbly: State Forms and Third World Economic Performance, In M. Lundahl and B. Ndulu (editors): New Directions in Development Economics: Growth Environmental Concerns Government in the 1990s. Routledge, New York.

Gwartney, J., R. Lawson, and W. Block (1996), Economic Freedom of the World: 1975-1995.

Haggard, S. 1994), "Politics and Institutions in the World Bank East Asia," in A. Fishlow et al (eds): Miracle or Design: Lessons from the East Asian Experience, Overseas Development Council, Policy Essay No. 11, Washington, D.C.

Hausmann, R. and M. Gavin (1995), "Macroeconomic Volatility in Latin America: Causes, Consequences and Policies to assure Stability," manuscript, Inter-American Development Bank, Washington D.C.

Hirschman, A.O. (1987), "The Political Economy of Latin American Development: Seven Exercises in Retrospection", Latin American Research Review 22 (3): 7-36.

IDB (1995), "Overcoming Volatility", Economic and Social Progress in Latin America, Annual Report, Inter-American Development Bank, Washington, D.C.

Kaminsky, G. and C.M. Reinhart (1996a) "Banking and Balance-of-Payments Crises: Models and Evidence", manuscript, Board of Governors of the Federal Reserve, Washington, D.C., September.

Kaminsky, G. and C.M. Reinhart (1996b), "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems", manuscript, September.

Kydland, F. y E. Prescott (1977), "Rules than Discretion: The Inconsistency of Optimal Plans", Journal of Political Economy 85(3): 473-91.

Norberg, H. and M. Blomstrom (1993), "Dutch Disease and Management of Windfall Gains in Botswana," Reprint Series No. 111, Department of International Economics and Geography, Stockholm School of Economics.

Rodrik, D. (1996), "Understanding Economic Policy Reform," Journal of Economic Literature, Vol XXXIV: 9-41, March.

Rodrik, D. (1994), "King Kong Meets Godzilla: The World Bank and the East Asian Miracle," in A. Fishlow et al. (eds): Miracle or Design: Lessons from the East Asian Experience, Overseas Development Council, Policy Essay No. 11, Washington, D.C.

Rodrik, D. (1994), "The Rush to Free Trade in the Developing World: Why so late? Why now? Will it last?", in S. Haggard and S. Webb (eds.): Voting for Reform: Democracy Political Liberalization, and Economic Adjustment, Oxford University Press.

Rogoff, K. and A. Sibert (1986), "Elections and Macroeconomic Policy Cycles", National Bureau of Economic Research Working Paper N° 1838.

Schmidt-Hebbel, K. (1996), "Fiscal Adjustment and Growth: In and Out of Africa," Journal of African Economies 5 (3, Suppl.): 7-59.

Schmidt-Hebbel, K. and Servén, L. (1997), "Saving Across the World: Puzzles and Policies", World Bank Discussion Paper No. 354, Washington, DC.

Servén, L. (1996), "Irreversibility, Uncertainty and Private Investment: Analytical Issues and some Lessons for Africa", Journal of African Economies, 6 (3, Supplement): 229-68.

Tommasi, M. and A. Velasco (1995), "Where are we in the Political Economy of Reform", manuscript, New York University, May.

Williamson (1994), (edit). The Political Economy of Policy Reform. Institute for International Economics, Washington DC.

World Bank (1996), Global Economic Prospects. Washington, DC.

World Bank (1994), Adjustment in Africa: Reforms, Results and the Road Ahead, New York: Oxford University Press.

World Bank (1993), The East Asian Miracle: Economic Growth and Public Policy, New York: Oxford University Press.

APPENDIX 1
Variable Definitions and Sources

Domestic Macro-Financial Variables

Macroeconomic Variables

Fiscal Policy	pubdef	Ratio of current-price public sector deficit to GDP. Easterly and Schmidt-Hebbel (1994) and World Bank
Monetary Policy	mongro	Normalized rate of growth of nominal Reserve Money stock (Outstanding december). IMF: IFS
	inflat	Normalized rate of growth of Consumer Price Index . IMF: IFS
Exchange Rate Policy	rerlev	Average annual trade-weighted real exchange rate (1990 = 100.0). Goldfajn and Valdés (1996)
	reremis	percentage deviation of annual average trade-weighted real exchange rate from trend equilibrium level. Goldfajn and Valdés (1996)

Financial Variables

Banking Sector

crepri	Rate of growth of nominal stock of monetary system credit to private sector (Outstanding december). IMF: IFS
bankincris	dummy variable for banking crisis, 1 for country-year of crisis, 0 otherwise. Caprio and Klingebiel (1996)

Foreign Payments

cacdef	Ratio of current-price current-account deficit to GDP. World Bank Saving Project
balpaycricris	dummy variable for balance of payments crisis, 1 for payments, 0 otherwise. IMF: Annual Report on Exchange Arrangements and Exchange Restrictions.

Per capita real GDP

g	Per capita constant-price GDP growth rate. World Bank Saving Project
---	--

EXTERNAL/POLICY LEVEL VARIABLES

Foreign Variables

Terms of Trade	ttrade	World Bank, IEC database .
Foreign Net Curr. Transfers	fortra	Ratio of current-price Foreign Net Current Transfers to GDP. World Bank Saving

Project

APPENDIX 2
Countries listed by real per-capita GDP Levels within each Region

1	SWITZERLAND
2	JAPAN
3	ICELAND
4	LUXEMBOURG
5	DENMARK
6	NORWAY
7	SWEDEN
8	FINLAND
9	UNITED STATES
10	FRANCE
11	AUSTRIA
12	NETHERLANDS
13	CANADA
14	GERMANY, REP.
15	BELGIUM
16	ITALY
17	AUSTRALIA
18	UNITED KINGDOM
19	NEW ZEALAND
20	IRELAND
21	SPAIN
22	BERMUDA
23	BAHAMAS, THE
24	PUERTO RICO
25	BARBADOS
26	ANTIGUA AND BARBUDA
27	TRINIDAD AND TOBAGO
28	ARGENTINA
29	ST. KITTS AND NEVIS
30	ST. LUCIA
31	VENEZUELA
32	URUGUAY
33	DOMINICA
34	BELIZE
35	SURINAME
36	PANAMA
37	BRAZIL
38	GRENADA
39	CHILE
40	MEXICO
41	COSTA RICA
42	ST. VINC. AND THE GREN.
43	JAMAICA
44	COLOMBIA
45	ECUADOR
46	PERU
47	PARAGUAY

48	HONDURAS
49	NICARAGUA
50	GUATEMALA
51	EL SALVADOR
52	DOMINICAN REPUBLIC
53	BOLIVIA
54	GUYANA
55	HAITI
56	NETHERLANDS ANTILLES
57	ARUBA
58	VIRGIN ISLANDS (U.S.)
59	UNITED ARAB EMIRATES
60	ISRAEL
61	BAHRAIN
62	CYPRUS
63	MALTA
64	SAUDI ARABIA
65	OMAN
66	PORTUGAL
67	GREECE
68	ALGERIA
69	IRAN, ISLAMIC REPUBLIC OF
70	TURKEY
71	IRAQ
72	JORDAN
73	TUNISIA
74	SYRIAN ARAB REPUBLIC
75	MOROCCO
76	EGYPT
77	KUWAIT
78	LEBANON
79	LIBYA
80	QATAR
81	YEMEN, REPUBLIC OF
82	BRUNEI
83	HONG KONG
84	SINGAPORE
85	KOREA, REPUBLIC OF
86	MALAYSIA
87	FIJI
88	THAILAND
89	VANUATU
90	PAPUA NEW GUINEA
91	TONGA
92	PHILIPPINES
93	MALDIVES
94	SOLOMON ISLANDS
95	INDONESIA
96	BHUTAN
97	SRI LANKA
98	INDIA
99	PAKISTAN
100	LAO PEOPLE'S DEM. REP.
101	CHINA

102	MYANMAR
103	BANGLADESH
104	NEPAL
105	CAMBODIA
106	AFGHANISTAN
107	TAIWAN, CHINA
108	WESTERN SAMOA
109	GABON
110	SEYCHELLES
111	SOUTH AFRICA
112	MAURITIUS
113	BOTSWANA
114	NAMIBIA
115	CONGO
116	CAMEROON
117	COTE D'IVOIRE
118	SWAZILAND
119	SENEGAL
120	SUDAN
121	ZIMBABWE
122	CAPE VERDE
123	SAO TOME AND PRIN.
124	MAURITANIA
125	COMOROS
126	UGANDA
127	KENYA
128	TOGO
129	GUINEA
130	GHANA
131	CENTRAL AFRICAN REP.
132	NIGERIA
133	EQUATORIAL GUINEA
134	BENIN
135	RWANDA
136	NIGER
137	GAMBIA, THE
138	ZAMBIA
139	LESOTHO
140	MALI
141	BURKINA FASO
142	MADAGASCAR
143	BURUNDI
144	GUINEA-BISSAU
145	ZAIRE
146	CHAD
147	ETHIOPIA
148	TANZANIA
149	SIERRA LEONE
150	MALAWI
151	SOMALIA
152	MOZAMBIQUE
153	LIBERIA

Table 2.1
MACRO-FINANCIAL (MF) VARIABLES

	MF Policy Performance Level	MF Volatility	MF Crisis
Individual Variables			
Fiscal Policy	pubdef	pubdefvol	pubdefcri
Monetary Policy	mongro	inflatvol	inflatcri
Exchange Rate Policy	termis	rerlevvol	rerlevcri
Foreign-Payments Policy	cacdef	cacdefvol	balpaycri
Domestic Payments Policy	-----	-----	bankincris
Aggregate MF Indicator	MFPOP	MFVOL	MFCRI
Per capita real GDP	g	gvol	

Table 2.2
**LONG-RUN INDIVIDUAL INDICATORS OF MACRO-FINANCIAL POLITICAL
PERFORMANCE, VOLATILITY AND CRISIS IN THE WORLD
AND IN SUB-SAHARAN AFRICA**

A. World Averages

Indicator	Description	Min	Max	Median	Average	Volat.	Crisis
pubdef	Consolidated Public Sector Deficit (% GDP)	-5.03	38.72	4.72	5.31	3.92	1.34
mongro	Normalized Money Growth Adjusted (%)	-27.69	42.74	7.00	8.91	-	-
inflat	Normalized Inflation (%)	-0.67	46.20	7.32	10.36	7.91	1.34
rerlev	Average Annual Real Exchange Rate Level	60.13	352.46	96.28	101.67	19.89	-
rrermis	Real Exchange Rate Misalignment (%)	0.25	12.01	3.59	4.18	-	0.87
cacdef	Current Account Deficit (% GDP)	-17.64	22.72	2.97	3.58	6.15	1.73
bankincris	Banking Crises	-	-	-	-	-	0.10
balpaycris	Payments Arrears	-	-	-	-	-	0.29

B. Sub-Saharan African Averages

Indicator	Description	Min	Max	Median	Average	Volat.	Crisis
pubdef	Consolidated Public Sector Deficit (% GDP)	-5.03	29.70	5.49	6.23	4.58	1.55
mongro	Normalized Money Growth Adjusted (%)	-27.69	30.85	7.48	8.93	-	-
inflat	Normalized Inflation (%)	-0.67	35.38	8.09	11.27	8.56	1.31
rerlev	Average Annual Real Exchange Rate Level	60.13	251.28	94.57	102.12	22.52	-
rrermis	Real Exchange Rate Misalignment (%)	0.25	11.24	4.39	4.95	-	1.68
cacdef	Current Account Deficit (% GDP)	-4.65	22.72	4.14	5.44	6.79	2.58
bankincris	Banking Crises	-	-	-	-	-	0.12
balpaycris	Payments Arrears	-	-	-	-	-	0.54

Table 2.3
**LONG-RUN AGGREGATE INDICATORS OF MACRO-FINANCIAL POLICY
 PERFORMANCE, VOLATILITY, CRISES, RISK AND INSTABILITY:
 World and Regional Averages**

	WORLD	OECD	LAC	EMENA	ASIA	SSA
MFPOP	0.974	0.407	1.323	1.218	0.861	1.103
MFVOL	0.892	0.455	1.121	1.094	0.733	1.048
MFCRI	1.030	0.325	1.691	1.597	0.550	1.136
RISK	0.963	0.324	1.207	0.977	0.558	1.622
MFINS	0.961	0.368	1.340	1.223	0.544	1.339

Table 2.4
**PARTIAL CORRELATION COEFFICIENTS BETWEEN INDIVIDUAL INDICATORS
 Cross-country Times-series World Sample**

	pubdef	mongro	inflat	rrermis	cacdef	bancri	balpaycri
pubdef	-						
mongro	0.147	-					
inflat	0.159	0.605	-				
rrermis	0.077	0.078	0.160	-			
cacdef	0.503	-0.042	0.052	0.098	-		
bancri	-0.019	0.054	0.057	-0.004	-0.025	-	
balpaycri	0.274	0.166	0.282	0.193	0.147	0.029	-

Table 2.5
**PARTIAL CORRELATION COEFFICIENTS BETWEEN INDIVIDUAL INDICATORS
 Cross-country Long-term World Sample**

	pubdef	mongro	inflat	rrermis	cacdef	bankcri	balpaycri	MFPOP	MFCRI
pubdef	-								
mongro	0.171	-							
inflat	0.181	0.832	-						
rrermis	0.322	0.512	0.494	-					
cacdef	0.620	0.082	0.184	0.139	-				
bankcri	-0.052	0.092	0.060	0.021	0.020	-			
balpaycri	0.399	0.240	0.316	0.487	0.377	0.049	-		
MFPOP	0.655	0.667	0.677	0.702	0.589	0.102	0.597	-	
MFCRI	0.380	0.711	0.769	0.612	0.208	0.454	0.579	0.747	-

Table 2.6
**PARTIAL CORRELATION COEFFICIENTS BETWEEN AGGREGATE INDICATORS
 Cross-country Long-term World Sample**

	MFPOP	MFVOL	MFCRI	RISK	MFINS
MFPOP	-				
MFVOL	0.680	-			
MFCRI	0.747	0.677	-		
RISK	0.587	0.570	0.467	-	

Table 3.1

LONG-RUN PER CAPITA GDP GROWTH AND VOLATILITY
The World and Major Regions

	Per Capita GDP Growth	Per Capita GDP Growth Volatility	Partial Correlation Between Growth Level and Volatility
WORLD	1.80	5.37	-0.19
OECD	2.69	2.81	0.44
LDC's	1.65	5.81	-0.16
LAC	2.10	5.17	-0.20
EMENA	1.37	8.01	-0.17
ASIA	2.88	4.38	-0.11
SSA	0.76	6.14	0.20
TCs	4.78	4.85	0.19

Table 3.2

**PARTIAL CORRELATION COEFFICIENT BETWEEN LONG-RUN GROWTH LEVEL
AND MACRO-FINANCIAL INDICATORS IN THE WORLD AND REGIONS**

	MFPOP	MFVOL	MFCRI	RISK	MFINS
WORLD	-0.406	-0.238	-0.261	-0.513	-0.457
OECD	0.159	0.535	0.157	0.094	0.337
LDCs	-0.363	-0.150	-0.205	-0.490	-0.437
LAC	0.134	-0.250	0.092	-0.221	-0.058
EMENA	0.794	0.540	0.941	0.633	0.949
ASIA	-0.592	0.092	-0.676	-0.745	-0.743
SSA	-0.457	0.158	-0.176	-0.288	-0.282
TCs	-0.725	-0.530	-0.823	-0.679	-0.778

Table 3.3

**PARTIAL CORRELATION COEFFICIENT BETWEEN LONG-RUN GROWTH
VOLATILITY AND MACRO-FINANCIAL INDICATORS IN THE WORLD AND REGIONS**

	MFPOP	MFVOL	MFCRI	RISK	MFINS
WORLD	0.229	0.409	0.079	0.287	0.313
OECD	0.562	0.682	0.228	0.391	0.476
LDCs	-0.103	0.178	-0.115	0.055	0.054

Table 3.4
CROSS-COUNTRY GROWTH REGRESSION RESULTS
(49 to 56 developing and OECD countries)

Regression	1	2	3	4	5	6
Constant	16.911 (5.4)	18.542 (5.3)	10.456 (3.2)	13.053 (3.7)	8.849 (3.1)	11.328 (3.6)
MFPOP	-1.473 (-2.3)	-2.120 (-2.9)	-1.125 (-1.4)	-1.184 (-1.3)	---	---
MFINS	0.339 (0.8)	---	-0.379 (-0.6)	---	-1.156 (-3.7)	---
MFVOL	---	1.268 (1.5)	---	0.775 (0.8)	---	0.348 (0.5)
MFCRI	---	0.295 (1.4)	---	0.06 (0.3)	---	-0.164 (-0.8)
RISK	---	-0.985 (-2.1)	---	-1.349 (-3.1)	---	-1.602 (-3.5)
lgdp ₆₀	-0.903 (-3.3)	-0.990 (-3.7)	-0.512 (-0.6)	-0.658 (-3.2)	-0.392 (-2.4)	-0.533 (-3.0)
enpri ₆₀	0.125 (0.9)	0.124 (1.1)	---	---	---	---
ensec ₆₀	0.398 (1.2)	0.269 (0.9)	---	---	---	---
civil	0.222 (1.3)	0.234 (1.3)	---	---	---	---
lly	1.445 (3.3)	1.031 (2.2)	---	---	---	---
tot	-0.061 (-3.0)	-0.072 (-3.1)	-0.026 (-1.3)	-0.040 (-1.7)	-0.022 (-1.2)	-0.035 (-1.6)
fortra	0.035 (0.3)	0.118 (0.9)	---	---	---	---
SSA	-2.607 (-3.7)	-2.194 (-3.5)	-1.663 (-3.4)	-1.377 (-2.7)	-1.573 (-3.4)	-1.275 (-2.8)
R ² _A	0.53	0.59	0.36	0.44	0.35	0.42
F	6.3	6.8	7.2	7.2	8.3	7.7
n	49	49	56	56	56	56

OLS estimations with heteroskedasticity-consistent covariance matrix.

Table 4.1
**AVERAGE MACRO-FINANCIAL POLICY PERFORMANCE
BEFORE AND AFTER STABILIZATION**
Regression Results for Equations 4.1 and 4.2

	Stabilization After Inflation Crisis	Stabilization After Macro-Financial Crisis
Constant (1994 average MFPOP)	0.78 (4.1)	0.62 (2.9)
<u>MFPOP Dummies</u> <u>in Stabilization Years:</u>		
Before Stabilization <i>Years -n to -1</i>	1.38 (12.2)	1.19 (18.0)
During Stabilization <i>Year 0</i>	0.64 (4.2)	0.85 (6.0)
After Stabilization <i>Years 1 and 2</i>	0.17 (1.2)	0.36 (3.9)
Long After Stabilization <i>Years 3 - 6</i>	0.19 (1.3)	0.21 (2.8)
<u>Sample:</u>		
Included observation	1,245	815

Note: t-statistics in parentheses

Table 4.2
**AVERAGE REAL PER CAPITA GROWTH
BEFORE AND AFTER STABILIZATION**
Regression Results for Equations 4.3 and 4.4

	Stabilization After Inflation Crisis	Stabilization After Macro-Financial Crisis
Constant (1994 average real per capita GDP growth)	1.11 (2.3)	3.16 (3.6)
<u>GROWTH Dummies</u> <u>in Stabilization Years:</u>		
Before Stabilization <i>Years -n to -1</i>	-2.10 (-5.3)	-2.09 (-6.3)
During Stabilization <i>Year 0</i>	-0.47 (-0.5)	-2.72 (-3.4)
After Stabilization <i>Years 1 and 2</i>	0.96 (1.6)	0.58 (1.1)
Long After Stabilization <i>Years 3 - 6</i>	0.46 (0.8)	-0.24 (-0.5)
<u>Sample:</u>		
Included observation	3,133	880

Note: t-statistics in parentheses

Table 5.1

GROWTH, MF PERFORMANCE AND INSTABILITY IN 12 TAKEOFF COUNTRIES, 1961-94

		Real Per Capita GDP Growth Level	Real Per Capita GDP Growth Volat.	MF Policy Performance (MFPOP)	MF Volatility (MFVOL)	MF Crisis (MFCRI)	Country Risk (RISK)	MF Instability (MFINS)
East Asia								
Korea	1961 - 65	3.712	2.386	0.574	n.a.	n.a.	n.a.	n.a.
	1966 - 94	7.655	3.797	0.694	0.611	0.000	0.427	0.346
Singapore	1961 - 65	2.352	5.854	0.810	n.a.	n.a.	n.a.	n.a.
	1966 - 94	7.283	3.271	0.501	0.990	0.136	0.342	0.489
Taiwan	1961 - 94	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
HongKong	1961 - 94	6.136	4.018	n.a.	n.a.	n.a.	n.a.	n.a.
Indonesia	1961 - 67	-0.230	2.468	n.a.	n.a.	n.a.	n.a.	n.a.
	1968 - 94	5.133	1.970	0.895	0.673	0.136	0.532	0.447
Malaysia	1961 - 87	3.797	2.921	0.676	0.725	1.352	0.398	0.825
	1988 - 94	6.169	0.618	0.694	0.453	0.291	0.438	0.394
Thailand	1961 - 85	4.319	2.065	0.670	0.545	1.018	0.508	0.690
	1986 - 94	7.752	2.388	0.593	0.428	0.582	0.454	0.488
China	1961 - 77	2.894	13.729	n.a.	n.a.	n.a.	n.a.	n.a.
	1978 - 94	8.616	3.745	0.582	0.689	0.000	0.429	0.373
Latin America								
Chile	1961 - 70	1.885	2.525	1.113	0.441	n.a.	n.a.	n.a.
	1971 - 86	1.001	6.816	2.262	1.533	1.552	0.733	1.273
	1987 - 94	5.221	2.513	0.234	0.350	0.000	0.725	0.358
Sub-Saharan Africa								
Botswana	1961 - 68	1.545	7.378	n.a.	n.a.	n.a.	n.a.	n.a.
	1969 - 79	11.175	9.427	1.123	0.924	n.a.	n.a.	n.a.
	1980 - 90	6.836	3.458	-0.504	1.470	0.000	n.a.	n.a.
	1991 - 94	1.640	3.833	-0.308	0.361	0.000	n.a.	n.a.
Mauritius	1961 - 71	1.004	8.428	0.194	0.364	n.a.	n.a.	n.a.
	1972 - 84	4.017	5.619	0.997	0.799	0.371	1.393	0.854
	1985 - 94	5.715	2.278	0.396	0.470	0.000	0.879	0.450
Uganda	1971 - 87	-2.599	4.517	1.378	1.082	3.590	4.899	3.190
	1988 - 94	3.523	1.719	1.220	1.349	2.211	4.402	2.654
38 Non-Takeoff Countries								
14 OECD Countries	1961 - 75	3.980	1.510	n.a.	n.a.	n.a.	n.a.	n.a.
	1976 - 94*	1.890	1.210	0.511	0.408	0.807	0.339	0.518
24 LDCs	1961 - 75	2.390	1.150	n.a.	n.a.	n.a.	n.a.	n.a.
	1976 - 94*	0.790	1.170	1.591	1.027	1.694	1.116	1.279

* MFPOP: 1976 - 90; MFVOL: 1976 - 90; MFCRI: 1980 - 90; RISK: 1979 - 94; MFINS: 1980 - 90.

Figure 1.1

LONG - TERM GROWTH AND MACRO-FINANCIAL INSTABILITY IN THE WORLD

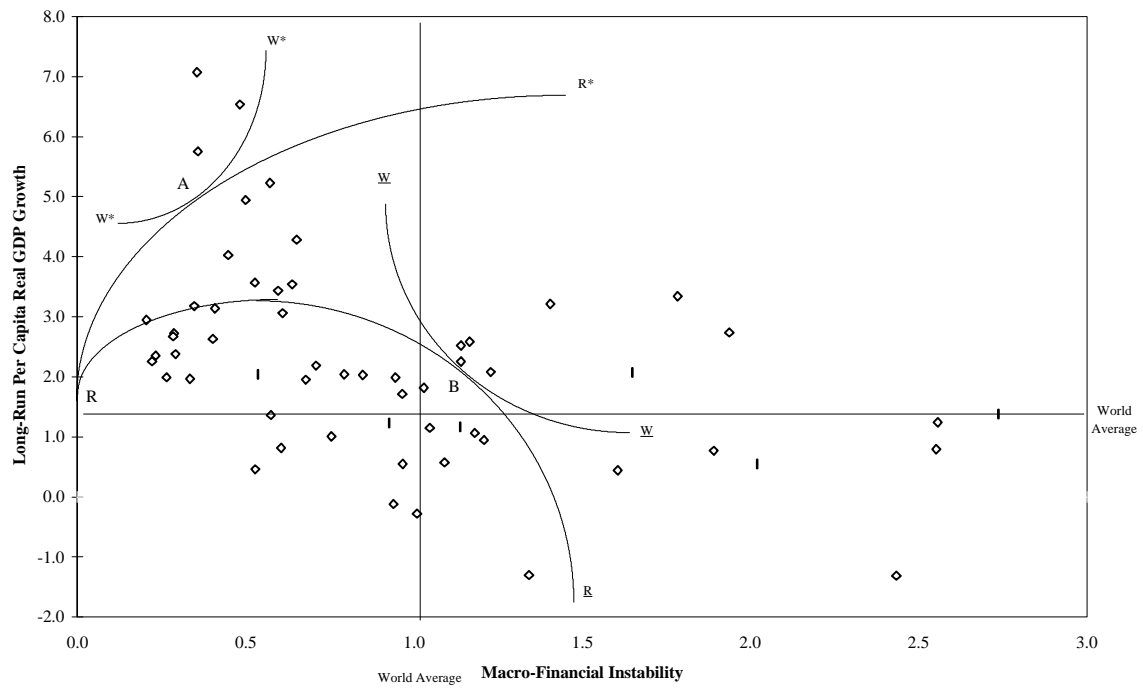


Figure 2.1

PER CAPITA REAL GDP IN 1990, BY REGIONS AND COUNTRIES
(US\$ 1987)

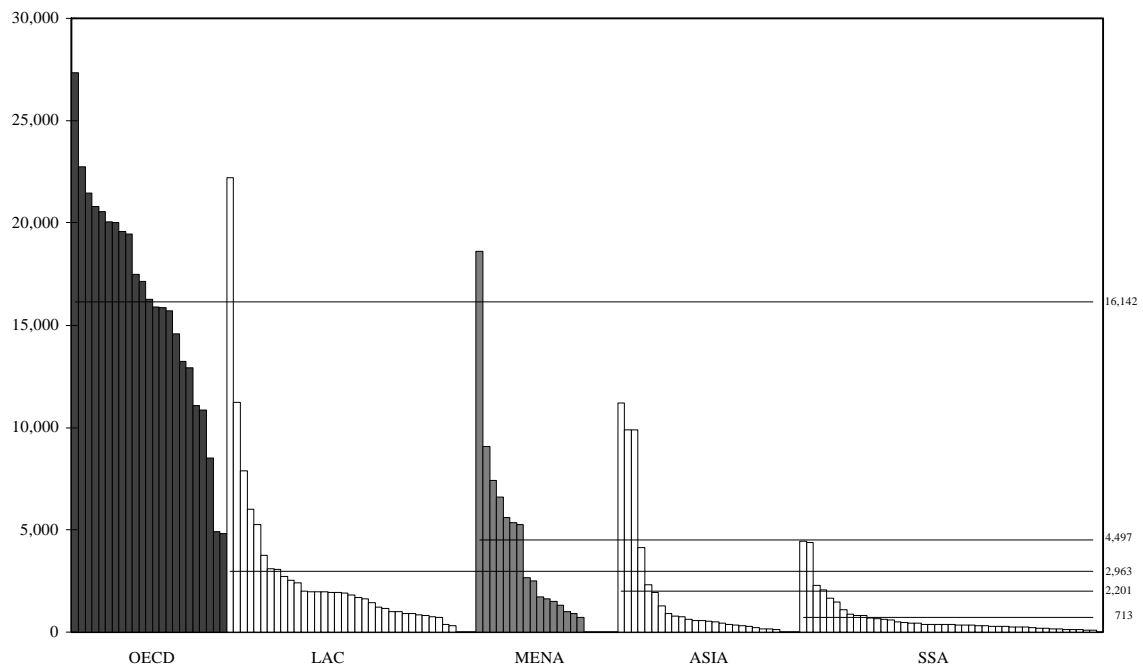


Figure 2.2

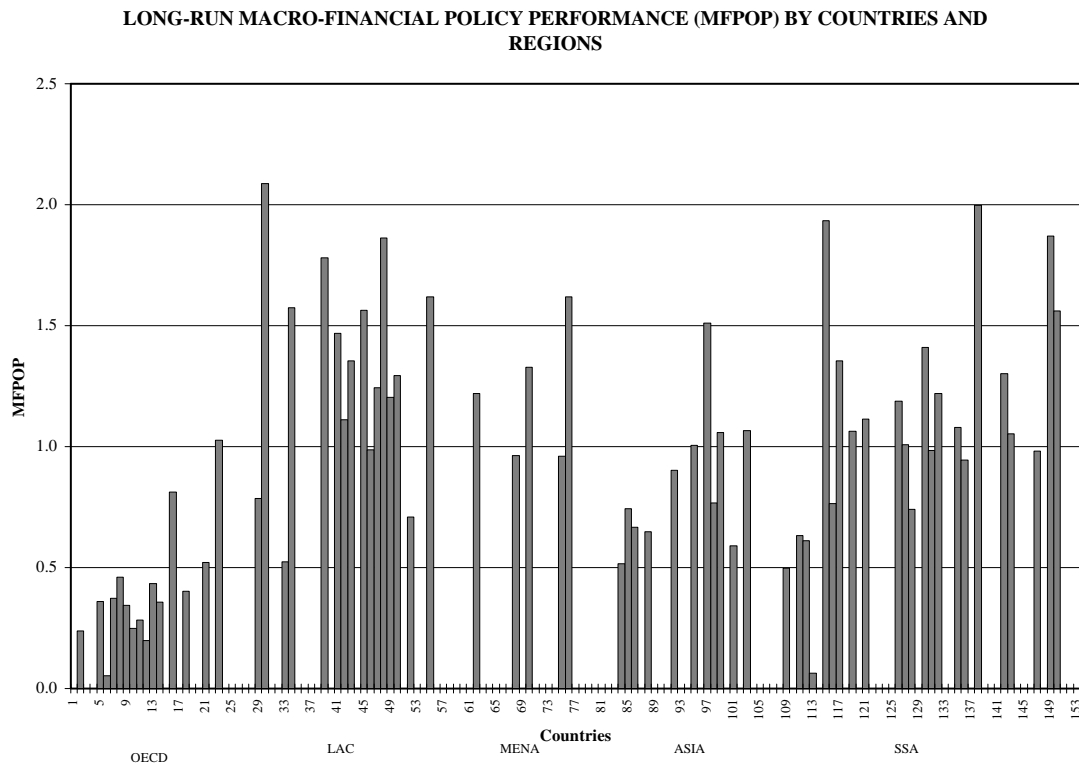


Figure 2.3

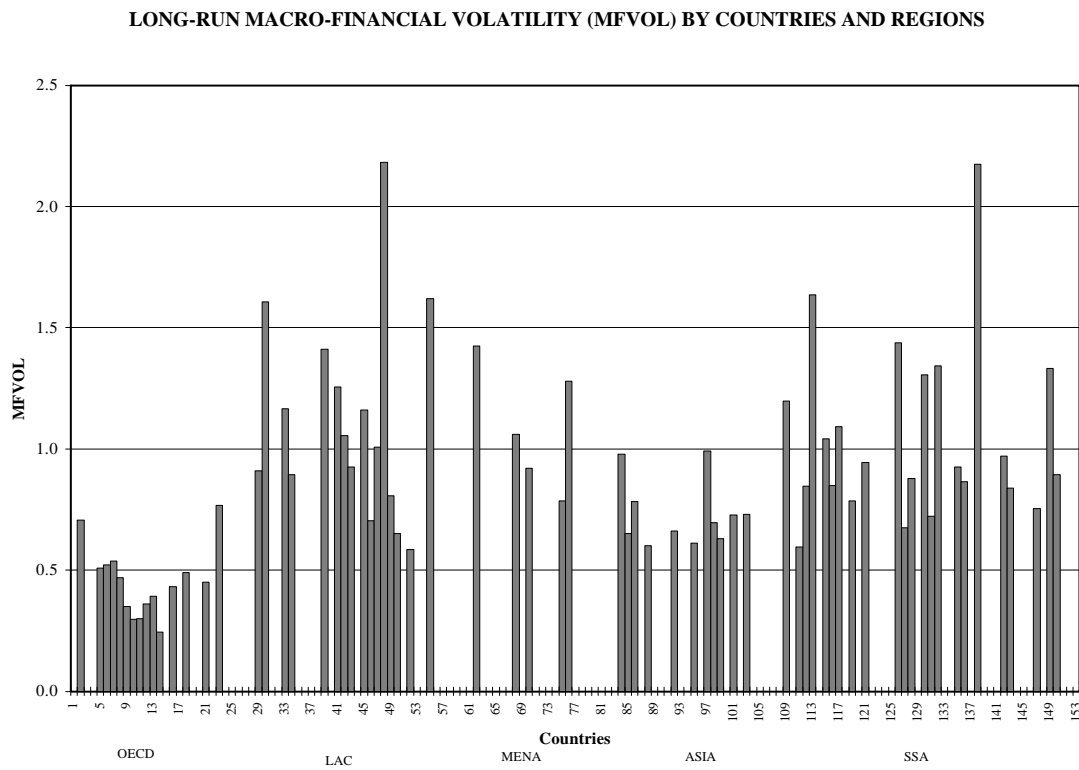


Figure 2.4

LONG-RUN MACRO-FINANCIAL CRISES (MFCRI) BY COUNTRIES AND REGIONS

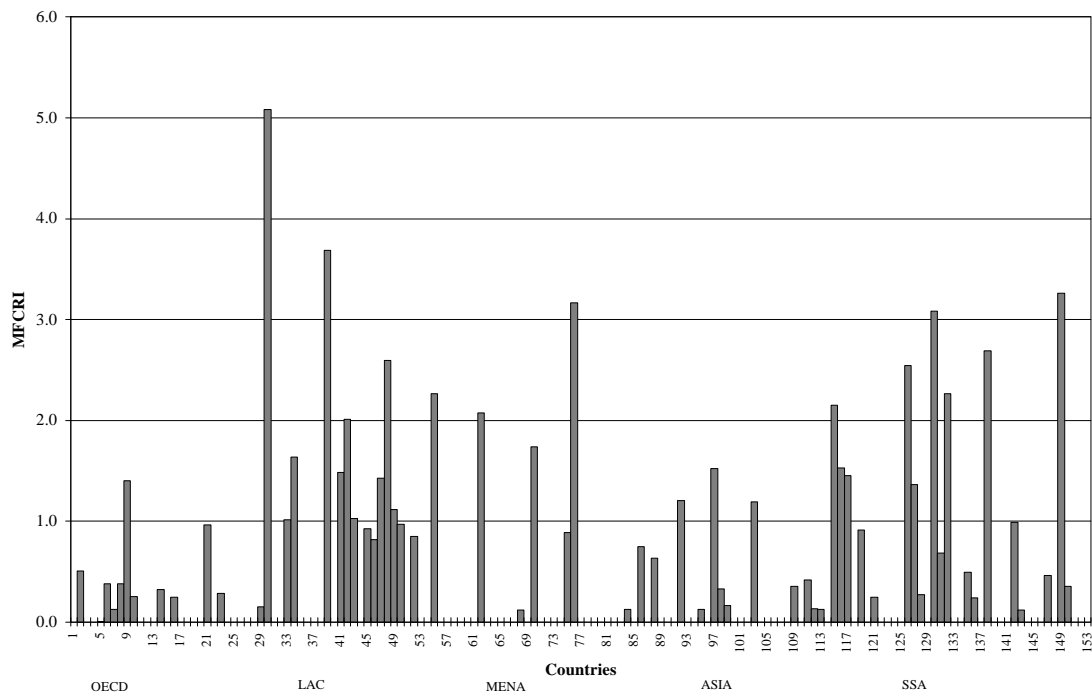


Figure 2.5

LONG-RUN MACRO-FINANCIAL RISK BY COUNTRIES AND REGIONS

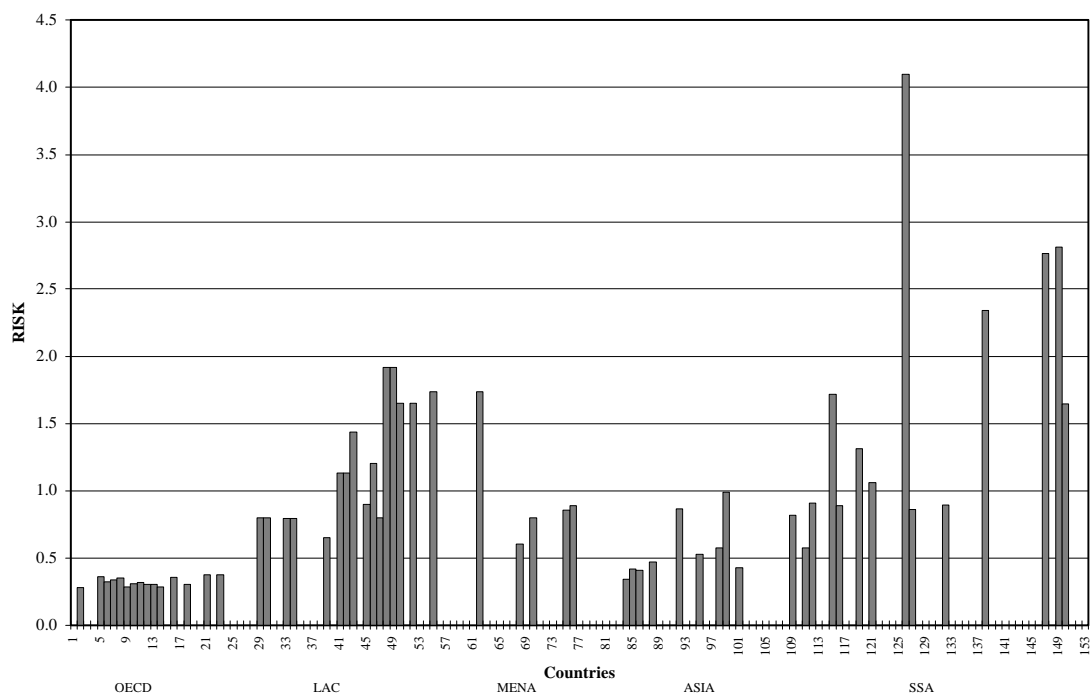


Figure 2.6

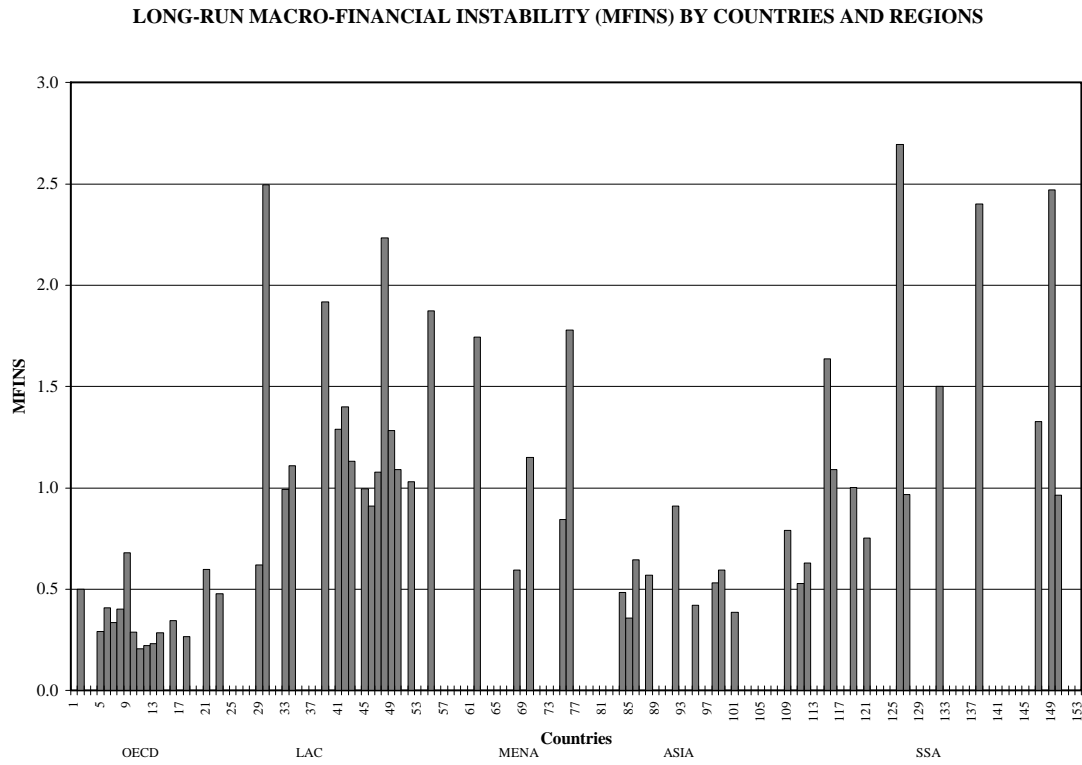


Figure 3.1

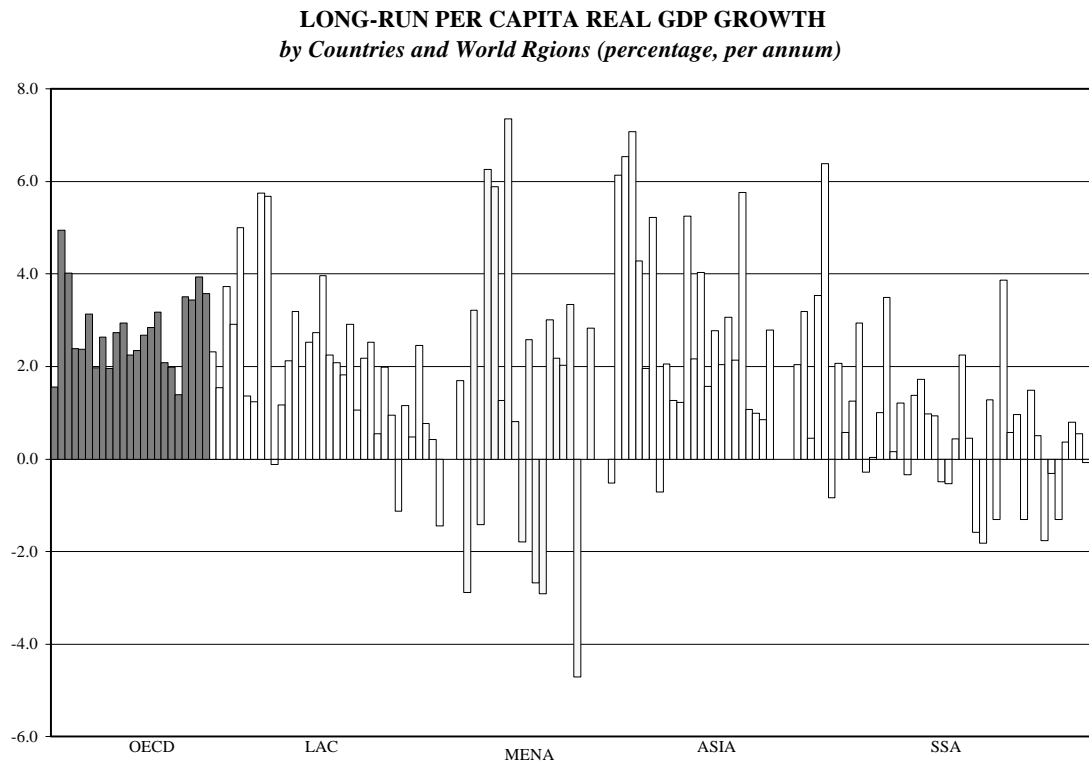


Figure 3.2

LONG-TERM GROWTH AND MF POLICY PERFORMANCE IN THE WORLD

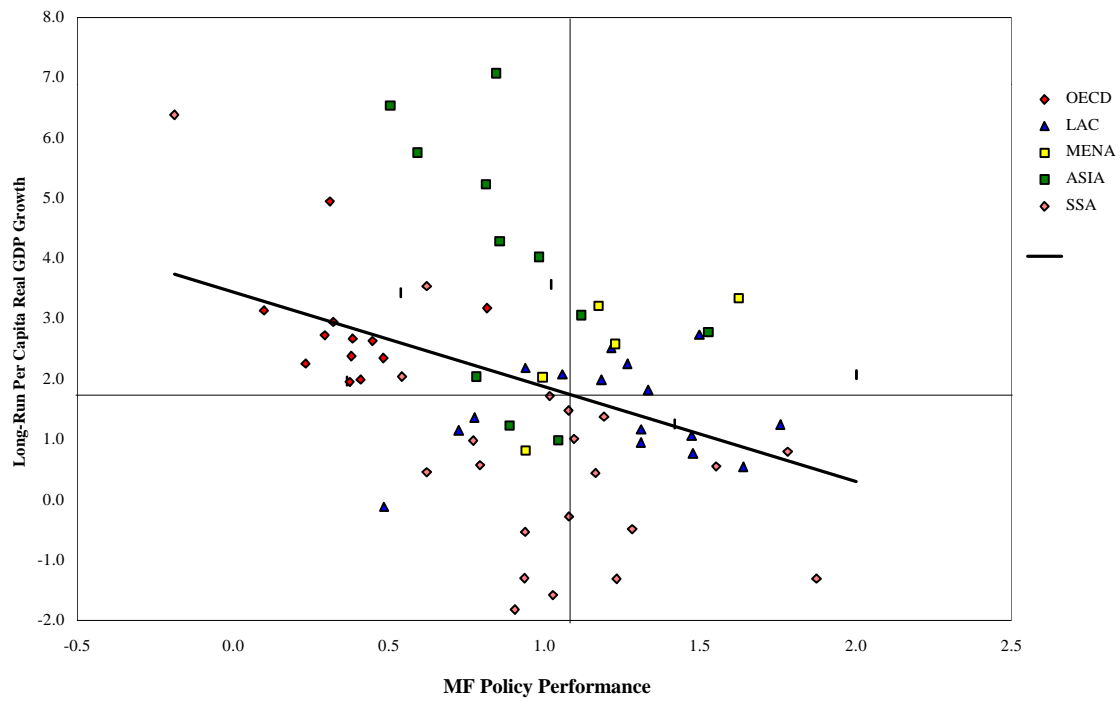


Figure 3.3

LONG-TERM GROWTH AND MF INSTABILITY IN THE WORLD

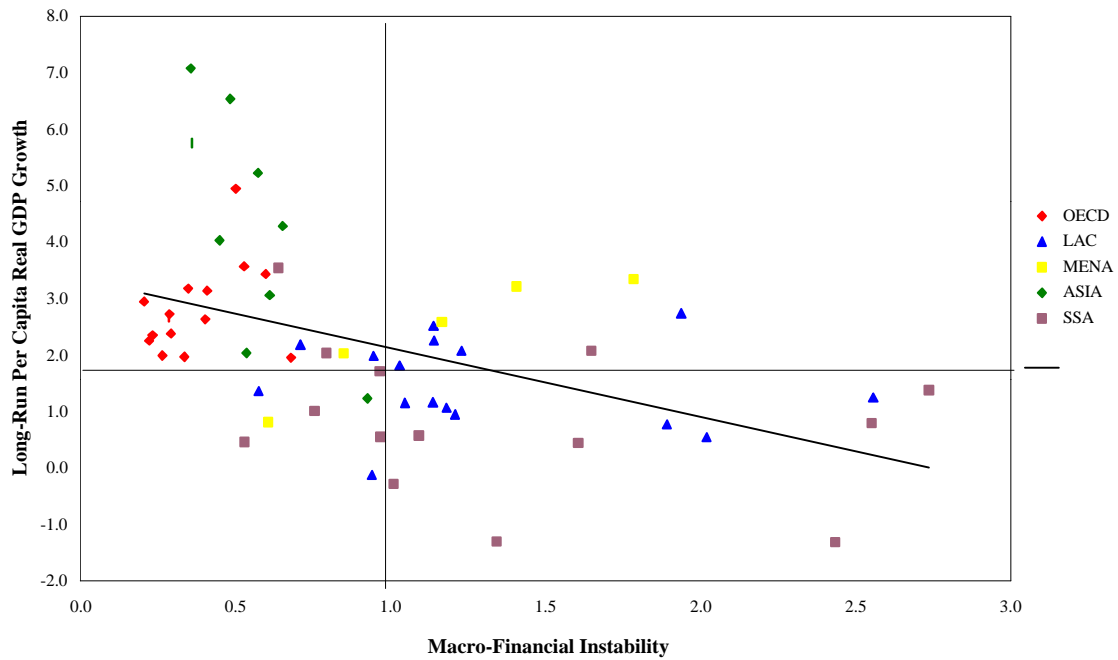


Figure 4.1

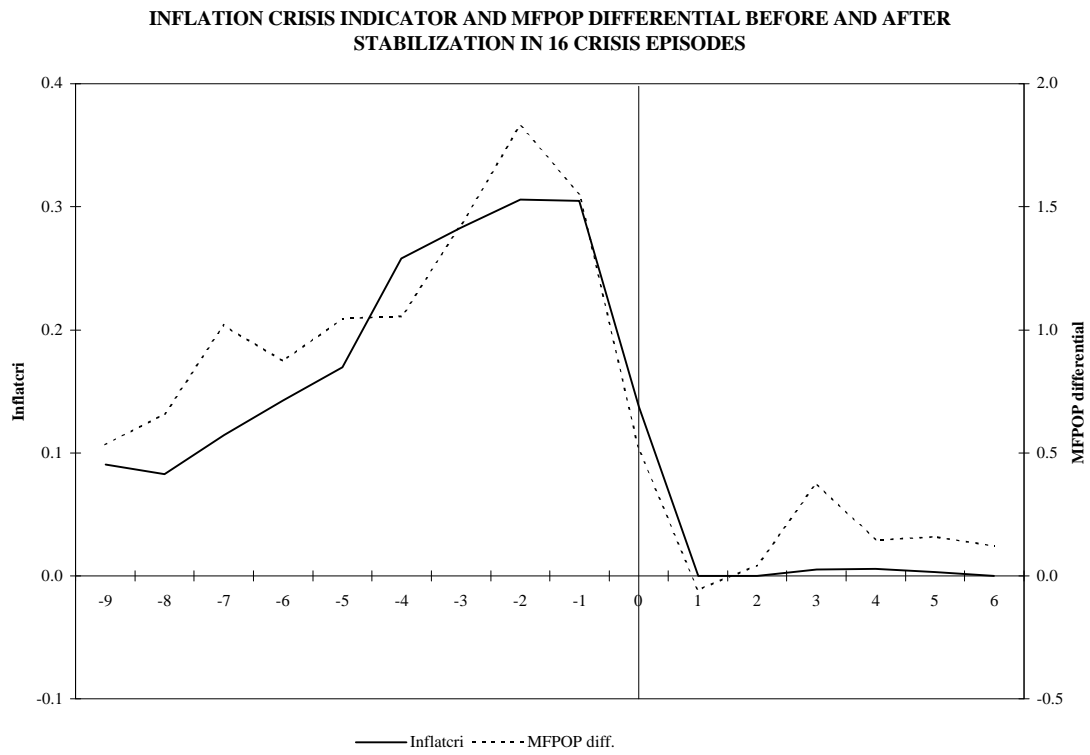


Figure 4.2

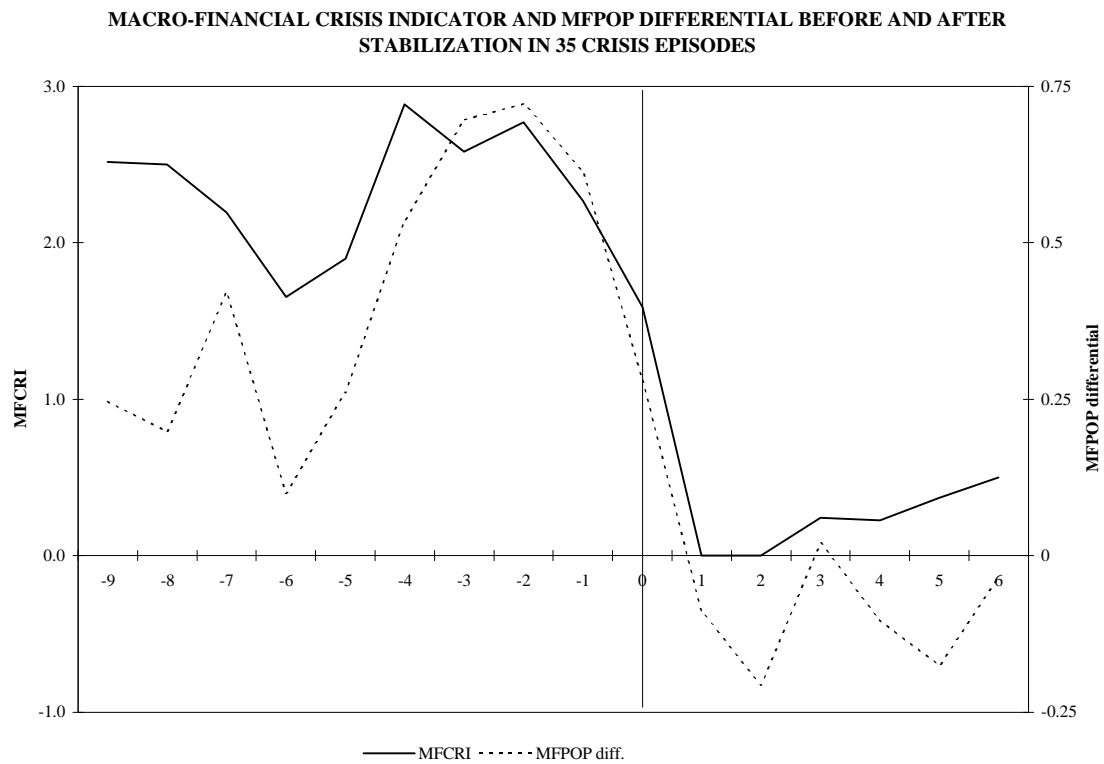


Figure 4.3

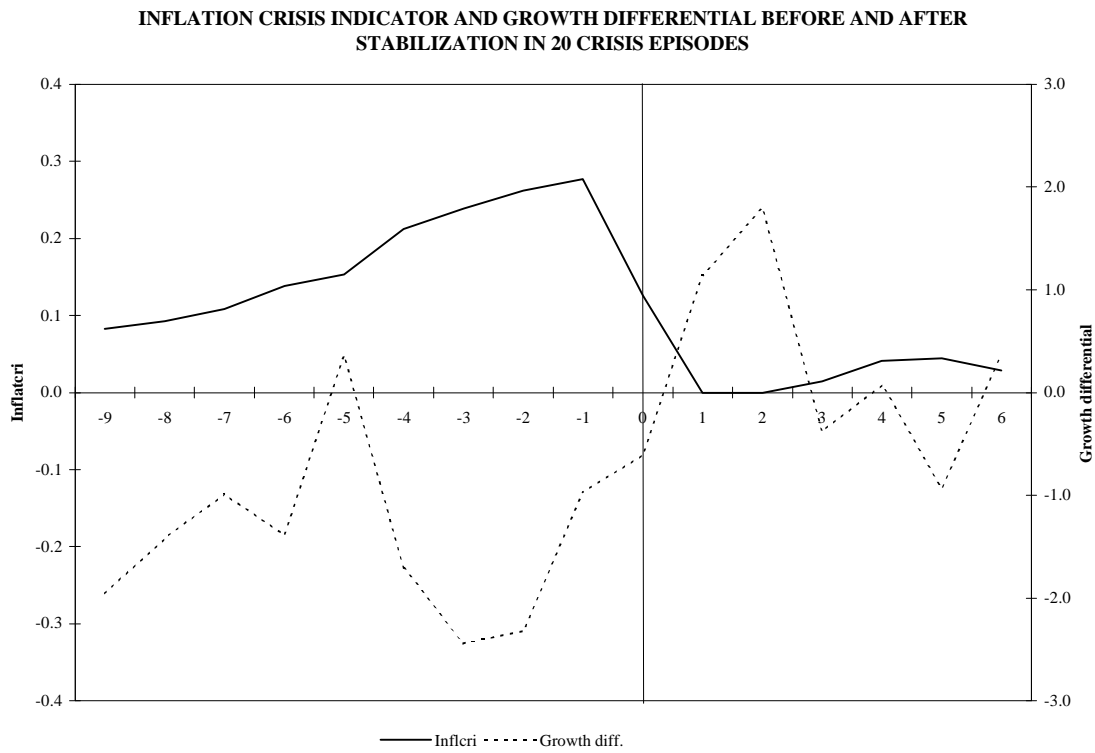


Figure 4.4

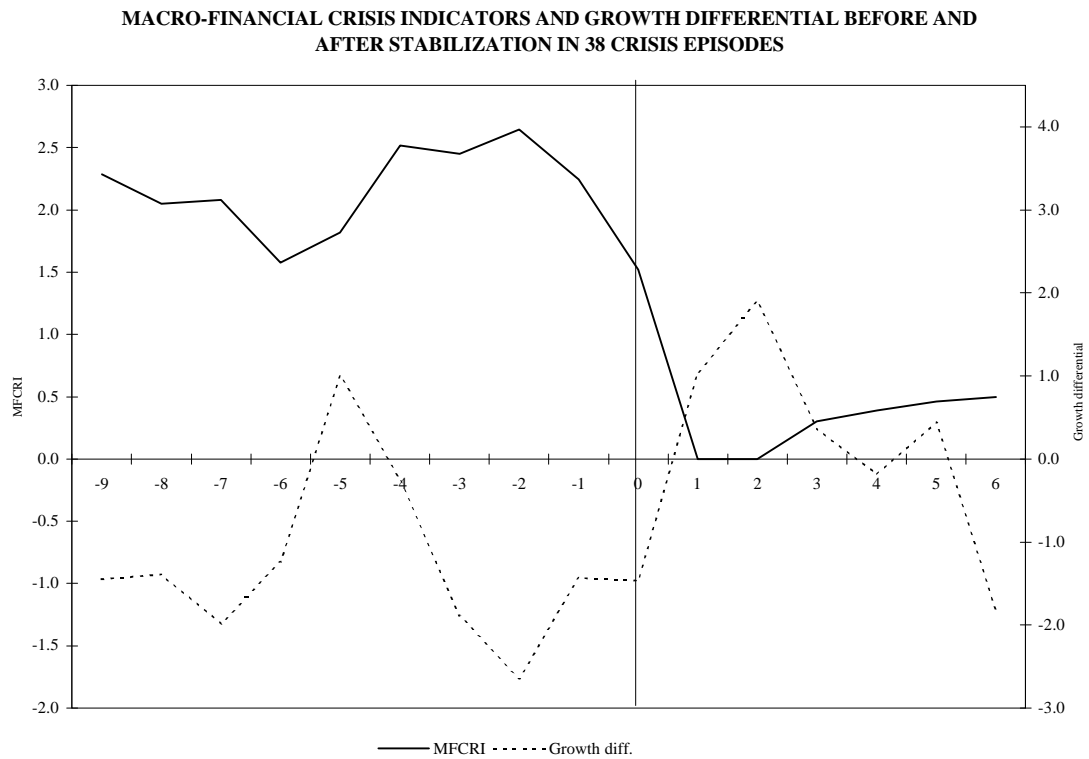


Figure 5.1

**MF POLICY PERFORMANCE, MF CRISES AND PER CAPITA GROWTH
IN 38 NON-TAKEOFF COUNTRIES, 1961 - 94**

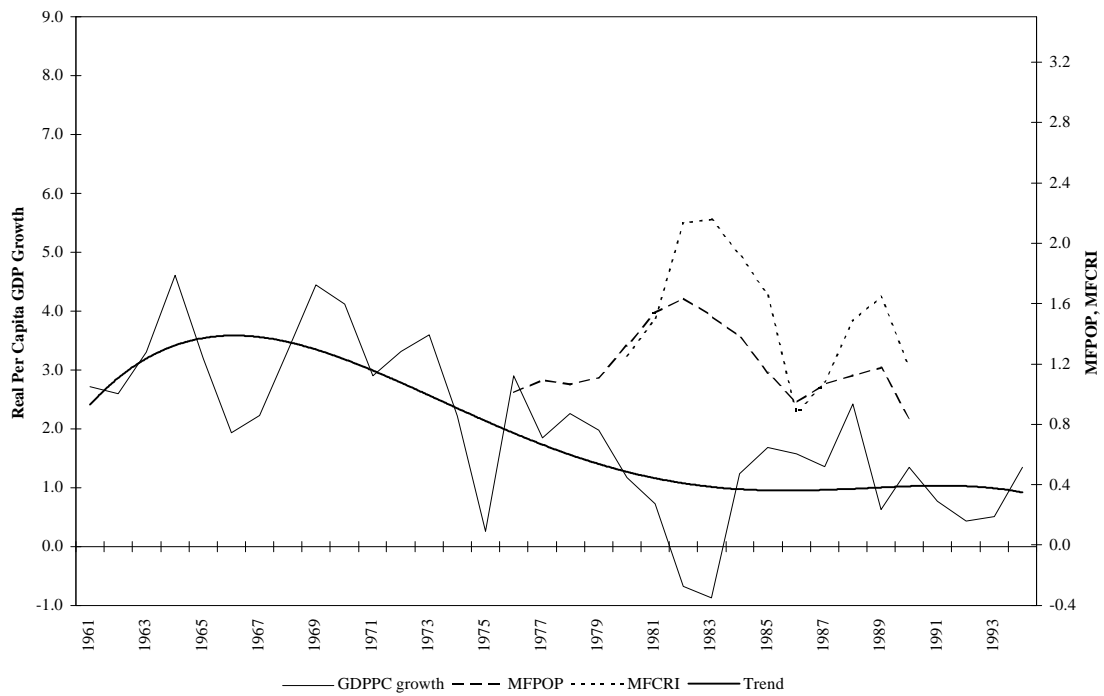


Figure 5.2

**MF POLICY PERFORMANCE, MF CRISES
AND PER CAPITA GROWTH IN 10
TAKEOFF COUNTRIES, 1961 - 94**

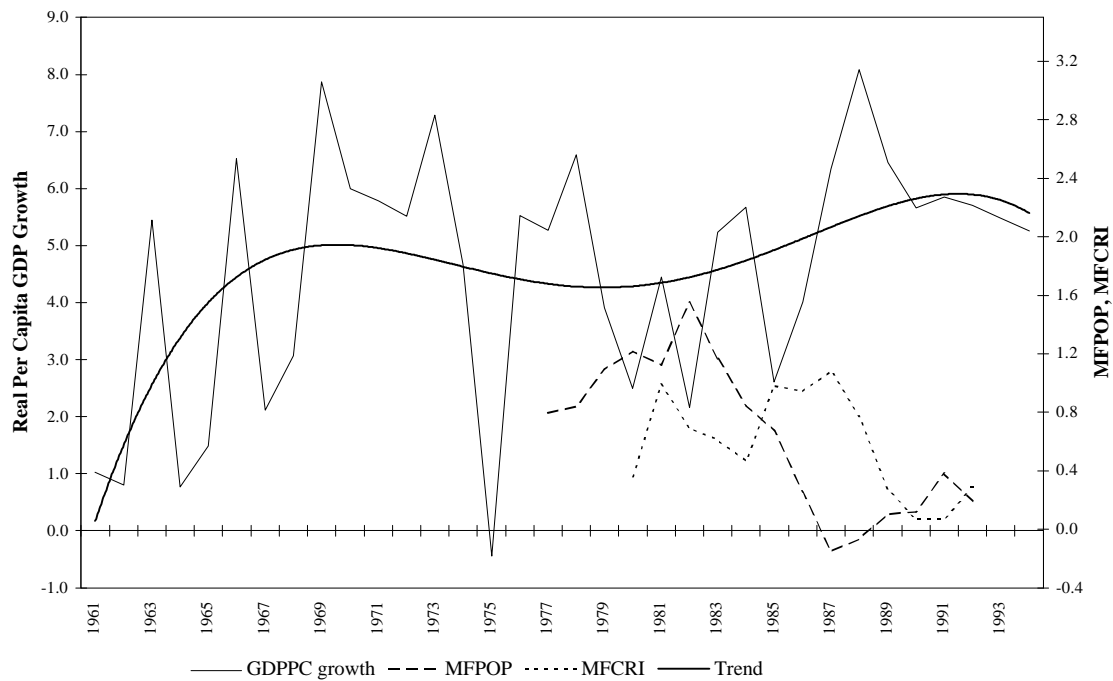
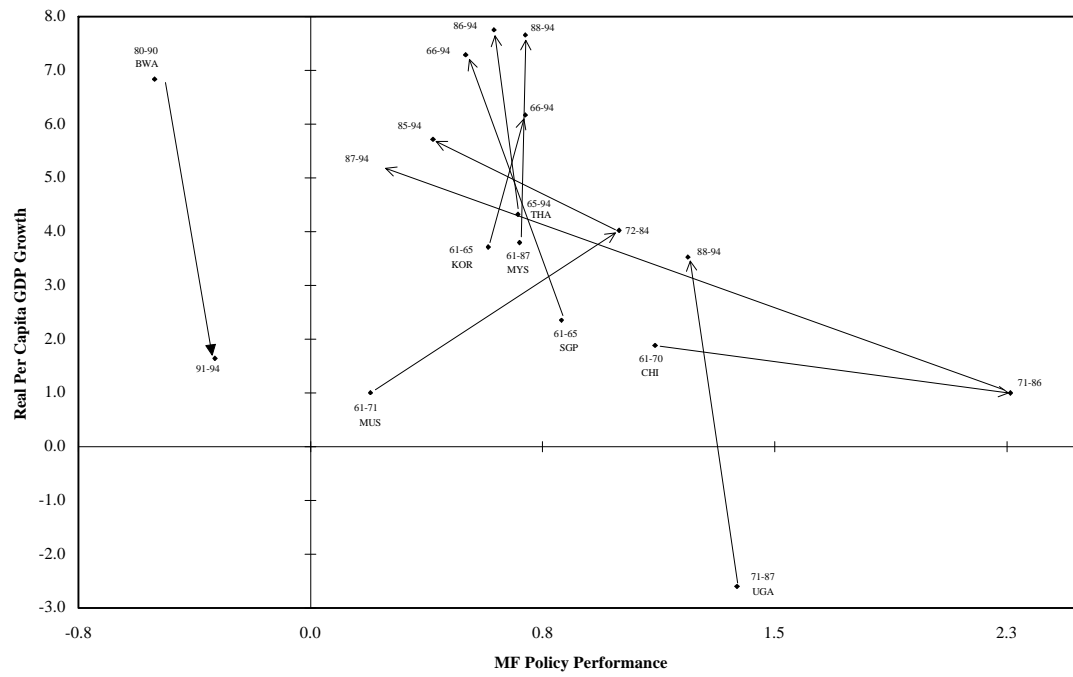


Figure 5.3

**GROWTH AND MACRO-FINANCIAL POLICY TRANSITIONS IN 8 TAKEOFF
COUNTRIES, 1960s - 1990s**



Números Anteriores

- | | |
|---|-----------------|
| DTBC-42
Revenue, Efficiency, and Equity Aspects
of Major Taxes in Chile: A Preliminary Assessment
Howell Zee | Diciembre, 1998 |
| DTBC-41
Empirical Regularities of Chilean Business Cycles
Agnès Belaisch y Claudio Soto | Diciembre, 1998 |
| DTBC-40
Evaluación del Sistema Tributario Chileno
y Propuesta de Reforma
Pablo Serra | Diciembre, 1998 |
| DTBC-39
El Sistema Impositivo y su Efecto en el Funcionamiento
de la Economía: Una Revisión de la Literatura
Pablo Serra | Diciembre, 1998 |
| DTBC-38
Productividad y Tipo de Cambio Real en Chile
Rodrigo Valdés y Valentín Délano | Diciembre, 1998 |
| DTBC-37
Stabilization, Inertia, and Inflationary Convergence:
A Comparative Analysis
Sebastian Edwards y Fernando Lefort | Diciembre, 1998 |
| DTBC-36
La Política Monetaria, el Tipo de Cambio Real y el Encaje
al Influjo de Capitales: Un Modelo Analítico Simple
Guillermo Le Fort | Diciembre, 1998 |
| DTBC-35
The Macroeconomic Consequences of Wage Indexation Revisited
Esteban Jadresic | Marzo, 1998 |
| DTBC-34
Chile's Takeoff: Facts, Challenges, Lessons
Klaus Schmidt-Hebbel | Marzo, 1998 |
| DTBC-33
Does Pension Reform Really Spur Productivity, | Marzo, 1998 |

Saving, and Growth?

Klaus Schmidt-Hebbel

DTBC-32

Marzo, 1998

Monetary Policy, Interest Rate Rules, and Inflation

Targeting: Some Basic Equivalences

Carlos Végh

DTBC-31

Marzo, 1998

Indización, Inercia Inflacionaria y el Coeficiente de Sacrificio

Luis Oscar Herrera

DTBC-30

Marzo, 1998

Causas y Consecuencias de la Indización:

Una Revisión de la Literatura

Oscar Landerretche, Fernando Lefort y Rodrigo Valdés

DTBC-29

Marzo, 1998

**The Chilean Experience Regarding Completing Markets
with Financial Indexation**

Eduardo Walker

DTBC-28

Marzo, 1998

**Indexed Units of Account: Theory and Assessment
of Historical Experience**

Robert Shiller

DTBC-27

Marzo, 1998

Public Debt Indexation and Denomination:

The Case of Brazil

Ilan Goldfajn

DTBC-26

Marzo, 1998

Optimal Management of Indexed and Nominal Debt

Robert Barro

DTBC-25

Marzo, 1998

Liquidez y Decisiones de Inversión en Chile:

Evidencia de Sociedades Anónimas

Juan Pablo Medina y Rodrigo Valdés