



**MACROECONOMIC POLICY TRAINING COURSE
FOR ECONOMIC GROWTH OFFICERS**

Workshop Objectives:

The Macroeconomic Policy Course objectives are to:

- Train Economic Growth (EG) Officers to understand Macroeconomic strategies being developed by national governments, with the advice of international organizations;
- Create a common technical knowledge-base in macroeconomic policy development for all EG Officers;
- Improve knowledge-sharing and networking among EG officers.

This two-and-a-half day in-depth course will provide an overview of macroeconomic policy development and will examine the importance and inter-play of various macroeconomic policy components on economic growth, democratic reform and social transition. The course will consider macroeconomic policy development experiences in and will examine USAID's lessons learned to date. It will also teach tools and tactics that can be used to analyse existing conditions and develop appropriate strategies and activities.

Teaching Approach:

The workshop will use a mix of presentations and panel discussions comprised of specialists from within and outside USAID. The workshop will culminate with a hands-on financial programming model that will help participants understand how changes in macroeconomic levers affect the overall economy.

Length: 2.5 Days

DAY 1: Monday, December 15, 2003

8:00-8:30 BREAKFAST

8:30-9:30 WELCOME AND INTRODUCTION TO THE COURSE

- Main topics to be covered in course and why
- Policy objectives and instruments
- Different functions of macroeconomic policies
- Short-term and longer-term impacts of macro policies

MODULE 1: MACROECONOMIC POLICY OVERVIEW

Objectives: (a) Provide an overview of macroeconomic policy; (b) discuss the role of financial programming in economic growth

9:30-10:30 PRESENTATION: FINANCIAL PROGRAMMING: INTERRELATIONS



AMONG THE MACROECONOMIC ACCOUNTS I (Richard Barth)

- Description of the macroeconomic accounts—national income and product, balance of payments, fiscal, and monetary—and their interrelations

10:30-10:45 Coffee break

10:45-12:00 PRESENTATION: FINANCIAL PROGRAMMING: INTERRELATIONS AMONG THE MACROECONOMIC ACCOUNTS II (Richard Barth)

- Key macroeconomic accounting identities and their use in analysis
- The financial programming process in the IMF

12:00-13:00 Lunch

MODULE 2: MACROECONOMIC POLICY FRAMEWORK

Objectives: (a) Provide an overview of the framework for analyzing macroeconomic policies under various external policy regimes; (b) discuss the components of those policy regimes

13:00-14:20 PRESENTATION: A FRAMEWORK FOR ANALYZING MACROECONOMIC POLICIES UNDER ALTERNATIVE EXTERNAL POLICY REGIMES (Paul McNelis)

- Behavior of the money, capital and exchange rate markets
- Derivation of DD/AA analysis
- The applications of DD/AA analysis to fiscal and monetary policy with and without capital mobility, and under fixed and flexible exchange rates

14:20-14:40 Coffee Break

14:40-15:30 PRESENTATION: FISCAL POLICY (Anthony Lanyi)

- Summary of macroeconomic role of fiscal policy and its other goals (allocation, distribution)
- Tax policy and administration
- Public expenditure management and budgeting; options for debt financing and their impact

15:30-16:20 PRESENTATION: MONETARY POLICY (Paul McNelis)



DAY 3: Wednesday, December 17, 2003

8:30-10:15 CASE STUDIES GROUP WORK: PREPARE PRESENTATIONS

10:15-10:30 Coffee break

10:30-11:15 REPORTS OF BREAKOUT GROUPS

- 15 minutes (including questions) for each group

11:15-12:00 PANEL PRESENTATION: CLOSING REMARKS

Flowing from the case study discussions, instructors will discuss the key lessons learned from the country examples, and will identify the primary tools that EG officers can apply to financial sector analysis and program development.



USAID Macroeconomic Policy Training Course

Welcome

December 15-17, 2003
Washington, DC



USAID Macroeconomic Policy Training Course

Purpose



Purpose

Purpose of the USAID/EGAT Macroeconomics Training Course

- Basic concepts and interrelation among variables in national income accounting
- Financial programming (IMF Methods)
- Real-life case study program for Ukraine
- Basic principles of macroeconomic policy
- Salient aspects of fiscal, monetary and external policies

Purpose

Three Distinctions in Macroeconomic Policy

- Policy objectives vs. policy instruments
- Allocation vs. distribution vs. stabilization functions of macroeconomic policies
- Short-term stabilization vs. medium-to-long-term growth

Purpose

Policy objectives & instruments

Policy objectives include:

- Price stability
- Balance of payments target
- Output (short-term)
- Saving and investment (long-term growth)
- "Intermediate objectives" include money supply, fiscal deficit, exchange rate

Policy instruments include:

- Tax policy (esp. rates, surcharges) and administration
- Level and allocation of government spending
- Central bank (monetary) policies
- Exchange rate policy
- Exchange controls and taxation

Purpose

Different functions of macroeconomic policies

- Allocation vs. distribution vs. stabilization functions
- Taxes and expenditure, and bank credit controls, affect allocation, investment
- So do non-market exchange rates, exchange controls
- Taxes may be progressive, regressive or neutral in distribution

Different functions of macro policies (cont.)

- BUT: stabilization policies are often unjustly blamed for all the woes of developing countries

- Composition of government spending usually has long-term political, historical roots -- and usually does not favor the poorest in the society

Short-term vs. longer-term effects of policies

Policy actions	Short-term impact	Longer-term impact
External/internal borrowing by government	Maintains govt. services, level of aggregate demand	Unsustainable external debt burden/crowding out private investment
Import surcharges and other tax increases	Maintains govt. revenue, lowers external current account imbalance	Skews resources toward less efficiency, discourages growth

Purpose

Short-term vs. longer-term effects of policies

Policy measures	Short-term impact	Longer-term impact
Cutback in government expenditures	Reduces aggregate demand	May hurt poor, reduce saving and investment



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Thank you





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December 15-17, 2003
Washington, DC



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**Financial Programming:
Interrelations among the
Macroeconomic Accounts**



Financial Programming

- What is financial programming?
- Accounting framework and flow of funds
- The process of establishing IMF-supported programs
- Baseline and program scenarios
- Case study: Ukraine in 1998

Definition of a Financial Program

A financial program is a comprehensive and consistent set of economic policies, implemented in a coordinated fashion and designed to achieve a given set of macroeconomic objectives.

Definition of a Financial Program

The framework provided by financial programming is a sensible approach to macroeconomic management even when the economy is performing well

Definition of a Financial Program

The consistent and coordinated approach provided by financial programming is imperative when significant adjustment to economic policies is needed.

Financial Programming

- Is not a formal economic model
- It is a simple flow-of-funds framework that combines basic macro-accounting identities
- It may involve a small number of behavioral equations, e.g., Demand for money, demand for imports, export supply, etc

Accounting Framework

- The 4 macroeconomic accounts
 - National accounts
 - Balance of payments
 - Fiscal accounts
 - Monetary accounts
- These accounting relations are neutral with respect to modeling behavioral relations



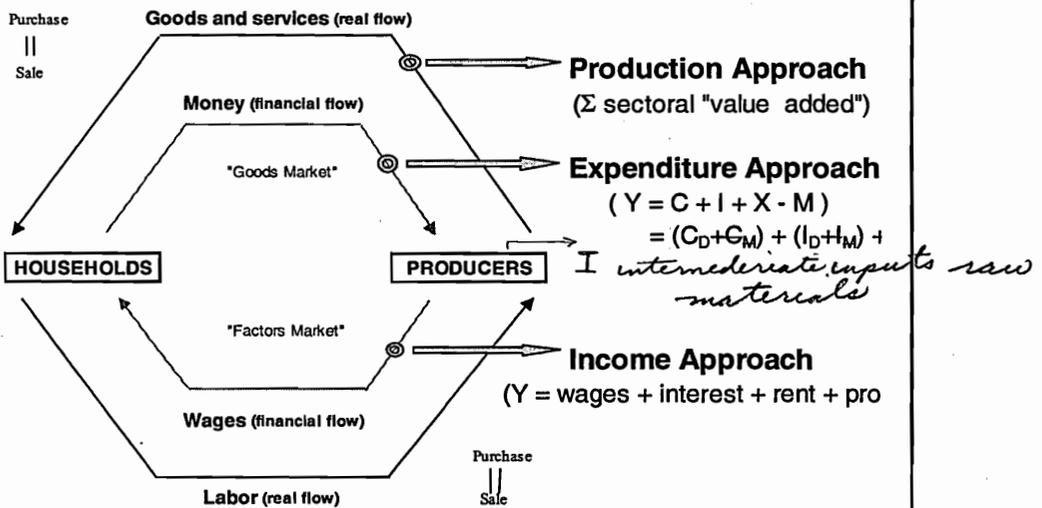
National Accounts

Major Aggregates and Relationships



Financial Programming: Interrelations

Gross Domestic Product (GDP)



Disposable Income

- Gross disposable income of domestic residents
= GDP + any income from abroad:
➤ GNDI = GDP + Y_F + TR_F
- This is the amount available to consume or save,
 $\frac{So}{Or}$ GNDI = C + S
 S = GNDI - C

Saving – Investment Gap

$$\begin{aligned} S &= \text{GNDI} - C \\ &= [(C+i+x-m)+Y_F+TR_F] - C \\ &= I + [x-m+Y_F+TR_F] \end{aligned}$$

Saving – Investment Gap

$$S - I = X - M + Y_F + TR_F = \text{current account}$$

So if $S > I \Rightarrow$ CAB surplus

If $S < I \Rightarrow$ CAB deficit

- Summarize this as "absorption": $A = C + I$

Then $GDP = A + (X - M)$

$$GNDI = A + \text{CAB}$$

$$GNDI - CAB = A$$

*to improve
current account
deficit you
can*

*[cut absorption = reduction of ab (cut spend)
increase GNDI \Rightarrow growth \Rightarrow increase output]*

S – I by Sectors

- We can now divide the domestic economy into the government sector (G) & non-government sector (P):

$$S_G + S_P = CAB$$

$$(GNDI_G - C_G - I_G) + (GNDI_P - C_P - I_P) = CAB$$

$$\text{or } (GNDI_G - A_G) + (GNDI_P - A_P) = CAB$$

*usually S_G is negative \Rightarrow government has to
cut C_G, I_G or increase $GNDI_G$ to reduce
CAB*

Implications

If we know the CAB and public sector balance, we know the private sector balance

To reduce a CAB deficit, the public and/or private sector must produce more or consume less

Nominal vs. Real

- Some of our analysis will look at nominal values, but much of the time we want to look at real developments

For example, we measured the total value of GDP in current prices—this is *nominal GDP*. But changes in nominal GDP over time reflect changes in both prices and physical output. *Real GDP* measures changes in an economy's physical output

$$\text{Value (V)} = \text{Price (P)} * \text{Quantity (Q)}$$

→ Fundamental relation

→ Approximation: $\Delta\%V \cong \Delta\%P + \Delta\%Q$

▪ Exact relationship for discrete changes:

$$(1 + \% \Delta v/100) = (1 + \% \Delta p/100) * (1 + \% \Delta q/100)$$

*for small Δ in $p + q$ the approximation works well,
if you have high inflation it doesn't.*

$$\text{Value (V)} = \text{Price (P)} * \text{Quantity (Q)}$$

▪ $V_{t-1} = p_{t-1} * q_{t-1}$

▪ $V_t = p_t * q_t$

▪ $V_t = V_{t-1} + \Delta V$

▪ $V_t/V_{t-1} = (V_{t-1} + \Delta V)/V_{t-1} = 1 + \Delta V/V_{t-1}$

▪ $1 + \Delta V/V_{t-1} = (1 + \Delta p/p_{t-1}) * (1 + \Delta q/q_{t-1})$

Inflation:

a Sustained Increase in the Overall Price Level

- **Underlying or core inflation** reflects fundamental changes in the overall price level, excluding one-time price increases (e.g., Changes in administered prices, taxes, or the exchange rate).

exchange rate Δ = one time increase in inflation because imports are more expensive.

Inflation:

- One-time increases will raise the price level immediately. These increases *can* trigger price and wage increases throughout the economy. But if monetary policy is sufficiently firm, there will be a change in *relative* prices but no sustained increase, and hence no increase in underlying inflation.

Measuring Inflation

- Commonly used measures include *changes* in:
 - The consumer price index (CPI)
 - Wholesale (WPI)
 - Or producer price index (PPI)
 - The GDP deflator (PGDP) *will be affected by devaluation because exports will be worth more. The extent domestic production is exported will determine the increase.*

Price Indices & Inflation

inflation calculated from price index

	Price index		Inflation	
	EOP	<i>of quarterly EOP average</i>	EOP	average
1994	100.0	85.0		
1995	121.55	113.14	21.6%	33.1%
Mar	105.0		5.0%	
Jun	110.25		5.0%	
Sep	115.76		5.0%	
Dec	121.55		5.0%	

EOP lower ⇒ inflation decelerating

$(\frac{113.14}{85.0}) - 1$

used to deflate end of period stocks *use to deflate flow rates*

$(\frac{121.55}{100}) - 1 = \text{Inflation}$

Contributions to GDP Growth

▪ $Y = A + X - M$ (GDP = absorption + net exports)

▪ $\Delta Y = \Delta a + \Delta(x-m)$

** $\Delta Y/Y_{t-1} = \Delta a/Y_{t-1} + \Delta(x-m)/Y_{t-1}$
% Δ in GDP = Δ A previous period *net exports/prev. periods*

▪ $\Delta Y/Y_{t-1} = \Delta a/a_{t-1} * a_{t-1}/Y_{t-1} + \Delta(x-m)/(x-m)_{t-1} * (x-m)_{t-1}/Y_{t-1}$

what you want to see in IMF programs is a shift in GDP from absorptive to net exports (balance of payments)



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Balance of Payments

Accounts and Analysis



when you add all accounts you get 0.
includes financing (double acc. system)

Financial Programming: Interrelations

<p>Current Account (Real transactions)</p> <p>Trade Exports of goods Imports of goods</p> <p>Services X-M Transport Insurance Travel</p> <p>Income Y_F Interest Profits Wages</p> <p>Transfers TR_F (current)</p> <p>* $S_N - I = CAB$</p>	<p>Capital & Financial Account (Financial Transactions)</p> <p>Capital Account <i>small</i> Direct investment ΔFDI</p> <p>Financial Account <i>large</i> Portfolio investment</p> <p>M/LT capital Borrowing <i>excludes IMF but includes WB</i> Amortization ΔNFB</p> <p>ST capital (net)</p> <p>Errors & Omissions</p> <p>Overall Balance</p> <hr/> <p>Financing ΔNIR Net International Reserves</p> <p>$CAB + \Delta FDI + \Delta NFB = \Delta NIR$</p>
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compiled on a accruals basis; interest, amortization is owed it is recorded not when paid.

which is project financing. Improves overall balance

IMF comes here as financing of the balance of payment deficit

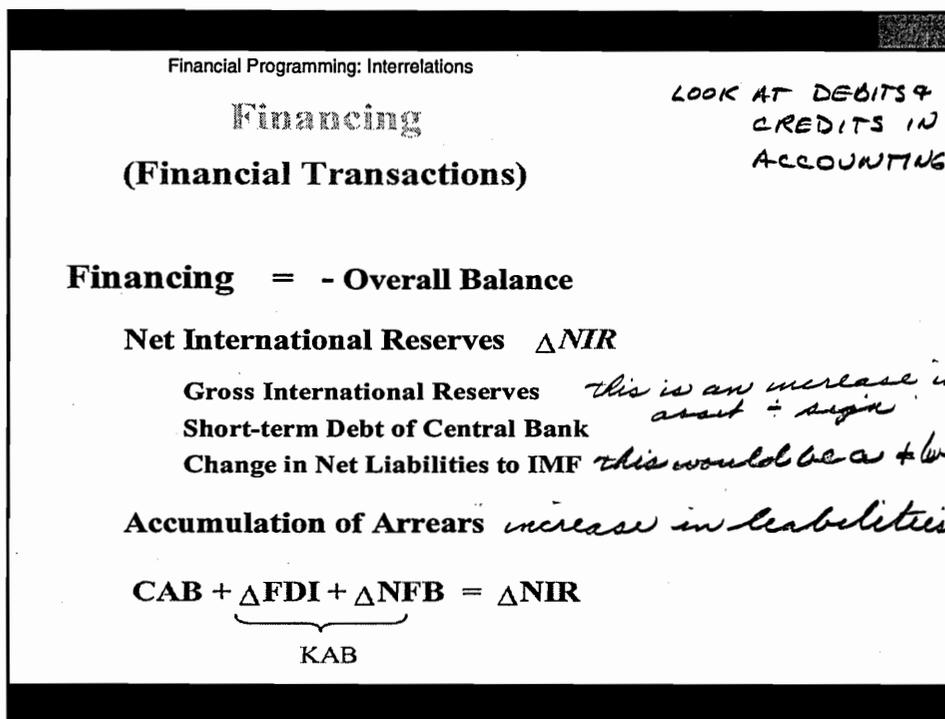
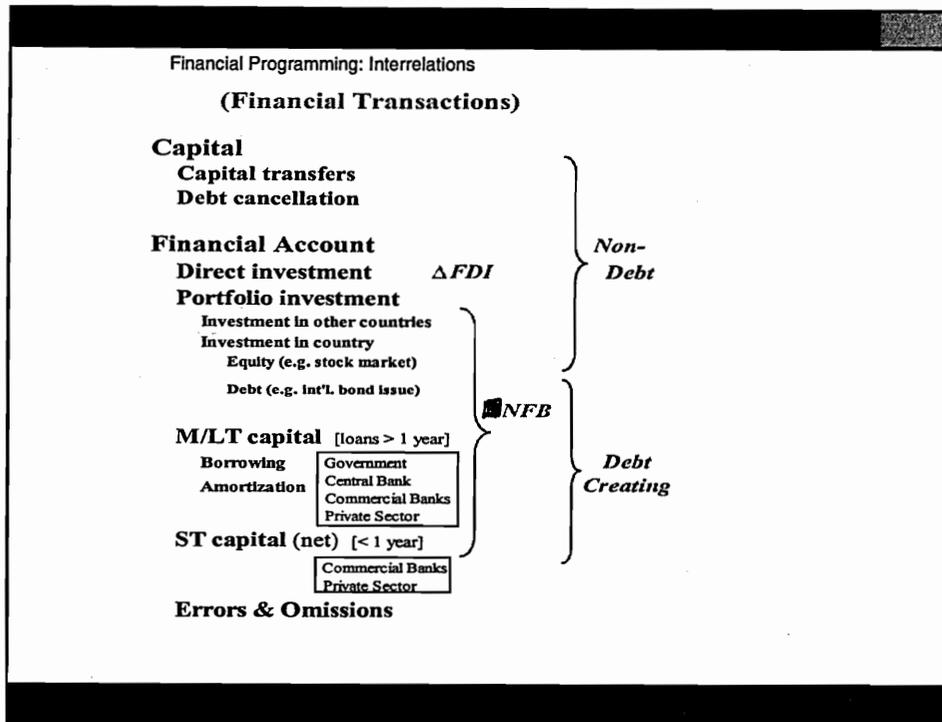
double acc. system

Foreign assistance
+ transfer
- imports

all transactions between resident and non residents

Financial Programming: Interrelations

Current Account (Real transactions)	
<p>Trade Exports Imports</p> <p>Services Transport Income Payments Insurance Travel</p> <p>Income Y_F Interest Income Payments Profits Wages</p> <p>Transfers TR_F Grants received Official Private Grants given</p>	<p>Trade in Physical Goods</p> <p>Trade in Services</p> <p>Payments to Factors of Production Return on Capital Return on Entrepreneurship Return on Labor (abroad < 12 months)</p> <p>Current unrequited payments (i.e. Gifts) Government-to-Government, EU, etc. Incl. Nationals abroad > 12 months</p>
$* GNDI - C - I = S_N - I = CAB$	



External Debt Analysis

Sustainability indicators

Indebtedness: severe moderate

1 NPV $\frac{\text{debt service}}{\text{Exports}}$ 200-250% 120-150%

this looks at debt profile over time.

2 NPV $\frac{\text{debt service}}{\text{GDP}}$ 80% 50%

3 Current $\frac{\text{debt service}}{\text{Exports}}$ $\geq 25\%$ 20-25%

1 year

*→ interest + amortization
↓ 20% not a problem unless
it has been growing over time.*

External Debt Analysis

▪ Vulnerability indicators

$\frac{\text{Short-term debt}}{\text{Reserves}}$ *gross reserves* > 1

indication country is vulnerable

~~Reserves~~

$\frac{\text{Amortization due}}{\text{Reserves}}$ *gross reserves*

~~Reserves~~

Forecasting the Trade Account

- Elasticities: $\% \Delta Q / \% \Delta P$

- Import Elasticities

Price \longrightarrow
Income

$$\frac{\% \Delta Q_m}{\% \Delta \left(\frac{P_m}{P_d} \right)}$$

relative price imports to domestic prices

- Export Elasticities

Supply
Demand

$$P_m = P^* \cdot e$$



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Fiscal Accounts

Accounts and Analysis



Financial Programming: Interrelations

General Government Operations

Revenue & Grants

Tax Revenue
 Turnover tax/VAT
 Excise taxes
 Income taxes
 Corporate
 Personal
 Social security/pension taxes
 Foreign trade taxes
 Other tax revenue

Nontax Revenue
 Licenses, fees, etc.
 Central Bank profits

Grants

Expenditure & Net Lending

Current expenditure
 Wages
 Goods & services
 Interest payments
 Pensions
 Subsidies
 Other Transfers
 Other

Capital Expenditure

Net lending
 New policy loans
 Repayments

primary balance leaves out interest payments

Overall Balance = Revenue - Expenditure = $S_G - I_G$

Financing = - Overall Balance

External (net)
 New borrowing
 Repayments
Domestic
 Bank (net)
 New borrowing
 Repayments
 Non-bank (net)
 Privatization

negative balance have to be financed from external or domestic borrowing or sale of state owned assets.

Financial Programming: Interrelations

GNDI

REVENUE

Tax
 Non tax

Revenue

- Interest
 - Transfers
 = $GNDI_G$

EXPENDITURE

CURRENT

Wages
 Goods
 Interest
 Transfers

C_G

} = S_G

CAPITAL

- I_G

FISCAL BALANCE = Rev - Exp = $S_G - I_G$

$(GNDI_p - C_p - I_p) + (GNDI_g - C_g - I_g) = CAB$

Measuring the Deficit

- Public sector borrowing requirement
 - Central government
 - Other levels of government
 - Public enterprises*
- Conventional overall balance
 - Total revenue less total expenditure
 - Cash or accruals basis

- Primary balance
- = Conventional balance - interest payments

] *that part of the budget
the gov. has control
over. It's the primary
balance - interest payments
over which the gov. has no
control.*

Cash vs. Accrual

- **Accrual basis is current standard**
 - Accrual corresponds to other macro accounts
 - Accrual measures true government use of resources

Forecasting Tax Revenue

- 1 Effective tax rate approach
- 2 Tax elasticity/buoyancy approach

1 Effective Tax Rate Approach

- Statutory tax rate = legal tax rate schedule

- Effective tax rate = $\frac{\text{actual tax revenue}}{\text{Tax base}}$

E.G. Customs duties / imports from BOP

- Forecast:

$$\% \Delta \text{ revenue} = \% \Delta \text{ tax base} * \text{effective rate}$$

Legal tax base vs. Proxy tax base

- E.G. $\% \Delta$ total imports \rightarrow customs duties
 $\% \Delta$ wage settlements \rightarrow wage taxes

EX: $\frac{\text{import duties}}{\text{value of imports}}$

2 Tax Elasticity/Buoyancy Approach

→ Elasticity =

→ % Δ tax revenue (unchanged system)

→ % Δ in tax base (GDP)

$E > 1$ elastic tax system is desirable

How?

Tax expanding sectors

Progressive tax rates

Ad valorem vs. Specific taxes

Prompt tax collection

note: without Δ s in tax system if it has you have to adjust revenues for Δ s in tax system.

→ Buoyancy = β =

→ % Δ actual tax revenue

→ % Δ in GDP

assumes no change in tax system approximates the E

Forecast:

$$\% \Delta \text{ revenue} = \beta * \% \Delta \text{ in GDP}$$



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Monetary Accounts

Monetary Survey

Balance Sheet of the Central Bank



The Monetary Survey

- Monetary survey (depository corporations survey in MFS) *banks*

Combines balance sheet data of depository corporations *monetary & financial survey*

Presents aggregated asset and liability categories that are useful for analytical purposes

foreign liability: liabilities to foreign residents (savings by foreigners), use of fund credit (fund holding of members currency over above fund reserve requirements)

The Monetary Survey

$$M = NFA + NDA$$

Assets

- Net foreign assets (NFA)
- Net domestic assets (NDA)
 - Net credit to government (NCG) *net of gov. deposits*
 - Credit to private sector (CPS) *gross*
 - Other items, net (OIN)

financial claims of banks on non-res + claims by foreign banks on residents.

OIN has to increase to balance

Liabilities (private sector liabilities - because gov. liabilities netted out under assets)

- Broad money (M)
 - Narrow money (NM)
 - Currency in circulation (CY)
 - Demand deposits (DD)
 - Quasi money (QM)
 - Time & savings deposits (TD)
 - Foreign currency deposits (FC)

consolidated accounts of all financial institutions (banks, CO, etc. plus central bank).

FX rate Δ as value of these deposits increase +

interested in ΔM because it gives you Δs in net foreign & domestic assets

foreign assets = SDR, gold, foreign ER deposits + reserve position in IMF.

25% convertible currencies. (can withdraw immediately is it has no problem)
75% local currency.

[reserve positions in \$ when US has higher reserve position in the funds.]

BOP
 Capital Account
 Capital + Financial Account
 ↓↓
 overall balances

$\Delta NFA_{CB} =$
 gold Δ official reserves
 SDR \neq
 reimport Δ gross reserves -
 Use of fund $\rightarrow \Delta$ liabilities
 credit what they owe the IMF

(Financing = Δ net foreign assets of central bank + Δ in
 arrears [below the line])

Financial Programming: Interrelations

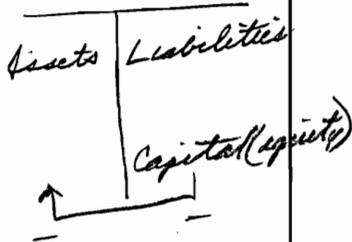
Aggregates in the Monetary Survey

$NFA_{t-1} + \Delta$ inflows

Net foreign assets (NFA) *change in assets of central bank.*
 Change in official reserves from BOP, below the line
 Change in other net foreign assets of the banking system (not included in reserves) from BOP, financial account

Net domestic credit (NDC)
 Government credit from fiscal sector
 Private credit ~~calculated as~~

Other items net (OIN): includes *if FX Δ net foreign assets Δ*
 Valuation changes in NFA and FX deposits *\uparrow in net foreign assets +100*
 Changes in bank capital *investments in banks equity*
 Profits and losses of banking system *retained earnings*
 \downarrow other items net -100



Financial Programming: Interrelations

Aggregates in the Monetary Survey

- Broad money
 - Deposits of residents
 - Currency outside banks

Typically you have access to income statement not the country's balance sheet.

What is OIN?

- Deposits excluded from broad money
- Securities excluded from broad money
- Financial Derivatives
- Trade and credit advances
- Shares and other equity
- Other items net
 - Other liabilities
 - Less other assets
 - Revaluation account

Other Items, Net

Possible approximation:

$$\text{OIN}_t = \text{OIN}_{t-1} - \text{valuation changes} \\ + \text{Change in banks' capital accounts}$$

- Valuation changes in:
 - NFA of central bank
 - NFA of commercial banks
 - Residents' foreign currency deposits (-)
- Banks' capital accounts
 - Stock/GDP
 - Assume same rate of growth as nominal GDP

The Central Bank Balance Sheet

$$RM^* = NFA^* + NDA^*$$

Assets

- Net foreign assets (NFA*)
- Net domestic assets (NDA*)
 - Net claims on government (NCG*)
 - Claims on DMBs (CDMB*)
 - Claims on other domestic economic sectors (CPS*)
 - Other items, net (OIN*)

Commercial banks.

Liabilities

- Reserve money (RM*)
- Currency issued (CY*)
 - Held by public (CY)
 - Held in banks (CYDMB)
- Deposits of DMBs (D*)
- Required (RR)
- Excess (ER)

*reserve money instrument
ent by which CB
controls money
supply. Increases
by lending more
reserve money
to banking sector*

The Monetary Survey: Key Links to Other Sectors



- Net foreign assets (NFA) \xleftrightarrow{BOP} Link to external sector
 $\Delta NFA = -\Delta RES = cab + \Delta FI$
- Net domestic assets (NDA) $\xleftrightarrow{+NFA}$ Link to fiscal sector
 $\Delta NCG = \text{domestic bank financing of fiscal deficit}$
- Net credit to govt (NCG) $\xleftrightarrow{deficit}$ Link to fiscal sector
- Credit to private sector (CPS) \xleftrightarrow{growth} Link to real sector
 ΔCPS related to growth of GDP, private consumption, private investment, etc
- Other items, net (OIN)

what's in the monetary survey has a link to the rest of the economy

includes private banks, increase in deb

Approach 2: Extrapolating Trends in Velocity

Quantity theory of money: $M^D / P = k Y$

Real money demand is proportional to real income

Velocity: $V = P Y / M$ ~~not~~
= Nominal GDP / money stock

*RM x multiplier =
M2*

velocity not particularly stable

Measures how often the money stock "turns over" each period

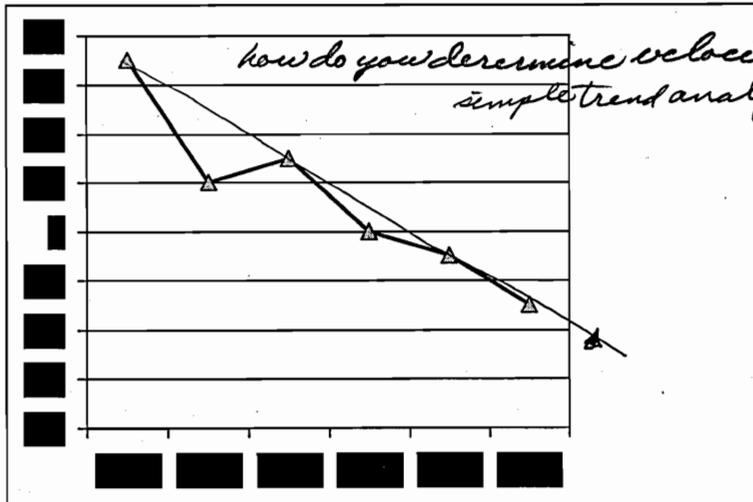
Inversely related to money demand

(Assume M^D = actual money stock, M)

** m = PY / V how do*

Financial Programming: Interrelations

Velocity: Example of Zambia





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Flow of Funds

Accounting Links Among Accounts
Financing S-I for Each Sector



*OP + NIA net income a/c
or Fin Stat + NIA*

Flow of Funds: Real Transactions

BOP

*GND + net income trans =
GNDI*

	Overall Economy	Domestic Economy			Rest of the World	Horiz. Check
		General Govt	Govt Sector 1	Bank System 2		
(-) GNDI	-GNDI	GNDI _G	GNDI _P	↑		0
Consumption	C	C _G	C _P	↓		0
Investment	I	I _G	I _P	↑		0
Exports minus imports (G&S)	X-M			↑	M-X	0
Net foreign income	Y _F			↑	-Y _F	0
Net transfers	TR _F			↑	-TR _F	0
Nonfinancial balances	0	S _G -I _G	S _P -I _P	0	-CAB	0

$GNDI_P = GNDI - GNDI_G$

$GNDI_G - C_G$

*How do you finance?
finance domestically
finance offshore
deficit.*

I_C = gov exp on wages + salaries + other expenditures

GFS + BOP
NFB

GFS + MS
NDC_G

Flow of Funds: Financial Transactions

	Overall Economy	Domestic Economy			Rest of the World
		General Govt	Non-Govt Sector ^{1/}	Bank system ^{2/}	
Foreign Financing		<i>liabilities</i>			
Direct foreign investment	0		FDI	-FDI	0
Net foreign borrowing ^{3/}	0	<i>net for.</i> NFB _G	NFB _P	ΔNFA	NFB-0
Change in NIR ^{3/}	0			-ΔNIR	ΔNIR 0
Domestic Financing					
Change in bank credit	0	ΔNDC _G	ΔNDC _P	-ΔNDC	0
Change in total money stock	0		-ΔM2	ΔM2	0
Change in nonbank credit	0	ΔT-bill	-ΔT-bill		0
OIN					
Change in other items (net)	0	ΔOIN _G	<i>(residual)</i> Σ	ΔOIN _B	ΔOIN _o 0
Vertical Check	0	0	0	0	0

increase in liabilities
increase in assets

(above the line)
net foreign lenders asset-
net inter reserves
(below the line)

Source: MF Institute database.

1/ Calculated residually.

2/ Banking system flows exclude valuation effects. Net foreign borrowing includes commercial banks and NFA of NBU other than NIR.

Financial Programming: Interrelations

Malawi: Transactions Balances, 1993

	National Accounts	Private Sector	Central Government	Banking Sector	External Sector	Check
Gross National Disposable Income	9418.1	8191.1	1227.0			0
Consumption	9319.2	7950.2	1369.0			0
Gross Domestic Investment	1090.0	625.0	465.0			0
Exports of Goods and Nonfactor Services	1470.5				-1470.5	0
Imports of Goods and Nonfactor Services	-2937.1				2937.1	0
Net Factor Income	-184.9				184.9	0
Net Current Transfers from Abroad	660.4				-660.4	0
Savings-Investment Balance	-991.1	-384.1	-607.0		991.1	0

Financial Programming: Interrelations						
Malawi: Financial Flows, 1993						
	National Accounts	Private Sector	Central Government	Banking Sector	External Sector	Check
Savings-Investment Balance	-991.1	-384.1	-607.0	991.1	0	
Net Foreign Indebtedness		605.8	583.0	-1188.8	0	
Change in Net Foreign Assets				-171.0	171.0	
Change in Domestic Credit		-34.0	202.0	-168.0	0	
Change in Money and Quasi-Money		-509.0		509.0	0	
Government Domestic Nonbank Borrowing		180.0	-180.0		0	
Other Items (Net)		141.3	2.0	-172.0	26.7	-2
Sum		0.0	0.0	-2.0	0.0	-2

→ borrowing more than they need to cover S-I gap leads to increases in bank assets

Financial Programming: Interrelations	
Phases of IMF Arrangements	
▪ Inception	yes/no they country
▪ Main elements	baseline projection what econ would look like with no policy change or bank facilities.
▪ Negotiation	what need to be done to fix it. what are targets
▪ Approval	write-up agreement, circulate in Fund amongst departments for comments - revised - sent to deputy adm → circulated informally to board approved - drawing in tranches
▪ Monitoring	based on performance if good record 1st immed 2nd front loaded if poor record back loaded
▪ Completion	

IMF says they need BOP of such a level inflation of such a level. What would the gov. do to achieve goals? cut costs Fund provides measures if country doesn't. funding gaps to be closed + countries able to pay of loan starting in 5yr.

Examples of Performance Criteria: Burkina Faso

- **Quantitative**

- Change in total net domestic budget financing of the government**

- Adjusted for disbursements of external budgetary assistance different from that programmed**

- Nonaccumulation of domestic payment arrears**

- Nonaccumulation of external payment arrears**

- Nonconcessional foreign loans prohibition**

- With a grant element of less than 35 percent**

- Prohibition on government short-term debt**

Examples of Performance Criteria: Burkina Faso

- **Structural**

- Elimination of 59 tariff lines subject to administratively set customs valuations**

- Appointment of 3 magistrates to the supreme audit court**

Examples of Benchmarks: Burkina Faso

- Quantitative

Indicators on current fiscal revenue, the civil service wage bill, and total current expenditure

Steps in Financial Programming

- Step 1: Project baseline under existing policies and identify problems
*FX rate within band
fiscal policy - adj. exp. to inflation
no monetary policy*
- Step 2: Set objectives – growth; inflation; BOP = *level of gross inter reserves growth of credit to private sector.*
1 year time horizon: realistic but objective
- Step 3: Project BOP, Monetary Accounts, and Fiscal Accounts to determine financing gaps
- Step 4: Develop measures to achieve the objectives while reducing financing gaps
- Step 5: Program additional financing if available

imports:

how to fill gaps: volume: income elasticity x real

- BOP gaps: raise tariffs, get foreign investment, borrow
- fiscal gaps: cut expenditures, increase taxes, cut pensions

Steps in Financial Programming (concluded)

- Step 6: Determine impact of proposed policy measures
- Step 7: Iterate to achieve objectives and economic and accounting consistency
- ~~Step 8~~: Set up schedule for program reviews
- ~~Step 9~~: Determine performance criteria



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Thank you

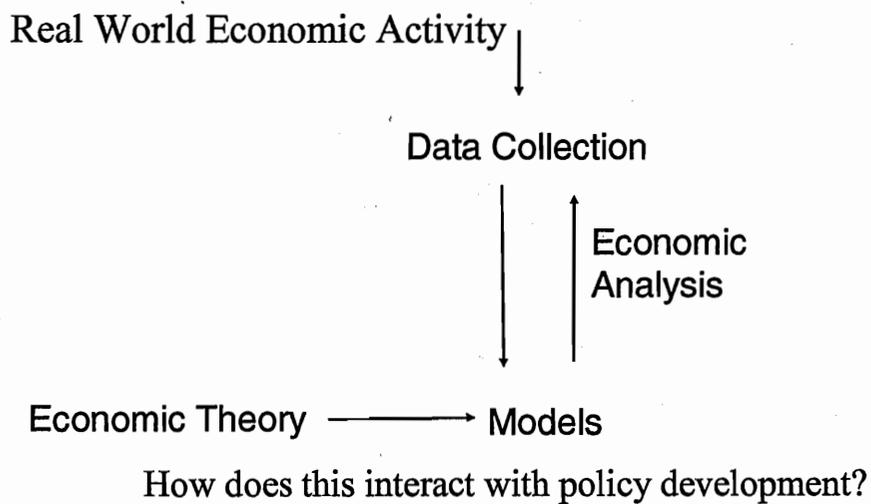


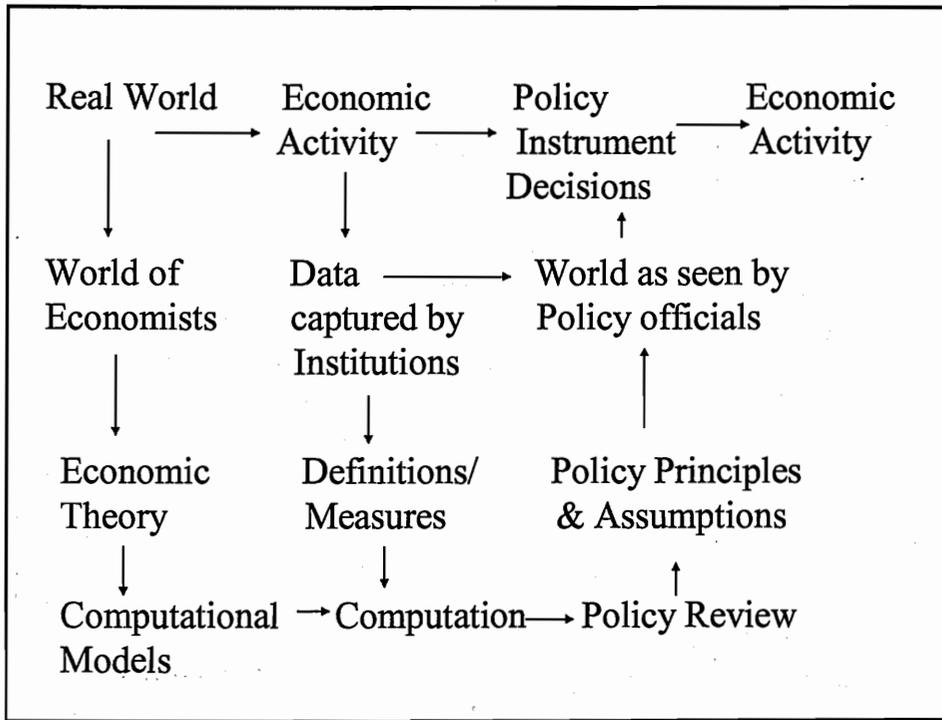
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**Analysis of Money, Capital and
Exchange Rate Markets and
Framework to Analyze Macroeconomic Policies
under Alternative External Policy Regimes**



Why we need models...and good data collection





The Quantity Theory

Equation 1

$$MV = PQ$$

Long run Δ in P comes from Δ in the money stock

Equation 2

$$\frac{M}{P} = kQ, \text{ where } k = \frac{1}{V}$$

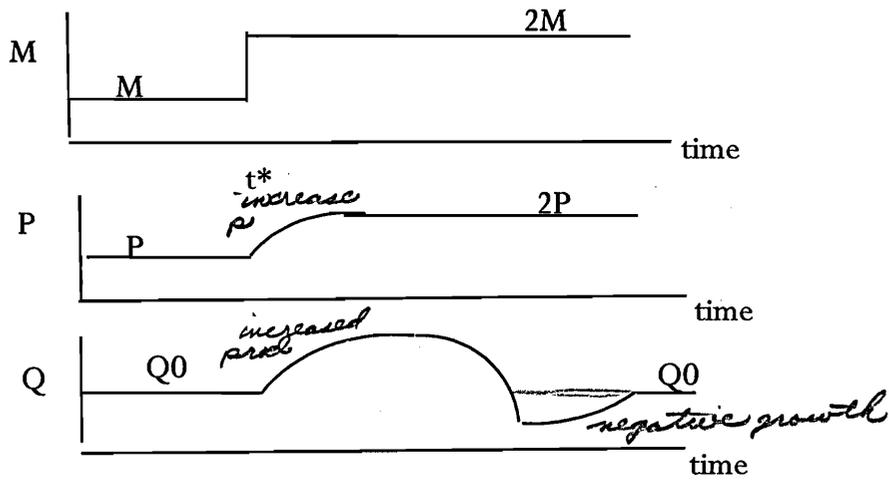
Equation 3

$$P = \frac{\bar{V}}{Q} M$$

Δ in money stock = changes in money stock

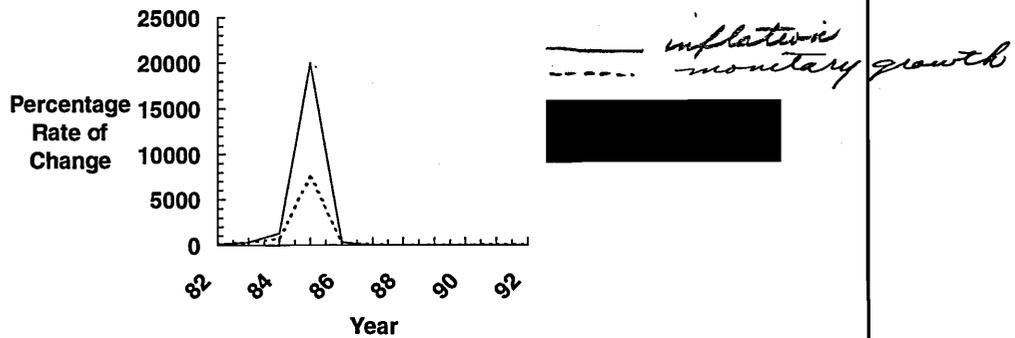
$$P = \alpha M, \text{ with } \alpha = \frac{\bar{V}}{Q}$$

Quantity Theory of Price Adjustment



Extreme Macro Instability

Bolivian Inflation and Monetary Growth



The Purchasing Power Parity

Equation 4

$$P^d = E P^f$$

exchange rate

domestic price *foreign price*

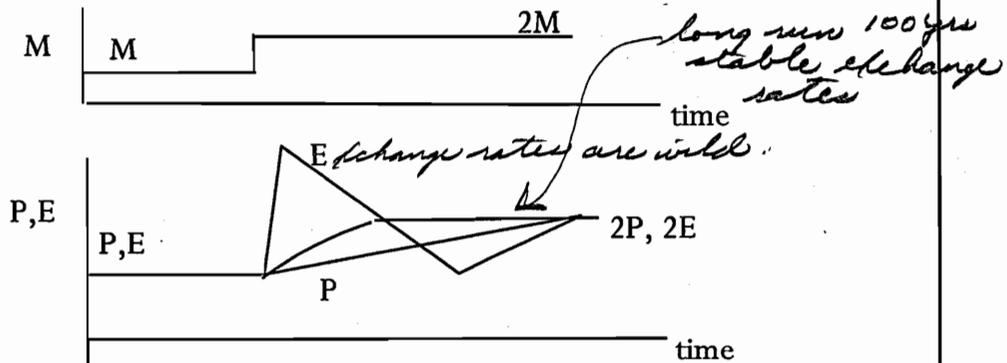
Equation 5

$$E = \frac{P^d}{P^f} = \frac{\alpha^d M^d}{\alpha^f M^f} = \alpha' \frac{M^d}{M^f}$$

foreign / domestic money stocks

if a country wants to have stable ex rates it has to coordinate its monetary policy with foreign monetary policy

Purchasing Power Parity and Overshooting



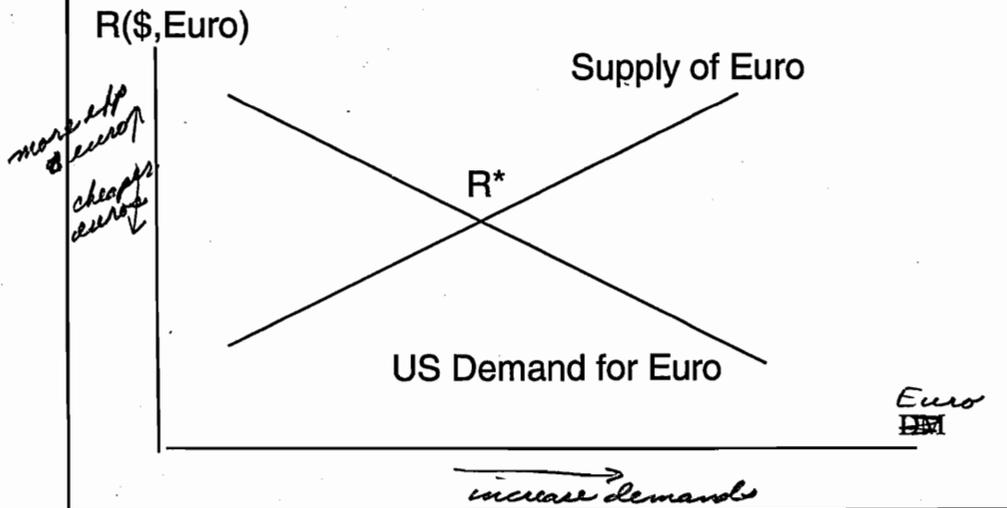
Pricing to Market for Traded Goods

exchange rates don't always pass through to price changes.

- Evidence suggests that many traded goods are priced to market, that purchasing power does not always work
- Most traded goods have a "non-traded component" even if it is only in the "marketing and distribution costs" of such goods.
- When there is an abrupt devaluation, the CPI may not change as much as the exchange rate

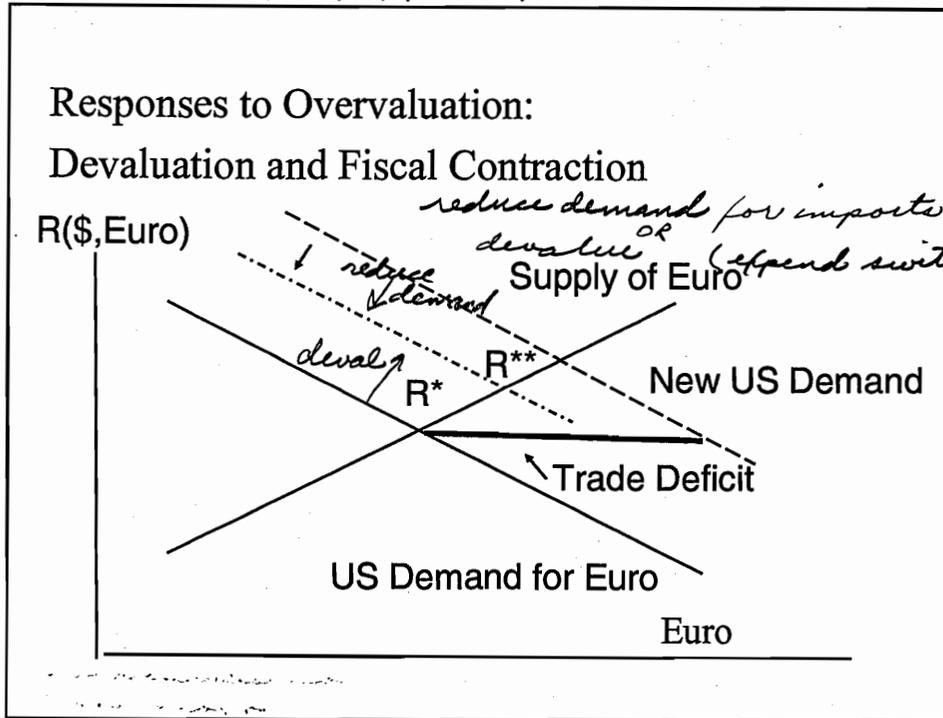
wages independent to

Demand and Supply of Foreign Exchange



current of c clears = R^ demand/supply of euro clears.*

only affects goods markets



Analysis and Framework

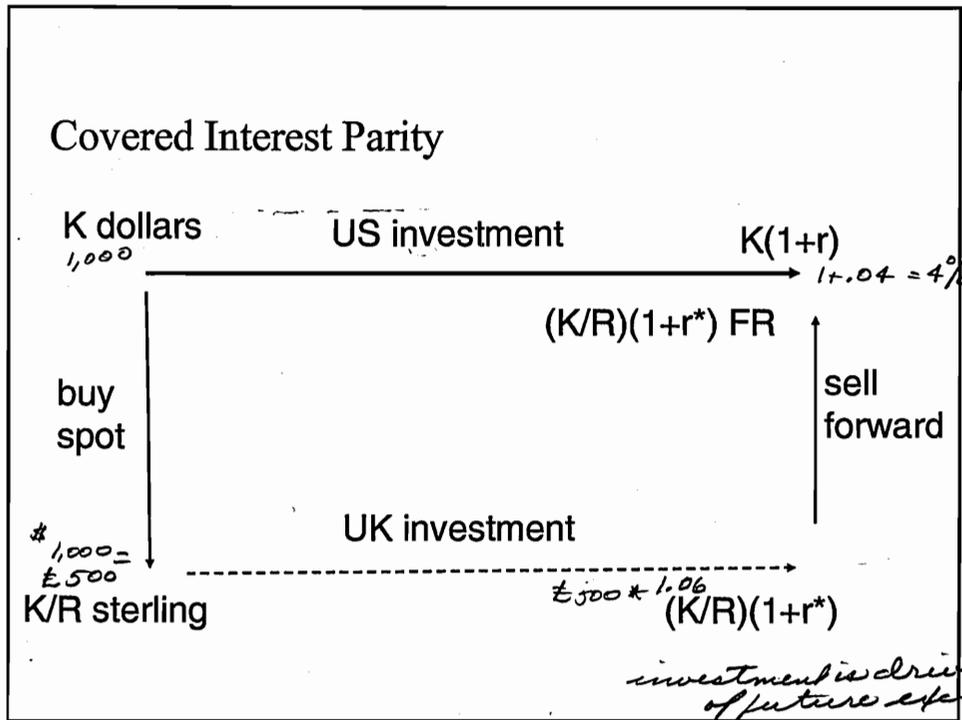
static model - ceteris paribus
Further conditions why devaluation may not work

- Issue of contractionary devaluation: imports may be inputs in production so devaluation may cause a fall in investment, employment, output
- Harberger-Laursen-Metzler effect: devaluation worsens income, so net saving falls quickly, so there is a savings-investment imbalance, and the trade balance falls.

import petroleum
export wheat
inelastic demand
devaluation will reduce exports while making petrol import more expensive ∴
BOP ↑

devaluation may not always do the trick
• intermediate imports more expensive
• savings falls because long term income declines

goods market transactions 20% of foreign exchange market prices
 capital mkt transactions 80%



Covered Interest Rate Parity

Equation 16 $K(1+r) = (K/E)(1+r^*) FR$

Equation 17 $R(1+r)/(1+r^*) = FR$

Equation 18 $R(1+r)/(1+r^*) - [(1+r^*)/(1+r^*)] E = FR - E$

Equation 19 $(r-r^*)/(1+r^*) = (FR-E)/E$

Equation 20 $(r-r^*) = (FR-E)/E$

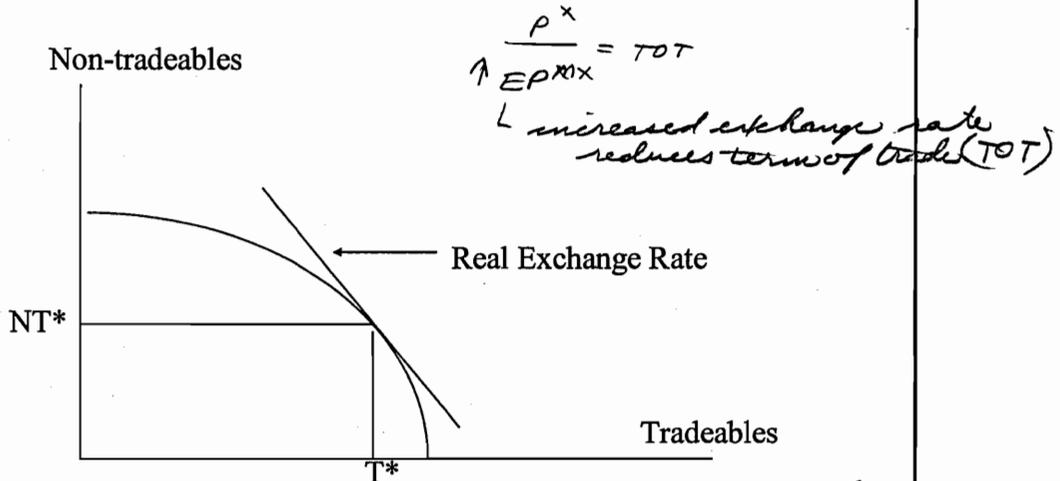
Equation 21 $(r-r^*) = [\text{Exp}(E_{t+1}) - E]/E$

Handwritten notes: n differentials of exchange rates diff. \rightarrow arbitrage
 interest rate diff = difference in exchange rates / divided by exchange rates

E: exchange rate, FR: forward rate, r, r*: interest rates
 K: capital for investment at home or abroad

*arbitrage profits = this drives FX mkt
 borrow in \$ convert invest in pesos*

The Real Exchange Rate



dev. countries shift from NT to T. Tradeables are economic drivers. Exports + import substitutes

In real exchange rates become unstable (because of bad monetary policy) then economies misallocate resources from non tradable and tradable production

The Real Exchange Rate

Equation 26 $REXR = \frac{P_{tradeables}}{P_{nontradeables}} \approx \frac{EP^*}{P_{cpi}}$ real price of

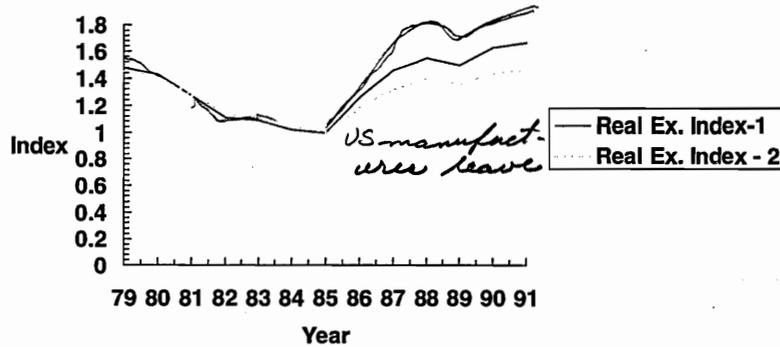
Equation 27 $REXR \approx \frac{E \text{ exchange rate (nominal)}}{P_{cpi}}$

Equation 28 $REXR \approx \frac{P_{wpi}}{P_{cpi}}$ who use p index / cpi

volatility for 10 intervals will give you a good idea growth potential

U.S. Real Exchange Rate Swings, 79-81

Indices Based on Unit Labor Costs and CPI



The Dornbusch Model of Flexible Exchange Rates

Flexible Price Version

DD (Demand) Block: $y = y^* + d(e-p)$, $d > 0$ *exchange rate movements*

LM (Liquidity-money) Block: $m/p = l(y,r)$, $l_y > 0$, $l_r < 0$

AA (Asset Arbitrage) Block: $\Delta e = r - r^*$ *expected Δ in ex rate = interest differences*

goods and asset markets

AA/DD Model

Fixed Price Version of Dornbush Model

DD (Demand) Block: $y = y + d(e - e^*)$, $d > 0$

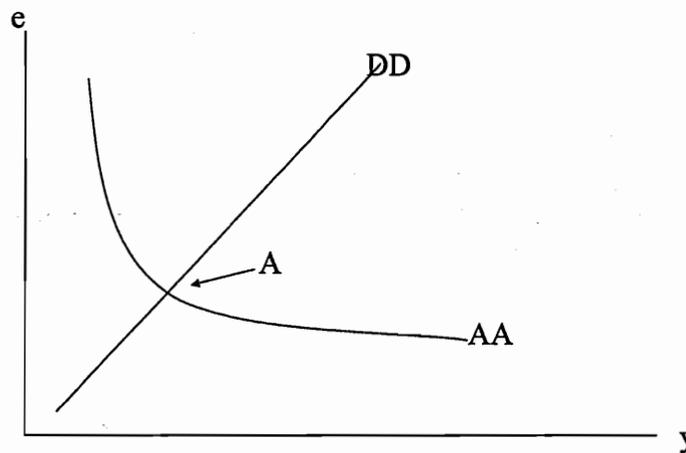
LM (Liquidity-money) Block: $m = l(y, r)$, $l_y > 0$, $l_r < 0$

AA (Asset Arbitrage) Block: $\Delta e = r - r^*$

y^* is the normal level of output, clearing the current acct,
When $e = e^*$

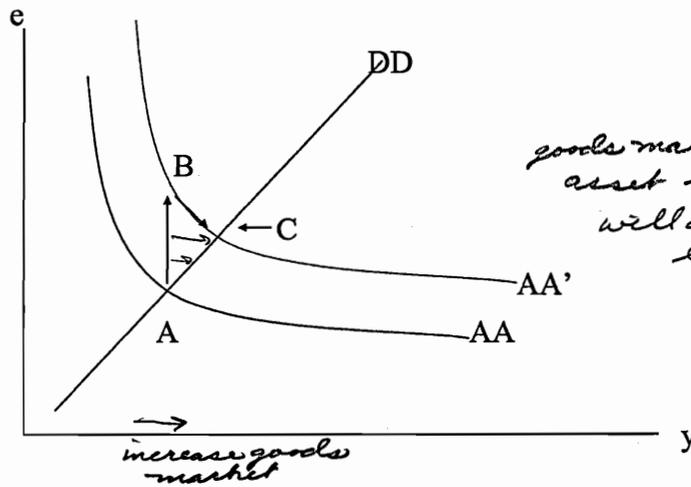
Handwritten note: $e = e^*$

AA/DD Model: Basic Setup



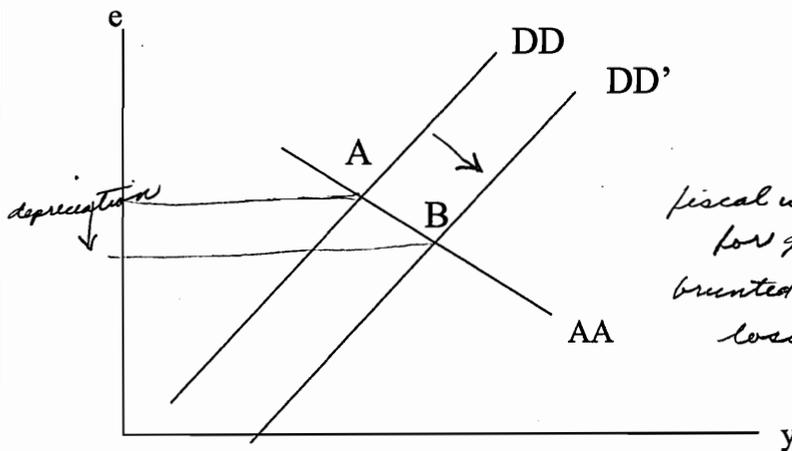
Handwritten note: AA falls because $e \downarrow$ increase demand

AA/DD Model: Monetary Expansion with Overshooting: Flexible Rate



*goods markets clear slowly
asset market clears instantaneously
will overshoot long-run
exchange rates.*

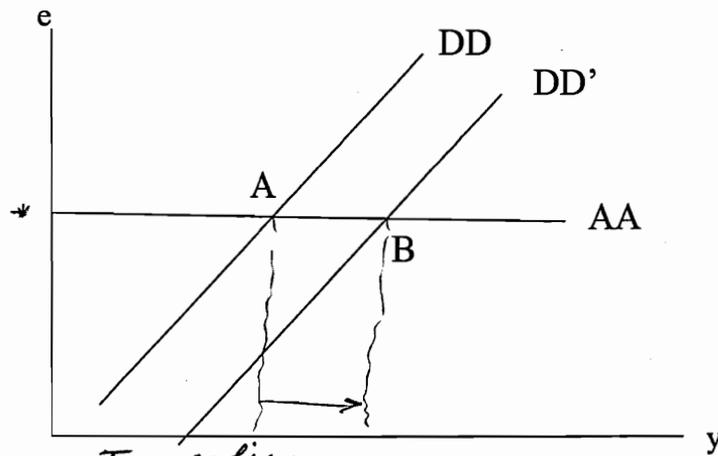
Fiscal Policy: Flexible Rates



fiscal

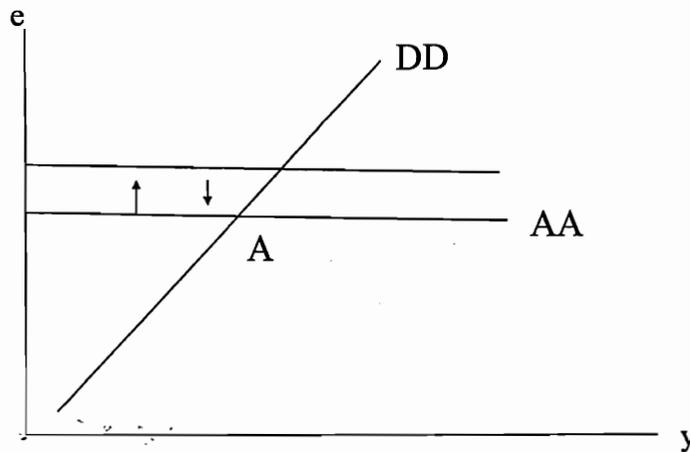
*fiscal will lead to ↑ demand
for gov services
brunted by real interest rate apprec
loss of competitive of export*

Fiscal Policy: Fixed Rates

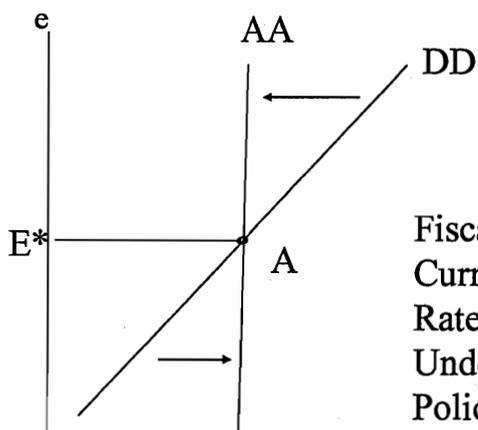


no monetary policy
 fiscal policy = gov spends \Rightarrow big bang for your bucks
 fix rate use it to support your deficit

Monetary Policy: Fixed Rates



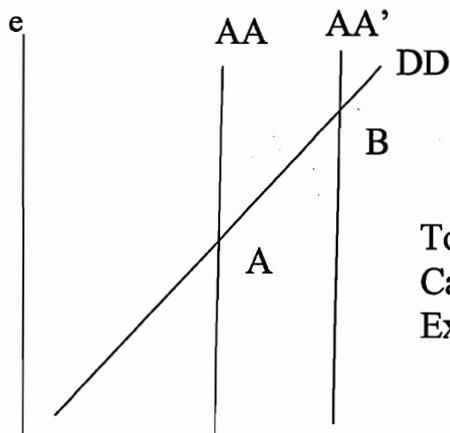
Fiscal Policy: Zero Capital Mobility



Fiscal policy is determined by Current account and pegged Rate E^* .
Under flexible rate, fiscal Policy determines E^*

capital mobility is the problems with ΔY & E . you can't borrow so E^ has to clear the market position A fiscal policy lost.*

Monetary Policy, Zero Capital Mobility, No Overshooting



Tobin Tax: Reducing Capital mobility reduces Exchange rate volatility

source of overshooting is capital mobility (perfectly mobile capital asset markets)

Tobin-tax on foreign transactions

Classification of Policy Regimes

Exchange Rate Regime

<i>Instrument</i>	Fixed	Flexible
Monetary Policy	WEAK <i>non-existent</i>	STRONG <i>very strong</i>
Fiscal Policy	STRONG <i>very strong</i>	WEAK

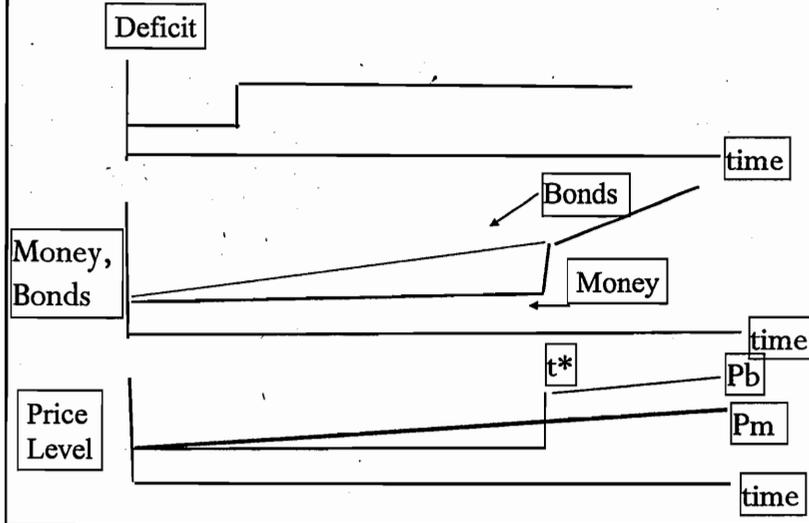
Unpleasant Monetarist Arithmetic

Equation 6

$$\frac{G}{P} + \frac{iB}{P} - \frac{T}{P} = \frac{\Delta M}{P} + \frac{\Delta B}{P}$$

if you run by deficits print lots of \$ you get inflat
" " print bonds no so inflat
in long run bonds can't be sustainable have to
pay them or print \$ & inflation bonds
get payed off.

Unpleasant Monetarist Arithmetic:
Sargent and Wallace: P_b vs P_m



*worse inflation
you print \$ to pay
of bonds but you
have to pay ^{accumulated} interest
too so higher money
supply needed lead
to higher inflation.*

The Absorption Model of the Balance of Trade

Equation 7

$$Y = C + I + G - T + EX - IM$$

Equation 8

$$EX - IM = Y - (C + I) + (T - G) = (Y - A) + (T - G), \text{ where } A = C + I$$



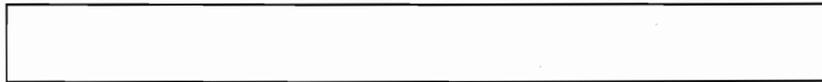
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Fiscal Policy



Fiscal Policy

The Functions of Fiscal Policy

- Allocation
- Distribution
- Stabilization

Allocation—affecting relative prices, supply, and the allocation of goods & resources (including investment). \Rightarrow growth.

government supply of goods + services at subsidized rates affecting private prices/supply; gov. controlling investment etc.

use of taxation differentially tax foreign trade more than domestic mgt.

Allocation

Examples include:

- provision of public goods and services;
- subsidization of public sector enterprises;
- price controls on publicly produced goods;
- regulation and control of private sector supply and prices;
and
- the allocative impact of taxation.

Distribution—affecting the distribution of income, goods and services among citizens.

Distribution

Examples include:

- Distributive impact of taxation,
- The way public goods and services are made available (e.g., rural vs. urban), and
- Special subsidies to particular groups.

Stabilization—affecting the level of aggregate demand, through the levels of government spending and taxation.

Impact of Fiscal Policy on Macroeconomic Policy Objectives

- Changing aggregate demand to reduce inflation or increase output
- Changing aggregate demand to correct the external current account
- Using fiscal policy to affect saving, investment and resource allocation
- Different impacts depending on degree of capital mobility & exchange rate regime

Fiscal Policy

Different impacts depending on degree of capital mobility and exchange rate regime

DEGREE OF CAPITAL MOBILITY	FIXED EXCHANGE RATES	FLEXIBLE EXCHANGE RATES
IMMOBILE CAPITAL <i>not very common now - countries can't prevent capital flight.</i>	Fiscal policy is constrained by the current account of the balance of payments	Fiscal policy has little effect on aggregate demand: an expansion leads to appreciation of the domestic currency and a lower level of both imports and exports, offsetting the increase in government expenditures
MOBILE CAPITAL <i>gov. can dampen down the economy</i>	Fiscal policy determines the current account of the balance of payments and the net capital inflow	The same effect as above, except that government borrowing also affects the exchange rate, because of its effects on the capital account

Fiscal Policy

Criteria for Choosing Types & Levels of Taxation

- Revenue-Generating Capacity
 - Breadth of tax base
 - Elasticity *how the tax grows as tax base or GDP grows (B) or Boyanney*
- Ease and Cost of Administration
- Horizontal and Vertical Equity *poor should not pay more in income tax*
- Simplicity and Transparency
- Reasonableness of Tax Burdens (Public Acceptability)
- Allocative Efficiency

*narrow base: cigarettes
wide base: VAT*

*country's with poor governance
tax adm. don't work properly.
need to be cleaned-up before
taxation becomes an effective
instrument. This assumes
gov can honestly identify
and implement policy.*

*same households
have = taxes: ag taxes =
manufacturing
taxes.*

*VA flat rate
income and
sales tax on
food. The
poor do pay
more.*

inelastic tax: 10\$ per gallon of gas no matter the price per gallon.

→ Taxes are acceptable to populations. The more complex and non-transparent, the more rent-seeking present or paid ↑ tax evasion.

Reduction and Reform of Government Expenditures

Reduce military expenditures.

- Reform Budget Procedures
- no way of monitoring budget formation by legislature or public, independent monitoring of expenditures
- Selectivity
only cut in priority areas not across the board.
- Reducing the Public Sector Wage Bill
how is important. Don't just cut encourages corruption. better to cut staff ↑ wages
- Social Safety Net
in many countries there a general - need to be more carefully targeted
- Capital Expenditures
aim for selectivity in cutting out capital expenditures
- Raise Fees for Public Services
theory - public services agencies should charge fees and poor receive transfer to buy them. Requires reasonable adm structure. Small fee for use max be minimum.
- Seek Least-Cost Debt Service
avoid indexing pursue stable
- Reform Public Enterprises
privatizations = sale price reduces gov. need to finance debt. Also, reduces debt directly by limited losses.

effects long and short term need to be considered

. if not being sold can be reformed.

Reform Budget Procedures

- Transparent budget formulation with public debate
- Transparent, accountable budget implementation with legislative oversight
- Independent accounting and oversight unit

Selectivity

Avoiding “across the board” cuts that affect priority and non-priority expenditures alike.

Reducing the Public Sector Wage Bill

- Better to reduce number of public employees than their wages and salaries, and better to reduce military than civilian employees.

Social Safety Net

- Economize by better targeting of low-income people. Transition economies have faced special problems of moving from enterprise-based to government-based, tax-supported systems, at times of poor revenue collections.)

Capital Expenditures

- Choose efficient investments, eliminate inefficient ones, moving from political to economic investment criteria. This may require a new system for investment decisions.

Raise Fees for Public Services

- This must take into account incomes of different groups.

Seek Least-Cost Debt Service

- Avoid indexing debt service to price level or foreign currency
- Currency composition of foreign borrowing should match that of foreign receipts
- Avoid guaranteeing nongovernment foreign borrowing, when possible

Reform Public Enterprises

Privatize if possible.

If not possible, introduce "hard budget constraint", eliminating subsidies and bringing in better management subject to a profit test.

In any event, decontrol prices of public enterprise outputs.

Four Ways of Financing (or Hiding) a Fiscal Deficit

1. Domestic Monetary Borrowing *if there are weak domestic markets, there may be no choice but to go with foreign borrowing*
2. Domestic Nonmonetary Borrowing *issuing gov. bonds.*
3. Foreign Borrowing *Leaves a country susceptible to FX devaluation.*
4. Arrears and sequestration *Funds set aside but not paid out, because gov. thinks it need the funds elsewhere.*

1. Domestic Monetary Borrowing

- ***Borrowing from the central bank*** creates high-powered money and results in “seignorage” and “inflation tax”.
- ***Borrowing from deposit money banks*** does not as such create high-powered money, but leads to crowding out of private sector borrowers)

2. Domestic Nonmonetary Borrowing

- This leads to crowding out of private sector.

3. Foreign Borrowing

- Raises external debt service; if the ratio of external debt to export reaches unsustainable levels, the result will be capital flight and future unavailability of foreign credit. Also, increased capital inflows tend to lead to appreciation of the domestic currency.

4. Arrears and Sequestration

- Meaning, respectively, allowing payments due to accumulate and deliberate decision to reduce expenditures on certain items below budgeted levels—lead to nontransparency and nonaccountability in budgetary formulation and implementation, and thereby feed poor taxpayer morality.



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Monetary Policy

Monetary Policy

The Phillips Fixed-Coefficient Model of the Banking System

currency has value because others believe it has value - social convention
good monetary policy fits like a glove invisible - bad policy drag on growth.

Equation 32 *required reserves* $R = \frac{r}{100} D$ % of deposits

currency in circulation $C = \frac{c}{100} D$ proportion of deposit

$MB = R + C$

monetary base

Equation 33 $MB = rD + kD$

$\frac{\Delta D}{\Delta MB} = \frac{1}{r+k}$ *monetary multiplier*

no interest rates. model from 1930/40s. where gov. couldn't charge interest.

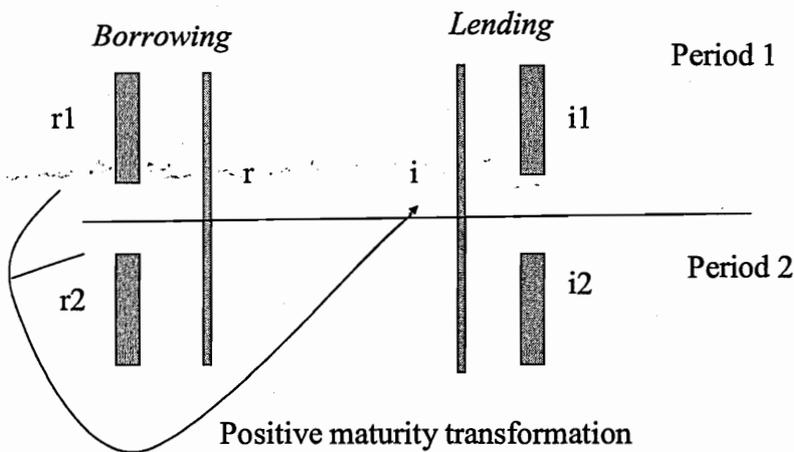
Δ base money
 Δ reserves

- unit of account
- medium of exchange * most important
- store of value (inefficient store)

Central Bank Policy Instruments

- Changing the required reserve ratio - *blunt instrument*
- Open-market operations - *buy or sell T-bills.*
- Changing the rediscount rate
- Direct controls on commercial bank credit: overall levels, allocation and interest rates
- Using exchange rate policy as a monetary policy instrument
set FX rate at a certain level.

Borrowing and Lending Strategies: Interest Rate Expectations



*borrow at longer horizon; save at shorter horizon.
 v low continue decline banks want to lock the
 public into longer term lending, borrow from
 public in 1 period, refinance in 2 at lower
 rate - ↑ margins between cost of funds and
 return on funds. If R rises, banks don't
 want to be locked in 1 because lower R want to shorter term.*

Policy Instruments: Role of the Banking System

- Changing the required reserve ratio is seldom done in practice
- Bank lending has become an important link in the "transmission channel" of monetary policy: banks can hold "excess reserves"
- Japan" proposal to tax "excess reserve holdings" of banks

banks import in transmission of monetary policy they can hold reserves.

Possible Targets of Monetary Policy

- Money supply—"narrow money"
- Money supply—"broad money" *with new fin instruments being developed every day difficult to target policy use*
- Inflation rate - *M₃* *Central banks target inflation using 5+ interest rates.*
- Interest rate - *risk free rate short term interest rate on T-bills*
Central Banks need to manipulate this rate to keep inflation in acceptable range.
- Ad hoc adjustments to measured levels of economic activity
Should central bank control asset markets.

Optimal Monetary Policy

- Recognition that money supplies, broad or narrow, do not predict price developments: Charles Goodhart, we did not abandon monetary targets, they abandoned us!
- What should the central bank use as its instrument, if it wishes to target inflation?
- Taylor: $\dot{r} = f(\dot{I}(t-1), \text{Inflation-Target, Gap})$
- Gap is Output less Potential Output
- Weights: all positive, more than 100% on inflation

which money stock do you target. M2 target had banking sector innovates then M2 no longer targets inflation

is lag interest rate
output gap.
interest smoothing is going on. Inflation above target ~~increase~~ reduce output gap

Working of Taylor Rules

- What inflation rate should we target: CPI or Domestic Price Inflation? If most imports are intermediate goods, this is a non-issue.
- Should the Central Bank target the expected rate of inflation or "forecast inflation" relative to a target? Could not the central bank be over-reacting?
- How in the world do we measure the "output gap"? What is "potential output"?
- How low should the "target" inflation rate be?

use inflation over next 4Q not just on Q.

keep inflation around 4% so you have some interest rate mobility if things happen.

Seignorage and Dollarization: Multiple Equilibria

Equation 34
Equation 34

$$g - t = \frac{\Delta M}{P} = \frac{\Delta M}{M} \frac{M}{P}$$

$$g - t = \pi \frac{M}{P} \text{ with } \pi = \frac{\Delta M}{M}$$

gov. spending more than taking in the are taking you via inflation. People start holding dollars and begin using them as medium of exchange.

Equation 35
Equation 35

$$\frac{M}{P} = A e^{-\alpha \pi}$$

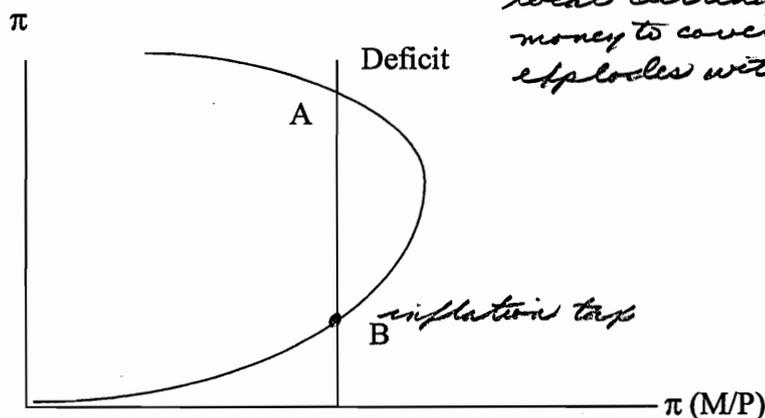
$$m - p = a - \alpha \pi,$$

$$m = \log(M)$$

$$p = \log(P)$$

$$a = \log(A)$$

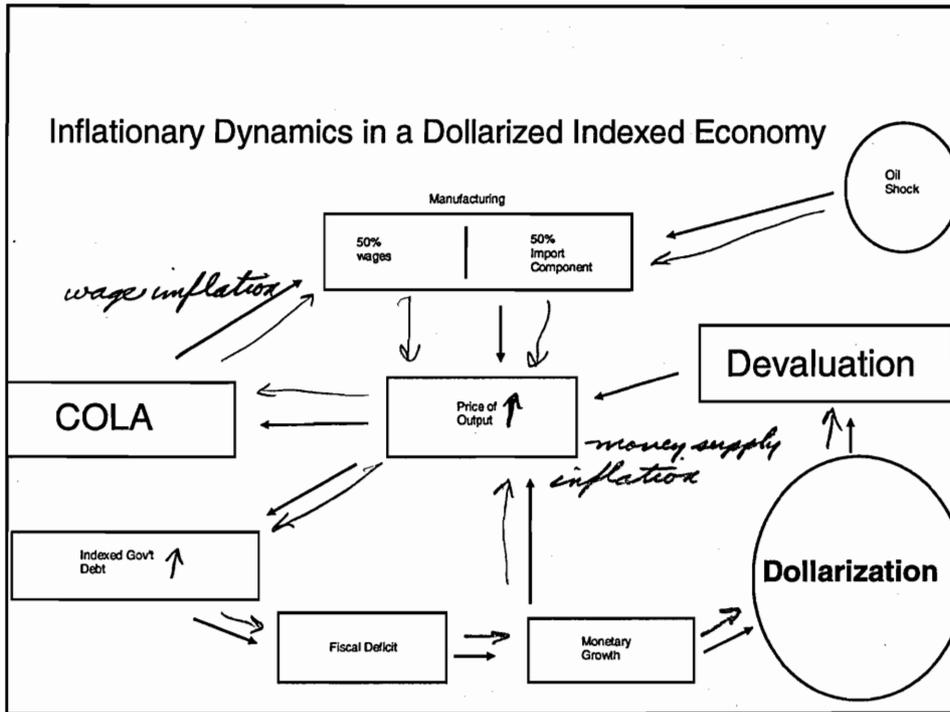
Inflation Laffer Curve



gov extracts tax, people reduce local currency, and gov pumps in money to cover deficit inflation explodes with no Δ in deficit

low deficit no problem. Same as about confidence in central bank.

Inflationary Dynamics in a Dollarized Indexed Economy



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Thank you

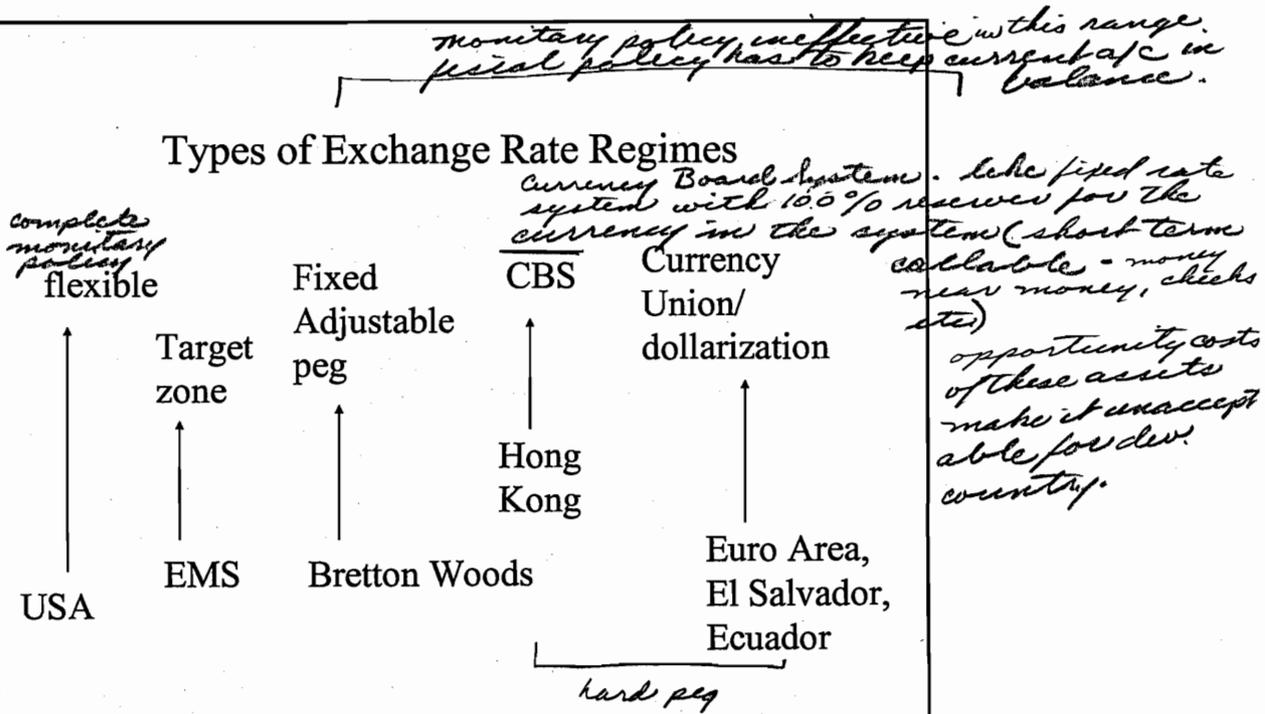




External Policy Regimes



Types of Exchange Rate Regimes



not resolved: what is the best system?

Copenhagen corner solution countries in middle are opposed to speculation.

Regimes and Shocks

effect of shocks on output

Exchange Rate Regime

<i>Shock</i>	Fixed	Flexible
<i>internal shocks</i> <i>swing in demand</i>	<i>increase in imports</i> WEAK <i>money sup contracts</i>	STRONG
<i>commod p.</i> <i>external shocks</i> <i>oil shocks</i>	STRONG	WEAK <i>relative prices adjust, make oil p.t. demand ↓</i>

Speculative Attack on a Fixed Rate

- Countries on a fixed but adjustable peg need reserves if they are going to “hold” the exchange rate
- Soros: a “hedge fund” borrows massive amounts of local currency and converts it into dollars or another hard currency, starting a loss of reserves
- The country has to devalue, and the “hedge fund” repays the local currency loan by converting the dollars at a much better exchange rate

Unholy Trinity—Invitation for a Speculative Attack

- Fixed exchange rates
- Convertibility
- Independent monetary policy

you can have only 2 out of 3 not all. If you want fixed FX rates and convertibility you have to accept inter. interest rates.

Old Style Exchange Rate Crisis

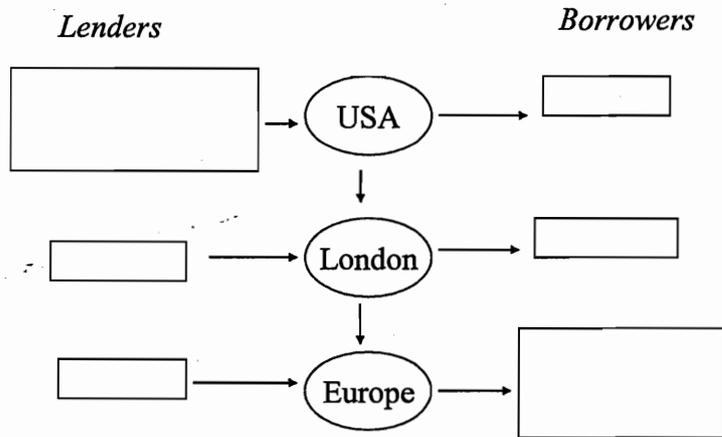
- Country runs a fiscal and trade deficit
- Exchange rate is over-valued .
- Everyone can see it coming—locals speculate against their own currency
- The actual "crisis" is a non-event, like waiting for the second shoe to drop.
- Examples: Argentina in the 70's, 80's, 90's

Mexico and Asia New style

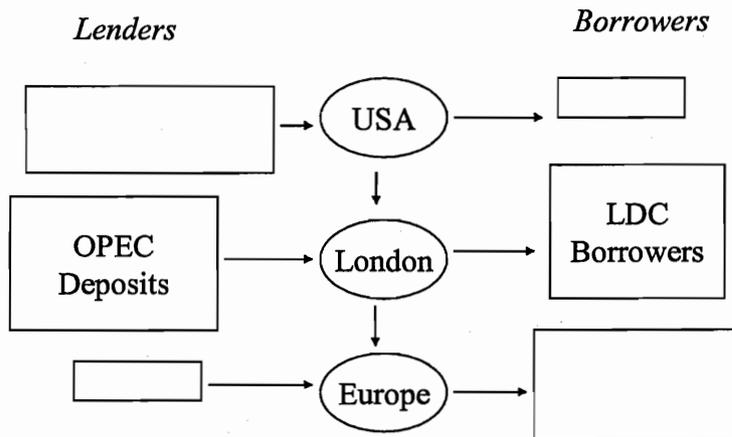
deficits in balance, FX OK investments come in banks not able to mgt. bad investments, high loss rates, capital flight.

→ no separation between banks and businesses made loans to subsidize us - governance problem

Internal Structure of Eurodollar Market: Capital Mobility



Eurodollar Market and OPEC Recycling



Controlling International Capital Movements

hard to limit K mobility after liberalized

- Direct restrictions on inflows
- Taxes on inflows
- Restrictions on outflows ("exchange controls")
- Multiple exchange rates
- Diverting transactions to gray or black markets

black market operations grow. financial system depends on currency arbitrage. Black mkt. & banking sector efficiency

Tobin Tax

- Efficient capital mobility leads to asset price instability
- Tobin: we need to "throw some sand" into the well-greased efficient machinery of international finance and capital mobility
- Problem with Tobin tax: Irish experience of the 1980's

Sequencing of Reform

- Price stability, fiscal balance first *stabilize first, get inflation under control, know real prices*
- Remove quantitative restrictions *trade restrictions*
- Unify the tariff system and gradually lower the tariff structure
- Labor market reform and flexibility in contracts, wage bargaining *develop greater mobility in labor force.*
- Domestic financial deregulation and supervision
- Liberalization of international capital market:
Inflows first, outflows second

factor market stabilization

capital flows from banking systems flow to investments that have real factors prices and marginal productivity of investment is known. Removes misallocation.

Political Economy of Reform and New Style Crises

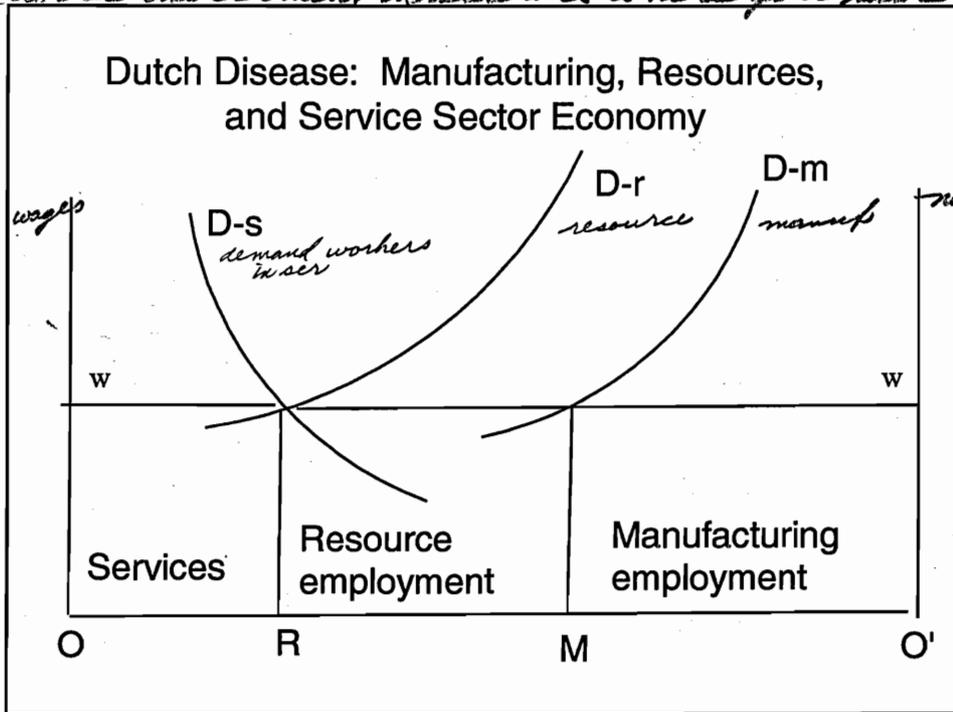
- In theory, sequencing with capital account liberalization last makes sense
- In practice, there is much resistance to budget balancing, tariff reform, labor market "flexibility"
- With a short electoral cycle, the quickest and easiest sector to "liberalize" is the capital and financial markets, little political resistance
- However, liberalization of financial markets with other distortions in place only makes matters worse, creates conditions for a "new style" crisis.

banks are the first that can be restructured not labor.

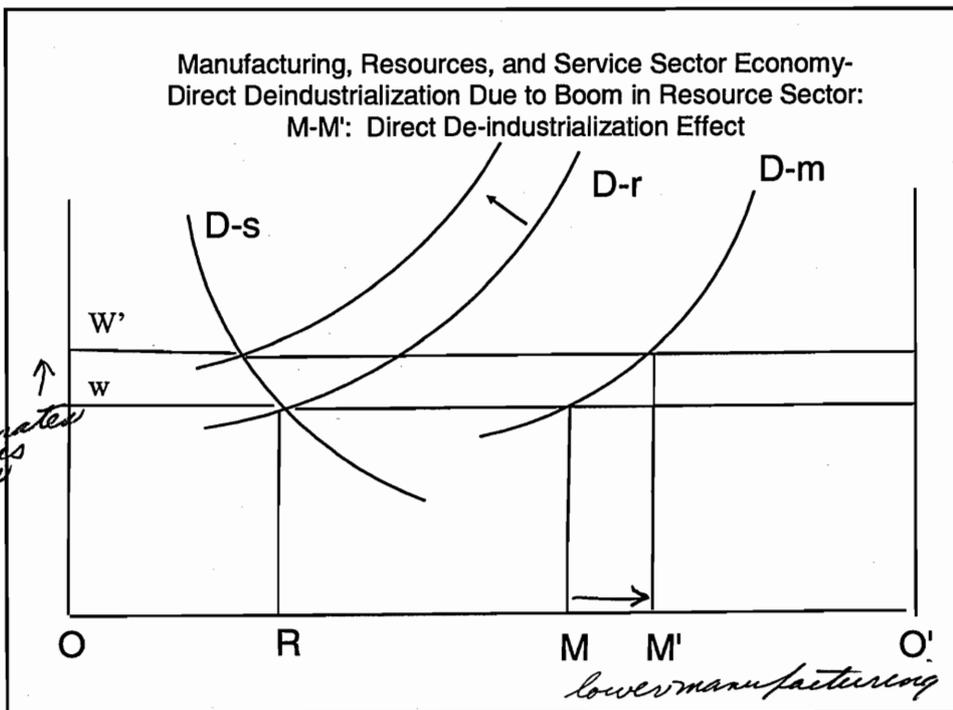
collusion, corruption, Cronism KKK Indonesia

oil boom → workers go to oil sector 1 round
 → increase demand for services because more money around. more workers leave industry. 2 round

booms/busts in resource P ⇒ industries recap but at higher capital out ratios ⇒ growing unemployment
 [lose investment in sectors where you have Comp adv]

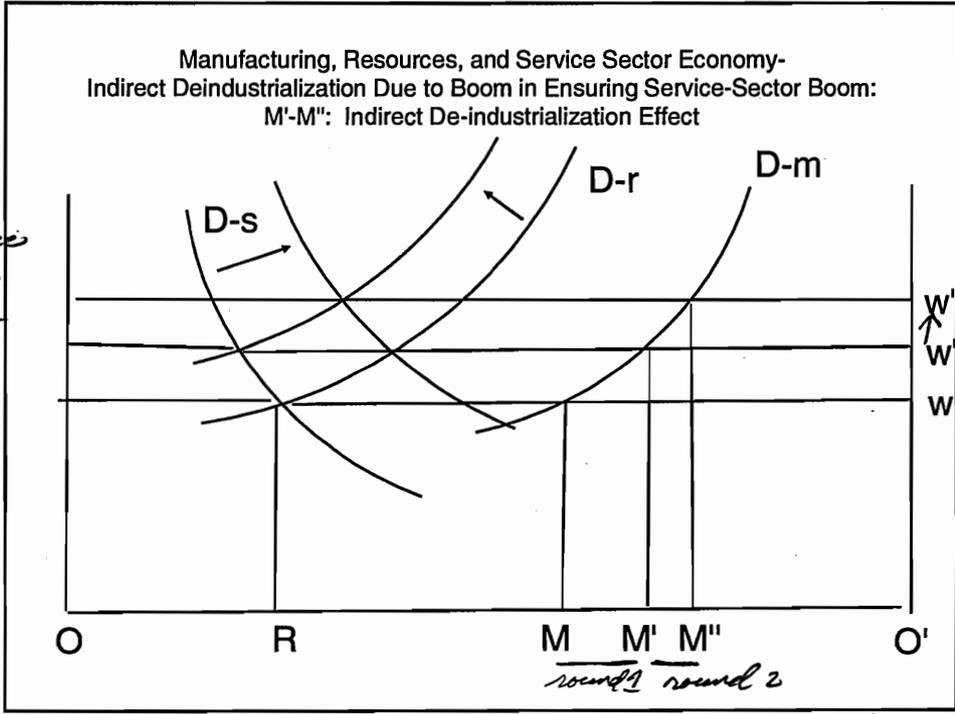


non tradable P ↑
 trad P ↓

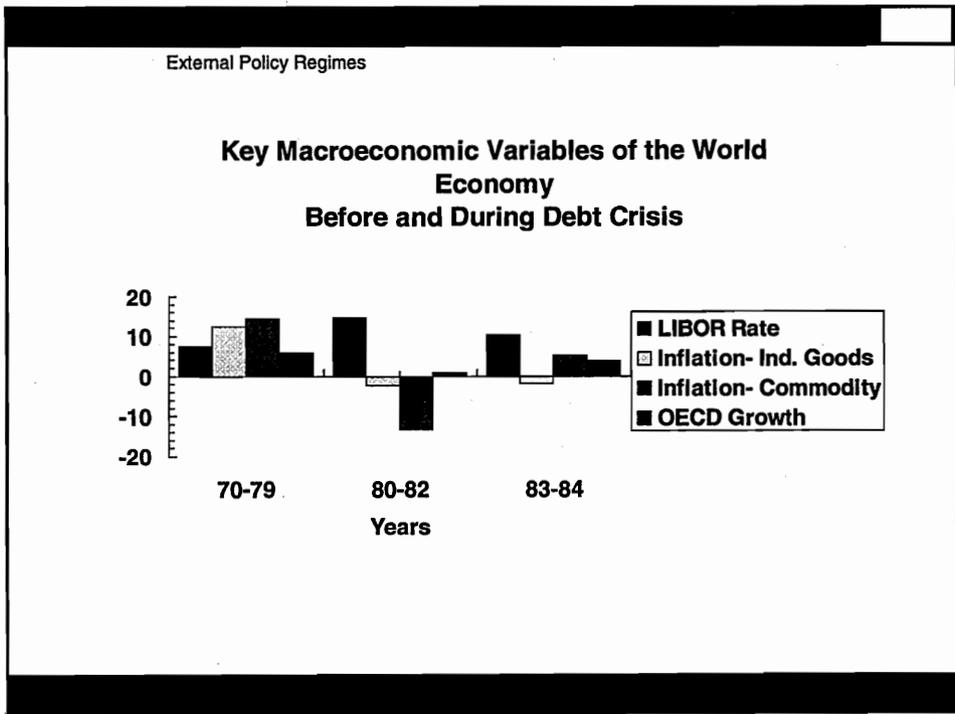


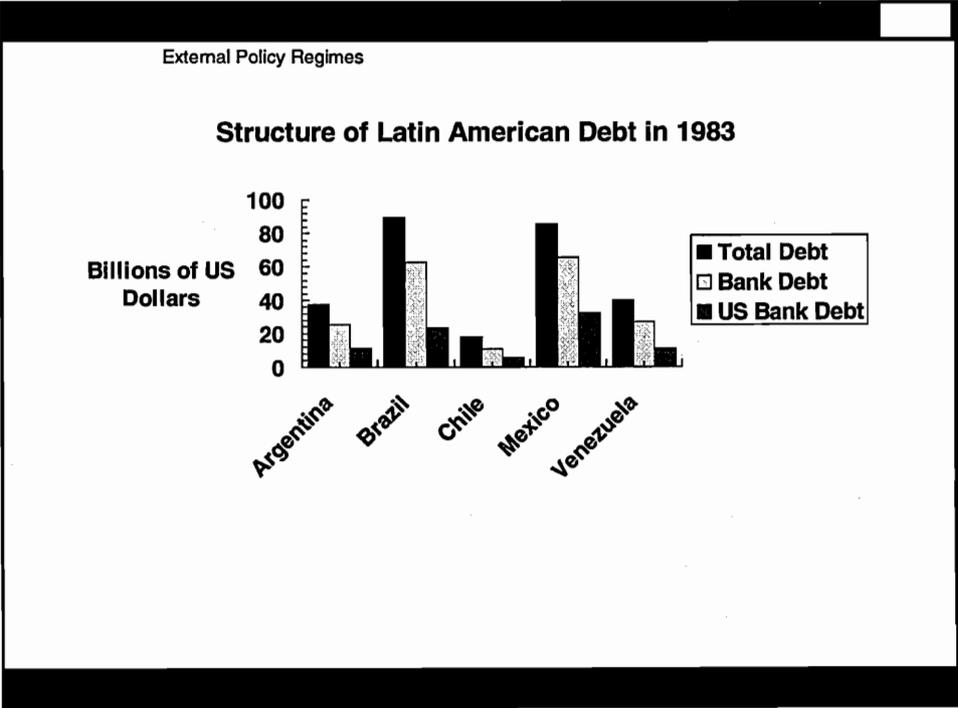
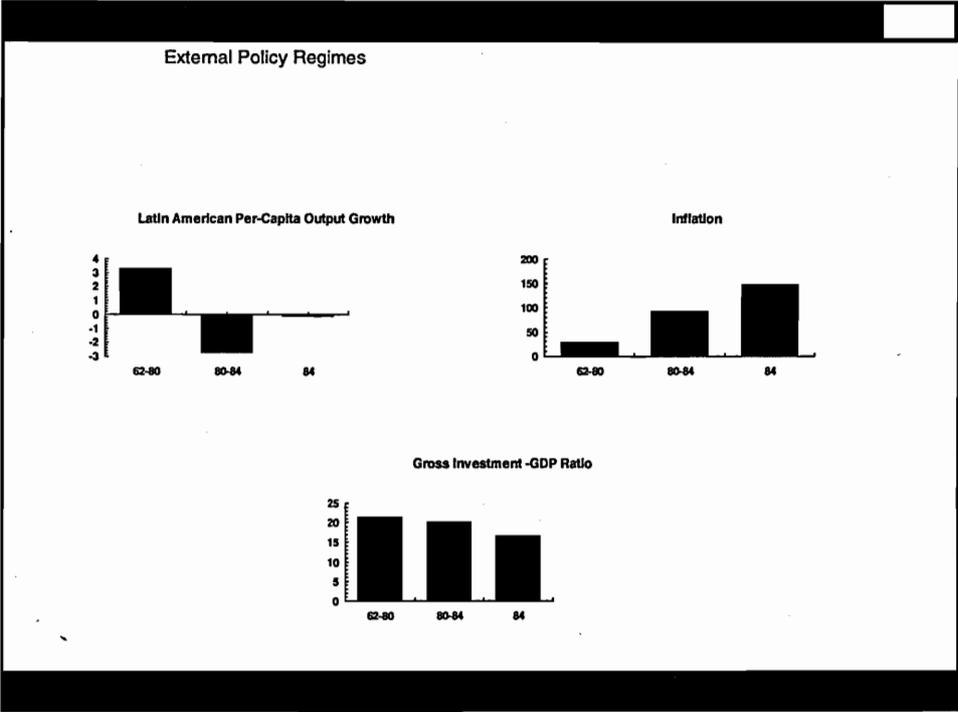
increased wages
 labor migrates
 resources
 to services

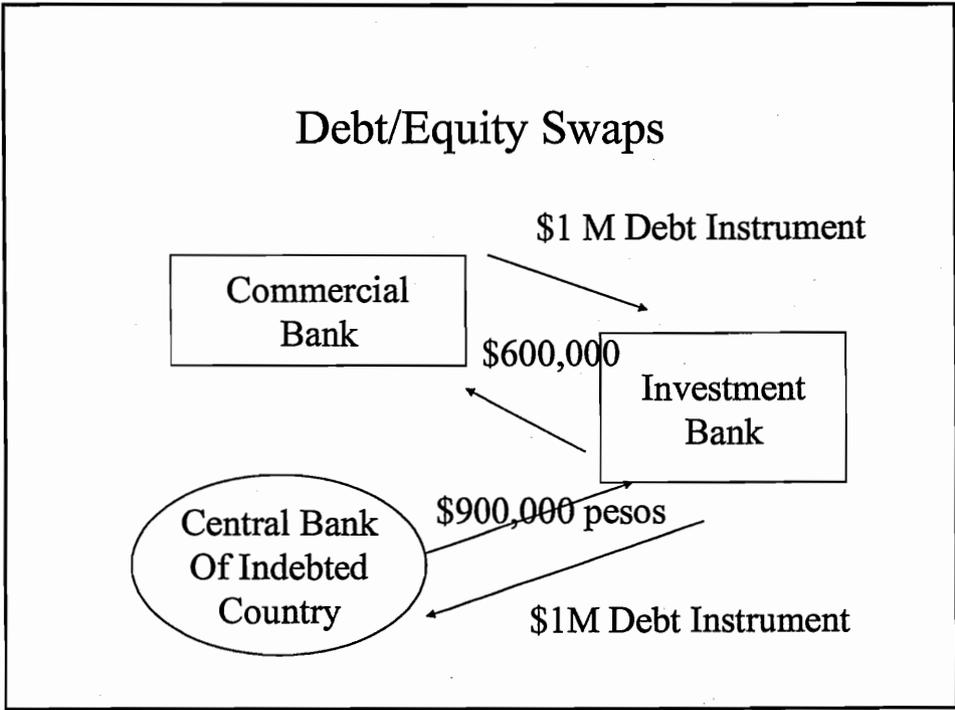
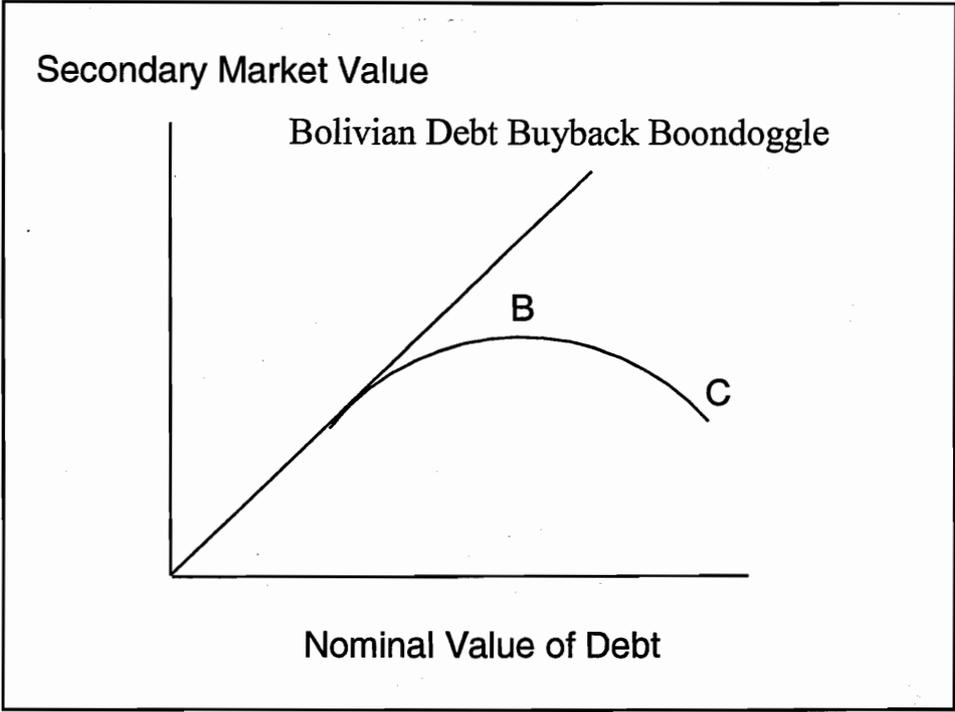
maybe a case for tapping resources booms and use resources to re-equip mfg or ag sector.



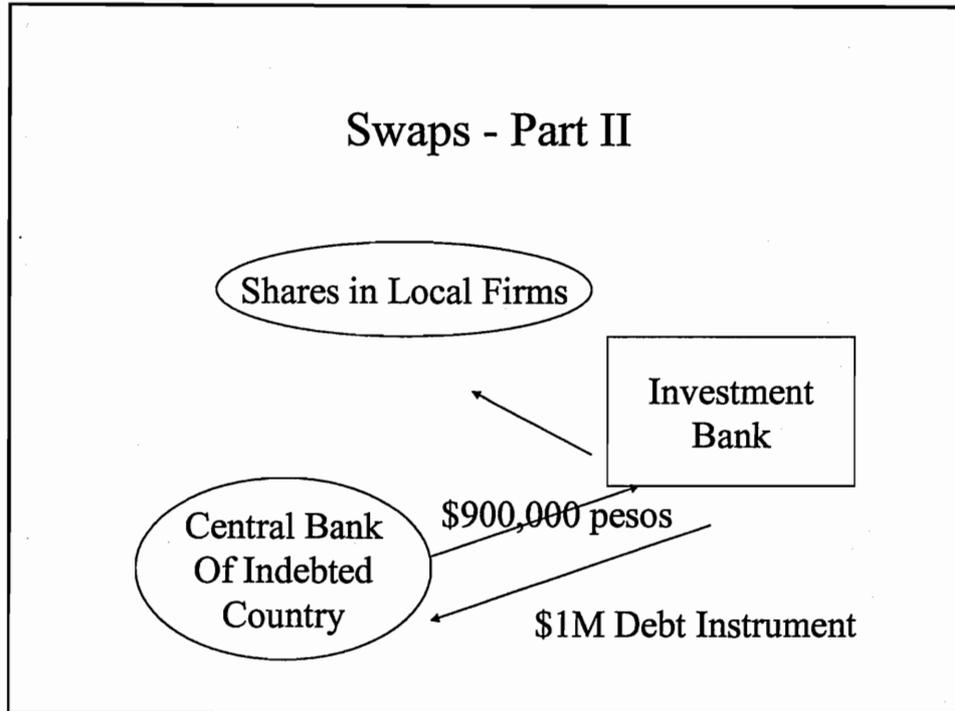
could lead to long term decline in M or ag.





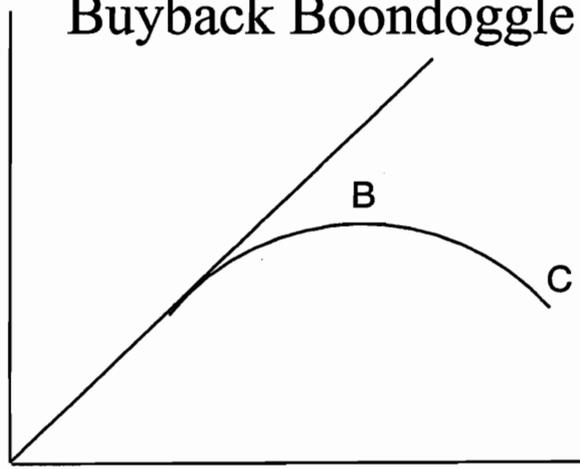


Swaps - Part II



Secondary Market Value

Buyback Boondoggle



Nominal Value of Debt



USAID Macroeconomic Policy Training Course

Thank you

Reading List for USAID/EGAT Macroeconomic Policy Training Course

Barth, Richard, Anthony Lanyi, and Paul McNelis (2003). Documents on Interrelations among the Macroeconomic Accounts, Ukraine Case Study, and other Course Materials. *[These provide notes and text that reflect the lectures and exercises carried out during the training course, obviating the need for participants to take detailed notes]*

Recommended but not provided: Corden, W. Max (2002). *Too Sensational: On the Choice of Exchange Rate Regimes*. Cambridge, MA: MIT Press. *[Short, nontechnical presentation of major macroeconomic policy issues for emerging market countries: clear, terse, timely explanations, with up-to-date case studies, by one of the most distinguished economists in this field. Despite the title, the text deals at length with the problems of effectively implementing fiscal and monetary policies in these countries.]*

Recommended but not provided: Easterly, William (2001). *The Elusive Quest for Growth*. Cambridge, MA: The MIT Press. *[Quite aside from stimulating discussions of the sources of growth and aid effectiveness, there are penetrating analyses of the interface between macroeconomic policy, IMF-Bank conditionality, governance, and longer-term development—especially in Chapters 6, 7, 11, 12 and 13.]*

International Monetary Fund, Fiscal Affairs Department (1995). *Guidelines for Fiscal Adjustment*. IMF Pamphlet Series, No. 49. Washington, DC: IMF. *[This is an admirably succinct, comprehensive, and policy-oriented review of how to assess fiscal policy issues and the considerations that arise in implementing fiscal policies.]*

International Monetary Fund, Policy Development and Review Department (2002). "Assessing Sustainability." IMF Document (May 28, 2002). Washington, DC. *[Defines and discusses in detail concepts of external and fiscal sustainability, as well as financial sector stability.]*

Khan, Mohsin S., Saleh M. Nsouli and Chorng-Huey Wong (2002). *Macroeconomic Management: Programs and Policies*. Washington, DC: IMF. *[This book, compiled by the IMF Institute, contains 11 articles on key topics in the analysis of macroeconomic policies. Topics include internal and external balance, sources of economic growth, the framework for monetary policy, inflation targeting, the role of fiscal policy in macroeconomic management, assessment of the fiscal balance, and exchange rate determination.]*

Recommended but not provided: Krugman, Paul R. and Maurice Obstfeld. (2002?) *International Economics: Theory and Policy (6th Edition)*. New York: Harper Collins. *[Standard textbook, which provides a detailed exposition of Dornbusch's AA/DD framework for analyzing macroeconomic policy in an open economy.]*

Lanyi, Anthony. "An Analytical Framework for Medium-Term Adjustment." (1995). IMF Institute course document. Washington, DC: IMF. *[This paper, written for training purposes, discusses the linkages between the financial programming framework of the IMF and policies]*

for medium-term macroeconomic adjustment.]

Mussa, Michael and Miguel Savastano (1999). "The IMF Approach to Economic Stabilization." M Working Paper WP/95/104. Washington, DC: IMF. [*This Fund document details the process of formulating, negotiating and monitoring IMF-supported financial programs.]*

Recommended but not provided: Sachs, Jeffrey and Felipe Larrain B. (1993). *Macroeconomics in the Global Economy*. Englewood Cliffs, NJ: Prentice-Hall. [*Excellent treatment of macroeconomics from the standpoint of small, open economies, with special attention to problems of developing countries, such as excessive external debt and high inflation.]*

Macroeconomic Management and Financial Programming Case Teams

NAME	EMAIL	MISSION	POSITION	
Group A - Briefing Room				
1 Julius	Schlotthauer	jschlotthauer@usaid.gov	Mozambique	Mission Economist
2 Leigh	Shamblin	lshamblin@usaid.gov	EGAT/EG	PEO-NEP
3 Hugh	Haworth	HHaworth@usaid.gov	EE.EG	Sr. Fin. Sect. Advisor
4 Martin	Hanratty	mhanratty@usaid.gov	EGAT/PR/PASSN	PEO
5 Steve	Olive	solive@usaid.gov	Nicaragua	Chief, Trade and Agri-business Office
6 Paul	Crawford	pcrawford@usaid.gov	Uganda	SGDO
7 Luis	Gonzalez	lgonzalez@usaid.gov	Dom. Rep.	Econ. Pol. Coord
8 John	Stewart	jstewart@usaid.gov	Peru	Senior Trade & Investment Advisor
9 Peter	Duffy	pduffy@usaid.gov	EGAT/EG;EE/EG	NEP- PEO
10 Carl	Mabbs-Zeno	cmabbs-zeno@usaid.gov	E&E/PO	Economic Advisor
11 Joseph	Lessard	JLessard@usaid.gov	EGAT/EG	PEO-NEP
12 Mark	Gellerson	mgellerson@usaid.gov	EGAT/EG	Prog Economist
13 V. Meta	Mobula	vmobula@usaid.gov	D.R. Congo	

Group B - Collaboratory

1 Paul	Bruning	pbruning@usaid.gov	EGAT	NEP/Program Economist
2 Joseph	Goodwin	jogoodwin@usaid.gov	Dominican Rep	Econ Policy Advsr
3 Lilliam	Baez	libaez@usaid.gov	Nicaragua	Trade/Inv Spec
4 Cheick	Drame	cdrame@usaid.gov	Mali	CTO/Finance Proj
5 Vicki	Johnson	vjohnson@usaid.gov	EGAT/EG/PSE	PEO-NEP
6 Jim	Elliott	jelliott@usaid.gov	EGAT/EG	Prog Economist
7 Ravi	Aulakh	raulakh@usaid.gov	AFR/SD	Chf Econ
8 Brent	Omdahl	bomdahl@usaid.gov	EGAT/EG (NEP)	PEO-NEP
9 Michael	Greene	mgreene@usaid.gov	Croatia	Director, Office of Economic Programs
10 Jason	Singer	jsinger@usaid.gov	EGAT/EG	PEO-NEP
11 Marcia	Musisi-Nkambwe	MaMusisi-Nkambwe@usaid.gov	RCSA	PEO
12 Jean	Lange	jlange@usaid.gov	AID/W	Sr Fin Sec Advsr
13 Skip	Kissinger	skissinger@usaid.gov	EGAT/EG	Sr Pr Enter Advsr

Group C - Conference Room

1 Juan	Calvo	jucalvo@usaid.gov	ANE/SAA	OIC/Bangladesh
2 Rita	Aggarwal	raggarwal@usaid.gov	AID/W	Prog Economist
3 Lisa	Ortiz	lortiz@usaid.gov	AFR/DP/POSE	Sr Econ
4 Sheila	Roquitte	sroquitte@usaid.gov	AID/W	NEP
5 Charles	Mohan	cmohan@usaid.gov	LAC/SPO	Prog Economist
6 Olga	Selivanova	oselivanova@usaid.gov	Russia	Proj Mgmt Spec
7 John	Seong	joseong@usaid.gov	Bosnia	Dir/Ec Restr Off
8 Donald	Niss	dniss@usaid.gov	E&E/EG/MT	General Business Specialist
9 David	Gosney	dgosney@usaid.gov	USAID NEP	Prog Economist
10 Mario	Martinez	marmartinez@usaid.gov	El Salvador	Mission Economist
11 Ryan	Washburn	rwashburn@usaid.gov	USAID/WARP	Econ Off/Team Leader
12 David	Dod	ddod@usaid.gov	EGAT/EG	Prog Economist
13 Erin	Nicholson	enicholson@usaid.gov	EGAT/EG	PEO-NEP

Table 1. Ukraine: Selected Economic Indicators, 1994-98

	1996	1997	1998			IMF	Actual
			Group A	Group B	Group C	program	
GDP							
Real GDP (percent change)	-10.0	-3.0	-0.2	-0.6	0.3	0	-1.9
Net external demand 1/	7.5	-3.6	0.9	2.4	3.0	0.76	-0.169
Domestic demand 1/	-17.5	0.6	-1.1	-3.0	-2.7	-0.76	-1.73
Nominal GDP (in millions of hryvnias)	81,519	93,365	107,188	109,549	110,453	105,658	102,593
Gross national savings (S = GNDI - C) (percent of GDP)	20.0	18.8	17.6	18.6	21.2		18.3
Inflation							
GDP deflator (average for the year)	66.1	18.1	15.0	18.1	18.0	13.2	12.0
Consumer prices (period average)	80.2	15.9	10.9	9.8	12.4	15	10.5
Dec. to Dec.	39.7	10.1	12.0	10.0	14.7	29	20.0
External sector							
Current account balance (incl. transfers)	-1,184	-1,335	-413	328.6	949.5	-1,182	-1,296
(in percent of GDP)	-2.7	-2.7	0.0	0.0	0.0	-2.8	-3.1
Export volume (percent change)	11.5	1.5	1.3	2.2	2.9	0.8	-12.4
Import volume (percent change)	12.7	3.1	-0.8	-3.4	-4.2	-2.1	-14.3
Gross official reserves	1,994	2,375	717	1,047.4	1,386.0	1,240	782
(in weeks of imports f.o.b.)	5.2	6.3	2.0	3.0	4.0	3.1	2.2
Official external debt (medium/long term)	9,170	11,807	13,299	13,235.3	12,704.0	12,286	11,483
Debt service (percent of exports of G&S)	6.0	7.1	10.0	9.9	9.8	19.9	11.2
Exchange rate (HRV/US\$): Period average	1.83	1.86	2.20	2.3	2.4	2.5	2.5
End of period	1.88	1.90	2.50	2.3	2.4	3.4	3.4
Government finances (consolidated)							
Total revenue	36.7	38.0	37.8	41.5	40.5	34.3	36.0
Total expenditure	39.9	43.6	41.2	42.1	36.2	37.1	38.7
Overall deficit	-3.2	-5.6	-3.4	-0.6	4.3	-2.8	-2.8
External financing	-0.1	0.3	2.1	2.2	2.0	1.6	1.8
Domestic financing	3.1	5.2	0.9	-1.9	-7.1	0.5	0.5
Privatization	0.2	0.1	0.4	0.1	0.2	0.7	0.5
Money and credit							
Total money stock	34.0	33.8	1.1	32.9	7.2	10.0	25.3
Net foreign assets	20.4	-7.4	-4.0	26.7	26.8		-44.4
Net domestic assets	13.6	41.2	5.2	6.2	-19.5		69.8
M2 velocity (average)	10.0	8.5	8.5	7.5	8.5	7.7	7.3
Real credit to rest of economy (percent change)	-26.0	17.0	-29.5	0.0	2.0	-0.9	-2.8

1/ Percentage change in relation to GDP.

Financial Programming Case Study

Background Information

Ukraine

USAID

Macroeconomic Policy Training Course

December 15-17, 2003
Washington, D.C.

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I. INTRODUCTION

A. Background

The Republic of Ukraine—about 10 percent larger than France in terms of geographic area—covers 603,700 square kilometers. The population is 50.5 million, of which three quarters are ethnic Ukrainians and about one fifth are Russians. The Ukrainian Republic was proclaimed on November 22, 1917 and was established in December 1919. It became part of the former U.S.S.R. on December 30, 1922. Ukraine declared itself an independent state on August 24, 1991.

Ukraine's principal natural resource is its agricultural land, which forms part of the extremely fertile "black earth" zone. It also possesses some 60 percent of the former U.S.S.R.'s bitumen and anthracite coal reserves, along with more modest reserves of natural gas and petroleum. It has a variety of minerals, including manganese, uranium, and substantial reserves of iron ore. Agriculture accounts for about 12 percent of GDP and industry for about 25 percent. Principal exports include food products, chemical products, minerals, metallurgical products, and machinery; total exports in 1997 amounted to some \$15.4 billion. Ukraine is a major importer of energy, especially natural gas. Energy imports in 1997 accounted for about 40 percent of total imports of about \$20 billion.

Ukraine's economic performance since independence has been turbulent. Inflation reached 10,000 percent in 1993, reflecting the legacy of decades of pervasive controls and economic decay, as well as three years of economic mismanagement following independence. External arrears accumulated rapidly, and the cumulative decline in recorded output since independence is estimated at more than 50 percent. In late 1994, the government launched a comprehensive program of stabilization and reform, supported by financial resources and technical assistance from the IMF and World Bank, as well as bilateral donors and creditors. Subsequently a measure of macroeconomic stability was achieved by 1996, but output has continued to contract and deep structural problems remain, necessitating renewed efforts to reform and adjust the economy.

B. Economic Developments Through 1997

Ukraine's already weak economic performance deteriorated steadily following independence. The government finally launched a comprehensive program of macroeconomic stabilization and structural reform in October 1994. Measures taken in the closing months of 1994 focused on the liberalization of prices, the exchange market, and the trade regime. Most price controls were removed. Interest rates were raised, and banking system credit—including to the government—was strictly curtailed in an effort to forestall a slide into hyperinflation. The dual exchange system was abolished, and the

currency was allowed to float at the auction exchange market. In addition, most export quotas were eliminated.

While the efforts made in late 1994 were far-reaching, continued serious imbalances underscored the gravity of Ukraine's initial economic conditions. The government therefore introduced a second package of measures in spring 1995, which aimed to drastically reduce the rate of inflation. The new program focused on sharply cutting the budget deficit and on containing the expansion of money and credit. It also provided for an acceleration of structural reforms, especially in the areas of trade liberalization and privatization.

As a result of these measures, Ukraine achieved a measure of macroeconomic stability in 1996 for the first time since gaining independence. Inflation, which at times had bordered on hyperinflation, fell from 182 percent (December on December) in 1995 to 40 percent in 1996 and 10 percent in 1997. Output proved more fragile, however. Following declines in real GDP of 23 percent in 1994, and 12 percent in 1995, output is estimated to have fallen by a further 10 percent in 1996 and 3 percent in 1997—though much of the 1996 decline was attributable to poor harvest conditions, and the estimates do not take account of the growth of the informal economy. Uncertainty about the prospects for reform also had a negative impact on economic activity.

During 1994 and 1995, monetary policy continued in the stop-go pattern which had characterized the two years before the reform program was launched. Credit policy was alternately tightened to curb inflation, then relaxed to provide liquidity to banks and enterprises as well as to finance the budget deficit. In contrast, throughout 1996 until the summer of 1997 the authorities pursued a relatively tight monetary policy compared to previous years. Two factors made it possible to further limit domestic credit and broad money expansion during this period. First, the budget deficit in cash terms was reduced to nearly 3 percent of GDP in 1996. Second, the nascent treasury-bill market became much more active—especially in the second half of 1996 when foreign participation increased—allowing the government to finance the largest part of the deficit through treasury-bill sales. The country's new permanent currency, the hryvnia, was also introduced in 1996. Starting in the fall of 1997, however, as market sentiment toward emerging markets changed, nonresidents began to withdraw from the treasury-bill market, putting financial policy and external reserves under considerable pressure.

Substantial fiscal adjustment was achieved under the program as the cash deficit was reduced from a peak of 23 percent in 1992 to 3 percent in 1996. Much of the fiscal adjustment suggested by the cash deficit in 1996 was illusory, however, as the government continued to incur payments arrears on wages, pensions, and other benefits equivalent to about 3.0 percent of GDP. The cash deficit rose to 5.6 percent in 1997, but at the same time the government reduced the stock of arrears on wages, pensions, and social benefits by around 0.4 percent of GDP. Following the departure of nonresidents from the treasury-bill market in the wake of the Asian crisis in August 1997, the government borrowed from international capital markets at increasingly high interest

rates. This served to delay the needed fiscal consolidation and increase Ukraine's vulnerability to external shocks.

Ukraine's balance of payments was under significant strain throughout the early post-independence years, and the country accumulated substantial external arrears, especially on gas import payments. The situation finally began to improve under the stabilization program, aided by a rescheduling in 1995 of significant obligations falling due to Russia and Turkmenistan. External performance in 1996 was particularly strong, as exports grew by 14 percent in dollar terms despite a substantial appreciation of the real exchange rate. The current account deficit narrowed from 5.8 percent of GDP in 1994 to 3.4 percent in 1996 and 2.7 percent in 1997. As a consequence of these current account deficits external debt was growing rapidly, but remained manageable at end-1997.

Following the abolition of multiple exchange rates with the launch of the program in late 1994, the official rate was established at an exchange auction. But the authorities' exchange rate policy varied during the subsequent period. At times, the National Bank of Ukraine (NBU) allowed the exchange rate to move in response to market pressures. On other occasions, the nominal exchange rate was used to anchor expectations and the NBU intervened heavily in support of the rate. In September 1996, an exchange rate band (Hrv. 1.70–1.90 per dollar) was introduced. When foreign participation in the treasury-bill market resulted in large capital inflows starting in late 1996, the NBU used the opportunity to rebuild its reserves. But capital outflows associated with the pullout of investors from the treasury bill market in the fall of 1997 put pressure on the exchange rate and led to a sizable loss of NBU reserves during the remainder of the year.

C. Structural Reforms

By the end of 1997, important steps had been taken in key areas: price controls and profit margins had been eliminated; the trade regime had been substantially liberalized; the privatization of small enterprises was virtually complete and that of medium-size and large enterprises was underway; and restructuring of the agricultural and energy sectors had begun.

The progress on structural reforms was, however, considerably less than envisioned at the launch of the comprehensive reform program in late 1994. Macroeconomic stabilization is a necessary but not a sufficient condition for economic growth, and as of end-1997 a widening and deepening of structural reforms was urgently needed to pave the way for a sustained resumption of output growth and improved standards of living. The highest priority is to remove obstacles to the development of the private sector, including through establishing market-based laws and practices, reducing administrative obstacles, and accelerating privatization. Banking sector reform is needed to restore public confidence and channel financial resources to support private sector development and investment. Comprehensive restructuring of the crucial agricultural and energy sectors remains essential to create a market orientation, improve payments discipline and reduce the waste of public resources. Finally, there is an urgent need for fundamental reform of the

labor market, supported by a sweeping overhaul of the social safety net to improve targeting and cushion the impact of reforms on the most vulnerable groups in society.

REAL SECTOR DEVELOPMENTS IN UKRAINE

Ukraine experienced steep declines in output and real activity following independence in 1991, and the cumulative decline in reported GDP is estimated at more than 50 percent through 1997. Inflation, which had reached 10,000 percent in 1993, was finally brought under control and fell to an average monthly rate of less than 1 percent during most of 1997. Registered unemployment remained low, but underemployment was widespread. The pace of structural reform picked up in 1997, but much remains to be done.

I. OUTPUT DEVELOPMENTS

The decline in real GDP that had started in 1991 decelerated gradually from 23 percent in 1994 to 12 percent in 1995, 10 percent in 1996, and 3 percent in 1997 (Table 1.1). Output started to recover in some industrial and service activities due mainly to relatively stable prices and an export-led recovery in the metals sector. Furthermore, for most of 1997, there was greater availability of working capital as credit to the economy grew in real terms. However, the GDP estimates should be interpreted with caution given the continuing problems with estimating Ukraine's national accounts, including the role of the informal economy (see Box 1.1).

A. Production

Industry accounted for 25-35 percent of GDP in 1991-97. Total industrial output is estimated to have declined by 11.2 percent in 1995, 4.6 percent in 1996, and 1.1 percent in 1997, with substantial variations across industries. Several factors contributed to the continued decline in industrial production. First, budget constraints became increasingly hard—especially in regard to gas deliveries, where prices were raised close to international levels, distribution was no longer controlled by a national monopoly, and the government no longer guaranteed external payments. Second, with the decline in inflation, banks became more aware of the perilous state of their portfolios and of the large amounts of interenterprise arrears, and were increasingly reluctant to provide fresh credits to enterprises. And third, despite a pick-up in privatization, substantial restructuring of enterprises remained to be done before productivity gains could be realized.

Agriculture accounted for 10-15 percent of GDP between 1991 and 1997. It is a significant source of inputs to the large food processing industry, as well as demand for machinery and other industrial goods. Gross agricultural production declined in real terms by 4.6 percent in 1995, 10.3 percent in 1996, and 0.8 percent in 1997. The poor harvest in 1996 was blamed on adverse weather conditions; grain output improved significantly in 1997. There has, however, been a secular decline in agricultural productivity resulting from the lack of necessary agricultural inputs, such as mineral fertilizers. The livestock sector continued to contract in 1997, due in part to the lagged impact of the large drop in fodder production in 1996 and in part to an export tax on livestock and animal skins which acted as a disincentive to raise animals. Overall, the agricultural sector continued to be dominated by collectives and state farms, which accounted for 80 percent of agricultural land.

Box 1.1 The Informal Economy and Obstacles to Economic Growth

According to most observers, the unofficial economy plays an important role in Ukraine, although estimates of its size fluctuate widely from 20 to 80 percent of official GDP, depending on the methodology employed (such as money demand or electricity consumption). This is in addition to the official estimate of GDP, which already includes some measure of informal activity. Much of Ukraine's value added is in heavy industry (where the official statistics probably capture most of the activity), and both the size and value added of the services sector in Ukraine is small, so the upper-end of the estimate would certainly appear to be too high. Nonetheless, it is clear that the unrecorded sector in Ukraine is substantial and may be growing significantly faster than officially recorded sectors of the economy.

There are many reasons for the rapid growth of the unrecorded sector, but the policy environment—which at least in some respects remains hostile to private sector development—plays an important role. Surveys of Ukrainian businesses point to several areas of concern, including: (i) excessive or unfair taxation; (ii) instability and lack of clarity of laws; (iii) external trade regulations, taxes, and fees; (iv) remaining foreign exchange restrictions; (v) slow privatization; (vi) remaining price restrictions; (vii) harassment of various sorts by local administrations; and (viii) inflation. Beyond the policy environment itself, a large fraction of enterprises surveyed admitted to having to pay “unofficial” fees for various “services” such as installation of phone lines, enterprise registration, visits by health or tax inspectors, registration of imports and exports and border crossings, and obtaining loans on preferential terms.

Sources: *Ukraine, Accelerating the Transition to Market*, P. Cornelius and P. Lenain editors (IMF); *Some Thoughts about Ukraine's Gross Domestic Product*, A. Ghosh (mimeo IMF).

B. Expenditure

National accounts statistics are subject to many uncertainties as reporting systems are adapted to a market economy. These problems are compounded in Ukraine, where several years of high inflation make it difficult to separate real from nominal developments, especially with respect to the expenditure breakdown of GDP. While the magnitudes may be in some doubt, it nonetheless appears that fixed investment contracted sharply throughout the period, reflecting the adverse business climate and informal barriers described above (Table 1.2). Stock building appears to have slowed significantly in 1996 and 1997, in contrast to the previous few years, although some of the large accumulation reported for 1992-94 almost certainly reflected accounting problems which resulted in overestimates of past inventory accumulation. There is no doubt, however, that substantial stock building had taken place through 1997, and it remained an open question whether this stock of inventories would eventually be sold or merely scrapped. Consumption contracted steadily from 1991 through 1996 (with the exception of a real increase of 7 percent in 1995), but rose by 1 percent in real terms in 1997, entirely due to higher public expenditure.

II. PRICE DEVELOPMENTS

Ukraine was on the verge of hyperinflation at the end of 1993, when inflation reached 10,000 percent. Inflation remained high and extremely volatile through much of 1994 and the early months of 1995 (Table 1.3). Volatility during this period initially reflected a mixture of stop-and-go monetary policy and occasional large adjustments in administratively controlled prices, followed by the impact of price and exchange rate liberalization which were part of the comprehensive reform package launched in late 1994. As the reform package took effect, inflation fell quickly. Monthly inflation averaged around 5 percent during much of 1995, although it accelerated again toward the end of the year and into early 1996 following a loosening of monetary policy and reflecting further administered price adjustments.

Inflation decelerated rapidly starting in March 1996, mostly due to tight credit and monetary policies and a relatively strong exchange rate. In contrast to previous years, underlying inflation (i.e. excluding the impact of administered price increases) remained low throughout the rest of 1996 and 1997, and average monthly inflation fell below 1 percent for most of 1997. Annual inflation (December-to-December) fell to 10.1 percent at end-1997.

Virtually all remaining price and margin controls were eliminated by the end of 1996. Progress in demonopolizing the economy was only modest, but an anti-monopoly committee tried to prevent dominant firms from exploiting their market power following price liberalization. Trade liberalization has also helped to introduce price competition.

III. LABOR MARKET DEVELOPMENTS

Labor market trends during 1994-97 were fairly steady, and total employment decreased just marginally (Table 1.4). The share of the labor force in the state sector declined from 41 percent to 38 percent, while the share of employment in the private sector increased from 20 percent to 23 percent, reflecting both privatization and the emergence of new enterprises.

Officially recorded unemployment (which is based only on those who register with state employment centers) remained very low, at around 1½ percent of the labor force in 1997. In general, there was little labor-shedding, in large part because enterprises continued to be responsible for many social services—schooling, housing, medical care—so that workers preferred to remain notionally employed even if they were not being paid on time, if at all. Labor laws also made it difficult and costly for firms to lay off employees. Underemployment remained widespread, with a significant proportion of workers either on unpaid involuntary leave or only partially employed. For instance, a household survey in 1997 found that early 23 percent of employed workers were either on involuntary leave at some point during the year or were working at less than full time.

Real wages (deflated by the consumer price index) fell by about 16.7 percent in 1994, increased by 21.3 percent in 1995, then fell by 2.5 percent in 1996 and further by 2.2

percent in 1997 (Table 1.5). These figures were for accrued wages, however, which were frequently not paid on time. The stock of wage arrears at the end of 1997 was estimated to represent 13 percent of all wages paid during the year. About one-quarter of these wage arrears were to budgetary workers.

BALANCE OF PAYMENTS DEVELOPMENTS IN UKRAINE

Ukraine's balance of payments was under significant strain through the early post-independence years and the country accumulated substantial external arrears, especially on gas import payments. The situation finally began to improve under the stabilization program launched in late 1994, aided by a reduction of the current account deficit and by the rescheduling in 1995 of significant obligations falling due.

Ukraine's current account deficit fell from 5.8 percent of GDP in 1994 to 3.8 percent of GDP in 1995 and 2.3 percent in 1997 (Table 2.1). Exports grew sharply, led by trade with nontraditional trading partners. While there was a deterioration in the trade balance in 1996 and 1997, a significant part of increased imports reflected a higher price for imported gas, and it was more than offset by higher receipts for gas transit fees in the services account. With the unification of the exchange market and general liberalization of the external regime in late 1994, the share of barter transactions in total trade fell steadily to about 9 percent of exports in 1997.

Up to the mid-1990s, Ukraine accumulated external arrears on gas payments to Russia and Turkmenistan, and on debt payments to various creditors. However, the pace of arrears accumulation slowed sharply in 1995, followed by significant rescheduling. In 1996 and 1997, increasing confidence led to a sharp turnaround in estimated short-term capital flows. Combined with continued bilateral and multilateral disbursements—and a doubling of foreign direct investment (albeit from a very low base)—this resulted in a significant strengthening of the overall balance in 1996 which was maintained in 1997. With exceptional assistance in the form of IMF purchases and bilateral assistance (but no reschedulings), gross reserves increased by \$860 million during 1996 and by a further \$381 million during 1997. Official reserves nonetheless continued to be measured in weeks rather than months of imports. Outstanding external debt at the end of 1997 stood at about 23½ percent of GDP and represented a substantial burden on the budget.

I. THE BALANCE OF PAYMENTS

A. Current Account

Merchandise Trade

A rapid expansion of exports and imports began in 1995, following the liberalization of trade and payments in the latter half of 1994. Export growth accelerated to 13 percent in 1995 and to 14 percent in 1996 in dollar terms, led by exports to nontraditional trading partners. While total exports declined slightly during 1997, exports to nontraditional trading partners continued to expand very rapidly, increasing by around 30 percent. As a result, the share of BRO exports in total exports declined to less than 50 percent for the first time since Ukraine's independence. (Table 2.2.) While a steady shift in exports away from the BRO had been occurring in previous years—reflecting the gradual weakening of pre-independence trade links—a sharp decline in such trade started in late 1996, as a result of a dispute between the Ukraine and Russia over the collection of value added tax

(VAT) and excise duties and the imposition of import tariffs on sugar and other items. Nonetheless, Russia remained the single largest export market, accounting for nearly 25 percent of total exports. Key export markets in the rest of the world are China, Turkey, and Germany. Ukraine's main exports are ferrous and nonferrous metals, chemicals, and machinery (Table 2.3). Despite Ukraine's agricultural potential, the share of food items and raw materials in total exports has fallen in recent years to 13 percent in 1997. Factors contributing to this decline include poor grain harvests (particularly in 1996), restraints on exports imposed by local authorities, the trade dispute with Russia, as well as policy shortcomings such as the absence of a functioning land market and the slow pace of agricultural reform.

Ukraine's imports also rose rapidly in 1995 and 1996, by 10 percent and 24 percent respectively. Some of this increase was accounted for by a higher price for natural gas; the higher price of imported gas in Ukraine increased the value of imports but this was mostly offset by higher payments from Russia for gas transit to the west (see below). Imports fell slightly during 1997, largely on account of lower energy imports from Russia and Turkmenistan. The decline was due to lower demand (energy consumption has declined by 26 percent since 1991)¹, nonpayment of energy bills by Ukrainian enterprises which forced foreign suppliers to reduce their exports, and pricing differences. However, fuel and energy products continue to make up the bulk of Ukraine's total imports (42.2 percent in 1997), with natural gas alone accounting for 25.4 percent of total imports in 1997 (Table 2.3). On the basis of the liberalization of trade and payments system which took place in late 1994, and the real appreciation of the karbovanets/hryvnia during 1995-97, non-energy imports rose by about 74 percent from 1994 through 1997. A rising share of non-energy imports comes from markets outside the BRO, especially Germany, Poland, and the United States (Table 2.2). Key non-energy imports include machinery and equipment, chemicals, and some food and agriculture items (Table 2.3).

Services

The services account is dominated by Ukgazprom, a wholly state-owned company that owns and operates 34,500 kilometers of gas transmission pipelines which are used to transport Russian gas to Western European markets. Ukraine signed a framework agreement with Russia in 1996 which increased the price of gas imports and the pipeline charges for gas transit through Ukraine to levels more consistent with world charges. Increased service receipts for gas transit in 1996 largely offset the higher price of gas imports noted above, and accounted for most of the increase in net nonfactor service receipts in that year. Despite a slight decline in gas transit pipeline fees in 1997, nonfactor service receipts increased by about 3 percent that year. Other transit receipts, which include a substantial share of freight shipping services, were also estimated to have risen in 1995-97, although part of this could be nothing more than improved statistical

¹ At the same time, recorded GDP has fallen by about 60 percent, suggesting that efficiencies in the use of gas remain limited.

methodology. The latter is also the most likely explanation behind the substantial increase in nonfactor payments in 1997.

Investment Income

Ukraine's two largest creditors are Russia (including RAO Gazprom) and the IMF. Interest payments to Russia, in respect of the 1995 rescheduling agreements and earlier borrowing, totaled \$261 million in 1997; interest payments to the IMF totaled \$108 million in 1997. Beginning in 1997, interest payments include payments to nonresident holders of domestic debt. In May 1997, Russia agreed in principle to cancel Ukraine's debt obligations to it (except for the Gazprom bonds) in exchange for Ukraine's cessation of its share of the Black Sea fleet and connected properties (as well as the rental of land plots and infrastructure facilities). The agreement was to come into effect in January 1998.

Current Official Transfers

Official transfers consist primarily of security-related aid (including nuclear disarmament and defense conversions), the decommissioning of the Chernobyl nuclear power plant, and other technical assistance. The large increase shown in Table 2.1 for 1996 and 1997 also reflects an improvement in data sources, including reports from international donors, together with increased provision of official transfers. Some private transfers may also be included.

B. Capital and Financial Account

Direct Investment

Ukraine's improving macroeconomic stability and liberalization of external payments appear to have been reflected in an increase in foreign direct investment from \$91 million in 1994 to \$266 million in 1995 and \$581 million in 1997. Of the total foreign direct investment of \$2.5 billion recorded following independence in 1991, the largest sources were the United States (17.4 percent), the Netherlands (9.5 percent), Germany (7.9 percent), and South Korea (7.5 percent). Food processing, wholesale and retail trade, machine building, and metal industries have attracted the most foreign investment.

Ukraine's performance nevertheless attracted foreign investment significantly below its needs, and well below actual investment in transition economies that began the reform process earlier. While there appeared to be substantial interest among foreign investors to bring capital to Ukraine, foreign inflows may have been discouraged by political and macroeconomic uncertainties. In addition, nontransparent legislation and regulations, poor management and incentives, and inadequate infrastructure are likely to have discouraged potential foreign investors (see also Box 1.1).

Medium and Long Term Loans

Disbursements of new medium and long term loans in 1994–97 (excluding exceptional financing, which is treated as a financing item) come mostly from trade credits made available by countries outside the BRO.

Exceptional financing includes IMF net purchases and disbursements on cash loans designed for general balance of payments or budgetary support (including World Bank adjustment loans and loans from the EU and bilateral creditors), as well as the proceeds from the issuance of Eurobonds. The structure of external financing changed in 1997 following Ukraine's entry into international capital markets. Prior to 1997, the largest source of exceptional financing was the IMF, followed by the World Bank.² In 1997, the largest source was from private creditors (nearly \$400 million), followed by the IMF (\$286 million under two stand-by arrangements), the World Bank, the EU, and other creditors.

Principal payments to Russia and Turkmenistan represented the lion's share of all such payments during 1995–97 (nearly 80 percent during 1997), mostly on account of the debt arising from the consolidation of gas debts (to Russia and Turkmenistan) and overdrafts early in independence (to Russia only). Payments on bilateral loans (all of which are government-guaranteed) were much smaller. In theory, these payments were supposed to be paid by the final borrower rather than by the government, but in the event, the government's guarantee was exercised in servicing nearly the entire amount.

Short Term Capital Flows

A significant outflow of short term capital affected the balance of payments in 1995 (estimated as a residual item), particularly during the second half. In 1996, however, more consistent application of tight monetary and fiscal policies during the year limited seasonal outflows (which usually occurred during September–November), and for the year as a whole, short term flows were positive. A substantial, although unmeasurable, portion of short term inflows appeared to be financing the purchase of treasury bills, either directly or indirectly, which paid substantial margins over dollar-denominated securities. The authorities took advantage of this opportunity to help rebuild official reserves.

² Exceptional financing was especially large in 1995, reflecting the rescheduling of arrears on gas payments and other debts to Russia and Turkmenistan. The rescheduling with Russia spread repayment out over 10 years, while the smaller repayments due Turkmenistan were spread out over five years; both agreements provided for a two-year grace period.

The \$264 million net inflow of short term capital during 1997 masks considerable fluctuations within the year, particularly the significant outflows during the second half of the year. In the first half of 1997, net capital inflows amounted to over \$750 million, largely reflecting nonresident purchases of treasury bills. Increased confidence in Ukraine's monetary and exchange rate policies as well as substantial margins over dollar denominated securities contributed to the inflow of foreign capital. However, nonresidents gradually started to leave the domestic treasury bill market during the second half of 1997 as confidence ebbed in the face of inconsistent fiscal policy, uncertainties regarding the upcoming parliamentary elections, and the financial turmoil in Asia.

II. EXTERNAL DEBT

Ukraine's external debt grew rapidly after independence, reaching \$11.8 billion by the end of 1997 (Table 2.4). The rapid growth of debt resulted primarily from the cumulative current account deficits through 1996 and to the sharp increase in international borrowing in 1997. Nonetheless, the size of the debt stock (24 percent of GDP at end-1997) is not high relative to other developing or transition countries. Debt service corresponded to only 7 percent of exports of goods and services in 1997. Some 30 percent of the total debt is owed to the BRO (down from an average of 60 percent during 1994-96). Ukraine signed the "zero-option" with Russia in December 1994, under which Ukraine would not be responsible for Soviet external debt while renouncing its claims on Soviet external assets.

III. TRADE POLICIES

Since 1993, Ukraine has taken steps toward reforming its trade regime but progress so far has been mixed.³ While implementation was good in (higher-priority) areas such as in eliminating price controls and phasing out the system of export quotas, state trading, and state orders, there have been delays and setbacks in other areas, notably in reducing the level and dispersion of tariffs; in addition, a variety of nontariff barriers serves to complicate the regime and render its operation nontransparent. While it is difficult to undertake cross-country comparisons of trade regimes, it would appear that Ukraine's trade restrictiveness falls in the middle of the group of BRO countries, although it is somewhat more restrictive than the transition countries in eastern and central Europe.

³ The essential components of trade policy reform include: eliminating state trading (including centralized imports) and state orders, along with the corresponding system of export quotas; eschewing import quotas, including import licensing restrictions; replacing export quotas with export taxes, and then eliminating all export taxes in tandem with the liberalization of domestic prices; and finally, adopting a simple, relatively open and transparent, tariff-based import regime with a low uniform rate.

IV. THE EXCHANGE RATE AND COMPETITIVENESS

With the launch of the stabilization program in late 1994, multiple exchange rates were abolished and the exchange rate was established at an exchange auction. The authorities' exchange rate policy varied during the subsequent years, however: the NBU allowed the exchange rate to move in response to market pressures during some periods, while on other occasions, the nominal exchange rate was used to anchor expectations and the NBU intervened heavily in support of the rate. In September 1996, an informal exchange rate band was introduced at the same time as the new permanent currency, the hryvnia. At the same time, Ukraine accepted the obligations of Article VIII of the IMF's Articles of Agreement, signaling its intention not to restrict convertibility of the hryvnia for making international payments for current account transactions.⁴

The currency appreciated significantly in real terms following the price liberalization and exchange market unification in late 1994. From December 1994 through December 1997, the real exchange rate (measured with the consumer price index) rose by more than 100 percent against the U.S. dollar (Table 2.5) and by 41 percent against the Russian ruble (Table 2.6). It is more difficult to assess the trend in terms of unit labor costs. Dollar wages in Ukraine remained well below those prevailing in many of its competitors, including Russia and the Baltic countries, as of end-1997. As discussed in Part 1, however, the problems with employment statistics make it difficult to obtain direct measures of productivity which are needed to calculate real unit labor costs.

An assessment of competitiveness must also take into account the choice of the base period, which is somewhat arbitrary. While the real appreciation from end-1994 through end-1997 could have given rise to concerns that Ukraine was losing competitiveness, the nominal exchange rate was almost surely undervalued at the end of 1994 following the exchange rate unification. In fact, a comparison of domestic and international prices for 290 tradable goods (with quality corrections) undertaken by a research center in Ukraine provided an absolute measure of international competitiveness which suggested that, on average, the hryvnia could appreciate further before international competitiveness would be fully eroded.

⁴ Capital account transactions are subject to registration/licensing requirements.

FISCAL DEVELOPMENTS IN UKRAINE

Substantial progress was made in fiscal consolidation between 1992 and 1996. The cash fiscal deficit was reduced sharply from its peak of 23.3 percent of GDP in 1992 to 4.9 percent of GDP by 1995. This improvement mainly reflected the elimination of directed credits and deep cuts in producer subsidies. The deficit was further reduced in 1996 to 3.2 percent of GDP through lower outlays for social protection, education, and health. However, the lower cash outlays for social spending reflected in part a sharp increase in arrears. The origin of these arrears lay in overly optimistic budget estimates of revenues which, in turn, led to budgetary expenditures that exceeded actual revenue collections.

The problem of arrears accumulation was compounded by institutional shortcomings. Line ministries did not curtail expenditure commitments in the face of revenue shortfalls, so expenditures were often made without sufficient funds. Until recently, the problem of expenditure control was exacerbated by the lack of a functioning treasury, which meant that line ministries could purchase goods and services without treasury approval (see Section II below).

The fiscal position deteriorated in 1997. The increased availability of foreign financing—as nonresidents developed a growing interest in Ukrainian treasury bills and the country gained access to international capital markets—weakened fiscal discipline in the run-up to parliamentary elections scheduled for early 1998. As a result, the cash fiscal deficit widened to 5.6 percent of GDP. However, budgetary arrears fell modestly as the government used the foreign financing to clear some arrears on wages, pensions, and other social expenditures.

Ukraine's social safety net comprises many separate programs established under the old centrally planned system where the government and enterprises each provided extensive social benefits. While some progress has been made in adapting the system to the requirements of a market economy, many of the programs remain poorly targeted and complex. These deficiencies, combined with severe financing constraints, have limited the provision of assistance to those most in need.

I. THE FISCAL DEFICIT

A critical component of the authorities' stabilization effort has been containment of the budget deficit. The substantial reduction achieved—from a peak of 23.3 percent of GDP in 1992 to 7.8 percent in 1994, 4.9 percent in 1995, and 3.2 percent in 1996 (on a cash basis, Table 3.1), was realized mostly through expenditure restraint since revenues also declined during that period (as happened in most transition economies). As noted above, however, the 1996 cash deficit understated the underlying deficit, as arrears for wages, pensions, and social benefits built up during the year amounted to an estimated 2.9 percent of GDP. Arrears accumulated in 1995 amounted to an estimated 1.2 percent of GDP, so the underlying deficit in 1996 was essentially unchanged from 1995 at 6.1 percent of GDP. (Table 3.2.)

The fiscal retrenchment between 1992 and 1996 was nonetheless substantial, and was accompanied by restructuring of the fiscal system to better support a market-based economy and in keeping with the goal of reducing the role of the government in the economy. These reforms were wide ranging, covering the revenue system, government expenditure policies vis-à-vis households and producers, and tax and expenditure administration practices.

The 1997 budget projected revenues optimistically at 42 percent of GDP and targeted a deficit of 4.6 percent of GDP. In the event, cash revenues fell far short of the target, reaching only 38 percent of GDP. In response, the government focused on borrowing and on daily cash management instead of cutting expenditures. As a result, the cash deficit reached 5.6 percent of GDP. At the same time, budgetary arrears on wages, pensions, and social benefits were reduced by about 0.4 percent of GDP; adjusted for payment of these arrears, the deficit amounted to 5.2 percent of GDP in 1997, compared with 6.1 percent in 1995 and 1996.

A. Revenues

Revenues remained high by the standard of BRO countries, notwithstanding the decline of about 5 percent as a share of GDP between 1994 and 1996 to 36.7 percent of GDP. The largest decline was observed in the collection of enterprises profit taxes, reflecting the contraction of real activity as well as some changes in enterprise taxation procedures. Declining revenues from enterprise profit taxes and the VAT were partly offset, however, by increased collections from payroll taxes, the personal income tax and other taxes. Even though personal income tax and payroll tax collections rose slightly as a percent of GDP, the increase was much smaller than the growth in nominal wages. The difference was accounted for by the buildup of wage arrears, which were estimated at around 1½ percent of GDP in 1996 and 1997. The sharp increase in other tax revenue between 1994 and 1996 reflected strong oil and gas tax receipts following the introduction in 1995 of royalties and a surcharge that raised industrial gas prices to world levels; royalties from oil and gas transit fees fell in 1997.

B. Expenditures

Expenditures were reduced by 8.2 percent of GDP between 1994 and 1996. The largest savings were achieved through reductions in producer subsidies and the elimination of directed credits. Expenditures on consumer subsidies were also reduced, but these savings were partially offset by increased expenditures on social programs to protect the most vulnerable groups. As mentioned earlier, most of the apparent further reduction in expenditures in 1996 merely reflected a buildup of arrears on wages, pensions, and social payments. Total expenditures rose by almost 4 percentage points of GDP in 1997, as social spending returned nearly to 1995 levels and there was some clearance of arrears on wages, pensions, and social benefits. At the same time, cuts were made in other programs designed to support the national economy, and in investment expenditures.

C. Financing

Interest by foreign investors in Ukrainian treasury bills started in 1996 and grew steadily through most of the following year. In 1997, the amount borrowed from the treasury bill market increased nearly threefold compared to 1996 and covered the major portion of the financing needs of the budget; the bulk of the treasury bills were purchased by nonresidents. Over time, the rapid accumulation of government obligations, together with the turbulence in Asian markets, affected investors' assessment of the Ukrainian economy and reduced their interest in the treasury bill market. This prompted the Ukrainian government to seek access to international capital markets. Ukraine floated its first Eurobond in August 1997. Despite the instability in international capital markets, Ukraine borrowed again in October 1997, although the amount was smaller and the terms less favorable.

II. INSTITUTIONAL ISSUES

Institutional aspects and deficiencies hampered efforts to adopt revenues and expenditures to the requirements of a market economy, and contributed to the recurrence of expenditure arrears.

A. Expenditure Control

Expenditure management has been complicated by: an unwieldy structure of government (with roughly 80 ministries and 30 spending agencies); a legal structure that varied revenue allocations and expenditure responsibilities from year to year; and practical and legal aspects of tax collection and ministerial rights. Since mid-1997, however, budgetary payments have been progressively taken over by an interim treasury that records most central government cash and noncash expenditures, and ministerial and departmental bank accounts have been closed.

B. Fiscal Federalism

Ukraine has a unitary system of government which includes, in addition to the central government: 1 autonomous republic, 2 city districts, 24 oblasts, 139 cities, 480 rayon district governments, and almost 30,000 villages and settlements. Oblasts and rayons act as agents of the central administration through a centrally-appointed executive and, at the same time, play a coordinating role for the smaller local governments.

Tax-sharing formulas among the various levels of government are not fixed until the time of the annual budget, as the general budget law only sets floors for revenue-sharing for the sub-national levels of government. This makes planning at the provincial and local levels a highly uncertain exercise, not least because there are often significant delays in the passage of the annual budgets. Even with a budget passed, there are additional institutional constraints to modifying spending. Ministries are not legally liable for overspending their budgets or for misallocating spending within the budget. The national government has no effective control over local spending to ensure that budgetary

spending requirements are carried out, and there is no way to hold back resources from local authorities that do not spend in accordance with budget priorities. As a result, the institutional structure fosters the buildup of arrears.

C. Tax Administration

The State Tax Administration (STA) began establishing a computerized tax administration in 1993. Notwithstanding this effort, the STA lacks resources in almost all areas of tax administration: the legal system does not provide adequate support (i.e., the rights of taxpayers and the STA are not clearly defined in law); penalties are too high; accounting methodologies do not meet international standards; enforcement is weak as the court system is not capable of handling potential tax cases; and STA auditors lack proper skills.

III. THE SOCIAL SAFETY NET

Ukraine has a plethora of social assistance benefits (Table 3.3). The biggest program is the pension system, which is a pay-as-you-go system financed by payroll contributions and direct transfers from the central government. The payroll tax rate is 33.6 percent, with all but one point paid by employers. The tax applies to the earnings of some 22 million workers and finances some 14 million pensioners (out of a total population of 50 million).⁵ High inflation in the early part of the transition period sharply eroded the real value of individual pensions. Most nonprivileged pensioners receive the minimum pension, which is less than the estimated poverty level. But the system's demographics and precarious budgetary situation has not permitted the minimum pension to rise faster than inflation, and has required that the maximum pension be capped below statutory levels. The resulting compression of the pension scale has left benefits largely unrelated to years of service and contribution. The pension system is extremely inequitable, with a large and growing gap between the pensions received by nonprivileged groups and those received by privileged groups, which include the military, civil servants, judiciary workers, and parliamentarians.

Payroll taxes finance several special funds in addition to the Pension Fund. A 4.4 percent payroll tax (paid by employers) finances the Social Insurance Fund. The fund, which is administered by trade unions, makes the bulk of its expenditures on health clinics and sickness benefits, as well as other benefit payments such as maternity leave and child birth allowances. A 2 percent payroll tax (also paid by employers) finances the Employment Fund, which provides mainly unemployment benefits and also training and job creation activities. Total outlays of this fund have been relatively small in light of the low official unemployment rate; however, there has been significant wastage owing to

⁵ As of end-1997, the eligibility age for pensions stood at 60 for men and 55 for women. Moreover, there were numerous professions and retiree classifications that received preferential pensions.

exceptionally high personnel and administrative costs. Finally, a 10 percent payroll tax finances the Chernobyl Fund, which was founded to absorb the human and environmental costs of the nuclear accident of 1986. The vast majority of the fund's expenditures are for social protection, including compensation payments, social insurance, and pension payments, although there are indications that the resources are often poorly targeted and not always used for the intended purposes.

There are multiple and complex family benefits, some of which began to be means-tested during late 1996. These include funeral benefits; maternity and childbirth allowances; child benefits for children under three years; monthly benefits for disabled children; additional benefits for families with three or more children; allowances for children living in households with income below the poverty line; grants for single mothers; and special benefits for children whose fathers served in the armed forces.

A targeted housing subsidy scheme was introduced in 1995 to protect the most vulnerable households as budgetary subsidies for household use of energy (coal, gas and electricity) and communal services (heating, water, sewerage and rent) were gradually eliminated and the prices raised toward cost recovery levels. In practice, the scheme cost little in 1995, due to cumbersome administrative procedures and delays in raising the cost recovery ratios. By the end of 1996, however, as prices of communal services were increased to 80 percent cost recovery and improvements were made in the administration and targeting of the program, the participation rate had increased to some 25 percent of households.

MONETARY DEVELOPMENTS IN UKRAINE

Monetary policy after independence largely reflected developments in Ukraine's public finances, given the almost exclusive reliance of the budget on the central bank for its large financing needs. From 1992 through 1995, monetary policy was characterized by a stop-go pattern, as credit policy was alternately tightened to curb inflation, then relaxed to provide liquidity to finance the budget deficit, as well as to provide liquidity to banks to fund directed lending to state enterprises.

This pattern began to change in 1996, as fiscal adjustment and growing activity in the domestic treasury bill market allowed the NBU to limit its credit expansion to government. Other factors also differentiated the authorities' policy stance in 1996 from that in earlier years. In the first half of the year, the authorities began to move forward with plans to replace the karbovanets with Ukraine's permanent currency, the hryvnia. Due to the political importance attached to the monetary conversion—and the great uncertainty generated by previous announcements of it—the authorities made a concerted effort to ensure its success. In particular, great significance was attached to the stability of the exchange rate in the period preceding the announcement of the conversion. In effect, this gave the NBU the political mandate for tight financial policies during 1996. The exchange rate consequently remained broadly stable throughout the year, and in September 1996, Ukraine introduced its new currency. The political mandate for tight policies also reduced pressures on the commercial banks to provide directed credits (primarily to the agricultural and energy sectors). Moreover, NBU refinancing—often used to provide liquidity for such operations—was modest compared to earlier years.

Ukraine's progress toward financial stabilization was disrupted by the financial crisis that hit many Asian economies during August and September 1997. The reversal of investor sentiment and the ensuing capital outflows in the fall of 1997 put financial policy and external reserves under considerable pressure. With reduced access to international and domestic creditors, the government once again relied heavily on borrowing from the NBU to finance the budget deficit and to service public debt. The decision to support the hryvnia in the face of substantial downward pressure on the exchange rate required heavy intervention by the NBU in the foreign exchange markets.

I. MONEY, CREDIT, AND INTEREST RATES

A. Money and Credit

The government's dependence on the central bank for financing its large budget deficits is reflected in Table 4.1, which shows that net credit to the general government comprised the NBU's largest asset by far, and was the main source of reserve money growth in 1995–97. A similar picture emerges at the level of the entire banking system, as summarized in the monetary survey (Table 4.3). Overall, the contribution to broad money growth of credit to the government considerably exceeded that of credit to nongovernment in 1995–97 (Table 4.5).

The principal monetary development during 1996 was the introduction of Ukraine's permanent currency, the hryvnia, in September. The importance attached—at all levels of government—to a successful introduction of the hryvnia resulted in a substantial easing of pressure for directed lending by commercial banks and the NBU. Moreover, demand for refinancing credit in 1996 was very moderate as banks exhibited caution in their general lending activity to the nongovernment sector, in part because of their own fragile state (see Section II). Instead, banks preferred to hold treasury bills whose real yields—though falling—remained very attractive. The banks' cautious behavior was also reflected in their often large holdings of unremunerated excess reserves.

Reflecting the generally good performance of the (cash) budget and the rapid expansion in the treasury bill market, the NBU's monetary and credit policies were tight through 1996 and part of 1997. Policy was tightened at the beginning of 1996 through increases in the required reserve ratios for both domestic and foreign currency deposits in an effort to reduce quickly excess reserves at commercial banks. This action was followed by tight credit policies as the NBU restricted refinancing by limiting the number of auctions and use of its Lombard facility, and by periodic NBU sterilization operations to offset its frequent net purchases in the exchange market. The NBU maintained its relatively tight credit policy during the first nine months of 1997, while strong participation of nonresidents in the treasury bill market allowed the budget to be financed without recourse to borrowing from the NBU. Throughout this period, the NBU kept the exchange rate near the (appreciated) edge of the band of Hrv. 1.70–1.90 per dollar.⁶

Government borrowing, however, delayed fiscal adjustment and structural reforms. This, coupled with the financial crisis that hit many Asian economies during August and September 1997 influenced investor perceptions of Ukraine. The foreign exchange and treasury bill markets became increasingly nervous during the fourth quarter of 1997 and investors started withdrawing due to concerns regarding the stability of the exchange rate and Ukraine's ability to repay. During this period, the NBU sold a considerable amount of foreign reserves to protect the exchange rate. At end-October, the authorities announced a number of measures to ease pressures in the foreign currency market and help keep the hryvnia within its band. These included increased interest rates, tightened reserve requirements, large-scale open market operations, and measures to enhance the attractiveness of treasury bills (including lowering the cutoff price and shortening their maturity). However, these measures were not sufficient to stem the loss of reserves associated with the decision to maintain the band: during the fourth quarter of 1997, net international reserves declined by about \$250 million.

⁶ This band was unofficially announced in April 1997; it was subsequently formalized in September that year.

B. Interest Rates

Most nominal interest rates began to fall in 1996 as inflation came down sharply (Table 4.6). Average commercial bank lending and deposit rates declined following several reductions in the statutory NBU refinance rate during this period.⁷ Nongovernment borrowing did not increase in response to the fall in the commercial bank lending rates, however, because of the cautious lending policies of commercial banks. Indeed, with the yield on 3-month treasury bills remaining high, commercial banks found holding treasury bills an attractive alternative to extending loans. It is not clear whether this crowded out lending to the nongovernment sector, however, since the commercial banks had previously kept large unremunerated excess reserves. The volume of treasury bills sold increased steadily, reflecting in part the rapid rise in the participation of nonresident investors in the market, particularly in the second half of 1996 through the third quarter of 1997.

The declining trend in interest rates was reversed in the last quarter of 1997. As noted above, large scale capital outflows during that period prompted the NBU to take action to maintain the exchange rate within its band. The statutory refinance rate was raised three times in as many weeks in October–November, from 16 percent to 35 percent, and 12-month treasury bill yields were increased from 27 percent to 38 percent.

II. THE BANKING SECTOR

Ukraine's banking sector consists of about 230 banks, many of which are small. Prior to 1991, the banking system consisted of Ukrainian branches of state-owned U.S.S.R. banks. Since independence, many private banks have been established in an environment characterized by low entry costs (no minimum statutory capital requirements initially) and limited banking supervision. In February 1996, the NBU acquired full authority to license banks: it increased the minimum statutory capital requirement and began to relicense banks and liquidate those that did not comply with prudential regulations. As a result, the growth in the number of banks has stopped.

Despite the large number of banks, Ukraine's banking system is small by international standards. The total assets of the banking system were equivalent to about \$6½ billion at the end of 1997—less than the assets of a single medium-sized commercial bank in a developed economy—or about 13 percent of 1997 GDP. The small size of Ukraine's banking system reflects the legacy of the centrally-planned system where commercial banking played virtually no role. But it also reflects the period of hyperinflation experienced by Ukraine shortly after independence. Confidence in the banking system has remained low and the public has held more currency in the form of cash than in the

⁷ Average interest rates on bank deposits fell less rapidly than average lending rates. This led to a reduction in the spread between these rates, from almost 100 percentage points at the beginning of 1996 to some 50 percentage points by year-end.

form of bank deposits. A substantial amount of national savings is also reportedly stored in the form of foreign banknotes and in overseas bank accounts.

Banking activity is highly concentrated, with seven large banks⁸ accounting for more than half of the assets of the entire banking system. Two of these banks (Exim Bank and Oschadny Bank) are state-owned, and two are new private banks. The remaining three large banks are former state-owned banks that were first corporatized in 1992. However, decision making in these three banks continued to be concentrated among senior management, which remained closely associated with the government; as a result, these were the banks most often targeted for directed lending operations throughout the mid-1990s. Aside from these seven banks, there are some 20 medium-sized banks (with assets of Hrv. 100-500 million) and 160 small banks (with assets of less than Hrv. 100 million). There are also around 28 banks with foreign capital operating in Ukraine, all of them in the form of subsidiaries; these banks specialize in corporate banking and are not engaged in retail banking.

The banking system plays a limited role in the Ukrainian economy. Households and enterprises are reluctant to hold deposits due to their lack of confidence in the banking system, the poor quality of banking services, and the risk that deposits may be seized arbitrarily by the state tax administration. Due to their financing constraints, banks extend only a limited amount of credit. Most of their credit portfolio consists of loans to the enterprise sector extended at interest rates closely linked to the NBU's refinancing rate. Approximately one half of the portfolio is noncollectible in full and represents either prolonged or nonperforming loans.

An indication of the health of the banking system in Ukraine can be drawn from banks' abilities to meet key prudential norms. On average throughout 1996, four of the largest fifteen banks in Ukraine were not conforming to the stipulated required reserve ratios. Several large banks also routinely violated norms governing lending exposure and risk. In addition, a large number of smaller banks did not meet minimum capital requirements, although all large banks conformed to this norm.

Beginning in 1996, the NBU took a number of significant steps toward addressing the problems in the banking sector. First, the system of licensing banks was improved by devolving all responsibility for licensing decisions to the Committee on Banking Supervision. The new system was applied through an operation to review the licences of all registered banks during 1996. Approximately two-thirds of all banks had been relicensed by the end of the year, with the remaining one third being smaller banks that did not meet the ECU 500,000 minimum capital requirement.

⁸ These banks have assets exceeding Hrv. 500 million each.

Second, in late 1996 a Bank Resolution Unit (BRU) was formed at the NBU, with the specific task of identifying problem banks and working out enforcement agreements for their restructuring. As one of its first steps, the BRU produced CAMEL⁹ ratings for the 30 largest banks in Ukraine. Based on these ratings, the BRU identified the first two private banks to be subject to enforcement agreements; one for restructuring and one for liquidation. In addition to these measures, the NBU drafted improved regulations for prudential reporting and loan classification by commercial banks, which were to take effect by mid-1997. An international audit of Oschadny Bank was also initiated.

Further steps in 1997 included the reorganization of the NBU's banking supervision department; improved monitoring of the financial status of banks, including the adoption of an enhanced version of the NBU's core prudential regulation; and the development of an early warning system.

Despite these important steps, banking supervision and regulation in Ukraine continue to be seriously hampered by several factors. The on-site inspection capacity of the NBU remains weak (the NBU began on-site inspections in 1997), and the prevailing accounting practices continue to obscure the true financial position of banks. Most importantly, however, there is still political interference in the enforcement of regulations by the NBU. This has resulted in the continuing deterioration of the health of many banks already identified as being in distress.

⁹ Capital adequacy, Asset quality, Management capability, Earnings and Liquidity.

Assumptions for 1998 for Preparing Baseline Scenario

I. Real Sector: Output, prices, and expenditures

1. **(Table 3)** Real GDP: The growth rate of real GDP should be projected as an average of the growth rates of the sectors: industry, agriculture, etc. Sector growth rates should be based on knowledge of recent and likely developments in each sector and analysis of recent trends. Here, industry should be projected to have zero real growth; services should be projected to grow at 3 percent; and the remaining sectors at their 3-year trend rates. Sector growth rates must be averaged according to the sector shares in GDP to arrive at the projected GDP growth rate but since the data in Table 3 include a statistical discrepancy in 1997, the sector shares should be recalculated or “normalized” to exclude the statistical discrepancy.
2. **(Table 4)** CPI: Monthly rate of increase for all of 1998 should be **initially** projected as equal to the average monthly rate of inflation in fourth quarter 1997 (on the assumption that monetary policy will remain as it was in that quarter.) Calculate the projected average and end-of period inflation rates for 1998.
3. The cell for the real growth rate of GDP in **Table 2** should be set equal to the calculated growth rate in **Table 3** and the cells for CPI in **Table 2** should be set equal to the calculated CPI inflation rate in **Table 4**.
4. Government consumption and government investment in nominal terms for **Table 2** should be taken from the projection of the Government General Operations, **Table 6**, based on assumptions given on projecting the accounts of the Government sector. Note that government consumption consists of expenditure on “education, health, and other social,” “defense, administration and justice,” and “other.”
5. The volume of exports and imports of goods and services in **Table 2** should be projected according to the assumptions for projecting exports and imports in the balance of payments for 1998, **Table 5**.
6. The growth of real private consumption in **Table 2** should be projected as equal to the real GDP growth rate
7. The growth of real private investment (value in 1998 at 1997 prices) in **Table 2** should be projected as a residual.
8. The percent change in the price of investment goods in **Table 2** is equal to the average of the percent changes in the price of imports and consumer prices.
9. The change in the exchange rate, in percent, in **Table 2** should be calculated based on the assumptions for projecting the balance of payments.

II. Balance of Payments (Table 5)

1. Exchange rate: Enter exchange rates in **Table 8**. Based on the exchange rate band established in January 1998, which specified a range of Hrv 1.8 to Hrv 2.25 per US\$, project the average exchange rate in 1998 to be approximately in the middle of the band at 2.01 Hrv per US\$, and the end-of-period rate to be Hrv 2.13 per US\$ (a rate consistent with the projected average for rate for 1998 and the end-1997 rate.)

2. Enter the percent change in the projected average exchange rate in **Table 2**.

3. Exports: Based on projections from the World Economic Outlook, the U.S. dollar price of exports of goods will increase by 0.7 percent in 1998. The relative price elasticity of export supply is projected to be equal to 0.2; Use this elasticity to calculate the volume change in exports for 1998 and enter the US\$ value of the projected 1998 exports in **Table 5** as equal to the 1997 value multiplied by (1+ percent change in volume) multiplied by (1+ percent change in US\$ price). Service credits should be projected to grow at the same rate as the value of exports of goods. The percent change in the volume of exports of goods and services should be entered in **Table 2**.

4. Imports: U.S. dollar price of imports is projected to decrease by 4.2 percent in 1998 based on projections from the World Economic Outlook; the income elasticity of demand for imports is projected to equal 1.0. The price elasticity of demand for imports is projected to be equal to -0.5. Calculate the projected volume change of imports for 1998 and enter the US\$ value of projected 1998 imports in **Table 5** as equal to the 1997 value multiplied by (1+ percent change in volume) multiplied by (1+ percent change in US\$ price). Service debits should be projected to grow at the same rate as the value of imports of goods. The percent change in the volume of imports of goods and services should be entered in **Table 2**.

5. Official current transfers: Based on government forecasts early in 1998, a 20 percent reduction should be projected for 1998 from the 1997 level (enter in **Table 5**).

6. Income receipts should be projected to be equal to income receipts in 1997 (enter in **Table 5**).

7. Interest payments: Payments of \$994 are due in 1998 (enter in **Table 5**).

8. Other income payments: Equal to other payments in 1997 (enter in **Table 5**).

9. Foreign direct investment: Projected as the average of FDI in 1996 and 1997 (enter in **Table 5**).
10. All medium and long-term borrowing from abroad represents borrowing by the government. Amortization of government external borrowing is scheduled to total \$1131 in 1998, and medium- and long-term loan disbursements, based on commitments, projected at \$528 million in 1998 (enter in **Table 5**).
11. Short-term capital: Based on developments during the last quarter of 1997, an outflow of \$750 million is projected (enter in **Table 5**).
12. Errors and Omissions projected to be zero in 1998 (enter in **Table 5**).
13. A final disbursement from the IMF under the 1997 SBA will be available in the first quarter of 1998 in the amount of SDR 36.3 million. Repurchases due to the Fund in 1998 are SDR 77.3 million. The average US\$/SDR exchange rate in 1998 was 1.3565. (enter in **Table 5**)
14. No exceptional financing under the assumption of unchanged policy in 1998 (enter in **Table 5**).

III. General Government Operations (Table 6)

1. Assume tax buoyancy equal to 0.98 for all taxes except foreign trade receipts, which should be assumed to grow at the rate of growth of imports of goods (Table 7); initially project non-tax revenues (Table 7) at 5 percent of GDP. Later, when interest paid to the NBU is projected for 1998, non-tax revenues should be increased by the value of these interest payments.
2. Project subsidies in 1998 to grow in line with nominal GDP.
3. Project all non-subsidy, non-interest (excluding any arrears clearance in 1997) domestic expenditures to increase in line with the growth projected for 1998 in the CPI; no arrears will be cleared in 1998. There will be no extrabudgetary operations and no directed credits in 1998.
4. Interest payments on official external debt: Stock of external debt at end-1997 equal to \$10.32 billion; interest rate equal to LIBOR of 6.08 percent. Apply LIBOR to one-half of any change in the stock of external debt in 1998.
5. Interest payments on official domestic debt: payments due on official domestic bank debt outstanding at end-1997 equal to Hrv 250 million. Interest payments on official domestic borrowing in 1998 charged at 34 percent (equal to the real interest paid at the end of 1997) plus the rate of inflation. Assume stock of official domestic non-bank debt equal to official non-bank borrowing in 1997.
6. Foreign borrowing (net) should be projected to be consistent with the balance of payments
7. Privatization receipts: Equal to amount for 1997.
8. Domestic non-bank borrowing: Based on developments during the last quarter of 1997 and early 1998, all of the non-bank financing obtained in 1997 is repaid in 1998 and no new borrowing takes place from the non-bank sector.

IV. Monetary Sector (Tables 8 and 9)

1. Velocity of broad money: Average velocity equal to the level in 1997.
2. Money multiplier: Unchanged from 1997 (consistent with unchanged policy).
3. Net foreign assets of commercial banks: unchanged in foreign currency terms from 1997.
4. Net foreign assets of the NBU other than net international reserves unchanged in foreign currency terms in 1998. Net international reserves of the NBU consistent with BOP.
5. Net domestic credit: "other" unchanged in 1998 from 1997.
6. Net domestic credit to banks: projection assumes same rate of growth as in 1997.
7. Foreign currency deposits in commercial banks: unchanged in foreign currency terms from 1997.
8. Other items (net): equal to Hrv -1,115 million for the NBU and Hrv -3,520 million for commercial banks.
9. Credit to general government: Half of the credit extended by the banking system to the government is projected to be from the NBU, as in previous years.
10. If the assets and liabilities of the NBU (**Table 9**) are not equal, project a value of reserve money equal to the assets of the NBU for 1998, use the money multiplier to recalculate broad money (M2) in **Table 8**, and recalculate the GDP deflator that would be consistent with the recalculated value of reserve money, given the projection already made for velocity and real growth in GDP. Change the projection of the CPI in **Table 4** so as to change the value of the GDP deflator previously calculated in **Table 2** to its recalculated value.

Assumptions for Financial Program

1. Targets: real growth of [choose] percent; inflation as measured by the CPI of [choose] percent per month; gross official reserves equal to [choose] weeks of imports of goods; increase in real credit to the private sector equal to [choose] percent.
 - a. Real growth rate target should be consistent with sector growth rates
 - b. Inflation rate should be consistent with GDP deflator derived from $Mv=GDP$
 - c. Gross official reserves target should be entered on "Indicators" table.
 - d. Increase in real private sector credit should be entered on "Indicators" table.
2. All global economic conditions are the same as the baseline.
3. Velocity of money and money multipliers: same as baseline.
4. Exceptional financing available in support of an adjustment program equal to \$750 million from the World Bank and \$845 million from other creditors.¹
5. IMF financial assistance under the EFF facility available equal to as much as 40 percent of Ukraine's quota of SDR 997.3 million²
6. Elimination of VAT exemptions will add 1.5 percent of GDP to government revenue
7. Expenditures of non-interest categories are policy variables.
8. The "before measures" column for 1998 should be projected based on the targets selected; financing entries in Tables 5 and 6 should also be based on the targets selected.
9. The "fiscal financing gap" is equal to the fiscal overall balance plus the sum of the financing elements, taking into account your targets, before any exceptional financing is received. The "BOP financing gap" is equal to the BOP overall balance plus the sum of the financing elements, taking into account your targets, before any exceptional financing is received.

¹ Please note that the receipt of exceptional financing will depend on having an approved program with the IMF.

² The IMF will agree to a program supported by the Fund's financial resources only if the country takes adequate adjustment measures to reduce its macroeconomic imbalances and only if there are no financing gaps in the BOP and budget.

Table 1. Ukraine: Selected Economic Indicators, 1994-98

	1994	1995	1996	1997	1998
					Baseline
GDP					
Real GDP (percent change)	-22.9	-12.2	-10.0	-3.0	-2.7
Net external demand 1/		2.1	7.5	-3.6	-0.7
Domestic demand 1/		-14.3	-17.5	0.6	-2.0
Nominal GDP (in millions of hryvnias)	12,038	54,516	81,519	93,365	102,937
Gross national savings (S = GNDI - C) (percent of GDP)	31.9	22.8	20.0	18.8	19.4
Inflation					
			<i>(In percent)</i>		
GDP deflator (average for the year)	895.3	415.8	66.1	18.1	13.3
Consumer prices (period average)	891.2	376.7	80.2	15.9	11.7
Dec. to Dec.	401.1	181.7	39.7	10.1	13.6
External sector					
			<i>(In millions of U.S. dollars unless otherwise indicated)</i>		
Current account balance (incl. transfers)	-1,396	-1,515	-1,184	-1,335	-1,116
(in percent of GDP)	-5.8	-4.1	-2.7	-2.7	-2.2
Export volume (percent change)	-15.8	4.8	11.5	1.5	-0.5
Import volume (percent change)	-13.8	0.6	12.7	3.1	1.0
Gross official reserves	646	1,134	1,994	2,375	404
(in weeks of imports f.o.b.)	2.3	3.7	5.2	6.3	1.1
Official external debt (medium/long term)	4,445	8,142	9,170	11,807	11,148
Debt service (percent of exports of G&S)	12.1	9.3	6.0	7.1	10.9
Exchange rate (HRV/US\$): Period average	0.50	1.47	1.83	1.86	2.01
End of period	1.08	1.80	1.88	1.90	2.13
Government finances (consolidated)					
			<i>(In percent of GDP)</i>		
Total revenue	43.7	39.1	36.7	38.0	37.5
Total expenditure	51.4	44.0	39.9	43.6	45.8
Overall deficit	-7.8	-4.9	-3.2	-5.6	-8.3
External financing	0.7	-0.9	-0.1	0.3	-1.2
Domestic financing	6.9	5.6	3.1	5.2	9.4
Privatization	0.2	0.1	0.2	0.1	0.1
Money and credit					
			<i>(Percent contribution to money growth)</i>		
Total money stock	335.5	97.0	34.0	33.8	-7.4
Net foreign assets	21.2	-40.8	20.4	-7.4	-32.7
Net domestic assets	314.3	137.7	13.6	41.2	25.2
M2 velocity (average)	6.4	10.8	10.0	8.5	8.5
Real credit to rest of economy (percent change)	14.7	-23.3	-26.0	17.0	-100.0

1/ Percentage change in relation to GDP.

Table 2. Ukraine: GDP, Prices and Volumes, 1998

Baseline

	1997		% Δ price			1998		Value (mil. HRV)		% share of GDP [I]
	Value (mil. HRV) [A]	% share of GDP [B]	U.S.\$ [C]	Hrv/\$ [D]	Hrv [E]= C*D	% Δ volume [F]	at '97 prices [G]= A*F	at '98 prices [H]= G*E		
Consumption	76,198	81.6	...	...	11.7	-3.4	73,644.0	82,290.7	79.9
Private	52,677	56.4			11.7	-2.7	51,256.0	57,274	55.6	
Government	23,521	25.2			11.7	-4.8	22,388.1	25,017	24.3	
Investment 1/	20,027	21.4	...	...	7.6	3.3	20,682.2	22,251.4	21.6
Private	19,491	20.9			7.6	3.3	20,126.0	21,653.0	21.0	
Government	536	0.6			7.6	3.9	556.2	598.4	0.6	
Exports 2/	37,894	40.6	0.7	8.0	8.7	-0.5	37,689.4	40,977.5	39.8	
Imports 3/	40,754	43.6	-4.2	8.0	3.4	1.02	41,169.2	42,582.8	41.4	
GDP	93,365	100.0	...	...	13.3	-2.7	90,846.5	102,936.8	100.0

1/ The percent change in the investment deflator [E14] may be calculated as the average of the percent change in consumer prices [E12] and the percent change in import prices [E18].

2/ The percent change in export volume [F16] may be calculated as the percent change in export prices [E16] relative to CPI inflation [E12] multiplied by the price elasticity of export supply [0.2].

3/ The percent change in import volume [F18] may be calculated as the percent change in import prices [E18] relative to CPI inflation [E12] multiplied by the average import price elasticity [-0.5], plus the import income elasticity [1.0] multiplied by the percent change in real output [F20].

1 **Table 3. Ukraine: Real Gross Domestic Product by Sector, 1994-98**

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	1994	1995	1996	1997	1998 Baseline
<i>(In percent of GDP)</i>					
Structure of GDP	100.0	100.0	100.0	100.0	100.0
Industry	35.0	31.0	27.5	24.6	28.0
Construction	7.4	6.9	5.9	5.2	5.9
Agriculture	14.6	13.8	12.2	12.1	13.7
Trade	5.1	5.3	5.6	7.9	9.0
Transportation	5.8	9.7	10.1	12.6	14.3
Other services	27.5	25.1	28.5	25.6	29.1
Statistical discrepancy	4.6	8.3	10.2	12.1	
<i>(Real percent change)</i>					
Real Gross Domestic Product	-22.9	-12.2	-10.0	-3.0	-2.7
of which:					
Industry	...	-11.2	-4.6	-1.1	0.0
Construction	...	-31.9	-34.0	-11.7	-5.7
Agriculture	...	-4.6	-10.3	-0.8	-1.4
Trade	...	-19.4	-15.1	3.0	3.0
Transportation	...	-18.0	-14.9	-11.8	-8.7
Other services	...	-5.6	-5.5	-4.5	-4.1

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34 Sources: Ukraine Ministry of Statistics; and IMF staff estimates.

Table 4. Ukraine: Consumer Prices, 1993-98

Consumer Price Index (CPI)						
Index (Dec. 1994=100)				Percentage change		
	Monthly	Yearly/Quarterly		Monthly	Yearly/Quarterly	
		End Period	Average		End Period	Average
1993		20.0	4.2		10155.0%	4734.9%
Q4 December	20.0	20.0	12.5	90.8%	360.5%	331.7%
1994		100.0	41.8		401.1%	891.2%
Q4 December	100.0	100.0	74.4	28.4%	171.2%	113.0%
1995		281.7	199.1		181.7%	376.7%
Q4 December	281.7	281.7	268.2	4.6%	21.2%	27.6%
1996		393.5	358.8		39.7%	80.2%
January	308.1			9.4%		
February	330.9			7.4%		
Q1 March	340.9	340.9	326.6	3.0%	21.0%	21.8%
April	349.0			2.4%		
May	351.5			0.7%		
Q2 June	351.8	351.8	350.8	0.1%	3.2%	7.4%
July	352.2			0.1%		
August	372.3			5.7%		
Q3 September	379.7	379.7	368.0	2.0%	7.9%	4.9%
October	385.4			1.5%		
November	390.0			1.2%		
Q4 December	393.5	393.5	389.7	0.9%	3.6%	5.9%
1997		433.3	415.8		10.1%	15.9%
January	402.2			2.2%		
February	407.0			1.2%		
Q1 March	407.4	407.4	405.5	0.1%	3.5%	4.1%
April	410.7			0.8%		
May	414.0			0.8%		
Q2 June	414.4	414.4	413.0	0.1%	1.7%	1.8%
July	414.8			0.1%		
August	414.8			0.0%		
Q3 September	419.8	419.8	416.5	1.2%	1.3%	0.8%
October	423.6			0.9%		
November	427.4			0.9%		
Q4 December	433.3	433.3	428.1	1.4%	3.2%	2.8%
1998 Baseline		492.2	464.591		13.6%	11.7%
January	438.0			1.1%		
February	442.6			1.1%		
Q1 March	447.4			1.1%		
April	452.1			1.1%		
May	457.0			1.1%		
Q2 June	461.8			1.1%		
July	466.7			1.1%		
August	471.7			1.1%		
Q3 September	476.8			1.1%		
October	481.8			1.1%		
November	487.0			1.1%		
Q4 December	492.2			1.1%		

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Table 5. Ukraine: Balance of Payments, 1994-98

	1994	1995	1996	1997	1998 Baseline
	<i>(In millions of U.S. dollars)</i>				
Current account balance	-1,396	-1,515	-1,184	-1,335	-1,116
Merchandise trade balance	-2,360	-2,298	-4,296	-4,205	-3,548
Exports, f.o.b.	12,111	13,647	15,547	15,418	15,442
Imports, f.o.b.	-14,471	-15,945	-19,843	-19,623	-18,991
Services balance	1,028	1,091	3,174	2,669	2,750
Receipts	2,602	2,789	4,799	4,937	4,945
Payments	-1,573	-1,698	-1,625	-2,268	-2,195
Income balance	-264	-508	-571	-644	-993
Receipts	7	27	131	180	180
Payments	-271	-535	-702	-824	-1,173
of which: interest	-271	-535	-505	-645	-994
Official transfers (net)	200	200	509	845	676
Capital and financial account balance	59	-2,042	282	749	-800
Direct foreign investment	91	266	526	581	554
Medium and long term loans, net	-1,065	-347	-482	-96	-603
New borrowing	451	649	234	698	528
Amortization	-1,516	-996	-716	-794	-1,131
Short term capital, net 1/	1,033	-1,961	238	264	-750
Errors and omissions	0	0	264	-203	0
Overall balance	-1,337	-3,557	-638	-789	-1,915
Financing	1,337	3,557	638	789	1,915
Gross official reserves (- = increase)	-513	-488	-860	-381	1,971
Net use of IMF resources	373	1,217	778	286	-56
Exceptional financing 2/	1,477	2,828	720	884	0
Memorandum items: BOP financing gap	0	0	0	0	0
Import volume relative price effect %Δ					3.72
Import volume income effect %Δ					-2.70
Export volume relative price effect %Δ					-0.54

1/ Includes changes in payments arrears.

2/ Includes reschedulings in 1994 and 1995.

Table 6. Ukraine: General Government Operations, 1994-98

Cash basis

	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
					Baseline					Baseline
	<i>(in millions of hryvnias)</i>					<i>(in percent of GDP)</i>				
Total budget revenue	5,040	20,618	29,943	35,476	38,581	41.9	37.8	36.7	38.0	37.5
Tax revenue	4,485	17,794	25,930	29,710	32,022	37.3	32.6	31.8	31.8	31.1
Nontax revenue	555	2,824	4,013	5,766	6,560	4.6	5.2	4.9	6.2	6.4
Total budget expenditure	5,790	23,188	32,551	40,665	47,157	48.1	42.5	39.9	43.6	45.8
Current expenditure	5,360	21,805	31,493	40,129	46,559	44.5	40.0	38.6	43.0	45.2
Consumer subsidies	502	687	1,426	3,743	4,126	4.2	1.3	1.7	4.0	4.0
Producer subsidies	1,449	1,890	3,453	2,830	3,120	12.0	3.5	4.2	3.0	3.0
Education, health, & other social	1,289	6,021	7,718	9,633	10,764	10.7	11.0	9.5	10.3	10.5
Interest payments	131	830	1,281	1,689	4,916	1.1	1.5	1.6	1.8	4.8
Foreign	...	...	...	...	1,224	...	...	...	...	1.2
Domestic	...	...	...	...	3,692	...	...	...	...	3.6
Defense, admin. & justice	508	2,450	3,644	4,460	4,984	4.2	4.5	4.5	4.8	4.8
Pension Fund outlays	897	4,119	7,025	8,394	9,380	7.5	7.6	8.6	9.0	9.1
Other	584	5,808	6,946	9,381	9,269	4.9	10.7	8.5	10.0	9.0
of which: Arrears clearance	...	...	...	1,086	0	...	...	...	1.2	0.0
Capital outlays	430	1,383	1,058	536	598	3.6	2.5	1.3	0.6	0.6
General government balance	-934	-2,662	-2,608	-5,189	-8,576	-7.8	-4.9	-3.2	-5.6	-8.3
Total revenue	5,257	21,327	29,943	35,476	38,581	43.7	39.1	36.7	38.0	37.5
Total expenditure	6,191	23,989	32,551	40,665	47,157	51.4	44.0	39.9	43.6	45.8
E. Financing	934	2,662	2,608	5,189	8,576	7.8	4.9	3.2	5.6	8.3
External	80	-478	-93	235	-1,212	0.7	-0.9	-0.1	0.3	-1.2
New borrowing ^{1/}	839	990	1,218	1,713	1,061	7.0	1.8	1.5	1.8	1.0
Repayments	-759	-1,468	-1,311	-1,478	-2,273	-6.3	-2.7	-1.6	-1.6	-2.2
Domestic	829	3,068	2,502	4,826	9,660	6.9	5.6	3.1	5.2	9.4
Bank	823	2,999	1,986	2,132	12,354	6.8	5.5	2.4	2.3	12.0
Nonbank	6	69	516	2,694	-2,694	0.1	0.1	0.6	2.9	-2.6
Privatization receipts	25	72	200	128	128	0.2	0.1	0.2	0.1	0.1
Memorandum items:										
Gross Domestic Product	12,038	54,516	81,519	93,365	102,937					
Primary balance	-803	-1,832	-1,327	-3,501	-3,660	-6.7	-3.4	-1.6	-3.7	-3.6
Fiscal financing gap	0	0	0	0	0					

1/ Including exceptional financing of the budget.

Table 7. Ukraine: Revenue of Consolidated Budget, 1994-98 1/

	1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
					Baseline					Baseline
	<i>(In millions of hryvnias)</i>					<i>(In percent of GDP)</i>				
Total revenue	5,040	20,618	29,943	35,476	38,581	41.9	37.8	36.7	38.0	37.5
Tax revenue	4,485	17,794	25,930	29,710	32,022	37.3	32.6	31.8	31.8	31.1
Turnover tax/VAT	1,300	4,530	6,293	7,602	8,214	10.8	8.3	7.7	8.1	8.0
Excises	169	406	652	1,158	1,251	1.4	0.7	0.8	1.2	1.2
Enterprise tax	1,426	4,861	5,451	5,689	6,147	11.8	8.9	6.7	6.1	6.0
Personal income tax	340	1,595	2,639	3,293	3,558	2.8	2.9	3.2	3.5	3.5
Chernobyl Fund receipts	241	1,026	1,488	1,698	1,835	2.0	1.9	1.8	1.8	1.8
Pension Fund receipts	922	4,189	6,988	8,455	9,136	7.7	7.7	8.6	9.1	8.9
Foreign trade receipts	87	429	444	704	681	0.7	0.8	0.5	0.8	0.7
Other tax revenue	0	758	1,975	1,110	1,200	0.0	1.4	2.4	1.2	1.2
Nontax revenue	555	2,824	4,013	5,766	6,560	4.6	5.2	4.9	6.2	6.4
Memorandum item:										
Gross Domestic Product	12,038	54,516	81,519	93,365	102,937					

Sources: Ukraine Ministry of Finance; and IMF staff estimates.

1/ Including the Pension Fund, which was not incorporated in the budget during 1991-93.

Table 8. Ukraine: Monetary Survey, 1994-98

	1994 December	1995 December	1996 December	1997 December	1998 Baseline
<i>(End of period; in millions of hryvnias)</i>					
Total Assets	3,188	6,930	9,363	12,541	11,609
Net foreign assets	449	-843	576	-125	-4,220
National Bank of Ukraine	314	-755	-572	-181	-4,282
Deposit money banks	135	-88	1,148	56	63
Net domestic assets	2,739	7,773	8,787	12,666	15,828
Net domestic credit	3,707	9,863	12,045	15,929	20,463
Net claims on general government	989	3,989	5,974	8,107	20,460
Claims on the rest of the economy	2,718	5,874	6,070	7,823	3
Other items, net	-968	-2,089	-3,257	-3,264	-4,635
Total Liabilities = Total money stock (M2)	3,188	6,930	9,363	12,541	11,609
Memorandum items:					
Average M2	1,876	5,059	8,147	10,952	12,075
GDP	12,038	54,516	81,519	93,365	102,937
Average velocity 1/	6.4	10.8	10.0	8.5	8.5
Money supply					11,608.9
Money supply (average)					12,074.9
GDP deflator (percent change)					13.3
Exchange rate (HRV/dollar, end of period)	1.08	1.80	1.88	1.90	2.13
(HRV/dollar, average)	0.50	1.47	1.83	1.86	2.01
Inflation (Dec/Dec, in percent)	401.1	181.7	39.7	10.1	13.6

Source: Table 4.3.

1/ Average GDP divided by average M2.

1 **Table 9. Ukraine: Accounts of the National Bank of Ukraine, 1994-98**

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	1994 December	1995 December	1996 December	1997 December	1998 Baseline
	<i>(End of period; in millions of hryvnias)</i>				
Total Assets	1,523	3,538	4,881	7,058	9,682
Net foreign assets	314	-755	-572	-181	-4,282
of which: Net international reserves	662	-213	-69	110	-3,955
Net domestic assets	1,209	4,293	5,453	7,239	13,964
Net domestic credit	1,350	4,694	6,366	8,079	15,079
Net credit to general government 2/	1,244	4,295	5,995	7,096	13,273
Credit to banks	108	418	549	1,000	1,824
Other	-2	-20	-178	-18	-18
Other items, net	-141	-401	-912	-840	-1,115
of which: Capital accounts	-76	-231	-421	-915	
Total Liabilities = Reserve Money	1,523	3,538	4,881	7,058	6,534
Memorandum items:					
Money multiplier: 1/	2.1	2.0	1.9	1.8	1.8

1/ Defined as money supply divided by base money.

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Table 10. Ukraine: Flow of Funds, 1998 (Baseline)

(In millions of hryvnias)

	Economy	General Government	Non- Government Sector 1/	Banking System 2/	Rest of the World	Horiz. Check
(-) Gross national disposable income (GNDI)	102,300	17,039	85,260			0
Consumption	82,291	25,017	57,274			0
Investment	22,251	598	21,653			0
Exports minus imports of goods and services	-1,605				1,605	0
Net factor income	-1,996				1,996	0
Net transfers	1,359				-1,359	0
Nonfinancial balances	-2,242	-8,576	6,333	0	2,242	0
Direct foreign investment			1,113		-1,113	0
Net foreign borrowing 3/		-1,212	-1,508		2,720	0
Change in net official international reserves 3/				3,849	-3,849	0
Change in domestic bank credit		12,354	-7,820	-4,534		0
Change in total money stock			932	-932		0
Change in nonbank credit		-2,566	2,566			0
Change in other items (net)			-1,617	1,617	0	0
Vertical Check		0	0	0	0	

Source: IMF Institute database.

1/ Calculated residually.

2/ Banking system flows exclude valuation effects.

3/ As shown in Table 6.6.

INTERNATIONAL MONETARY FUND

Assessing Sustainability

Prepared by the Policy Development and Review Department

In consultation with the Fiscal Affairs, International Capital Markets,
Monetary and Exchange Affairs, and Research Departments

Approved by Timothy Geithner

May 28, 2002

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I. INTRODUCTION

1. Assessments of external and fiscal sustainability are a key element in the Fund's work on member countries. The Fund's advice on macroeconomic policies, both in the context of Fund-supported programs and Article IV surveillance, is informed by a view of the sustainability of the country's external debt and its public debt. Judgments about debt sustainability—whether a country's debt can be serviced without an unrealistically large future correction in the balance of income and expenditure—underpin the Fund's decisions in program contexts, in particular by helping to determine when financing is appropriate, what might be a sensible level of access, and whether a debt restructuring may be needed. These judgments become particularly crucial—and in many cases, particularly finely balanced—in cases of emerging market economies that are highly integrated into global capital markets and may have large financing needs.

2. Assessing sustainability in the first instance means forming a view of how outstanding stocks of liabilities are likely to evolve over time. This requires projecting the flows of revenues and expenditures—including those for servicing debt—as well as exchange rate changes (given the currency denomination of the debt). Projections of the debt dynamics thus depend, in turn, on macroeconomic and financial market developments which are intrinsically uncertain and highly variable. Here, a key factor is the markets' willingness to provide financing, which determines the costs of rolling over debt. Such projections also frequently incorporate judgments, based on historical and cross-country experience, of what adjustment is politically and socially feasible. They also depend importantly on the exchange rate regime—both because the existing regime affects the variability of exchange rates and because a change in regime is always possible. Another complication is that the sustainability of a country's external debt depends on the balance sheets and revenue-expenditure balances of several different sectors—the government, the banking system, and the corporate and household sectors—which are also linked with one another by actual and contingent liabilities. These factors should be incorporated into assessments of sustainability insofar as this is feasible, given the availability of information.

3. A number of aspects of the Fund's existing work are relevant to assessing sustainability. Medium-term projections of the balance of payments and of fiscal developments are a staple of the Fund's work on member countries, particularly in a program setting. The staff has also developed a set of tools for exploring medium-term current account and real exchange rate sustainability. Such judgments have potentially important bearing on assessments of debt sustainability, notably when there is significant foreign currency denominated debt. Financial sector stability assessments, which have recently been added to the Fund's toolkit to help identify the vulnerability of the financial sector to various shocks, may have important implications for the contingent claims on the government. But, while all these elements are present in the Fund's work, their application has not been sufficiently consistent and disciplined to always ensure the credibility of the Fund's overall assessment of sustainability.

4. This paper proposes a framework that builds on existing best practices in the assessment of sustainability. The object of this exercise is both to strengthen the elements that go into assessing sustainability and to put these elements into a common framework.
5. The proposed framework for assessing both fiscal and external sustainability centers on the staff's baseline medium-term projections. First, it would continue to permit such projections to incorporate staff knowledge of country-specific conditions, while providing a greater element of discipline and transparency to these projections by laying bare the underlying assumptions and their implications. Beyond this baseline projection, the framework incorporates a standard set of sensitivity tests, examining the effects of alternative assumptions about the time paths of variables affecting the ability to service debt and the costs of financing it. It is intended that the framework would progressively be applied to surveillance of emerging market economies, as well as requests for use of Fund resources in the GRA, with appropriate modifications in light of initial experience.
6. The remainder of the paper is structured as follows. Section II lays out some of the general analytical issues. Section III discusses existing work in the Fund that goes into assessing sustainability, highlighting the aspects in which improvement is needed. Section IV proposes a new template, and discusses how this could have been applied in some recent cases. Section V concludes and outlines the future work program. Section VI presents issues for discussion.

II. ANALYTICAL BACKGROUND

7. It is useful to start with a definition of debt *sustainability* as a situation in which a borrower is expected to be able to continue servicing its debts without an unrealistically large future correction to the balance of income and expenditure. Sustainability rules out any of the following: a situation in which a debt restructuring is already needed (or expected to be needed); a situation where the borrower keeps on indefinitely accumulating debt faster than its capacity to service these debts is growing (a Ponzi game); or a situation in which the borrower lives beyond its means by accumulating debt in the knowledge that a major retrenchment will be needed to service these debts (even if nothing in the external environment changes). The cost of financing is a key factor influencing debt accumulation (i.e., the present value budget constraint), and thus sustainability. Sustainability thus incorporates the concepts of solvency and of liquidity, without making a sharp demarcation between them (see Box 1).¹ Moreover, the assumption of no expectation of major corrections

¹ Which aspect of sustainability—solvency or liquidity—is more relevant in making the sustainability assessment depends on the country circumstances and, in particular, its source of finance. For low-income countries that do not borrow from private capital markets, but may have a high debt ratio, liquidity is likely to be less of a concern than solvency. For many emerging market countries, although debt ratios may be moderate, the main sustainability risk may arise from liquidity problems.

in income or expenditure² captures the notion that there are social and political limits to adjustment that determine willingness (as opposed to ability) to pay, which may be especially important in a sovereign context.

Box 1: Solvency, Liquidity, Sustainability, Vulnerability—Defining the Concepts

There are a number of related concepts used in the discussion of debt dynamics.¹

Solvency. An entity is solvent if the present discounted value (PDV) of its current and future primary expenditure is no greater than the PDV of its current and future path of income, net of any initial indebtedness.

$$\sum_{i=0}^{\infty} \frac{E_{t+i}}{\prod_{j=1}^i (1+r_{t+j})} \leq \sum_{i=0}^{\infty} \frac{Y_{t+i}}{\prod_{j=1}^i (1+r_{t+j})} - (1+r_t)D_{t-1} \quad (1)$$

As discussed in the text, solvency needs to be viewed in relation to the adjustment path that is not only economically feasible, but also socially and politically acceptable such that default is not a preferred option.

Liquidity. An entity is illiquid if, regardless of whether it satisfies the solvency condition, its liquid assets and available financing are insufficient to meet or roll-over its maturing liabilities.

The distinction between solvency and liquidity is sometimes blurred because illiquidity may be manifested in rising interest rates—in the limiting case that no further financing is available, the marginal interest rate becomes infinite—which eventually calls into question the entity's solvency.

Accordingly, it is useful to define:

Sustainability. An entity's liability position is sustainable if it satisfies the present value budget constraint without a major correction in the balance of income and expenditure given the costs of financing it faces in the market.

Vulnerability. Vulnerability is simply the risk that the liquidity or solvency conditions are violated and the borrower enters a crisis.

8. More generally, assessments of sustainability must be predicated on the path of both policy variables (such as expenditure or tax rates) and on endogenous variables, such as

² This formulation does not rule out a situation in which a major correction is needed to adjust to a shock.

interest rates and growth rates, but around this central projection will be a number of risks. For instance, the balance of income and expenditure may deteriorate to an extent that the debt dynamics are no longer sustainable. On the income side, this would typically reflect a prolonged downturn or adverse developments in export markets. On the expenditure side, there may be increases in outlays that are difficult to avoid—such as demographic changes that impose a rising burden on (unfunded) social security systems—or that are unforeseen. Assessments of sustainability are thus inherently probabilistic and no framework can dispense with the need for making judgments: at best, it can help inform such judgments. What constitutes a “major correction” may depend very much on the particular history and circumstances of the country.

9. A particularly important source of uncertainty surrounding projections of debt and debt service is associated with contingent claims—such as those associated with either explicit or implicit guarantees of debt or bank deposits. Many contingent claims, by their nature, pass unnoticed in normal times, but are more likely to be exercised in crises. Indeed, such claims have been a key feature in recent emerging market crises, in which defaults in one sector have spilled over to others. But contingent claims are exceedingly difficult to measure in practice, both because amounts subject to such claims are often unknown, and because the terms of the claims—the precise circumstances under which they would turn into actual liabilities—are often unknowable.³

10. A second risk is an increase in the cost of financing. Such increases may reflect general developments in the financial markets—including possible contagion effects—or funding difficulties specific to the country in question. In the limiting case in which no financing is available, the effective marginal interest rate is infinite. Increases in the cost of financing may thus threaten sustainability in two ways—by precipitating a liquidity crisis, if the country is unable to rollover its maturing obligations, or, if the increase in interest rates is sufficiently persistent, by calling into question the long-term solvency of the borrower.

11. A third risk is that a sharp change in asset prices will increase the net liability position of the borrower to an unsustainable level. The most obvious example is a depreciation of the real exchange rate—possibly, though not necessarily, in the aftermath of the collapse of an exchange rate peg. Such exchange rate collapses have figured prominently in a number of recent crises, whether by raising the debt burden of the private sector (as in East Asia) or of the public sector (Brazil). A key factor in determining the subsequent dynamics of the real exchange rate is the extent of initial overvaluation. As some of these recent cases have

³ Such difficulties should not, however, preclude best efforts at estimating the potential costs of contingent liabilities, for instance by using cross-country historical experience on the costs of bank deposit guarantees or by using information contained in financial asset prices (or using the implied exchange rate volatility from option prices to estimate possible future values of the exchange rate and corresponding losses).

shown, however, once a crisis erupts, the magnitude of capital outflows can result in exchange rate adjustments far in excess of any initial estimates of overvaluation.⁴

12. As reviewed in Section III below, existing work on sustainability analysis within the Fund focuses on various aspects of the central projection and these risks to it. The purpose of the framework proposed in Section IV is tie together some of these elements, and to better discipline the process of making projections and undertaking sensitivity tests.

III. EXISTING WORK IN THE FUND

13. Given the importance of sustainability to various aspects of the Fund's work, a number of tools are already in use to assess it. In general, there are three aspects of sustainability that are analyzed in the course of the Fund's work: overall external sustainability, fiscal sustainability, and financial sector stability. The sustainability of corporate or even household debt is also studied as part of the Fund's analysis of the financial sector, in cases where this is seen as relevant,⁵ but it is not a standard part of the Fund's analytical toolkit.

14. This section will discuss briefly the analytical methods used to assess these three main aspects of sustainability and review of how systematically these have been applied in practice in the Fund. Many of these elements have generated a large literature; the purpose of the discussion here is not to provide a comprehensive review but to highlight the key elements that will be drawn upon in developing a proposed framework in the following section, also highlighting the aspects in which improvement is needed.

A. External Sustainability

15. Assessing external sustainability has a number of dimensions—judgments about whether the current account can be financed through private and official capital flows; projections of the medium-term balance of payments and the associated debt (or net foreign liabilities) dynamics; and assessments about the appropriate level of the exchange rate—that are clearly related through various stock-flow and trade elasticity relationships. Existing work at the Fund, whether in a program or surveillance context, touches upon each of these dimensions, while emphasizing those aspects that are particularly relevant to the application

⁴ See *IMF-Supported Programs in Capital Account Crises*, Occasional Paper 210; and "Balance Sheet Approach to Assessing Vulnerability to Crises, and Policy Responses," forthcoming.

⁵ As one illustration, early assessments of Japan's banking crisis analyzed the household sector's mortgage exposures in relation to developments in housing prices. See *International Capital Markets Part II. Systemic Issues in International Finance*, August 1993.

at hand. In addition to the standard indicators of debt and debt service,⁶ the main tools are medium-term balance of payments projections and benchmarks for assessing medium-term current account projections. Each of these will be discussed briefly in turn.

Medium-term current account and balance of payments projections

16. Medium-term balance of payments projections are a standard tool, used *inter alia* to assess a member's exchange rate, its need for Fund financing, and its ability to repay the Fund.⁷ The analytical basis of these projections is a variant of the simple intertemporal budget constraint (i.e., the equation showing debt accumulation as equal to the current account deficit plus any valuation changes). The intention is to trace the implications for future debt and debt service of a consistent set of macroeconomic assumptions, including with regard to growth rates, nominal exchange rates, inflation, and financing costs. These assumptions are not standardized but are adapted to the circumstances of the member. Typically, the same macroeconomic scenario used for these projections in the context of surveillance and use of Fund resources are also used for the World Economic Outlook (Table 1). Alternative scenarios are sometimes devised to present the implications of various policy paths or potential risks.

17. These projections often play a dual role—serving at the same time to trace the implications of a particular set of policies and to present the Fund staff's economic forecast. To the extent that the medium-term scenarios are based on stylized assumptions—such as constant nominal effective exchange rates—the staff may not view them as central forecasts.

18. A key question is the realism of the assumptions underlying medium-term scenarios, as well as the behavior they incorporate. There have been concerns that Fund staff projections of economic growth, in particular, err on the optimistic side, making it more likely that forecasts will show sustainability. There have certainly been a number of cases in which staff projections have repeatedly erred on the optimistic side (Box 2). But other observers see

⁶ One specific use of such indicators has been in the context of the HIPC initiative (see Appendix I, Box 1)

⁷ Such projections need to cover the medium term (rather than just the program period) because the determination has to be made that the member has the capacity to repay the Fund, taking into account the maturity of all indebtedness, including that to the Fund.

Table 1. Medium-term Frameworks - BOP Information in Board Documents for the EMBI Global Emerging Market Countries

Country	Medium-term framework	Time forward (years)	Indicators explicitly included in medium-term framework					Quantified sensitivity analysis for external debt
			external debt	current account	capital/fin. account	debt services	international reserves	
AFR								
Cote d'Ivoire	yes	4	yes 1/	yes	yes	yes 1/	yes	no 2/
Nigeria	yes	5	yes	yes	yes	yes	yes	yes
South Africa	yes	4	yes	yes	yes	yes	yes	no
APD								
China	yes	10	yes	yes	yes	yes	yes	no
Malaysia	yes	5	no	yes	yes	no	yes	no 2/
Philippines	yes	5	yes	yes	yes	yes	yes	yes
South Korea	yes	5	yes	yes	no	yes	no	no
Thailand	yes	10	yes	yes	yes	yes	yes	no
EU1								
Bulgaria	yes	5	yes	yes	no	yes	yes	no 3/
Croatia	yes	3	yes	yes	yes	yes	yes	no
Hungary	yes	3	no 4/	yes	yes	no	yes	no
Poland	yes	5	yes	yes	yes	no	yes	no
Turkey	yes	5	yes	no	no	yes	yes	no
EU2								
Russia	yes	15	no	yes	yes	yes	yes	yes 5/
Ukraine	yes	5	yes	yes	yes	yes	yes	no 2/
MED								
Algeria	yes	5	yes	yes	no	yes	yes	yes
Egypt	yes	5	yes	yes	yes	yes	yes	no
Lebanon	yes	5	no 6/	yes	no 6/	no 6/	yes	no
Morocco	yes	5	yes	yes	yes	yes	yes	no 2/
Pakistan	yes	3	yes 1/	yes	yes	yes 1/	yes	yes 7/
WHD								
Argentina	yes	5	yes	yes	yes	yes	yes	yes 7/
Brazil	yes	5	yes	yes	yes	yes	yes	no
Chile	yes	5	yes	yes	yes	yes	yes	no
Colombia	yes	10	yes	yes	yes	no	no	yes 7/
Ecuador	yes	10	yes	yes	yes	no	yes	no
Mexico	yes	5	yes	yes	yes	yes	yes	yes 8/
Panama	yes	5	yes 1/	yes	yes	no	no	no
Peru	yes	10	yes	yes	yes	yes	yes	yes 9/
Uruguay	yes	5	yes	yes	yes	yes	no	no
Venezuela	yes	5	yes	yes	yes	yes	yes	yes
Percent of total or average	100	6	87	97	87	77	87	33
By Department								
AFR	100	4	100	100	100	100	100	33
APD	100	7	80	100	80	80	80	20
EU1	100	4	80	80	60	60	100	0
EU2	100	10	50	100	100	100	100	50
MED	100	5	80	100	80	80	100	40
WHD	100	7	100	100	100	70	70	50

Source: Latest Staff Reports.

1/ Only public external debt and debt services are covered.

2/ There are alternative scenarios for the current account/overall balance, but not external debt.

3/ There is a brief discussion in the text.

4/ Net foreign debt is covered, but not total external debt.

5/ Analysis undertaken separately from staff report.

6/ Short-term projections over 2 years are presented.

7/ No table, but report includes graphs and discussion on the sensitivity of external debt in the text.

8/ In Selected Issues.

9/ No table, but quantitative discussion on debt dynamics sensitivity in the text.

Box 2: Debt Sustainability in the Baltics, Russia, and Other States of the FSU

During the 1990s, most of the Baltic states, Russia, and other states of the former Soviet Union (BRO) saw a marked increase in their external indebtedness. Starting from generally low initial levels of debt, the median debt ratio for these countries had risen to 60 percent of GDP by end-2000, despite having Fund-supported adjustment programs through much of this period.¹

An analysis of the underlying causes suggests that it was *not* the GDP growth-interest rate differential that accounted for the debt build up, mostly because of the low initial level of debt. Moreover, the steep real appreciations experienced by these countries helped offset the impact of the initial debt. The flip side of these real appreciations, however, were wide "primary" (i.e. excluding interest payments) current account deficits that were only partly offset by foreign direct investment.

While capital flows were generally welcomed as a sign of confidence in the economy and the transition process, FDI and other non-debt generating flows were overestimated, and the extent of the increase in external (and public) debt was not foreseen. As such, staff projections tended to be overly optimistic regarding the fiscal and external adjustment that would be achieved under successive programs (see Table).

Table. Baltics, Russia and Other States of the Former Soviet Union : External Debt, 1993-2001
(In percent of GDP)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	Change in Debt/GDP ratio	
										1995-2001 Actual	1995-2001 Projections 1/
Armenia	14.5	30.8	29.1	36.1	43.2	42.9	48.9	53.6	55.3	26.2	6.4
Azerbaijan	4.0	20.0	17.6	14.7	10.2	11.4	21.0	23.0	22.7	5.1	.
Belarus	39.8	52.9	29.1	13.2	15.3	17.2	18.7	17.1	18.6	-10.5	15.0
Estonia 2/	5.2	4.9	4.5	35.8	16.4	15.0	15.2	13.0	11.7	7.2	-5.6
Georgia	71.1	141.0	61.0	44.8	42.6	58.5	61.1	61.8	64.2	3.2	-21.6
Kazakhstan	35.7	28.1	26.4	26.4	32.6	35.7	70.9	68.7	64.8	38.4	1.4
Kyrgyz Republic	43.7	37.3	39.1	41.5	54.2	69.0	107.5	134.2	121.4	82.2	14.0
Latvia 2/	10.1	9.7	9.5	14.9	13.8	17.8	20.2	18.7	25.7	16.2	7.0
Lithuania 2/	10.3	10.5	12.6	30.2	35.1	20.9	26.4	26.1	26.5	13.9	-0.7
Moldova	1.3	22.8	49.2	59.2	61.0	75.9	111.0	102.3	102.5	53.3	-16.0
Russia 3/	61.3	46.0	37.9	32.5	31.4	54.0	76.4	60.4	.	22.5	.
Tajikistan	75.0	91.7	154.9	83.2	98.2	89.3	113.2	124.2	104.0	-50.9	-67.0
Turkmenistan 4/	3.1	11.5	206.0	28.1	50.6	61.1	61.6	53.9	103.3	25.8	1.0
Ukraine	30.3	0.0	21.4	19.9	19.0	27.5	39.4	33.1	26.5	5.1	1.7
Uzbekistan	17.3	17.0	17.8	16.5	17.2	23.5	25.5	32.0	39.9	22.1	5.0
Mean	28.2	34.9	47.7	33.1	36.1	41.3	54.5	54.8	56.2	17.3	-4.6
Median	17.3	22.8	29.1	30.2	32.6	35.7	48.9	53.6	47.6	16.2	1.4

Source: International Monetary Fund, WEO.

1/ Medium-term projections reported in Staff Reports dated late-1995 or 1996.

2/ Country Desk data for Estonia, Latvia and Lithuania.

3/ Country Desk data from EDSS. Change in debt ratio is calculated for 1995-2000 period.

4/ Change in debt ratio is calculated for the period 1996-2000

1/ The main exception to the low initial indebtedness was Russia, which assumed the obligations of the Soviet Union under the "zero option."

Fund staff as constructing deliberately pessimistic scenarios in order to persuade the authorities to undertake greater adjustment. The only systematic empirical study of program numbers finds a median bias in GDP growth projections of 0.0 percent—suggesting that these tendencies, if they exist, are surprisingly well balanced for program countries as a whole. But the same study finds a significant bias toward optimism for the sub-sample of

in projections of external current accounts, but finds that the accuracy of these projections is rather low.⁸

Current account and exchange rate assessments

19. The staff's assessments of current accounts and exchange rates are relevant to developing a framework for assessing debt sustainability for two reasons. First, as discussed in Section II above, judgments about the whether the real exchange rate is overvalued may be of particular importance in assessing debt sustainability in the presence of foreign currency denominated debt. Second, some of the analytical tools used may usefully be considered, with appropriate modifications, for use in analyzing debt sustainability.

20. The Fund's macroeconomic balance approach to assessments of current accounts and exchange rates uses analytical techniques associated with "fundamental equilibrium exchange rates."⁹ Under this approach, an underlying current account is calculated in one of two ways: one approach is to adjust the actual external current account balance for the output gap (both in that country and its trading partners) and for the lagged effects of recent exchange rate changes. An alternative calculation of the underlying current account uses the staff's baseline projection for the current account at the end of the projection period, at which it is assumed that the output gap will have closed and any past exchange rate movements had their full effects. The underlying current account is then compared with a norm calculated on the basis of econometric estimates of the historical relationship between saving-investment balances and a set of medium-term determinants. The difference between the actual current account and the norm is then used to calculate the degree of exchange rate misalignment.¹⁰

21. The current account norm derived in this framework is not intended as a measure of either the sustainable or the optimal current account balance. Instead, it is a saving-investment balance predicted to prevail under WEO projections of the determinants of saving and investment if historical relationships continue to hold. In particular, it is calculated on the basis of medium-term projections of fiscal policy variables—and if fiscal policy were unsustainable, it is not clear that the saving-investment norm would be consistent with

⁸ Alberto Musso and Steven Phillips (2001), *Comparing Projections and Outcomes of IMF-Supported Programs*, IMF *Staff Papers*, 49, pp. 22-48.

⁹ An alternative approach, using time series methods to measure deviations from (generalized) purchasing power parity models, is also frequently used by staff in analyzing particular countries' exchange rates.

¹⁰ See Peter Isard and Michael Mussa, *A Methodology for Exchange Rate Assessment*, in *Exchange Rate Assessment—Extensions of the Macroeconomic Balance Approach*, edited by Peter Isard and Hamid Faruquee, IMF Occasional Paper 167, 1998.

external sustainability. This methodology was initially applied only to industrial countries, as its implicitly assumes perfect capital mobility and assumes that standard behavioral relationship remained stable over the 30-year sample period.

22. More recently, staff have sought to develop a framework for current account and exchange rate assessments that could be also applied to developing countries. For this purpose it has supplemented its econometrically-based saving-investment norms with three other criteria based on the ratios of net foreign liabilities (NFL) to GDP: whether current account deficits exceed average experience over the past decade, whether they occasion an increase in NFL/GDP, and whether they are consistent in the long run with keeping NFL/GDP below a threshold level corresponding to the 75th percentile of sample of emerging market countries. The choice of these criteria and how to apply them collectively in assessing sustainability are matters of judgment. In addition, the quality of sustainability assessments depends critically on frank evaluations of the risks to the current account projections, taking account of the uncertainties surrounding the policy assumptions on which they are based.

23. While these current account and exchange rate assessments are a useful way of systematizing the staff's assessments, they are not intended as the basis for a judgment of overall debt sustainability. Further, they depend on a number of assumptions on which further work would be needed to test their relevance to particular groups of countries.

B. Fiscal Sustainability

24. Assessments of fiscal sustainability are a second key element in the work of Fund staff. These assessments have two main dimensions: indicators of public debt and deficits and medium-term fiscal projections. Each of these elements is based on an extensive body of information, which highlights both the substance and the limitations of these tools.

Fiscal indicators

25. One standard part of the Fund economist's toolkit is the assessment of a variety of measures of the fiscal deficit and public sector debt, as well as ratios such as public debt-to-GDP ratio. Similarly, the debt-stabilizing primary fiscal surplus is often used to assess current fiscal policy by judging whether the existing fiscal surplus is consistent with a stable debt-to-GDP ratio, or to indicate how much effort is required to achieve a stable debt ratio. In using this indicator, it is important to take account of differences in countries' ability to achieve high primary surpluses, both on technical grounds and on grounds of political and social feasibility. For instance, Turkey managed to achieve primary surpluses of some 6-7 percent of GDP in 2001/02 as part of its recent stabilization program, while Argentina has not run a primary surplus of more than 1 percent of GDP since 1993.

26. The usefulness of any fiscal indicators depends on the appropriate coverage of the public sector. Ideally, for sustainability analysis, the fiscal framework should include all parts of the public sector that can accumulate debt including public enterprises, especially to the

extent that their income and debt reflect mostly noncommercial obligations (though it is often difficult to draw the line precisely). If the coverage is too narrow, public debt will be understated and a country's debt may look sustainable when it is not.¹¹ This issue has become particularly important since more open capital markets have made public debt more likely to be contracted by subnational governments or public enterprises. Already in the debt crisis of the early 1980s, much of the debt had been borrowed outside central government and was assumed by the sovereign only when it became evident that subordinate public (or, in some instances, private) entities could not pay.

27. More generally, contingent liabilities that have an important impact on fiscal sustainability are often difficult to measure. While data are frequently available on debt formally guaranteed by the central government, experience suggests that non-guaranteed debt has often turned out to be an important contributor to public debt build-up and should ideally be monitored and controlled. Many liabilities which are contingent from the standpoint of the central government are actual liabilities of the broader public sector: such exposures are more readily identifiable, the broader is the coverage of the public sector.¹² However, there are usually contingent liabilities not covered by the fiscal framework, either because of limitations to the coverage of fiscal data or because some contingent liabilities such as (actual or implicit) deposit insurance extend beyond the public sector. Government contingent liabilities should be identified and a separate assessment made of the likelihood that they will be called: the Fiscal Transparency Code recommends that a list of government contingent liabilities be appended to budget documents, but this has not yet become common practice in emerging market economies—or indeed, anywhere else.

28. Another important aspect is the need to undertake continuous improvements in the quality of fiscal data, in view of continuing deficiencies in many countries which are highlighted in Box 3.

¹¹ Care should be taken to ensure that cross-country comparisons of indebtedness are on a comparable basis. For instance, in most European and OECD countries, only general government data are available.

¹² In this respect, consolidated public sector statistics, which are important in tracking total debt exposures, should be supplemented with a breakdown of the operations of the various components of the public sector (central and local governments, public enterprises, the social security system, etc.) so that the sources of debt accumulation can also be traced.

Box 3: Data Deficiencies in Undertaking Fiscal Sustainability Analyses.

The scope and quality of fiscal data differs significantly across countries and regions.¹

- **Data availability.** The compilation and dissemination of basic variables such as public debt, primary balances, interest bills, the real interest rate, etc., vary tremendously from country to country.
- **Coverage of the public sector.** Of the EMBI global countries (EMBI-G), 15 monitor the public sector (Latin America plus Malaysia, Philippines, South Africa, Thailand, and Turkey); 9 monitor general government (most transition countries, Nigeria, Egypt and Pakistan); and the rest track only central government. These data limitations are less of a concern in countries where subnational governments and public enterprises do not borrow.
- **Off-budget and contingent liabilities.** The Fund has only recently started tracking whether countries monitor contingent liabilities, in the context of ROSCs and FSAPs. Twelve EMBI-G have had a fiscal transparency ROSC, and of these, eight do not track/report their contingent liabilities. Only a few countries (e.g., Brazil and Hungary) provide partial information on its quasi-fiscal activities.²
- **The social security system.** Pensions are a particularly important direct or contingent liability for government in most EMBI-G. The evolution of these liabilities (and, for instance, of “captive financing sources” from private pension systems investing in government paper) will depend on a country’s demographics and the maturity of its social security system. Typically, Fund fiscal sustainability assessments have not included any estimate of, or comment on, the impact of the evolution of pension liabilities on sustainability.³
- **Standardization and conceptual soundness of definitions.** Standard debt sustainability analysis assumes that, valuation effects aside, the deficit should equal the change in the debt. If the deficit does not capture all changes in the debt, then controlling the primary balance may not be sufficient. In several EMBI-G, Fund programs have targeted partial deficits that excluded important debt-creating government outlays, such as for bank recapitalization (e.g., Indonesia, Thailand) or debt recognition/assumption (e.g., Argentina, Brazil). While such deficit targets may be useful for other purposes—for instance, controlling aggregate demand—a comprehensive definition is required for debt sustainability analyses.
- **Financing requirements and sources.** Even if the debt is shown to converge to a reasonable level, getting there requires continuous re-financing of maturing debt. But traditionally, Fund documents have often omitted to include gross financing numbers or any risk assessment.
- **Government assets.** Fund debt sustainability analyses focus almost exclusively on government liabilities. In reality, debt is likely to be more sustainable when the government has significant liquid assets. The revised Government Finance Statistics system sets as a new standard the compilation of the government’s balance sheet. Many countries already have at least pilot balance sheets, but an acceptable methodology and quality will take some years to establish.

1/ See SM/00/241, “Issues in Fiscal Accounting”, for a cross-country survey.

2/ This information is from completed ROSCs.

3/ In the 10-15 year timeframe covered, lack of attention to demographics may be justified. However, failure to anticipate (and offset) the fiscal gap caused by the introduction of funded pension schemes explains worse-than-anticipated debt ratios in a number of countries (for instance, Argentina).

Medium-term fiscal projections

29. Medium-term fiscal projections are a key element in the assessment of fiscal sustainability, contributing to an overall assessment of sustainability and providing a framework in which to assess fiscal policy. To be useful, such frameworks need to be based on a realistic set of assumptions which are used to stress-test the projections for robustness.

30. Fund staff prepare medium-term frameworks for many countries, in particular for almost all emerging market economies, but their content is not uniform. Table 2 lists fiscal information included in medium-term frameworks in the recent Board papers of countries making up the EMBI Global index. It shows that projection periods vary from 3 to 15 years (with an average of 6 years). Most frameworks have projections for the public debt ratio and the primary balance, and about two-thirds have explicit projections for expenditure and revenue ratios. About one-third explicitly show interest rate assumptions, while most do not project the government's gross financing needs. Moreover, sensitivity tests for the public debt projections tend to be limited.

31. As with medium-term balance of payments projections, there is also the issue of how realistic are these scenarios. An obvious source of bias toward optimism is that projections start with the assumption that the authorities' policy program will be implemented in full. This is not to suggest that the baseline projection should not be based on the program assumptions—but it does suggest that program design may need to take better account of how much adjustment is realistically feasible. The macroeconomic assumptions are another source of optimism: while, as noted above, there is no clear evidence of overall bias in growth projections in Fund supported programs, there may be significant biases in individual countries or groups of countries. Assumptions with regard to costs of financing may also be a source of optimism.

Table 2. Medium-term Frameworks - Fiscal Information in Board Documents for the EMBI Global Emerging Market Countries

Country	Medium-term framework	Time forward (years)	Coverage of government	Indicators explicitly included in medium-term framework					Quantified sensitivity analysis for public debt
				public debt	primary balance	revenue	gross financing	interest rate	
AFR									
Cote d'Ivoire	yes	4	Central	yes	yes	yes	no	no	no 1/
Nigeria	yes	5	General	yes	yes 2/	yes	yes	no	yes
South Africa	yes	4	Public sector	yes	yes	yes	no	no	no
APD									
China	yes	10	General	yes 3/	yes	yes	no	no	yes
Malaysia	yes	5	Public sector	yes	no	no	no	no	no
Philippines	yes	5	Public sector	yes	yes 2/	yes	no	no	yes
South Korea	yes	5	Central	yes	no	no	no	no	no
Thailand	yes	10	Public sector	yes	yes	yes	no	yes	yes
EU1									
Bulgaria	yes	5	General	yes	yes	yes	no	yes	no 4/
Croatia	yes	3	Central	no	yes 2/	yes	yes	no	no
Hungary	yes	3	General	yes	yes	yes	no	no	yes
Poland	yes	5	General	no	no	yes	no	no	no
Turkey	yes	5	Public sector	yes	yes	no	no	yes	yes 5/
EU2									
Russia	yes	15	General	yes	yes	yes	no	no	no 6/
Ukraine	no	n/a	General	n/a	n/a	n/a	n/a	n/a	n/a
MED									
Algeria	yes	5	Central	no	no	no	no	no	no 7/
Egypt	yes	5	General	yes	yes	yes	no	no	no
Lebanon	yes	5	Central	yes	yes	yes	no 8/	yes	yes 9/
Morocco	yes	5	Central	yes	yes	no	no	no	yes
Pakistan	yes	3	General	yes	yes	yes	no	yes	no 10/
WHD									
Argentina	yes	10	Public sector	yes	yes 11/	no	no	yes	yes 5/
Brazil	yes	5	Public sector	yes	yes	no	no	yes	yes 5/
Chile	yes	5	Public sector	no 12/	yes	no	no	yes	no
Colombia	yes	10	Public sector	yes	yes	yes	no	no	yes 5/
Ecuador	yes	10	Public sector	yes	yes	no	no 13/	yes	no
Mexico	yes	5	Public sector	yes	yes	yes	no	yes	yes 14/
Panama	yes	5	Public sector	yes	yes	yes	no	no	no
Peru	yes	10	Public sector	yes	yes	yes	no	no	no
Uruguay	yes	5	Public sector	yes	yes	yes	no	no	no
Venezuela	yes	5	Public sector	yes	no	yes	no	no	no
Percent of total or average	97	6	80 16/	86	83	66	7	31	41
By Department									
AFR	100	4	67	100	100	100	33	0	33
APD	100	7	80	100	60	40	0	0	60
EU1	100	4	80	60	80	80	20	40	40
EU2 15/	50	...	100	...	...	...	...	...	...
MED	100	5	40	80	80	60	0	40	40
WHD	100	7	100	90	90	60	0	50	40

Source: Latest Staff Reports.

1/ There are alternative scenarios for the overall balance, but not government

2/ Can be derived from the overall balance and interest

3/ Also includes in the scenarios "quasi-fiscal" debt implied by the negative net worth of the public

4/ There is a brief discussion in the

5/ No table, but has graphs and box for sensitivity of fiscal balances and

6/ There is a paragraph in the text on the implications of a worse

7/ There is a low oil price scenario but with no public debt

8/ Does have privatization and eurobond

9/ No table, but quantitative discussion on debt dynamics sensitivity in the

10/ There is a sensitivity analysis for external

11/ Also includes rows for other debt creating flows, privatization, debt consolidation and

12/ There are projections of public external debt - Chile's domestic public debt is very low (excluding the central

13/ Does have very detailed net financing

14/ In Selected Issues.

15/ Only two observations, only one of which had a medium-term framework with fiscal

16/ Percentage with coverage at general or public sector

32. The experience with these medium-term fiscal projections has been somewhat mixed—with some cases of excessive pessimism (Figure 1) as well as some important recent cases in which medium-term fiscal projections repeatedly turned out to be over-optimistic.¹³ Figure 2 shows debt, deficit, and growth projected in various Board documents for Argentina, Brazil, Lebanon and Turkey, together with actual outturns. In the first three cases, projections were consistently over-optimistic: they persistently showed the debt ratio stabilizing after rising for one year, while in reality debt levels continued to mount. The large jumps in the debt ratio typically reflected sharp exchange rate depreciations, but there were biases toward overoptimism more generally as well. To some extent, this overoptimism is not surprising, since program projections were predicated on the program being implemented, and incorporated primary adjustments that did not always materialize.¹⁴ But it also reflects overoptimism regarding other variables such as real growth rates, real exchange rates, and interest rates. The optimism of projections for Turkey was more muted until the unexpected exit from the exchange rate peg in early 2001 raised debt levels substantially.

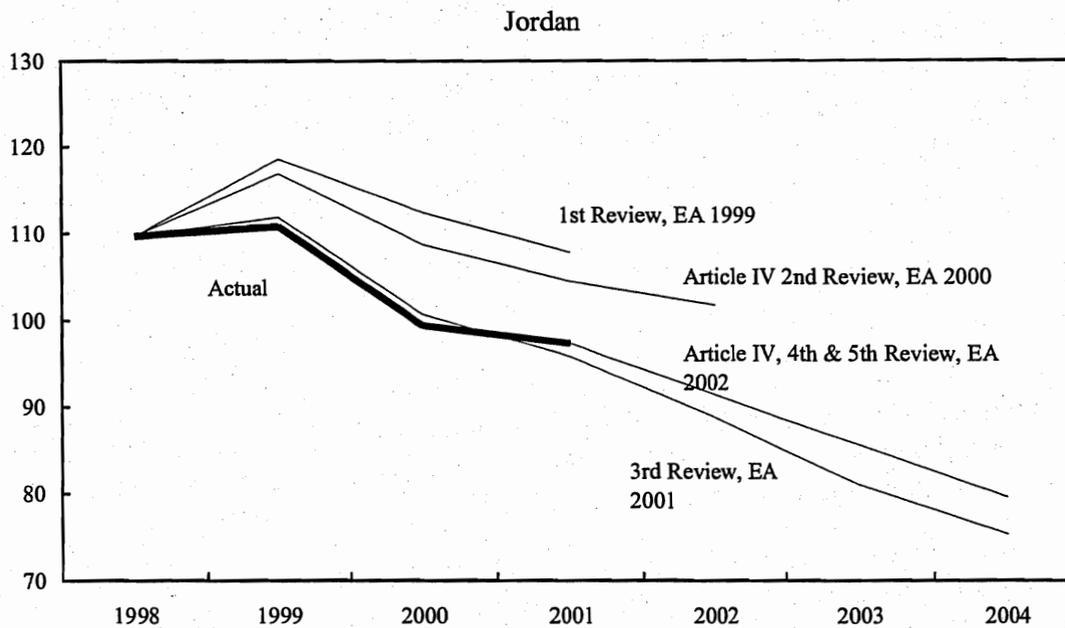
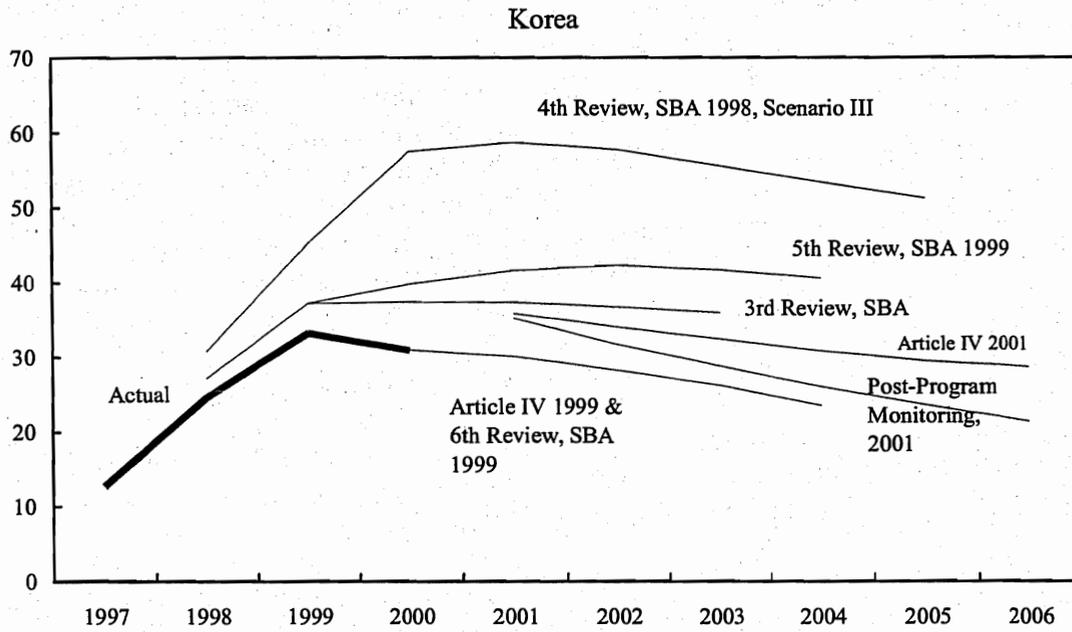
33. This experience points first of all to a need for greater realism in formulating medium-term fiscal projections, in line with best practice (see Box 4). It also argues for a need to spell out clearly the assumptions underlying these scenarios.

34. In addition to the baseline fiscal projections, sensitivity analysis is important in taking account of the fiscal impact of potential shocks. As mentioned, such analyses are currently undertaken for only two-fifths of emerging market countries. Moreover, the sensitivity analysis is typically limited to one or two scenarios, with the assumptions varied on a discretionary basis. This suggests that there is scope for improvement, both in ensuring that sensitivity analysis is a routine part of sustainability assessments, and in promoting greater uniformity in the kinds of sensitivity tests undertaken for different countries.

¹³ In examining the experience with such projections there may also be an element of “sample selection” bias stemming from the fact that when public debt dynamics are not a major concern, explicit projections are not always undertaken.

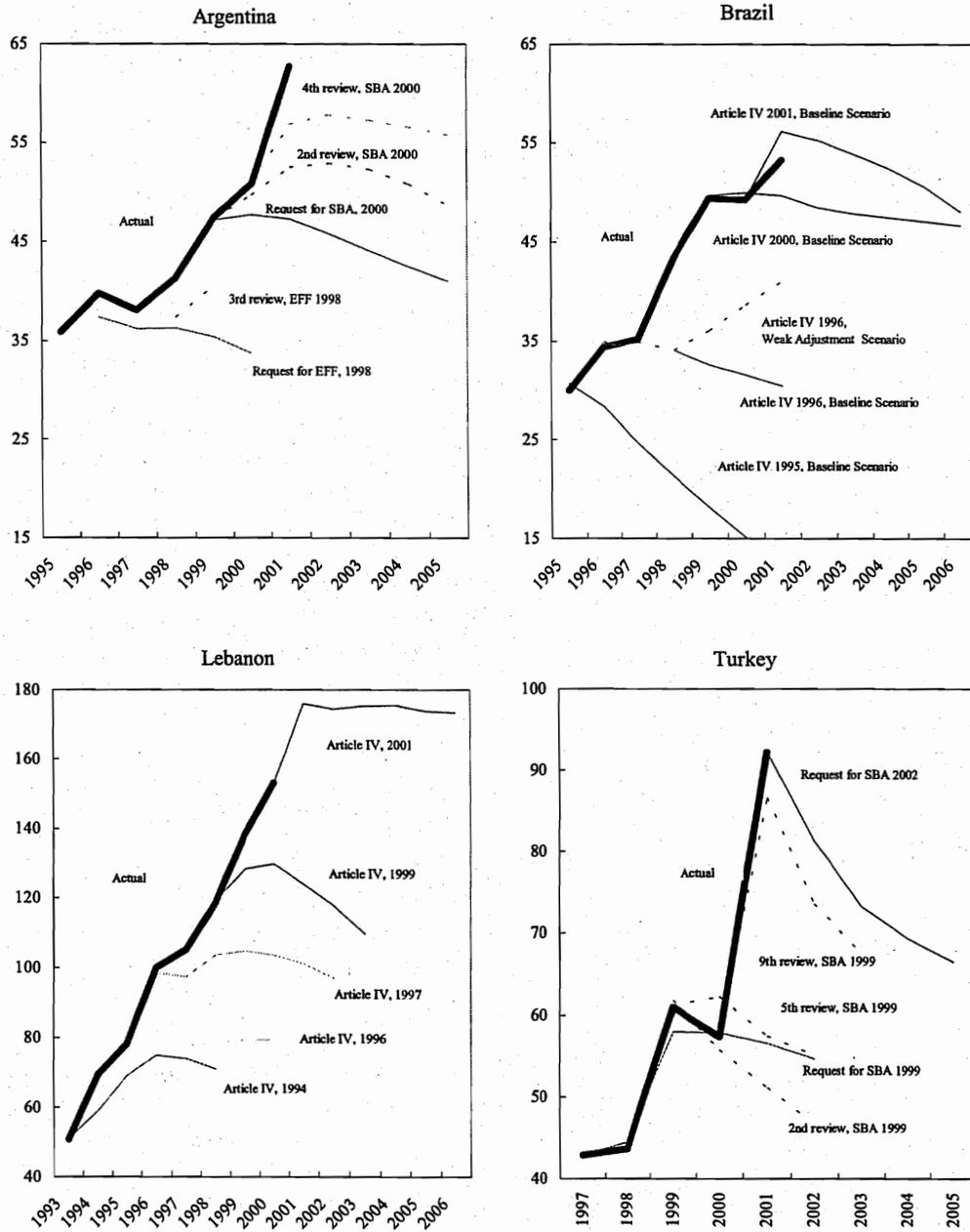
¹⁴ This is largely unavoidable in program projections. The template proposed below also reports projections based on average historical data (including for the primary balance) to give an indication of how optimistic are the program projections for the primary balance (or goods and services balance for external debt) compared to the country’s historical performance.

Figure 1. Projections of Public Debt to GDP Ratio : Selected Emerging Market Countries



Source: IMF Staff Reports

Figure 2. Projections of Public Debt to GDP Ratio : Selected Emerging Market Countries



Source: IMF Staff Reports

Box 4. Good Practices for Realistic Fiscal Sustainability Assessments

Staff are working to develop operational criteria for assessing and limiting undue optimism in fiscal projections. However, some good practices are already well-known and are increasingly being incorporated in the staff's work.

Sustainability analysis should not be based on assumptions that by themselves solve the debt sustainability problem (for example, interest rates consistently lower than output growth rates and sharp real exchange rate appreciations)—other than in the very exceptional cases where these are clearly justified.

While the baseline projection may be predicated on policy actions and market outcomes, risks associated with exogenous variables should be balanced between the up- and downside. Moreover, sensitivity texts should be designed in such a way that risks on both sides are adequately examined. Typically, this may be done by calibrating the baseline path of exogenous variables in line with past averages. But in some cases history may not be an adequate guide to the most likely future, and the assessment of the realism of projections may need to take into account other indicators—for instance, levels in similar countries—or a judgment on the impact of a regime change.

The sustainability assessment should be based on the fiscal measures needed to achieve the projected debt path. It is difficult to assess the feasibility of the primary surplus consistent with debt sustainability without first specifying the tax and expenditure measures that would be needed to achieve it, and judging whether these measures are sustainable over time, both technically and politically.

Example I: Fund-supported programs sometimes include taxes which cannot be collected repeatedly or need to be phased out to avoid damage to the economy (e.g., tax on corporate assets, financial transactions tax). Fiscal sustainability exercises need to exclude these taxes from medium-term revenue projections.

Example II: Programs are sometimes predicated on major policy commitments such as fiscal rules, rather than on policy measures. This should be avoided. For instance, Argentina in 1999-02, the authorities adopted a fiscal responsibility law which promised a balanced budget, and this budget was built into the medium-term projections. But in the event the government was unable to take the measures needed to meet the fiscal rule.

Assumptions about fiscal policies should generally be in line with economic behavior. Revenue elasticities should be realistic (tax revenue to GDP and non-tax revenue to inflation elasticities equal or close to 1). Revenues from natural resources should be based on conservative long-term price forecasts (such as WEO projections) and take into account the stock of non-renewable resources and their depletion rate. Primary expenditure projections should grow at a minimum in line with inflation and population growth (i.e., constant in real per capita terms).

Large projected changes in revenue or expenditure ratios should generally be based on revenue and expenditure *policy* measures or tangible changes in the environment, and not on efficiency gains in tax administration or expenditure or on revenue windfalls. Departures from these conventions should be justified.

The assessment should include an evaluation of the authorities' planned financing policies and the implications. Financing amounts from each source should be projected and associated risks assessed. For example, shortening debt maturities would increase roll-over risks while increasing debt maturity usually entails a higher financing cost. For a country with access to external bond markets, the share of the financing it pre-empted from its bond class may be an indicator of vulnerability.

Financing plans should be consistent with medium-term monetary and external sector projections. Domestic bank financing should be consistent with a reasonable increase in money demand, deposit growth (and other factors influencing banks' sources of funds), and the financing needs of the private sector. If the public sector crowds out the private sector, growth and interest rate assumptions may be questionable. Privatization receipt projections should be based on a reasonable assumption about the realizable value of the stock of assets (for example, avoid projecting privatization proceeds that last for more than a few years or which rely on high valuations being quickly realized). The same applies to projections of proceeds from sales of financial assets the government obtains after banking crises.

The impact of large real exchange rate changes on public debt levels and its dynamics need to become a standard part of the core sensitivity test. Experience in Brazil during the East Asian crisis and in other cases of large devaluations shows that changes in external indebtedness resulting from large, unanticipated movements in the exchange rate can be decisive for subsequent debt dynamics.

C. Financial Sector Stability

35. There are important interactions between the stability of the financial system and sustainability of public and external debt. On the one hand, the government often acts as the ultimate guarantor (explicit or implicit) of the financial system, which confronts it with potentially large contingent liabilities in the face of widespread bank insolvencies. On the other hand, an unsustainable stock of government debt could cause broader financial instability, because government securities often constitute a large share of the assets of banks and other financial institutions due to their unique role as a source of collateral or low-risk assets, as well as their role in providing a benchmark for interest rates.

36. The importance of financial system stability has increasingly been recognized. In particular, in the East Asian financial crisis, financial sector imbalances were seen as being at the heart of the crisis. In retrospect, Fund staff did not pay adequate attention to these weaknesses before the crisis. In large part in response to this experience, efforts are now underway to strengthen the Fund's assessments of the financial system and to integrate these assessments into the overall staff assessment of the macroeconomic situation. The cornerstone of these efforts is the joint IMF/World Bank Financial Sector Assessment Program (FSAP).¹⁵ The focus of the FSAP is on financial stability and understanding the vulnerabilities and development challenges facing the financial system, with the ultimate objective of reducing the likelihood and severity of financial crises.

37. The FSAP uses a range of macroeconomic and financial soundness indicators (FSIs) to measure the potential vulnerability of a financial system. In addition to FSIs, the FSAP includes a description of the macroeconomic environment and the likely impact of projected developments in key economic sectors on the stability of the financial system.

38. The FSAP also provides a portrait of the main vulnerabilities based on a qualitative analysis of the institutional environment and policy framework. For instance, the design of the financial sector safety net may determine the extent of the public sector's (implicit or explicit) liability in the event of financial sector distress, with obvious implications for public debt sustainability. Other elements of the institutional environment include the liquidity management framework used for monetary management, the crisis management framework in place to deal with emergencies, and the supervisory and regulatory framework that determines the robustness of the financial system. In addition, the FSAP includes assessments of observance of various internationally accepted standards, codes and guidelines on best

¹⁵ See *Summing Up by the Acting Chairman: Financial Sector Assessment Program—A Review—Lessons from the Pilot and Issues Going Forward*, Executive Board Meeting 00/123, December 13, 2000, issued as BUFF/00/190.

practices in the financial sector. The *Guidelines for Public Debt Management*¹⁶ are particularly relevant for debt sustainability, as they provide a coherent framework and set of guiding principles for formulating and assessing debt-management policies.

39. A major element of the FSAP is the stress tests. These are typically used to measure the sensitivity of portfolios to changes in underlying prices, or to examine the impact of a particular scenario on the balance sheet of an institution or group of institutions. Most stress tests involve common elements, such as the impact of changes in the yield curve, the exchange rate, or macroeconomic conditions on an institution's portfolio. Although such tests represent a significant advance in monitoring financial sector stability, their use is still relatively novel, and the robustness of their findings remains to be tested.¹⁷ Moreover, while stress tests in the context of the FSAP were useful in integrating different perspectives and bringing out the linkages between prospective macroeconomic developments and the financial sector, in light of data limitations and the difficulty in formalizing the macro-financial linkages or the interlinkages within a financial system, the quantitative results of stress tests should not be overemphasized and should be interpreted with caution. There are also difficult choices in calibrating the tests appropriately.¹⁸ In particular, stress tests should not be so extreme that their likelihood is implausibly small; on the other hand, certain "extreme" scenarios—such as sovereign defaults or devaluations under pegged exchange rates—may need to be included. Stress testing should be viewed as one methodological device among many that supplements the analysis undertaken in the FSAP.

40. The coverage of debt-sustainability issues in the Fund's financial sector surveillance efforts could be expanded in several ways. The stress-testing tools and techniques being developed could be more widely applied outside the FSAP (e.g., in Article IV consultation proper) to provide additional information on the possible extent of contingent liabilities, and the circumstances that could increase their magnitude. For example, the solvency of deposit insurance and implicit bank guarantee schemes and the likely fiscal burden could be analyzed under various macroeconomic scenarios. Sensitivity analysis could also be used to analyze the impact of different debt scenarios, for example, by showing the effect on the financial system of different adjustment paths for the stock of debt. All of this, however, would require a much greater allocation of resources to such exercises than is now envisaged.

¹⁶ See *Concluding Remarks by the Acting Chairman: Guidelines for Public Debt Management*, Executive Board Meeting 01/27, March 16, 2001, issued as BUFF/01/40.

¹⁷ The forthcoming FSAP review will provide a more comprehensive discussion of lessons learned from experience with recent FSAPs, including on the design of stress tests.

¹⁸ Such calibration difficulties are inherent to any form of stress or sensitivity tests, see Box 5, below.

D. Conclusions

41. While Fund staff currently undertake a variety of work forming the basis of sustainability assessments, this work has some limitations. The indicators used are not standardized and it is not always clear how they should be interpreted.¹⁹ Medium-term projections are used for a variety of purposes, and although no overall bias has been established, in individual cases their validity may be in question. Sensitivity tests are an element in existing work to the extent that alternative scenarios are presented to examine risks and to differentiate among alternative policies. But this could be done in a more integrated and systematic way, even though progress will ultimately be limited by the availability of information, including that pertaining to the nature and magnitude of contingent liabilities. The next section proposes a framework that keys off the existing work of Fund staff, attempting to build on the strengths while remedying the weaknesses.

IV. A PROPOSED FRAMEWORK

42. The proposed framework is intended to introduce a greater degree of consistency and discipline in sustainability analyses undertaken at the Fund. The aim is to use these ingredients to make better informed judgments possible, and to discipline these judgments by laying bare the basis on which they are made, rather than to distill a single measure of sustainability that would eliminate the need for judgment. The previous section suggests that, while limited in ambition, this would nonetheless be an important improvement on existing practice.

43. While the purpose is to provide greater uniformity and discipline to sustainability exercises, it is not intended that the framework be applied in a completely mechanical and rigid fashion—depending upon country circumstances, there may be good reasons for deviating from it to some extent.²⁰ At the same time, the basic logic of undertaking baseline sustainability analyses and calibrated sensitivity tests should apply across countries and, in any event, significant deviations from this practice should be noted and justified. Moreover, the framework is not intended to preclude the articulation of alternative scenarios in staff reports (as is currently done in some cases) but rather to ensure that at least some standard minimum set of stress tests are reported.

¹⁹ More generally, of course, the underlying economics behind movements of key indicators will have important bearing on sustainability assessments. For instance, a current account deficit and associated debt build-up would presumably be less problematic if it reflects additional productive investment, especially in the tradables sector.

²⁰ For instance, for oil-producing countries, the non-oil fiscal balance may merit special consideration, and a larger set of sensitivity tests based on oil price movements may be appropriate.

44. The framework may be useful in three different situations: For countries that have moderately high indebtedness, but are not facing an imminent crisis, the framework can help identify vulnerabilities—that is, how the country might eventually stray into “insolvency territory.” For countries that are on the brink, or in the midst of a crisis, experiencing severe stress characterized by high borrowing costs or lack of market access, the framework can be used to examine the plausibility of the debt-stabilizing dynamics articulated in the program projections. Finally, in the aftermath of a default, the framework can be used to examine whether alternative structures and levels of restructured debt are consistent with projected outcomes.

45. As discussed, assessments of sustainability are probabilistic, since one can normally envisage some states of the world under which a country’s debt would be sustainable and others on which it would not. But the proposed framework does not supply these probabilities explicitly; rather, it traces the implications of alternative scenarios and leaves the user to determine the probabilities that should be attached.

46. Further research will be required to identify the levels at which difficulties have typically emerged in particular groups of countries. Moreover, it is unlikely that any definitive “danger levels” can be established. By means of illustration, Appendix I considers some simple rules of thumb for assessing the external debt-to-GDP ratio. The analysis suggests that an external debt ratio of about 40 percent provides a useful benchmark. For countries with debt ratios below this level, the conditional probability of a debt crisis or “correction” is around 2-5 percent; for countries with debt ratios above this level, the conditional probability rises to about 15-20 percent. The estimated benchmark level thus provides a rough guide for assessing a country’s debt ratio, with an appreciable increase in the probability of a crisis at debt levels above it. At the same time, it bears emphasizing that a debt ratio above 40 percent of GDP by no means necessarily implies a crisis—indeed, another way of looking at the results is that there is a 80 percent probability of *not* having a crisis (even when the debt ratio exceeds 40 percent of GDP).

47. More generally, the scenarios for the debt ratio generated by the framework need to be viewed in the context of the structure of the debt (such as its maturity structure, whether it is fixed or floating rate, whether it is indexed, and by whom is it held) as well as various vulnerability indicators (see Appendix II), and information provided by markets, including expectations of interest rates and spreads embedded in the position and shape of yield curves, access to new borrowing, and whether there have been interruptions in such access or difficulties in issuing long-term debt.²¹ The framework also proposes a set of sensitivity tests, but further work will be necessary to settle on a precise calibration (see Box 5).

²¹ Other information that could be useful in assessing liquidity problems include, *inter alia*, (i) private market participants’ assessments and investor recommendations, (ii) information or investor positioning, (iii) banks’ share prices (vi) specifics on banks’ subordinated debt;
(continued...)

48. While in principle the different aspects of sustainability—external, fiscal, and financial sector—are interrelated, the linkages between them are not explicitly modeled here. In particular, the framework focuses on the sustainability of the public and external debt dynamics, treating the interaction with the financial sector largely implicitly. As discussed above, while such interactions are likely to be important in practice, they do not lend themselves very easily to explicit quantification. The framework allows for certain aspects of the potential interactions—such as contingent liabilities in the assessment of the public debt dynamics—but it does not, for instance, incorporate a mapping from financial sector vulnerabilities (such as the share of non-performing loans, or the state and funding of deposit insurance scheme) to the magnitude and likelihood of such contingent liabilities being called.²²

49. In general, the framework focuses on gross rather than net liabilities. In part, this is for pragmatic reasons—timely and consistent data on net investment positions data are not always available.²³ But there are also conceptual reasons. First, even if individual entities in the economy have external assets, they may not correspond to the entities that have external liabilities. Moreover, the liquidity aspect of sustainability, the risk of not being able to roll over existing debts, is likely to be related to gross financing needs. Similarly, while there are arguments both for and against focusing on gross versus net public sector liabilities, the framework generally focuses on gross liabilities.

50. Finally, it is worth noting that, in contrast to exercises such as the WEO, individual country projections in this framework are not constrained to be globally consistent. While such global consistency of real exchange rates and current account balances would be desirable, the only practical way of ensuring it would be to constrain individual projections of the real exchange rate and current balance to assume zero change from their current levels, compromising the accuracy of the projections.

(v) default probabilities estimated from credit default surges and bonds; and (vi) liquidity in secondary markets.

²² Where indicators of financial sector vulnerability suggest serious weaknesses, some estimates of contingent liabilities would be required.

²³ Lane and Milesi-Ferretti (2001), “The External Wealth of Nations,” *Journal of International Economics*, December, calculate net foreign liability positions for a large sample of countries, as of end-1998.

51. With these preliminaries, the framework consists of two presentations, for external and public sector debt sustainability analysis respectively (Tables 3-4).²⁴ The main block articulates the staff's central medium-term scenario,²⁵ with the assumptions and implications clearly laid out. In particular, it includes a decomposition of both the historical and the projected debt dynamics.²⁶ Such a decomposition is useful for identifying whether the purported stability of the debt ratio arises mostly from the behavior of interest rates, growth rates, inflation or real exchange rate movements, or through adjustment of the primary/trade balance.

²⁴ Public sector would refer to the consolidated nonfinancial public sector, except for countries where sub-national governments and public enterprises do not borrow. Where data limitations preclude a comprehensive definition, these should be noted.

²⁵ In program cases, this would be the agreed program projection; in a surveillance case, it would be an articulation of the authorities' plans and proposed policies, as discussed with the staff.

²⁶ The decomposition is based on the debt dynamics equation:

$D_{t+1} = (1+r)D_t - TB_{t+1}$, where D is end-period debt in US dollars, and TB is the debt-creating component of the balance on goods and non-interest services. Let g denote real GDP growth, ρ the growth rate of US dollar value of the GDP deflator, d the external debt-to-GDP ratio, and tb the debt-creating component of the balance on goods and services (in percent of GDP), then:

$$d_{t+1} = \frac{(1+r)}{(1+g)(1+\rho)} d_t - tb_{t+1},$$

or:

$$d_{t+1}(1+g+\rho+g\rho) = (1+r)d_t - (1+g+\rho+g\rho)tb_{t+1}$$

Rearranging yields an expression for the change in the net debt ratio:

$$d_{t+1} - d_t = \frac{(r-g-\rho-g\rho)}{(1+g+\rho+g\rho)} d_t - tb_{t+1}$$

To this, needs to be added any increase in assets to arrive at the change in the gross debt ratio. (There will typically be a residual as well, because of valuation changes on cross-exchange rates, certain non-debt creating flows and numerical approximation.)

Table 3. External Sustainability Framework

I. Baseline Medium-Term Projections

	t-5	t-4	t-3	t-2	t-1	t	Projections			t+10
							t+1	...		
1 External debt/Exports of G&NFS										
2 External debt/GDP										
3 Change in external debt/GDP										
4 Net debt-creating external flows/GDP (lines 5+9+13)										
5 Current account deficit, excluding net interest payments/GDP										
6 Deficit in balance of G&S/GDP										
7 Exports of G&S/GDP										
8 Imports of G&S/GDP										
9 Minus net non-debt creating inflows/GDP										
10 Net foreign direct investment, equity/GDP										
11 Net portfolio investment, equity/GDP										
12 Net Unrequited transfers/GDP										
13 $(r-g-(p+g))(1+g+p+g)debt/GDP$ (lines 15/14)										
14 Adjustment factor: $1+g+p+g$										
15 $(r-g-(p+g))debt/GDP$ (lines 16+17+18)										
16 r (interest rate) times debt/GDP										
17 minus g (real GDP growth rate) times debt/GDP										
18 minus $(p+g)$ (p = US dollar value of GDP deflator, growth rate) times debt/GDP										
19 Residual, incl. change in gross foreign assets/GDP (lines 3-4)										

Memorandum Items: Key macro and external assumptions

- Nominal GDP (local currency)
- Nominal GDP (US dollars) 1/
- Real GDP growth (in percent per year)
- Consumer price index (change, in percent per year)
- Exchange rate (LC per US dollar, end period) 1/
- Real Exchange Rate (change, in percent per year)
- Nominal GDP deflator (in US dollars, change in percent per year)
- External interest rate (percent per year)
- Growth of exports of G&S (US dollar terms, in percent per year)
- Growth of imports of G&S (US dollar terms, in percent per year)

II. Sensitivity Analysis for External Debt-to-GDP Ratio

1. If interest rate, real GDP growth rate, US\$ GDP deflator growth, non-interest current account and non-debt flows (in percent of GDP) are at average of past 10 years
2. If interest rate in year t and t+1 is average plus two standard deviations, others at baseline
3. If real GDP growth rate in year t and t+1 is average minus two standard deviations, others at baseline
4. If US\$ GDP deflator growth in year t is average minus two standard deviations, others at baseline
5. If non-interest current account (in percent of GDP) in year t and t+1 is average minus two standard deviations, others at baseline
6. Combination of 2-5 using one standard deviation shocks
7. Repeat 6 using "standard" standard deviations 2/
8. One time 30% depreciation in year t (-30% GDP deflator shock), others at baseline.

Memorandum Items

- Current account deficit, excluding interest payments (percent of GDP, average of past 10 years)
- Current account deficit, excluding interest payments (percent of GDP, standard deviation of past 10 years)
- Net non-debt creating inflows (percent of GDP, average of past 10 years)
- Interest rate (average of past 10 years)
- Interest rate (standard deviation of past 10 years)
- Real GDP growth rate (average of past 10 years)
- Real GDP growth rate (standard deviation of past 10 years)
- GDP deflator, US dollar terms (average of past 10 years)
- GDP deflator, US dollar terms (standard deviation of past 10 years)

1/ Exchange rate projections are not normally explicitly reported in Fund staff reports.

2/ A set of "standard" standard deviations will eventually be provided to desks, according to the type of country (e.g. emerging market, oil exporter etc.)

Table 4. Public Sector Debt Sustainability Framework

I. Baseline Medium-Term Projections

	t-5	t-4	t-3	t-2	t-1	t	Projections		
							t+1	...	t+10
1	Public debt/Revenue								
2	Public debt/GDP								
3	Change in public debt/GDP								
4	Net debt-creating flows/GDP (lines 5+9+12)								
5	Overall deficit, excluding net interest payments/GDP (=primary deficit)								
6	Revenue/GDP								
7	Expenditure/GDP								
8	Minus net non-debt creating in flows/GDP								
9	Unrequited grants/GDP								
10	Privatization Receipts/GDP								
11	$(r-g-(\pi+g\pi))/(1+g+\pi+g\pi)$ debt/GDP (lines 13/12)								
12	Adjustment factor: $1+g+\pi+g\pi$								
13	$(r-g-(\pi+g\pi))$ debt/GDP (lines 14+15+16)								
14	r (interest rate) times debt/GDP								
15	minus g (real GDP growth rate) times debt/GDP								
16	minus $(\pi+g\pi)$ (π = GDP deflator, growth rate) times debt/GDP								
17	Residual, incl. change in assets (e.g. government deposits)/GDP (lines 3-4)								

Memorandum Items: Key macro and external assumptions

- Nominal GDP (local currency)
- Real GDP growth (in percent per year)
- Consumer price index (change, in percent per year)
- Exchange rate (LC per US dollar, end period) 1/
- Exchange rate (LC per US dollar, average of period) 1/
- Nominal GDP deflator (in US dollars, change in percent per year)
- Nominal GDP deflator (in local currency, change in percent per year)
- Average interest rate on government debt (percent per year)
- Growth of revenues (deflated by GDP deflator, in percent per year)
- Growth of expenditure (deflated by GDP deflator, in percent per year)

II. Sensitivity Analysis for Public Debt-to-GDP Ratio

1. If interest rate, real GDP growth rate, GDP deflator growth, primary balance and non-debt flows (in percent of GDP) are at average of past 10 years
2. If interest rate in year t and t+1 is average plus two standard deviations, others at baseline
3. If real GDP growth rate in year t and t+1 is average minus two standard deviations, others at baseline
4. If GDP deflator growth in year t is average minus two standard deviations, others at baseline
5. If primary balance (in percent of GDP) in year t and t+1 is average minus two standard deviations, others at baseline
6. Combination of 2-5 using one standard deviation shocks
7. Repeat 6 using "standard" standard deviations 2/
8. One time 30% (average of period) depreciation in year t, others, except primary balance, at baseline.3/
9. If debt ratio in year t rises by 10 percent of GDP, others at baseline 4/

Memorandum Items

- Primary deficit (percent of GDP, average of past 10 years)
- Primary deficit (percent of GDP, standard deviation of past 10 years)
- Net non-debt creating inflows (percent of GDP, average of past 10 years)
- Interest rate (average of past 10 years)
- Interest rate (standard deviation of past 10 years)
- Real GDP growth rate (average of past 10 years)
- Real GDP growth rate (standard deviation of past 10 years)
- GDP deflator growth (average of past 10 years)
- GDP deflator growth (standard deviation of past 10 years)

1/ Exchange rate projections are not normally explicitly reported in Fund staff reports.

2/ A set of "standard" standard deviations will eventually be provided to desks, according to the type of country (e.g. emerging market, oil exporter etc.)

3/ Requires separate calculation of the effect of the depreciation on foreign currency denominated debt and on the primary balance (e.g. if government receives oil royalties).

4/ This scenario is intended to capture contingent liabilities (e.g. financial sector restructuring costs) that may be assumed by the government.

Ideally, the shock would be calibrated to such costs (depending, for instance, on indicators of weakness of the financial system).

52. In formulating the baseline projection, it would, in general, be good practice to base projections of macroeconomic factors on central forecasts (e.g., the scenario should not achieve sustainability by assuming abnormally high growth rates). As regards policy variables, there may be a tension between realism and giving the authorities the benefit of the doubt. The approach adopted here allows for such optimism in the baseline scenario, as deemed appropriate by the staff, but attempts to keep unwarranted optimism in check by laying bare the underlying assumptions and examining the sensitivity of the baseline projection to alternative assumptions.

53. The second block therefore consists of a set of standard sensitivity tests around the medium-term scenario, examining the implications of alternative assumptions about policy variables, macroeconomic developments, and costs of financing. The first sensitivity test sets the key parameters to their historical averages. In effect, it shows the ambitiousness of the baseline projection relative to historical experience including, for instance, whether the adjustment envisaged in the baseline projection far exceeds the country's historical norm (which may give an indication of the social and political limits to adjustment). The other sensitivity tests consider adverse two-standard deviation shocks lasting two years to each of the key parameters in turn, and a one-standard deviation combined shock. The combined shock is also repeated using cross-country standard deviations as a robustness check. Finally, since the volatility of the real exchange rate may, historically, be low under a fixed exchange rate regime, an additional scenario in which there is a 30 percent real exchange rate depreciation is considered as well.²⁷ The public debt sustainability sheet also contains a scenario in which there is an initial exogenous increase in the debt ratio of 10 percent of GDP—intended to simulate the realization of a contingent liability—with the subsequent debt dynamics governed by the assumptions of the baseline scenario. Ideally, the magnitude of this shock would be related to indicators of financial sector vulnerability; at present, pending further research, it is set 10 percent of GDP.²⁸

54. It bears emphasizing that, in designing the sensitivity tests, there are a number of important trade-offs (Box 5). For instance, should the shocks used in the sensitivity tests be calibrated on one or on two standard deviations? On the one hand, the shocks to the

²⁷ This corresponds approximately to a two-standard-deviation shock to the U.S. dollar value of the GDP deflator growth for the full sample considered in Box 5, below.

²⁸ The average cost of systemic bank restructuring (fiscal or quasi-fiscal outlays) reported in *Systemic Bank Restructuring and Macroeconomic Policy* (eds. Alexander et al.) is 11 percent of GDP, although there is substantial cross-country variation.

Box 5: Calibrating the Sensitivity Tests

A tricky issue is how to calibrate the sensitivity tests to the baseline scenario. A first point worth noting is that most emerging market and developing countries are subject to large shocks to key parameters (such as real GDP growth rates, interest rates, inflation rates, primary or trade balances), particularly in relation to the underlying averages. A simple, standardized measure of this is the ratio of the mean squared to the sum of the mean squared and the variance, $\mu^2/(\mu^2 + \sigma^2)$, which ranges between unity and zero. The Table reports these statistics for some of the key parameters required for external debt sustainability analysis. As the Table indicates, typical values are under 0.5 (except for the interest rate), indicating a large volatility relative to the mean.

Second, there is large variation across countries—the interquartile range for average real GDP growth is 1.9 percent per year to 4.5 percent per year; the interquartile range for the standard deviation of the growth rate is 3.1 to 5.6 percent per year. This suggests that the sensitivity tests should generally be cast in terms of the country-specific standard deviations, rather than in terms of the absolute magnitude of the shock (e.g. a 1 percentage point decrease in real GDP growth). The main exception to this are the uniform shocks that will be applied to all countries, which may be cast in terms of absolute magnitudes (e.g. a 500 basis point increase in interest rates).

Third, there is an important trade off in setting the range of shocks to be considered. The range needs to be sufficiently encompassing to capture most of the risks to the scenario. On the other hand, if the envisaged shocks are too extreme, almost any country would appear “unsustainable,” and the likelihood of such shocks materializing may be too remote to be of practical significance. Without knowledge of the precise probability distributions, it is difficult to determine the likelihood of, say, a two standard deviation shock. Chebyshev’s inequality states that the probability of a shock more than k standard deviations from the mean is less than $1/k^2$. But this is a very loose bound—applying it to a two standard deviation shock, it implies only that the probability is less than 25 percent. Under specific distributional assumptions, tighter bounds may be established. For instance, if a Normal distribution is assumed, then the probability of a two standard deviation shock is approximately 2 percent—close to the empirical probabilities reported below (which are around 3-5 percent). Shocks may also exhibit serial correlation: if they are perfectly correlated, the probability of a two-year sequence of two standard deviation shocks would also be 3-5 percent, if they are perfectly uncorrelated, the probability of such a sequence is about 0.25 percent.¹ This suggests that casting the sensitivity tests in terms of a two-year sequence of two standard deviation adverse shocks, followed by a return to the historical mean, should capture most of the risks to the scenario—subject to the caveat that the historical data is sufficient to characterize the true underlying probability distributions.

^{1/} In the data set, there are a few instances of two-year sequence of adverse shocks that are more than two-standard deviations from the average, but almost none of three-year sequences of such shocks.

Table: Key Parameters for External Debt Sustainability Analysis 1/

	All	Transition	Excluding Official Financing Countries	Excluding HIPC countries	Africa	Asia	Middle East and Europe	Western Hemisphere	Fuel and Primary Product Exporters
1. Real GDP Growth									
Average (Sample median)	3.1	3.5	3.1	3.2	2.9	4.6	3.7	2.5	2.7
Sample 25th percentile	1.9	1.8	2.0	2.0	1.8	2.6	2.7	1.4	1.7
Sample 75th percentile	4.4	4.4	4.5	4.6	3.7	6.0	4.4	3.7	3.9
Standard Deviation (Sample median)	4.3	3.6	4.3	4.3	4.8	3.6	5.3	3.9	4.8
Sample 25th percentile	3.1	2.3	3.1	3.2	3.6	3.0	4.5	3.3	3.6
Sample 75th percentile	5.6	6.1	5.3	5.3	5.7	4.9	7.6	4.6	5.7
$\mu^2/(\mu^2+\sigma^2)$	0.3	0.5	0.3	0.4	0.3	0.6	0.3	0.3	0.2
Prob (GDP growth < $\mu-\sigma$)	13.8	17.6	14.3	13.8	13.6	11.3	12.7	13.5	13.1
Prob (GDP growth < $\mu-2\sigma$)	3.2	2.2	3.0	3.2	3.4	3.4	3.0	3.7	3.2
2. Interest Rate									
Average (Sample median)	4.5	4.9	5.5	5.5	2.4	4.5	5.3	6.1	3.7
Sample 25th percentile	2.0	3.6	4.0	3.9	0.7	1.6	3.8	4.3	1.6
Sample 75th percentile	6.6	6.3	7.4	7.8	4.0	6.6	6.8	9.0	5.6
Standard Deviation (Sample median)	1.7	1.2	2.4	2.4	1.6	1.7	2.0	2.4	1.9
Sample 25th percentile	1.0	0.9	1.7	1.2	0.9	0.9	1.4	1.8	1.1
Sample 75th percentile	3.0	1.7	3.4	3.3	3.1	2.6	3.9	3.1	3.3
$\mu^2/(\mu^2+\sigma^2)$	0.9	0.9	0.8	0.8	0.7	0.9	0.9	0.9	0.8
Prob (Interest rate > $\mu+\sigma$)	16.8	15.5	16.9	16.9	16.3	15.6	18.5	18.6	17.3
Prob (Interest rate > $\mu+2\sigma$)	4.2	2.7	4.0	3.7	4.4	3.2	5.5	5.4	5.1
3. GDP Deflator Growth (US dollar value)									
Average (Sample median)	2.3	6.4	2.4	2.3	0.7	1.6	1.9	4.0	1.5
Sample 25th percentile	0.8	2.7	1.2	1.1	-0.3	0.7	1.1	3.0	0.2
Sample 75th percentile	4.5	13.0	4.1	4.0	2.0	2.6	2.6	5.0	3.2
Standard Deviation (Sample median)	13.1	19.1	11.2	10.4	13.8	8.4	15.1	10.6	14.0
Sample 25th percentile	8.8	11.2	7.4	7.4	11.0	6.9	10.1	4.8	10.7
Sample 75th percentile	17.8	32.5	16.0	14.9	17.6	13.6	17.3	14.9	18.4
$\mu^2/(\mu^2+\sigma^2)$	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Prob (deflator growth < $\mu-\sigma$)	11.2	8.9	11.5	11.5	11.1	13.4	11.4	11.6	11.7
Prob (deflator growth < $\mu-2\sigma$)	2.2	0.0	2.0	1.8	2.5	2.6	2.9	2.8	2.5
4. Balance on goods and non-factor services (percent of GDP)									
Average (Sample median)	-6.5	-7.2	-5.2	-6.5	-5.8	-10.8	2.3	-8.5	-1.3
Sample 25th percentile	-14.0	-12.5	-16.0	-25.9	-11.5	-21.9	-11.8	-25.9	-9.9
Sample 75th percentile	0.9	-4.4	2.0	2.0	1.8	-3.7	17.5	0.1	6.8
Standard Deviation (Sample median)	5.6	4.5	6.0	6.1	5.7	6.1	9.5	4.8	6.5
Sample 25th percentile	3.6	2.7	3.8	3.8	3.3	3.3	6.1	3.8	4.1
Sample 75th percentile	8.8	7.2	9.8	9.4	7.7	9.0	13.5	7.7	9.9
$\mu^2/(\mu^2+\sigma^2)$	0.6	0.7	0.4	0.5	0.5	0.8	0.1	0.8	0.0
Prob (Trade Bal. < $\mu-\sigma$)	15.1	13.5	14.5	14.9	15.3	16.4	14.8	15.4	15.9
Prob (Trade Bal. < $\mu-2\sigma$)	2.1	1.0	1.8	1.8	2.0	2.6	2.1	2.6	2.6

Source: World Economic Outlook

1/ Sample period 1980-2001; except for transition economies, 1994-2001.

baseline scenario need to cover a reasonable proportion of the likely outcomes. On the other hand, under sufficiently large shocks, almost any country's debt dynamics may appear unsustainable. A further difficulty is that the shocks are likely to be correlated: low GDP growth rates will probably be associated with high interest rates; output declines will likely lead to larger fiscal deficits.²⁹ Yet there will seldom be sufficient data to estimate the joint probability distributions of the relevant variables (interest rates, GDP growth rates, etc.).³⁰ As a simple alternative, the envisaged framework uses the mean plus two standard deviations, as well as a scenario in which shocks occur simultaneously, while recognizing that further calibration of the sensitivity tests is likely to be necessary.³¹ Indeed, given that most countries undertaking Fund-supported adjustment programs are likely to be going through a period of structural change, the relevant horizon over which to calculate the means and standard deviations is not clear. Typically, long horizons would help guard against excessive euphoria about a country's growth prospects following a growth spurt; conversely, there may have been so many structural changes that the distant past is of limited relevance. In general the framework proposes using the previous ten years to calculate the relevant averages and standard deviations, unless there have been significant structural changes or shocks in this period (such as transition from centrally planned economy, hyperinflation, currency crisis), in which case a five-year period may be more appropriate.³² When too short a span of data are available for a country, cross-country parameters may need to be used instead. Finally, a judgment needs to be made about the serial correlation of the shocks, particularly as the

²⁹ Indeed, a rising level of debt may itself result in lower GDP growth rates as a greater proportion of resources is devoted to servicing the debt and away from physical and human capital investment.

³⁰ For instance, even if one were willing to impose a joint Normal distribution (which has the advantage of being fully characterized by only the first two moments) and to treat the primary/trade balance as a policy variable, there would still be 8 parameters (the means, standard deviations, and correlations of the interest rate, real growth rate, and inflation/real exchange rate) to estimate. Taking Argentina as an example, there are 8 post-hyperinflation observations (1993–2001) available, unless one is willing to assume that the stochastic processes generating these variables was invariant to the hyperinflation (and other structural changes).

³¹ By the Chebyshev inequality, for any well-defined probability distribution function, the probability of an outcome of more than k -standard deviations from the mean is less than $1/k^2$. While this does not require any specific distributional assumptions, it does, of course, assume that the sample mean and standard deviation provide a good estimate of the corresponding population moments.

³² Alternatively, if the data are available, a much longer period (e.g., 20 years) could be used to arrive at unbiased estimates of the underlying averages and standard deviations.

projection horizon lengthens. A low growth rate in a given year may presage a recession, suggesting a positive serial correlation in at least the level of output, but it is unlikely that there would be repeated negative shocks to the output growth rate. As such, the sensitivity tests are based on a two-year sequence of two-standard deviation shocks followed by a return to the mean growth rates for the remainder of the projection horizon.

Examples

55. As an illustration of the use of the framework, Table 5 reports the baseline projection (together with the associated sensitivity tests) of Turkey's external sustainability,³³ as it would have been viewed at the time of the approval of the 1999 stand by arrangement.³⁴ Following the currency crisis in 1994, the external debt ratio had peaked at 52 percent of GNP. Thereafter, net debt-creating flows were negative, reflecting modest current account deficits together with real output growth and some real exchange rate appreciation (the latter two factors contributing more than 3 percent of GNP of net debt reduction in 1997 and 1998).

56. Under the program, the external debt ratio was projected to increase by some 10 percent of GNP, though much of this corresponded to an increase in central bank reserves so that net external debt was to remain roughly constant (in fact, to decline by about 2 percent of GNP between 1998 and 2001).

³³ Projections for only three years (instead of 10 years) are shown so that projected and actual outcomes may be compared.

³⁴ In fact, the background paper to the 1999 Article IV (SM/99/294) consultation included some sensitivity tests on external sustainability. Those tests, however, were designed to calculate the maximum allowable current account deficit consistent with stabilizing the debt ratio, under alternative assumptions about the behavior of macroeconomic variables such as growth rates and interest rates. In the event, the main shock came from a wider-than-expected current account deficit due to higher oil prices and non-oil imports.

Table 5. External Sustainability Framework Applied to Turkey (1999)

I. Baseline Medium-Term

	Historical						Projection			Actu				
	t-199	t-199	t-199	t-199	t-199	t-199	t-199	t+200	t+200	Increa 1998-	t-199	t+200	t+200	Increa 1998-
1 External debt/Exports	29.	220.	191.	169.	157.	169.	217.	223.	210.		214.	211.	212.	
2 External	34.	51.	43.	44.	44.	47.	49.	53.	57.	10.	52.	57.	76.	29.
3 Change in external		16.	-	0.	-	2.	2.	3.	3.		5.	4.	19.	
4 Net debt-creating external		14.	-	-	-	-	1.	-	-	-	3.	3.	22.	29.
5 Current account deficit, excluding	1.	-	-	-	-	-	-	-	0.		-	1.	-	
6 Deficit in balance of			3.	3.	3.	1.	1.	2.	-		3.	7.	1.	
7 Exports of	13.	23.	22.	26.	28.	27.	22.	23.	27.		24.	26.	36.	
8 Imports of		22.	25.	30.	32.	29.	24.	26.	26.		27.	34.	37.	
9 Minus net non-debt creating													0.	
1 Net foreign direct investment,	0.	0.	0.	0.	0.	0.	0.	0.	0.		0.	0.	2.	
1 Net portfolio	0.	0.	0.	0.	0.	0.	0.	1.	1.		0.	0.	-	
1 $(r - \rho) / (1 + \rho) \text{ debt/GDP (lines$	0.	22.	-	1.	-	-	3.	0.	-		5.	2.	28.	
1 Adjustment $\rho + \rho$		0.	1.	1.	1.	1.	1.	1.	1.		0.	1.	0.	
1 $(r - \rho) \text{ debt/GDP (lines$		14.	-	1.	-	-	3.	0.	-		5.	2.	20.	
1 r (interest rate) times	0.	2.	3.	2.	2.	2.	2.	2.	3.		2.	3.	3.	
1 minus g (real GDP growth rate)	0.	2.	-	-	-	-	1.	-	-		2.	-	5.	
1 $\min(\rho + \rho) = \text{US dollar value of GDP deflator, growth}$	10.	-	-	1.	0.	-	-	0.	-		0.	2.	11.	
1 Residual, incl. change in gross foreign		2.	4.	1.	2.	7.	0.	5.	6.		2.	0.	-	

II. Sensitivity Analysis for External

1. If interest rate, real GDP growth rate, US\$ GDP deflator growth, and non-debt flows (in percent of GDP) are at	45.	49.	53.	6.
2. If interest rate in year t and t+1 is average plus two standard	50.	54.	58.	11.
3. If real GDP growth rate in year t and t+1 is average minus two	52.	62.	67.	20.
4. If US\$ GDP deflator growth in year t is average minus two	83.	88.	95.	48.
5. If non-interest current account (in percent of GDP) in year t and t+1 is average minus	52.	57.	58.	11.
6. Combination of 2-5 using one	63.	89.	94.	47.
7. Repeat 6 using "standard"				
8. One time 30% depreciation in year t (-30%)	71.	75.	80.	33.

1/ May not precisely match projections made by staff at the time of program approval due to data revisions or because

2/ Exchange rates are not normally explicitly

3/ In view of Turkey's currency crisis in 1993/94, 5 year averages

4/ A set of "standard" standard deviations will eventually be provided to desks, according to the type of

57. In the event, the debt ratio rose by almost 30 percent of GNP. To analyze why the projected path was not realized, it is useful to consider the period 1999 to 2000—when net debt rose by 7 percent of GNP (instead of the projected ½ percent of GNP)—separately from 2002, when there was a sharp devaluation following the abandonment of the crawling peg regime. During the period 1999-2000, the main source of error was the trade deficit, which, over the two years combined, was some 6 percent of GNP wider than projected.³⁵ In 2002, the depreciation of the exchange rate contributed some 11 percent of GNP to the increase in the net debt ratio, which, together with higher interest rates, lower GNP growth, and a larger trade deficit resulted in a 22 percent of GNP increase in the debt ratio.

58. The sensitivity tests indicate that the program baseline scenario was somewhat optimistic compared to historical trends. Using five-year averages for the key parameters, net debt would have increased by some 6 percent of GNP, rather than the 2 percent of GNP decline projected under the program. More importantly, the sensitivity tests would have made clear the risks to the projection. In particular, the outcome of a 7 percent of GNP increase in the debt ratio between 1998-2000 (i.e. prior to the devaluation) was within the two-standard deviation shocks to either the interest rate, the real GDP growth rate, or the non-interest current account deficit. Moreover, the two devaluation scenarios—either the two-standard deviation shock to the U.S. dollar deflator growth rate, or the standard 30 percent devaluation shock—would be sufficient to generate the eventual outcome of a 29.4 percent increase in the net debt ratio observed between end-1998 and end-2001.

59. Table 6 reports a similar exercise for Argentina, as it might have been viewed at the beginning of 1999. The baseline projection delineated here provides an approximate reconstruction of the program projections made in early 1999, with the debt ratio projected to increase by 2 percentage points, from 47.3 percent of GDP 1998 to 49.3 percent of GDP in 2001.³⁶

60. Over the previous five years, there had been a substantial increase, of some 14 percentage points, in the debt-to-GDP ratio, largely because the interest rate had outstripped the growth of nominal GDP (in US dollar terms). Over the projection period,

³⁵ This reflected, in part, the steep rise in oil prices, but also underestimation of the income elasticity of imports. In addition, growth in 1999 was more negative than expected, contributing some 3 percent of GNP to the increase in the debt stock, but this was offset by higher-than-expected growth in 2000.

³⁶ For a variety of reasons, it is not possible to reconstruct the program projection precisely. In particular, the projection of the *level* of debt differs from the actual program projection made at the time, due to revisions in the debt and national accounts data. The program projection for the *increase* in the debt ratio, however, is approximately the same—i.e., 2 percent of GDP (from 37 percent of GDP in 1998 to 39 percent of GDP in 2001).

smaller trade deficits were projected to help stabilize the debt ratio. In the event, the debt ratio actually rose by about 8 percent of GDP mostly because real GDP growth was weaker than expected and deflation raised the real debt burden.³⁷

61. Would the sensitivity tests have indicated such an outcome? The first sensitivity test repeats the projections using the historical averages of the relevant variables. Since Argentina underwent a hyperinflation in the early 1990s, five-year instead of ten-year averages are used. Under this sensitivity test, the debt ratio would have *decreased* by about 2 percentage points of GDP, suggesting that the baseline scenario was somewhat pessimistic (mainly because the program assumed a larger non-interest current account deficit than had been the historical average). Two-standard deviation shocks to the interest rate, the deflator, or the non-interest current account deficit are sufficient to raise the debt ratio by some 3 to 6 percent of GDP—shy of the 7.8 percent of GDP increase that was realized. A two-standard deviation shock to real GDP growth, however, would have raised the debt ratio by 10 percent of GDP, as would the one-standard deviation combined shock.³⁸ These scenarios would have implied debt ratios of almost 60 percent of GDP—a level that is particular worrisome in view of Argentina's low export-to-GDP ratio (see Appendix I).

V. CONCLUSIONS AND NEXT STEPS

62. This paper has outlined a framework for assessing members' external sustainability. The intention is to provide a tool to help staff examine systematically the evolution of members' debt dynamics under alternative assumptions regarding the macro economy, the

³⁷ Under the pegged exchange rate regime, inflation raises the dollar value of nominal GDP while deflation decreases it.

³⁸ It is worth noting that the U.S. dollar value GDP deflator shock raises the debt ratio by only 5 percent of GDP, reflecting the low real exchange rate volatility of the currency board arrangement. For this reason, the sensitivity tests include a 30 percent devaluation shock, which would have raised the debt ratio by 27 percent of GDP.

Table 6. External Sustainability Framework Applied to Argentina (1999)

I. Baseline Medium-Term

						Projections				Actual			
	t-5 1994	t-4 1995	t-3 1996	t-2 1997	t-1 1998	t 1999	t+1 2000	t+2 2001	Incras 1998-	t 1999	t+1 2000	t+2 2001	Incras 1998-
1 External debt/Exports of	441.	398.	391.	405.	455.	478.	458.	434.		520.	472.	480.	
2 External	33.6	38.1	40.4	42.7	47.3	48.7	49.3	49.3	2.0	51.0	51.4	55.1	7.
3 Change in external	2.8	4.5	2.3	2.3	4.6	1.4	0.6	0.0		3.7	0.5	3.6	
4 Net debt-creating external flows/GDP (lines	-0.6	-1.0	-2.0	-2.0	1.7	1.1	0.5	0.4		3.6	0.1	2.7	
5 Current account deficit, excluding interest	2.5	-0.8	-0.1	1.1	1.4	1.7	1.4	1.6		0.2	-1.2	-2.6	
6 Deficit in balance of	4.2	1.5	1.9	3.5	3.8	2.8	2.4	2.1		2.7	0.6	-1.4	
7 Exports of	7.6	9.6	10.3	10.5	10.4	10.2	10.7	11.3		9.8	10.9	11.5	
8 Imports of	11.8	11.0	12.2	14.1	14.2	13.0	13.2	13.4		12.5	11.5	10.1	
9 Minus net non-debt creating	-2.4	-2.2	-2.7	-3.3	-2.3	-2.5	-1.8	-1.9		-3.2	-2.9	-2.2	
10 Net foreign direct investment,	1.4	1.7	2.3	2.8	2.3	2.5	1.8	1.9		3.2	3.0	2.2	
11 Net portfolio	1.1	0.4	0.4	0.5	-0.1	0.0	0.0	0.0		0.0	0.0	0.0	
12 $(r-g-p+g)/(1+g+p)$ debt/GDP (lines	-0.6	2.0	0.9	0.1	2.6	1.9	0.9	0.7		6.6	4.2	7.4	
13 Adjustment factor: $p+g$	1.1	1.0	1.1	1.1	1.0	1.0	1.1	1.1		0.9	1.0	0.9	
14 $(r-g-p+g)$ debt/GDP (lines	-0.7	2.0	0.9	0.1	2.6	2.0	1.0	0.8		6.2	4.2	7.0	
15 r (interest rate) times	2.0	2.5	2.8	3.3	3.5	3.6	3.8	3.9		3.8	4.4	4.4	
16 minus g (real GDP growth rate) times	-1.8	1.0	-2.1	-3.3	-1.6	-1.2	-1.9	-2.2		1.6	0.4	1.9	
17 minus $(p+g)$ (p = US dollar value of GDP deflator, growth rate) times	-0.9	-1.5	0.2	0.2	0.7	-0.4	-0.9	-0.9		0.8	-0.5	0.8	
18 Residual, incl. change in gross foreign assets/GDP	3.4	5.5	4.3	4.3	2.9	0.3	0.1	-0.4		0.1	0.4	0.9	

II. Sensitivity Analysis for External Debt-to-

1. If interest rate, real GDP growth rate, US\$ GDP deflator growth, non-interest and non-debt flows (in percent of GDP) are at average of	46.9	46.3	45.3	-2.0
2. If interest rate in year t and t+1 is average plus two standard deviations,	49.3	50.4	50.3	3.0
3. If real GDP growth rate in year t and t+1 is average minus two standard deviations,	52.2	57.4	57.7	10.4
4. If US\$ GDP deflator growth in year t is average minus two standard deviations,	51.2	52.3	52.7	5.4
5. If non-interest current account (in percent of GDP) in year t and t+1 is average minus two standard	50.4	53.0	52.3	5.0
6. Combination of 2-5 using one standard	51.9	57.5	57.4	10.1
7. Repeat 6 using "standard" standard				
8. One time 30% depreciation in year t (-30% GDP	70.4	72.6	74.2	26.9

1/ May not precisely match projections made by staff at the time of program approval due to data revisions or because projections reported were not

2/ Exchange rate projections are not normally explicitly reported in

3/ In view of the hyperinflation in Argentina in the early 1990s, averages and standard deviations are calculated over

4/ A set of "standard" standard deviations will eventually be provided to desks, according to the type of country (e.g. emerging

external environment and politically and socially feasible adjustment effort. In conjunction with other sources of information and analyses—such as EWS models and market data—the framework can help inform the Fund’s decisions on program targets, access levels, and the possible need for debt restructurings. Naturally, such judgments will continue to be made on a case-by-case basis, taking into account the implications for member’s economy, but also the possible contagion and systemic ramifications in line with the Fund’s mandate.

63. An important question is how such a framework could be incorporated into staff reports. It is envisaged that the framework will be progressively applied and included in Article IV staff reports and in staff reports for use of Fund resources in the GRA, with appropriate modifications as indicated by initial experience.³⁹ Making such assessments public, in line with existing practice for staff reports, would help strengthen the credibility of staff assessments by making it clear that there has been an explicit assessment of the risks surrounding the baseline scenario. Most of the elements of the assessment are information that is already available in principle to market participants. While the sensitivity tests would be a new element, it must be borne in mind that similar tests are undertaken by financial institutions.

64. The resource costs of applying the proposed framework to surveillance of all emerging market countries and all requests for Fund resources in the GRA, while not trivial, are likely to be relatively modest, given that it is based on the medium-term framework that should already be a standard part of staff work. Assembling the various vulnerability indicators that place into context the sustainability scenarios (as described in Appendix II) would be more onerous and, in some instances, may require substantial statistical work by country authorities, possibly leading to requests for increased technical assistance.⁴⁰

65. Beyond the present framework, further research work will be necessary to develop more sophisticated models and methods for assessing sustainability—though it is unlikely that such work, to any great extent, will narrow the need for judgment in making assessments. Such work will need to focus, in particular, on fleshing out the linkages between the financial sector and the public and external debt dynamics. While the framework in its current form highlights some of these connections, it does not fully integrate them. For instance, financial sector restructuring costs are an important contingent liability for the

³⁹ The precise format in which these tables will be included and how to avoid overwhelming the reader is yet to be decided.

⁴⁰ In a number of countries, significant deficiencies exist in the coverage of the public sector accounts and in the availability of some external sector data, such as the breakdown of foreign exchange-linked debt by sector, that will necessitate additional efforts to compile balance of payments and international investment position statistics.

budget,⁴¹ but further work will be necessary to map the outputs of the FSAP process to obtain plausible magnitudes for conducting the sensitivity tests. More generally, the framework will need to be integrated with other work on financial sector vulnerabilities, the “balance sheet” approach to assessing vulnerability based on linkages between the private financial and nonfinancial sectors and the government sectors,⁴² as well as forward-looking market information on yield curves, evolution of spreads, and the duration and terms of emerging markets countries’ access to capital markets.⁴³

66. A related task for staff is to reach firmer views about the “danger” threshold levels of various debt indicators, either in isolation or perhaps combined in a composite indicator of sustainability. Here experience suggests that it is probably impossible to arrive at clear warning indicators, a view shared by a panel of outside experts convened for a seminar on assessing sustainability.⁴⁴ Yet, information, including on sovereign borrowing spreads for countries that eventually defaulted, may be useful for ascertaining conditions under which it might be difficult for countries to come back from the brink.

67. This is an ambitious agenda for future research, but the enhancements to the framework would make it all the more valuable as an input to surveillance discussions and the program design process.

VI. ISSUES FOR DISCUSSION

68. Directors may wish to focus on the following issues.

- Directors may wish to comment on the proposed framework for assessing sustainability. Do Directors believe that the objective should be to bring together relevant information as a basis for better informed judgment, or rather that an attempt should be made to generate a single indicator of sustainability that could largely remove the need for judgment in individual cases? Do Directors agree that the proposed elements of the framework are those that would be most useful in informing

⁴¹ See, in particular, sensitivity test 9 in the public sector debt dynamics template.

⁴² See “Balance Sheet Approach to Assessing Vulnerability to Crises, and Policy Responses,” forthcoming.

⁴³ A further task will be to consolidate individual country assessments to make sure that global “adding-up” constraints are respected. For instance, what are the implications of say countries tightening fiscal policy simultaneously? And how are aggregate borrowing needs related to the available supply of credit?

⁴⁴ This seminar was held at Fund headquarters on February 8, 2002.

decisions on access and in surveillance of emerging markets, or are there further elements that merit inclusion?

- The paper notes a tension between the need to avoid excessive optimism in forecasts and the importance of tailoring projections to country-specific circumstances. The proposed framework addresses this tension by laying bare the assumptions underlying the projections and subjecting them to stress tests, rather than seeking to standardize the basis on which projections are made. Do Directors support this approach?
- Directors may wish to comment on the proposed coverage of the framework as background for all requests on access to Fund resources in standby and extended arrangements and in connection with all Article IV consultations for emerging market countries.
- Directors may wish to comment on whether the information presented in the proposed framework, including the indicators, medium-term projections and sensitivity tests, should be made public.
- Directors may also wish to comment on the suggested next steps in developing and applying this framework and the work program proposed for strengthening various elements.

Assessing External Debt Sustainability—An Indicative Threshold Approach

69. The framework proposed in Section IV focuses on the dynamics of the (external or public) debt ratio, while leaving open the question of whether the *level* at which the debt ratio is likely to be stabilized is appropriate. Yet clearly this is not a matter of indifference: a (modestly) increasing debt ratio from a “low” initial level of indebtedness is likely to entail less risk than stability of the debt ratio at a “high” level of debt (though, of course, the latter is preferable to an increasing debt ratio from a high level). The difficulty lies in defining “high” and “low”—in some instances, countries have run into debt servicing difficulties (a “debt crisis”) at moderately low levels of debt, while others have been able to support much higher levels of indebtedness. While thresholds have been established in certain instances for particular groups of countries (such as the HIPC Initiative, see Appendix I, Box 1), in general, country specific factors and circumstances are likely to be at play, and there will likely be a large element of judgment involved in assessing whether an individual country’s debt exceeds prudent levels. Nonetheless, to help inform such assessments, this appendix surveys some of the cross-country evidence on external debt.⁴⁵

70. The first challenge is to define a “debt crisis.” One method is define a crisis as an event in which there are arrears (above some *de minimis* threshold) of principal or interest on external obligations towards commercial creditors (banks or bondholders), or in which the country reschedules or restructures its commercial debt. A number of empirical studies use such indexes (see Appendix I, Box 2); the index adopted here is taken from Detragiache and Spilimbergo (2001; D&S). The drawback of this approach is that it excludes external payments difficulties that do not result in formal arrears or rescheduling as well as instances in which, faced by an unsustainable debt burden, the country anticipates a crisis by taking corrective adjustment. An alternative approach, therefore, considers all cases in which there is a sharp decline or “correction” of the debt-to-GDP ratio (again, beyond some *de minimis* threshold), regardless of whether this correction comes about through debt default, debt restructuring, or a deliberate adjustment effort (see Appendix I, Box 3).

71. Over the period 1979-2001, the D&S index identifies 43 debt crises, while the second method identifies 53 debt corrections—roughly 10 percent of the observations.⁴⁶ Figure 1

⁴⁵ This appendix considers only external debt; a similar analysis can be undertaken for public debt, though it is difficult to obtain comparable cross-country data. An alternative approach would be to construct a full “early warning” model of debt crises/corrections, perhaps using a probit framework, from which each individual country’s probability of a crisis may be obtained. The approach adopted here is to try to obtain some simple rules-of-thumb against which a country’s debt ratio may be assessed.

⁴⁶ The data cover all IMF member countries, except the advanced industrialized countries, in five year averages over the period 1979-2001; transition countries are included over the period 1994-2001.

graphs the relative frequency distribution of the peak debt ratios associated with these 53 debt corrections. While the distribution of the debt/GDP ratio ranges widely—from less than 10 percent to more than 150 percent—about two-thirds of the observations occur at a debt/GDP ratio of below 60 percent and more than three-quarters of the observations occur at a debt/GDP ratio of below 70 percent. Excluding HIPC-eligible countries or those that rely primarily on official financing, the peak debt ratios are lower, with three-quarters of the observations occurring at debt ratios below 60 percent of GDP. Figure 2 graphs the corresponding frequency distribution for the 43 D&S index debt crises, where about three-quarters of the observations occur at debt ratios below 60 percent of GDP. While any cut-off of the distribution (e.g. three-quarters of the observations) is necessarily arbitrary, both indexes suggest that, when debt crises or corrections occur, they typically do so at debt ratios below 50-60 percent of GDP.⁴⁷

72. A more formal method of establishing a threshold level of debt is by means of a *binary recursive tree* (BRT). In its simplest form, with a single explanatory variable, a BRT chooses a threshold value of debt, \hat{d} , that best discriminates between crisis and non-crisis cases in the sense of minimizing the sum of Type I and Type II errors.⁴⁸ Table 1 reports, for a variety of samples, the unconditional probability of a crisis/correction, the estimated threshold value, \hat{d} , and the associated conditional probabilities. For instance, in the full sample, there are 53 crisis cases out of 508 observations, so the unconditional probability of a debt crisis is 0.104. The estimated debt threshold is $\hat{d} = 44.7$ percent of GDP and there are 233 observations with $d \leq \hat{d}$, of which 14 entailed a debt crisis nonetheless, so the conditional probability of a debt crisis for countries with debt-to-GDP ratios below 44.7 percent is $14/233 \approx 0.06$. Conversely, there are 275 observations with $d > \hat{d}$ of which 39 entailed a debt crisis, so the conditional probability of a debt crisis for countries with a debt-to-GDP ratio above 44.7 percent is $39/275 \approx 0.14$

73. Across samples, and using either index, the estimated threshold is a debt level of about 40 percent of GDP. For countries whose debt falls below this threshold, the conditional probability of a debt crisis or correction is typically 2-5 percent; for countries above the threshold, the conditional probability is about 15-20 percent. The estimated threshold thus

⁴⁷ This is not quite the same as saying that there is a high likelihood of a debt crisis/correction whenever debt exceeds 50-60 percent of GDP; recall that the unconditional probability—across all debt ratios—is about 10 percent.

⁴⁸ It is also possible to weight the relative cost of Type I and Type II errors in the penalty function. A more general BRT allows for multiple explanatory variables and multiple branchings of the decision tree. These are not estimated here because the small number of crisis observations makes the method unreliable.

provides a very rough guide for assessing a country's debt ratio, with an appreciable increase in the likelihood of a debt crisis or debt correction as the debt ratio rises above 40 percent of GDP. At the same time, it bears emphasizing that a debt ratio above 40 percent by no means necessarily implies a debt crisis—indeed, another way of looking at the results is that there is a 80 percent probability of *not* having a crisis (even if the debt ratio exceeds 40 percent of GDP).

74. Moreover, as emphasized in the text, no single indicator is likely to capture fully the likelihood that a country's debt will prove unsustainable. In the context of external debt, the "transfer problem" implies that a country must generate trade surpluses to service its debt. Taking as given the degree of possible import compression, this implies that, among other factors, the export/GDP ratio (or debt export or debt service/export) ratio will be relevant as well. Figure 3 therefore plots the bivariate frequency distributions of the peak debt ratios, analogous to Figures 1 and 2, but split by the export/GDP ratio. The Figure indeed suggests that the peak debt ratios that can be supported are higher the greater the export ratio. For example, of the observations that occur at export ratios below 20 percent, three-quarters occur at a debt ratio below 60 of GDP; of the observations that occur at export ratios between 20 and 40 percent of GDP, the corresponding debt-GDP ratio is 60-80 percent. Likewise, when the debt service-to-export ratio is low, the debt-GDP ratio can be higher.

75. Table 2 reproduces the binary recursive tree estimates for the debt threshold, but allowing for various export-GDP ratios. As expected, the estimated debt threshold increases with higher export ratios. For the debt correction index, the threshold increases from 45 percent of GDP to almost 50 percent of GDP when countries with export ratios below 10 percent are excluded. For the D&S debt crisis index, the threshold increases from 40 percent of GDP to 53 percent of GDP (and 65 percent of GDP for countries with export ratios above 40 percent, although such observations are very few).

Appendix I, Box 1. The HIPC Initiative Framework

The HIPC Initiative framework aims to reduce the debt burdens of heavily indebted poor countries to more sustainable levels. Eligibility for debt relief under the Initiative is limited to countries that are IDA-only and PRGF-eligible. Countries must also demonstrate a track record of policy performance.

The determination of debt relief under the Initiative is based on qualifying thresholds for debt remaining after the full application of traditional debt relief mechanisms. Traditional relief includes a stock-of-debt operation on Naples terms¹ by the Paris Club and comparable treatment by non-Paris Club official bilateral and commercial creditors (multilateral creditors do not provide traditional relief). The thresholds for determining HIPC relief are (i) a ratio of the net present value (NPV) of debt to exports² above 150 percent; or (ii) for very open economies,³ a ratio of the NPV of debt to government revenue above 250 percent.⁴ The NPV,⁵ rather than the nominal stock, of debt is used because it reflects the relative degree of concessionality of the country's debt. By taking into account the concessionality of debt, the NPV is a more accurate measure of a country's effective debt burden. Countries with debt ratios above the thresholds after traditional relief qualify for HIPC relief. The HIPC Initiative also set targets for debt service ratios of 15-20 percent of exports (20-25 percent under the original framework), but in practice debt relief brought the debt service ratios faced by HIPCs much below these targets—and often into the single digits.

The HIPC Initiative utilizes the concept of external public and publicly-guaranteed debt outstanding and disbursed (as opposed to debt committed), and includes arrears. Domestic debt is not included in the calculations, which is consistent with treatment by the Paris Club. The inclusion of domestic debt in the debt stock for HIPC relief purposes could prove very disruptive to the limited domestic financial markets in HIPCs. Once a country qualifies for relief under the Initiative, the relief to be delivered by each creditor is determined based on each creditor's exposure, in NPV terms after traditional relief.

In 1999, the HIPC Initiative was enhanced to provide broader, deeper, and faster debt relief. The modifications to the Initiative included a reduction in the debt sustainability thresholds from a range of 200-250 percent to 150 percent for the NPV of debt-to-exports ratio, and from 280 percent to 250 percent for the NPV of debt-to-revenue ratio. The new thresholds were to provide a more substantial cushion for HIPCs to be able to meet their debt service obligations in the face of external shocks.

A country can be said to achieve debt sustainability if it can meet its current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears, and without compromising growth. Analytically, there are three key determinants of debt sustainability: (i) the existing stock of debt and its repayment terms; (ii) the development of a country's fiscal and external repayment capacity; and (iii) the growth, composition, and terms of new external financing. Maintaining debt sustainability after debt relief remains an important challenge for HIPCs.

1/ Naples terms provides for a 67 percent NPV reduction of pre-cutoff date commercial (non-ODA) debt, and a rescheduling over 40 years with 16 years' grace for pre-cutoff date ODA debt. The cutoff date is a concept used by the Paris Club and differs for each country.

2/ The three year average of exports of goods and services (consistent with the IMF *Balance of Payments Manual*, 5th edition, 1993) ending in the last year for which actual data is available, is used for the calculation of HIPC relief. This average is used to avoid situations where exports may be unusually high or low in the base year (i.e., the year on which the DSA is based).

3/ Countries for which the exports-to-GDP ratio is at least 30 percent, and whose central government revenue-to-GDP ratio is at least 15 percent.

4/ Central government revenue, excluding grants. This is consistent with the objective of releasing government resources from external debt service, which in HIPCs is mostly undertaken by the central government, to spending in priority areas. Also, information on revenue on a wider basis is not available for most of those countries.

5/ Under the HIPC Initiative framework, currency-specific commercial interest reference rates (CIRRs) are used as discount rates when calculating the NPV of debt.

Appendix I, Box 2. Literature Survey on Debt Sustainability

Although debt crises in the early 1980s spurred academic research on debt sustainability and underlying causes of crises, most of the empirical literature in the 1990s has focused on currency crises rather than debt sustainability.

A few notable exceptions are Detragiache and Spilimbergo (2001) and Reinhart (2002). Detragiache and Spilimbergo (2001) analyzed the relationship between debt crises and external liquidity by using a large panel sample of 69 countries over 1970-98. They identified 54 debt crises in total by the occurrence of a default on commercial debt, a rescheduling, or a debt reduction agreement.¹ The results of the probit analysis indicate that, after controlling the effects on debt crises of macroeconomic variables and debt characteristics, less liquid countries are more likely to default on their external debt. Liquidity variables, measured by the share of short-term, debt service due and reserves, continue to be highly significant in various model specifications and stress tests, while it was not the case for other variables. Reinhart (2002) also used a large panel sample to investigate the predictive power of sovereign credit ratings for currency crises and defaults on external debt. Within the framework of signals approach and by using the sample that includes 59 countries and spans 1970-1999, she found a strong link between currency crises and default in developing countries: about 85 percent of all defaults in the sample are linked with currency crises.² Another major finding was that sovereign credit ratings systematically fail to anticipate currency crises, but do considerably better predicting defaults.

Although these studies explore whether debt crises are predictable—and if so, what indicators are important in predicting crises—they did not directly address the more complex issues involved in the assessment of debt sustainability, particularly those associated with setting the appropriate threshold values of various sustainability indicators, and hence, provide only limited reference.³

In this context, the studies of the IMF and World Bank on the debt sustainability of highly indebted poor countries (HIPCs) would appear to be more relevant, despite the reservation that the methodology employed and judgment made for HIPCs are unlikely to be fully applicable to other developing countries. As noted, for example in IMF(1996), the ratios to export earnings of current debt service and/or the net present value of all future debt-service payments were chosen as the most direct indicators of external sustainability. And levels of 20-25 percent and 200-250 percent for these indicators were suggested as thresholds which, if exceeded, may presage imminent debt-servicing difficulties. Those thresholds are arguably based on an empirical analysis of the experience of developing countries and their debt service performance over time, but the scope of the underlying empirical analyses seems to be limited with only a small number of countries included in the sample.⁴

References

- Beim, David O. and Charles W. Calomiris, Emerging Financial Markets, New York MacGraw-Hill, Irwin, 2001
- Cohen, D., "The Sustainability of African Debt," mimeo, Ecole Normal Superieure, 1995.
- Detragiache, E., and A. Spilimbergo, "Crises and Liquidity: Evidence and Interpretation," IMF Working Paper, WP/01/2, 2001.
- Frankel, J. and A. Rose, "Exchange Rate Crises in Emerging Markets," *Journal of International Economics*, November 1996.

Goldstein, M., G. Kaminsky and C. Reinhart, Assessing Financial Vulnerability: An Early Warning System for Emerging Markets, Washington D.C., Institute for International Economics, 2000.

International Monetary Fund, "Analytical Aspects of the Debt Problems of Heavily Indebted Poor Countries," SM/96/23, January 1996.

Kaminsky G., A. Lizondo and C. Reinhart, "Leading Indicators of Currency Crises," *IMF Staff Papers* 45, No. 1, March 1998.

Kaminsky G. and C. Reinhart, "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," *American Economic review* 89, No. 3, June 1999.

Reinhart, C., "Default, Currency Crises and Sovereign Credit Ratings," NBER Working Paper No. 8738, January 2002.

Underwood, J., "The Sustainability of International Debt," International Finance Division, The World Bank, mimeo, 1990.

1/ They classify an observation as a debt crisis if either or both of the following conditions occur: 1) there are arrears of principal or interest on external obligations toward commercial creditors (banks or bondholders) of more than 5 percent of total commercial debt outstanding; 2) there is a rescheduling or debt restructuring agreement with commercial creditors as listed in the World Bank's *Global Development Finance*.

2/ In the study, currency crises were identified by using the crisis index developed by Kaminsky and Reinhart(1999), while the episodes of defaults were dated by relying on the cases documented by Beim and Calomiris(2001), Detragiache and Spilimbergo(2001) and others. In the sample used to analyze the interaction between defaults and currency crises, there are a total of 106 defaults and 154 currency crises, of which 135 are in emerging markets.

3/ For currency crises, the signals or indicator approach was extensively explored in many studies. See Frankel and Rose(1996), Goldstein, Kaminsky and Reinhart(2000), and Kaminsky, Lizondo and Reinhart(1998), among others.

4/ For more detail, see Underwood(1990) and Cohen(1995).

Appendix I, Box 3: Identifying Debt Corrections and Peak Debt Ratios

Conceptually, a debt "correction" is a large reduction in the debt-to-GDP ratio which comes about either because of debt default or restructuring, or because of corrective adjustment policies. To make this concept operational, however, requires identifying the peak of the debt ratio as well as a judgment about how large a reduction in the debt ratio qualifies as a "correction."

Most of the difficulties in identifying the peak debt ratio stem from exchange rate devaluations that distort the debt ratio. While a steady rate of devaluation is likely to feed into domestic inflation (and nominal GDP) thereby limiting the distortion of the debt ratio, a spike in the devaluation rate may result in a significant increase in the debt ratio even though the level of GDP or of GDP measured in local currency has remained relatively constant.

In constructing the data set, an isolated episode of currency depreciation of 50 percent or more for a given year is considered a spike devaluation. Persistent but modest depreciation refers to several years of continued or recurrent depreciation within the ceiling set to the smaller of 50 percent per year and $1\frac{1}{2}$ times the historical average (calculated excluding extreme values over 500 percent per year if they are present in the sample). Persistent depreciation beyond this ceiling is again considered a spike.

With these definitions, the peak debt is defined as: (i) the historical peak of debt-to-GDP ratio in the sample if a country exhibits no or small movements in its exchange rate, or if the historical peak is less than 100% and preceded by several years of modest currency depreciation; (ii) year $t-1$ ($t-2$) if the historical peak at year t is apparently a blip associated with a spike in the devaluation rate in the same (previous) year, and; (iii) year $t-s$ if the historical peak at time t is preceded by s years of large and continued depreciation.

In the second stage, the decline from the peak debt ratio is defined as a debt "correction" only if it is sufficiently large. Measuring the debt decline as the percentage change in the debt-to-GDP ratio over the two-year period subsequent to the date of the peak, debt "corrections" were defined as those that are greater than the average cross-country decline. For the dataset, this corresponded to a fall in the debt-to-GDP ratio of about 20 percent (not percentage points), yielding 53 episodes of "debt corrections."

Appendix Table 1: Estimated Threshold Levels and Associated Conditional Probability of

	All Observations				Debt Threshold	Observations with Debt <				Observations with Debt >			
	Crisis	Non-crisis	Total	Uncond. Prob.		Crisis	Non-crisis	Total	Cond. Prob.	Crisis	Non-crisis	Total	Cond. Prob.
Debt corrections 1/													
Full sample	53	455	508	0.104	44.72	14	219	233	0.060	39	236	275	0.14
Excluding	36	320	356	0.101	38.98	9	172	181	0.050	27	148	175	0.15
Excluding HIPC/Official	36	308	344	0.105	31.40	4	120	124	0.032	32	188	220	0.14
Private Financing	14	146	160	0.088	38.88	3	71	74	0.041	11	75	86	0.12
Debt crises 2/													
Full sample 3/	29	403	432	0.067	38.99	5	256	261	0.019	24	147	171	0.14
Excluding	29	403	432	0.067	43.06	5	256	261	0.019	24	147	171	0.14
Excluding HIPC/Official	28	388	416	0.067	43.28	4	238	242	0.017	24	150	174	0.13
Private Financing	20	160	180	0.111	38.99	2	89	91	0.022	18	71	89	0.20

1/ As defined in the

2/ As defined by Detragiache and Spilimbergo

3/ The full sample consists of 545 observations of which 43 are crisis observations. The optimal tree picks out two

(a) $\text{debt/GDP} < 18.7$ percent, conditional prob. of crisis = 0, $\text{debt/GDP} > 18.7$ percent, conditional prob. of crisis = 0.10; (b) the second threshold (38.99 percent of GDP) is

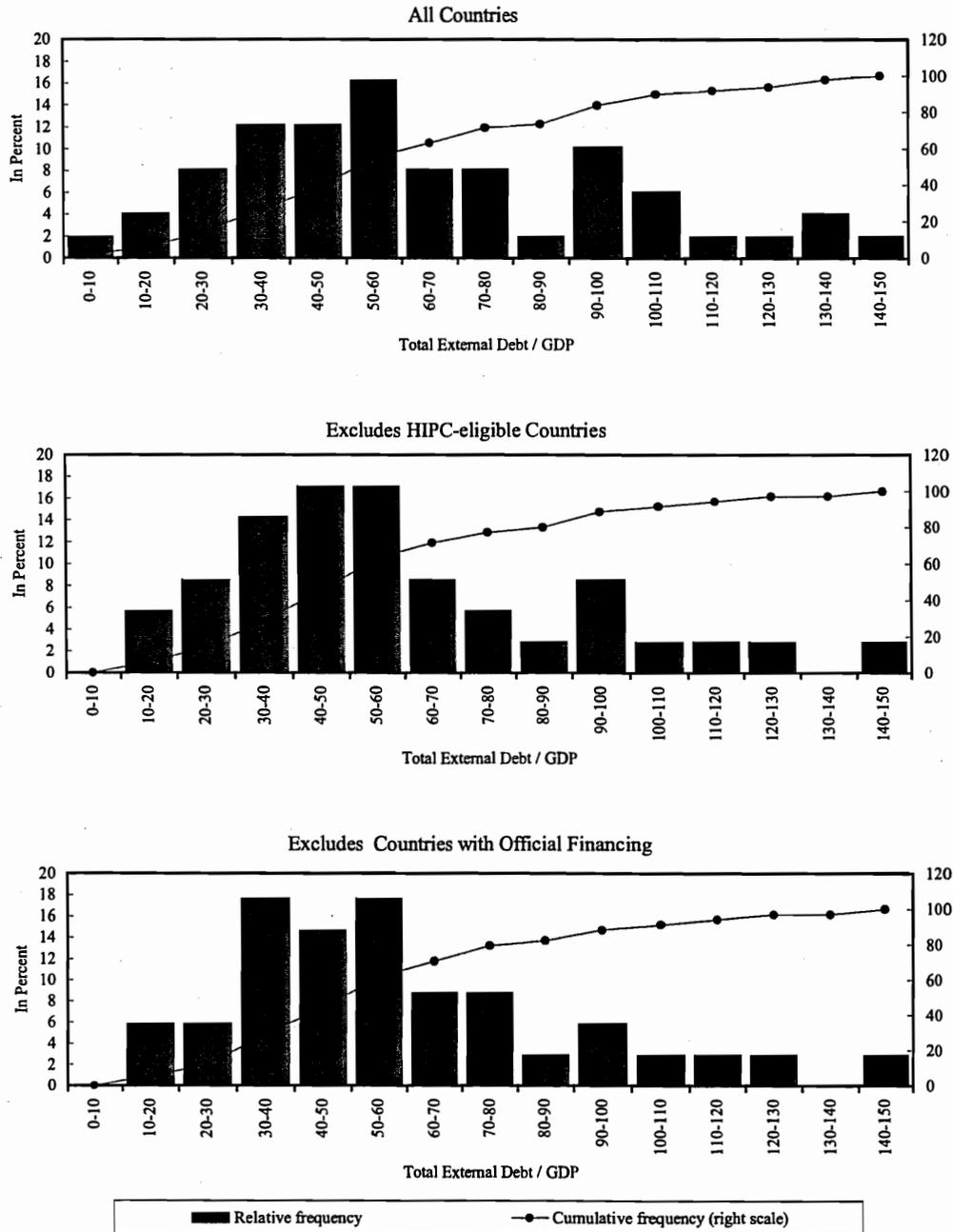
Appendix Table 2: Estimated Threshold Levels and Associated Conditional

	All				De Thresh	Observations with Debt <				Observations with Debt >			
	Cris	Non-	Tot	Uncond.		Cris	Non-	Tot	Cond.	Cris	Non-	Tot	Cond.
Debt													
Full	5	45	50	0.10	44.7	1	21	23	0.06	3	23	27	0.14
Export/GDP > 20	2	23	26	0.10	48.5	9	14	15	0.05	1	9	11	0.16
Export/GDP > 30	2	22	24	0.11	48.5	5	11	11	0.04	2	10	12	0.17
Export/GDP > 40	1	15	17	0.10	48.5	4	9	9	0.04	1	6	7	0.20
Debt													
Full	2	40	43	0.06	38.9	5	25	26	0.01	2	14	17	0.14
Export/GDP > 20	1	30	32	0.05	53.0	2	21	21	0.00	1	8	10	0.15
Export/GDP > 30	1	28	29	0.04	53.0	1	17	18	0.00	1	10	11	0.11
Export/GDP > 40	3	21	21	0.01	64.9	0	16	16	0.00	3	4	5	0.05

1/ As defined in

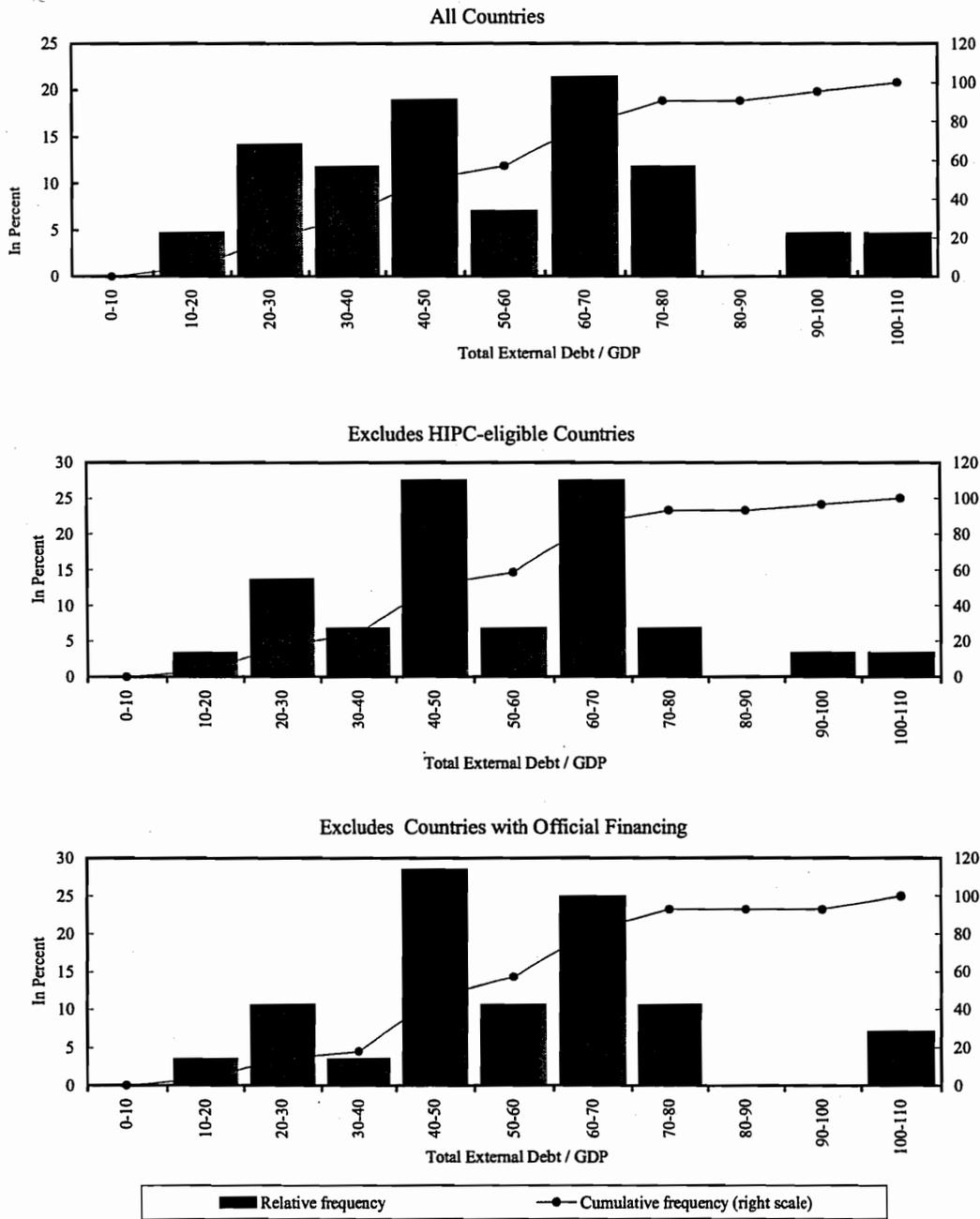
2/ As defined by Detragiache and

Figure 1. Relative Frequency Distribution of Peak Debt Ratio: 1979-2001 1/



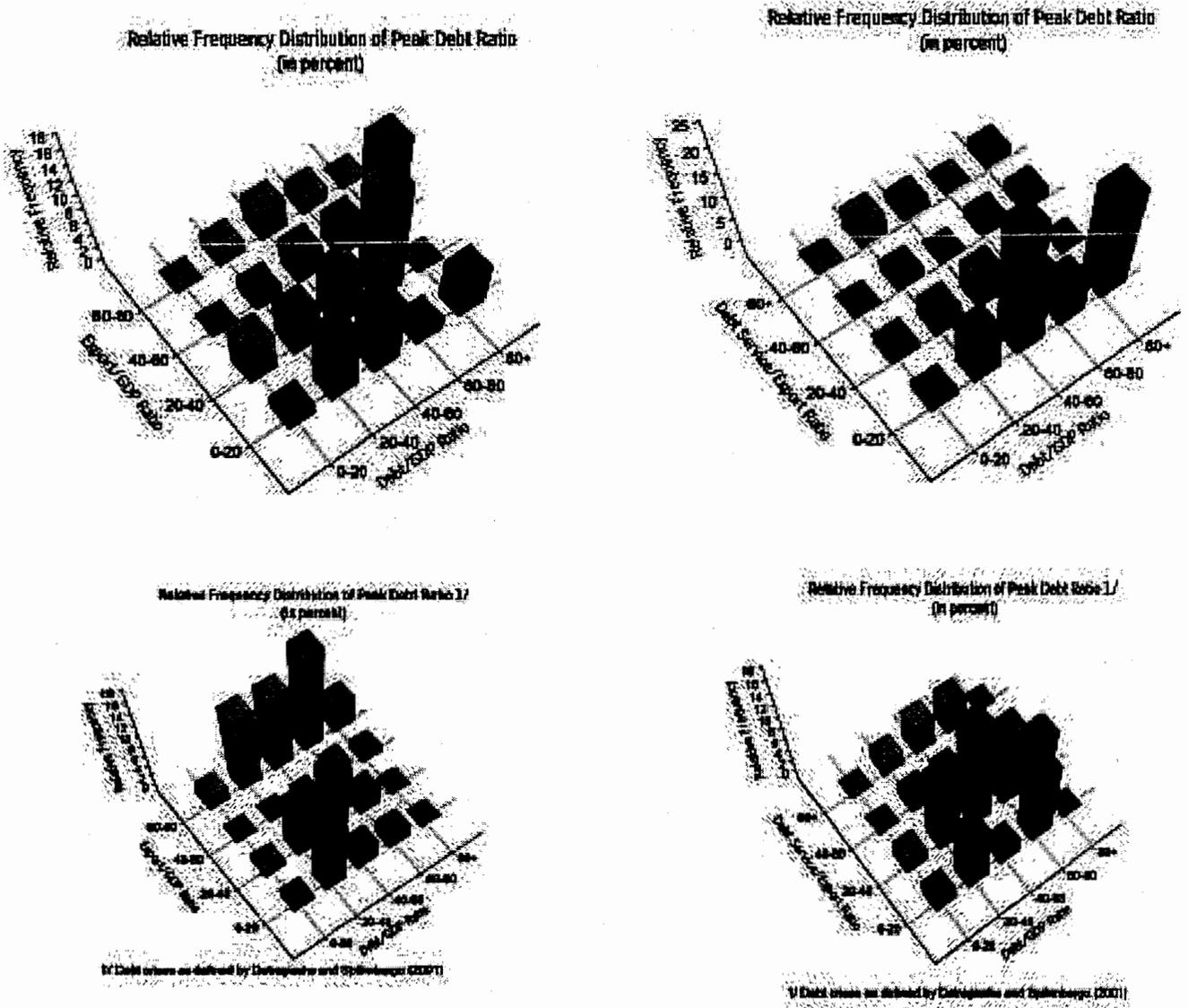
Source: International Monetary Fund; *World Economic Outlook*, and staff estimates.
 1/ Excludes major industrialized countries.

Figure 2. Relative Frequency Distribution of Peak Debt Ratio: 1979-2001 1/



Source: International Monetary Fund; World Economic Outlook, and staff estimates.
 1/ Debt Crises as defined by Detragiache and Spilimbergo (2001).

Figure 3: Frequency Distributions of Peak Debt Ratios



Best Practices for Vulnerability Indicators

76. Following the onset of the Mexican and Asian crises, analysis at the Fund has been paying increasing attention to the question of crisis prevention and, in particular, to the analysis of external vulnerability. One key method has been the identification, collection and inclusion in Board papers of vulnerability indicators comparable across countries. This annex provides some background on the use of core vulnerability indicators in surveillance.

77. A standardized table of vulnerability indicators was introduced in staff reports in early 1998, based on a review of empirical evidence, experience, theory and data needed for such assessments. Following the introduction of this table,⁴⁹ there has been steady improvement in the use of such indicators for surveillance purposes, furthered by guidance on the use of reserve indicators focused on capital, rather than current account risks. In the 2000 *Biennial Review*, the use of selected vulnerability indicators in staff reports, was reviewed. There, it was reported that “references to ratios of reserve cover [in terms of short-term debt had become] standard in staff reports,” whereas “the coverage of external debt and related flows in vulnerability assessment varied greatly.”⁵⁰ Another weakness was the uneven use of indicators for financial system monitoring. The 2000 *Biennial Review* also highlighted specific country cases where the analysis of external vulnerability had been noteworthy and could provide a model for other countries with similar characteristics.⁵¹

78. *The paper Approaches to Vulnerability Assessment for Emerging Market Economies* reported on advances in the⁵² systematic use of cross-country external vulnerability indicators in the context of the quarterly vulnerability assessment exercise conducted by Fund staff. Cross country indicators, Early Warning System (EWS) models (and the

⁴⁹ The suggested format of this table was reported to the Executive Board in the context of vulnerability analysis as Table VII-2 in the *Biennial Review of the Implementation of Fund's Surveillance and of the 1977 Surveillance Decision*, SM/00/40 (2/18/00), while versions of it would have been seen by the Board as part of country Staff Reports. The paper *Debt- and Reserve-Related Indicators of External Vulnerability*, SM/00/65 (3/23/00) provided the rationale for the use of some of the key indicators.

⁵⁰ As earlier cited, pp.54-56.

⁵¹ See Box 16, which analyzed the cases of South Africa, Tunisia and China, and Box 17, which examined the case of New Zealand.

⁵² SM/01/301 (10/3/01).

indicators on which they are based) together with data on forward-looking financing needs and average cross-correlations of foreign exchange spreads are among the indicators used.

79. Yet another, and more recent, look at the use of selected external vulnerability indicators in staff reports was provided to the Board in the paper *Data Provision to the Fund for Surveillance Purposes*.⁵³ There, it was reported that staff reports now systematically include indicators of external vulnerability and generally a separate standard table. Of the countries with access to private capital markets, 89 percent did meet this requirement, and 78 percent discussed reserve adequacy explicitly, many by discussing the relation of reserves to short-term external debt. The paper also identified critical data needs for external vulnerability assessments: the need to have the relevant detail of data on reserves, debt, capital flows, the International Investment Position and corporate and financial sector indicators.

80. Since the early introduction of the standard table on vulnerability indicators the empirical results now confirms the selection of indicators used. In addition, staff has gained experience in interpreting the indicators in the context of in depth country analysis. Much additional work has been done on identifying data needed for vulnerability assessments (e.g. the new external debt guide and the SDDS reserve template), and the framework for analyzing vulnerabilities has improved. Distinguishing the liquidity and solvency aspects of vulnerability (and sustainability) (see also Box 1, and SM/00/65), provides a useful way to classify indicators.

81. Reflecting these developments, the attached table of core vulnerability indicators provides for:

- A more systematic identification of the information needed for judging the indicators and assumptions (partner GDP growth rate; GDP and export paths) from the indicators themselves.
- A separation of indicators according to whether they pertain primarily to external solvency (debt solvency and dynamics; related balance sheet information); and liquidity.
- A separation of whether the indicators cover the overall economy or the sectors (public, financial, corporate).
- Information that captures views of private markets (stock market performance; debt ratings, spreads, and a maturity indicator).

⁵³ SM/02/126 (4/26/02).

82. The core table (Table 1) is set up in a manner that would allow it to replace the 1998 table following further internal review.

83. Table 2 presents a similar set of indicators for assessing vulnerability of the public sector debt dynamics, although a definitive list is yet to be established. Indicators of financial sector soundness are discussed in "Macro prudential Indicators" (SM/01/159).

**Table 1. Country Name: Vulnerability Indicators for External Debt Sustainability Assessments 1/
(In percent unless otherwise indicated)**

	1991-97	1998	1999	2000 Prelim.	2001 Latest Estimate Date	2002	2003	2004
External balance sheet information								
External debt (in US\$)								
o/w: Public sector debt								
Non-concessional public debt								
Banking sector debt								
Domestic currency debt								
External debt (in US\$) by maturity								
Domestic, foreign currency linked or indexed public debt (in US\$)								
Net stock of FDI (in US\$)								
Net foreign assets of the banking sector (in US\$)								
Net external liabilities (in US\$)								
Other external solvency information 1a/								
Exports of GS (growth rate)								
Partner country import growth								
Imports of GS (growth rate)								
Terms of trade (growth rate)								
Real exchange rate (growth rate)								
GDP (growth rate)								
Partner country GDP growth								
Industrial production growth								
CPI (12 months)								
31 day T-bill yield 2/								
External interest payments to exports GS 3/								
Profit remittances plus reinvested earnings/stock of FDI 4/								
Share of corporate external debt held by export oriented firms								
External debt dynamics 1a/								
Net debt creating external flows/exports GS								
Minus (exports GS growth) * (debt/exports GS)								
External solvency indicators								
External debt to exports GS								
External debt to GDP								
Net external liabilities to exports GS								
Gross financing need (in millions of US\$)								
o/w: Amortization of MLT debt (in millions of US\$)								
Short-term debt (in millions of US\$)								
Current account deficit								
Liquidity information								
Central Bank short-term foreign currency liabilities (in US\$) 2/ 5/								
Short term foreign liabilities of the banking sector (in US\$) 2/ 5/								
Short term foreign currency liabilities of the banking sector (in US\$) 2/ 5/								
Overall open foreign currency position of the banking sector (in US\$) 5/								
REER appreciation (-) (12 month basis)								
Current account balance (in US\$)								
o/w: Financed by debt creating inflows								
o/w: Financed by trade credits								
Domestic credit to GDP								
Liquidity indicators								
Gross official reserves (in US\$)								
Reserves to total short term external debt by remaining maturity (rm)								
Reserves to short-term debt (rm) plus current account balance								
Reserves to M2								
Reserves in months of imports GS 3/								
Sectoral liquidity indicators								
Gross reserves to foreign currency public debt service								
Gross reserves/central bank foreign currency liabilities								
Foreign currency public debt service to exports GS								
Foreign currency liabilities over liquid foreign currency assets (for banks)								
Market Indicators 6/								
Stock market index 7/								
Foreign currency debt rating 8/								
Spread of benchmark bonds (basis points, end of period) 9/								
Maturity of non concessional public external debt issued during period (weighted average)								
Memo items								
GDP (in US\$)								
Exports of GS (in US\$)								

**Table 1. Country Name: Vulnerability Indicators for External Debt Sustainability Assessments 1/
(In percent unless otherwise indicated)**

1/ Sectoral solvency indicators, such as domestic public debt ratios, financial sector and corporate indicators (such as leverage) are not included here. Similarly detailed public sector liquidity indicators on the maturity structure, the share of floating rates and on the corporate sector such as short-term debt to working capital are excluded. Indicators of external debt dynamics are not needed if the prescribed sustainability analysis is undertaken. It could be useful to add information on adherence to key standards, such as Basle Core Principles, and International Accounting Standards if not done so elsewhere. The data in this table are expected to be provided in briefing papers and staff reports for countries with significant but uncertain access to private market financing (emerging market economies). In some cases, data may not be available or in the suggested format. Definitions can be interpreted with some flexibility, bearing in mind that the purpose of providing such details also to facilitate a cross-country comparison of indicators of vulnerability so that the deviations need to be clarified where necessary.

1a/ Under this header the most recent information should be provided. Data for rates of change are to be provided on a 12-month basis. For example, REER appreciation, Sept. 1999-Sept. 98. For stocks, provide the most recent observation point, for flows the latest 12-months observation. The date of the most recent observation can be usefully indicated in a separate column rather than through numerous footnotes. Comparing the latest information, as indicated, with trends in the end/full year data should provide a clear indication of reversal in trends. Additional information regarding details in recent trends is best provided in the form of time series graphs.

2/ Short-term is defined as 1 year and under. The use of remaining maturity, rather than original maturity, is required.

3/ Ideally imports of exports of goods and services (GS). This excludes factor income in line with the fifth edition of the Balance of Payments Manual.

4/ Inconsistency between reported remittances and FDI stock is a major issue in many countries.

5/ This position includes the notional value of off-balance sheet foreign currency liabilities, such as short forward position.

6/ No projections are expected for financial market indicators.

7/ Stock market capitalization as percent of GDP can be added as indicator of scale.

8/ Please highlight date and nature of recent down/up grading. Specify rating source.

9/ Spread of Euro, Brady bonds or other benchmark instrument compared to government bonds of equivalent maturity in the currency of issue. Please specify comparator instrument and maturity.

Table 2. Country Name: Vulnerability Indicators for Public Sector Debt Sustainability Assessments 1/
(In percent unless otherwise indicated)

	1991-97	1998	1999	2000	2001	2002	2003	2004
				Prelim.	Latest		Projection	
					Estimate Date: (specify date of latest observation)			

Memo Items

- GDP (in local currency)
- GDP (in US dollars)
- Implicit debt (payg pensions and other; percent of GDP)

1/ The public sector is broadly defined to include the general government, which consists of the central, provincial and local authorities, and state owned enterprises (especially where their activities are mostly non-commercial in nature) The data in this table are expected to be provided in briefing papers and staff reports for countries with significant but uncertain access to private market financing (emerging market economies). In some cases, data may not be available or in the suggested format. Definitions can be interpreted with some flexibility, bearing in mind that the purpose of providing such details also to facilitate a cross-country comparison of indicators of vulnerability so that the deviations need to be clarified where necessary.

2/ Where available, the IIP of the general government could be identified in detail following the classification of table on page 108-111 of the BOP Manual. It is expected that the detailed IIP for the sovereign would be available in most cases.

3/ Need not be completed if sustainability analysis has been undertaken.

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INTERNATIONAL MONETARY FUND

Research Department

The IMF Approach to Economic Stabilization

Prepared by Michael Mussa and Miguel Savastano¹

July 1999

Abstract

This paper explains the IMF approach to economic stabilization. It argues that a Fund-supported program is a process, comprising six broadly defined phases, that evolves along a multiplicity of potential pathways. The paper discusses the three-pronged approach to stabilization at the core of all IMF-supported programs, stresses the iterative character of "financial programming," and explains the rationale for setting quantitative performance criteria for fiscal and monetary policy in IMF-supported arrangements. A main theme is that IMF-supported programs contain a great deal of flexibility to respond both to differences in circumstances and to changes in conditions in individual cases.

JEL Classification Numbers: E52, E61, F33, F34, F41

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Author's E-Mail Address: mmussa@imf.org, msavastano@imf.org

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I. INTRODUCTION

When the International Monetary Fund makes resources available to a member country to assist with adjustment of its balance of payments, it does so under an agreed arrangement (or program) specifying the conditions governing that support. These conditions, known as IMF conditionality, include both policies a member may need to carry out prior to approval of the arrangement (by the IMF's Executive Board) and disbursement of the initial tranche of support, as well as policy undertakings that must be met for disbursement of subsequent tranches over the life of the arrangement (usually one to three years).

Of necessity, the IMF's approach to economic stabilization has vital quantitative features. Projections must be made for key macroeconomic variables (national output, the price level, the current account balance, and so on), under the policies to be adopted under the program. Particular attention must be paid to the likely availability of external financing to assure that viability is restored to the country's external payments position. As a central element of conditionality, IMF programs contain quantitative "performance criteria" for key variables related to macroeconomic policies, which typically include ceilings for the fiscal deficit and the central bank's net domestic credit, and floors for net international reserves. These performance criteria, which must be agreed by the national authorities and the IMF, are calculated using a flows-of-funds framework known as "financial programming." Thus, in a general consideration of quantitative approaches to economic stabilization, the approach employed by the IMF merits particular scrutiny.

Over the years as well as recently, the IMF approach to economic stabilization and especially IMF conditionality have been the subject of much controversy. IMF programs are often characterized as unnecessarily damaging to growth, harmful to the poor, unduly inflexible and unresponsive to the differing needs and circumstances of member countries, and based on rigid application of outmoded and discredited economic principles. Some of these criticisms can and should be dismissed as factually inaccurate.² Others are based on the wishful thinking that there are easy policy choices, or that there should be virtually unlimited concessional official financing (or grants), for countries with severe balance of payments problems—problems often due, at least partly, to the countries' own policy mistakes. Other criticisms clearly merit substantive consideration. In individual cases, recognizing that

²Chief among these are the claims that IMF-supported programs seldom pay attention to the effects of adjustment on the poor, that they all contemplate a fiscal retrenchment of approximately the same size and composition which relies heavily on regressive tax rate hikes and undue compression of public investment, and that they (almost) invariably require a large exchange rate devaluation. The evidence contained in numerous studies, conducted inside and outside the Fund, shows that all those claims are unfounded. Some, but certainly not all, of the studies that provide (or refer to) that evidence include Bernstein and Boughton, 1993, Burton and Gilman, 1991, Gupta et al., 1998, Heller et al., 1988, IMF, 1997, IMF Assessment Project, 1992, Johnson and Salop, 1980, Killick, 1995 (Chapter 3), Nashashibi et al., 1992, Schadler et al., 1993, and Schadler et al., 1995.

undertaking adjustment to correct external imbalances is necessary and difficult, and that there are limits to official support, the degree of tightening of macroeconomic policies and the balance between adjustment and financing are always debatable issues.

This paper is not primarily concerned with the latter type of criticisms, which can only be addressed on a case-by-case basis, but rather with two more specific critiques that relate to the quantitative character of the IMF approach to economic stabilization. First, because IMF-supported programs employ a similar quantitative framework across a very wide array of cases, there is the accusation that the IMF approach to stabilization is rigid and unresponsive to the particular situations of different members and to changing conditions over time. Second, because of the common practice of setting quantitative performance criteria for fiscal and monetary policy in virtually all IMF-supported programs, there is the indictment that the IMF approach is based on outmoded economic models and principles that fail to account for the complexity and uncertainty of key macroeconomic relationships. These accusations, we intend to show, largely reflect misconceptions about how the IMF approach operates in reality; misconceptions that are partly due to the way the IMF describes its programs.

To understand the IMF approach to economic stabilization and especially how it functions in its quantitative aspects, it is first essential to understand the **process** of an IMF-supported program, described in Section II. A typical IMF-supported program is not set in stone at its inception, either proceeding subsequently in exact accord with the initial plan, or terminated because of some minor deviation. A program begins with an explicit request from a member. IMF staff then prepares a blueprint of a program that is used as the basis for negotiations. When agreement is reached, often after hard bargaining over key elements of the program, the arrangement has to be cleared by IMF management and then approved by the IMF Executive Board. Thereafter, disbursements proceed automatically if all the performance clauses are met as initially specified. This rarely happens all the way through an arrangement. Instead, if various conditions are not met, deviations may be accommodated with "waivers," projections may be revised, and numerical targets changed. Those who participate in the process of IMF-supported programs, from both sides, do so with full awareness of their fundamentally iterative, open-loop character.

With an understanding of this process, it is worth addressing the substance of the economics of IMF programs; this is the subject of Section III. At their core, IMF-supported programs emphasize a member country's actions in three areas: (i) securing sustainable external financing; (ii) adopting demand restraining measures consistent with available financing; and (iii) proceeding with structural reforms to promote growth and adjustment in the medium and longer term. The member's more basic objectives of high output growth, alleviating poverty, and so forth are not explicitly among those core areas. This does not imply unconcern with these objectives, but rather the priority that a country experiencing severe balance of payments difficulties must assign in the shorter term to ameliorating these difficulties and correcting the macroeconomic and structural imbalances at their root, in order to achieve more basic objectives in a sustainable manner over the longer term.

Beyond this, a good deal of misconception concerning the inflexibility and dogmatism ascribed to IMF programs probably derives from the superficial similarity that those programs exhibit in terms of the specification of quantitative performance criteria for fiscal and monetary policies. Once account is taken of the **process** of IMF-supported programs, however, it becomes apparent that there is a great deal of flexibility to respond both to differences in circumstances and to changes in conditions in individual cases. In fact, properly understood, the intellectual doctrine associated with IMF financial programming is primarily a recognition of basic accounting identities supplemented with a small number of behavioral relationships and forecasts of key economic variables, the latter two being subject to revision as new evidence becomes available. This is topped with a reasonable discretion in judging both the size of the required macroeconomic adjustment and the relative effectiveness of the policy instruments available to the authorities to undertake it.

Before turning to the main subject of the paper, five further points deserve clarification and emphasis. First, as an international organization, the International Monetary Fund must serve the interest of and be accountable to its membership, within an established set of policies, procedures and practices that assure reasonable equality of treatment, with due recognition of differences in circumstance. In short, not everything goes. A degree of conservatism in Fund arrangements is not only inevitable, but is also desirable.

Second, under its legal charter, the Articles of Agreement, IMF financial support to members is supposed to serve a particular purpose, as specified by Article I (iv):

To give confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards, thus providing them with the opportunity to correct maladjustments in their balance of payments without resorting to measures destructive to national or international prosperity.

Plausible assurance that a member's use of the Fund's resources will be temporary requires a reasonable expectation of a member's relatively early return to external payments viability (so that the member will be able to repay the Fund). Indeed, the primary legal justification for conditionality, as provided in Article V of the Articles of Agreement, is to impose "adequate safeguards" that render that plausible assurance. No one may reasonably argue that the IMF should ignore this constraint in its conditionality. Moreover, the IMF has no authority to write down claims against members who fall into arrears on their obligations to the Fund; in the end, those members become outcasts of the international community with prolonged and dire consequences. In the application of conditionality, prudence to contain the risks of such situations is clearly essential.

Third, while we do not review them here, empirical studies that have evaluated the macroeconomic effects of IMF-supported programs have generally found that they do best what they are primarily designed to do, namely, improve the current account balance and the overall balance of payments of countries experiencing external payments difficulties. And the most careful studies, which attempt to correct for a variety of econometric difficulties, confirm

that this association is something more than the usual tendency for things to get better when they are very bad to start with.³ Other macroeconomic effects associated with IMF-supported programs—on output growth, on inflation, and so forth—are more difficult to pin down, especially when proper account is taken of all the other factors that influence the outcome of a program. If anything, the results tend to show negative initial effects on output, while the effects on inflation are often not statistically significant.

Fourth, for exchange rate policy (not discussed in detail in the rest of the paper), it is *not* the case that the IMF imposes its views on all members, or that those views (almost) always entail a devaluation and replacement of currency pegs for “more flexible” regimes. True, discussions about exchange rate policy and, in particular, the dismantling of exchange restrictions (an area that falls under the direct purview of the IMF as stated in Article VIII of the Articles of Agreement) are important and at times central aspects of program negotiations. Moreover, in some cases the reform of the foreign exchange system or an exchange rate devaluation become preconditions (“prior actions”) for Board approval of an IMF arrangement. But this is hardly the norm. As in other areas, negotiations over exchange rate policy give considerable weight to the views and desires of the member country. The many arrangements approved for countries in the CFA franc zone in the years prior to the January 1994 devaluation of the CFA franc (a period when IMF staff voiced repeatedly, though subtly, its concerns about the harmful effects of maintaining the old parity) attest to this fact. So does the evidence from a large number of Fund arrangements approved in the 1980s that is reported in an external evaluation of IMF conditionality and which lead the authors to conclude, with some surprise, that: “perhaps the strongest tendency of IMF conditionality was to leave existing exchange rate policies intact” (IMF Assessment Project, 1992; page 39).⁴

³The empirical literature on the macroeconomic effects of IMF-supported programs is quite extensive. However, the question is difficult to address and the methodologies employed (particularly the earlier ones) have serious shortcomings, especially with the so-called “problem of the counterfactual”—i.e., ascertaining what would have been different in the absence of an IMF program—see Goldstein and Montiel, 1986, Khan, 1990, and Dicks-Mireaux et al., 1995. See Haque and Khan, 1998 for a recent survey of this literature.

⁴In the 1990s, views of country authorities have continued to play a key role in shaping exchange rate policy in IMF-supported programs. For example, Argentina made its own decision to adopt a currency board in early 1991, and received support from an IMF arrangement only in July of that year. When the peg came under intense pressure in the tequila crisis of 1995, a new program supported by the IMF helped Argentina sustain its decision to preserve its currency board. In mid-December 1994, Mexico devalued the peso and then moved to a floating rate before reaching any agreement with the IMF. Also outside of any Fund arrangement, Brazil adopted the Real Plan in mid-1994 and defended it against intense pressures in the tequila crisis and from the Asian crisis beginning in October 1997. When Brazil requested, negotiated, and agreed on a program supported by the IMF in November 1998, the decision to continue with the Real Plan was fundamentally a decision of the

(continued...)

That substantial deference is given to national authorities in their exchange rate and other economic policies is a reflection both of the right of members to determine their own policies, and of the experience showing that IMF programs tend to perform best when their associated policies are most closely "owned" by the national authorities in charge of implementing them.

Fifth, substantial deference to national authorities, however, still means that Fund arrangements impose tangible constraints on economic policies. This implies that there is an unavoidable political economy component to IMF conditionality. National authorities may modify policies to comply with IMF conditionality when it would be difficult to find domestic political consensus in the absence of external pressure. On behalf of the international community, the IMF attaches conditions that the ultimate providers of IMF resources might find difficult to request and enforce on a bilateral basis. Thus, the IMF and its conditionality become a "scapegoat" on both sides of the bargain (see James, 1998). That such a scapegoat can be useful in securing necessary or desirable, but unpopular, policy adjustments is clear. That the IMF might actually be counterproductive because of the political consequences of its conditionality and the hostility associated with its scapegoat function, is also at least a debatable issue (see Schultz, 1995 and Feldstein, 1998). We will not attempt to resolve this debate. We note, nonetheless, that the IMF is the creature of its membership and is accountable and responsive to that membership; the IMF cannot, in broad terms and over a sustained period, pursue policies which the membership does not generally approve.

⁴(...continued)

Brazilian authorities. As market pressures intensified in mid-January 1999, the decision to devalue the real and subsequently to let it float was again a decision of the Brazilian authorities, although with knowledge that the IMF and the international community probably would not continue to support an exchange rate policy that had become unviable.

II. THE PROCESS BEHIND IMF-SUPPORTED PROGRAMS

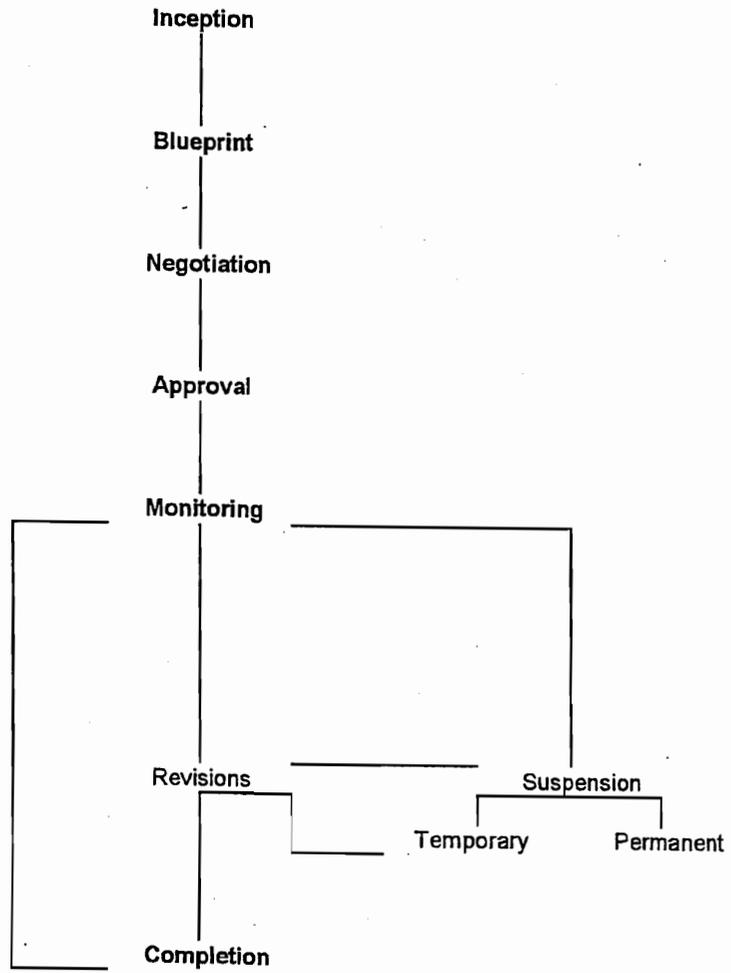
IMF programs are, in practice, quite flexible. An IMF-supported program is **not** the initial agreement negotiated with a member. A Fund-supported program is a process. It evolves along a multiplicity of potential pathways, driven by exogenous economic events, by policy actions of the national authorities, and by the responses of the IMF staff, management, and Executive Board, within the general framework of the Fund's policies governing assistance to members. Those who work on IMF programs, inside the Fund or with the national authorities, generally understand the iterative and "open-loop" nature of the process.

The process involves two main parties: a country facing external payments problems rooted in macroeconomic and/or structural imbalances, and the IMF with a mandate to offer financial and technical assistance to members that undertake economic adjustment. From the country's side, the process is delimited by the authorities' capacity and willingness to implement the measures needed to resolve their external payments problems. From the IMF's side, the process is governed by policies and procedures that regulate the access to, and uses of, IMF financing—i.e., by IMF conditionality. These policies and procedures have evolved over five-and-a-half decades from a few general guidelines to a more complex body that reflects the major changes in the international monetary system during this period and the effects of those changes on an expanding and more heterogenous IMF membership—see Polak, 1991 and Guitián, 1995. Notwithstanding its increased complexity (reflected also in a growing number of facilities tailored to the needs of particular groups of countries), the core process underlying IMF-supported programs has proved to be remarkably resilient in its main features. Indeed, with relatively minor differences across the various types of facilities, that process comprises six broadly defined phases: inception, blueprint, negotiation, approval, monitoring, and completion (Chart 1).

A. Inception

IMF programs get underway when the authorities of a member request financial assistance from the IMF. The request need not be written; normally an oral communication from the authorities to IMF staff and/or management suffices. Prior discussions with staff or management sometimes precede a request, but the decision to request support rests with the country's authorities. Indeed, in the regular process of IMF surveillance, staff or management may impress upon the authorities the need to adopt measures to redress actual or potential external or other macroeconomic imbalances, but it is up to the country authorities whether and when to take up that advice (see Mussa, 1997). Often, authorities delay required adjustment, and domestic and external imbalances worsen significantly before a request for assistance from the IMF (see Santaella, 1996 and Knight and Santaella, 1997). As a consequence, IMF programs often start with crisis or near-crisis conditions in the balance of payments thereby necessitating rapid policy responses to normalize external payments and correct underlying macroeconomic imbalances.

Chart 1: Phases of IMF Programs



B. Blueprint

When a request for IMF assistance is made, IMF staff from the Area Department responsible for relations with the member prepare a blueprint of an adjustment program. The blueprint takes account of key characteristics of the country—e.g., membership in a currency union, size of the public sector, depth and soundness of the financial system, access to international capital markets—features IMF staff knows well from its regular surveillance and preprogram discussions with the authorities. The blueprint also contains a preliminary assessment of the proximate and underlying sources of the aggregate imbalances that have caused the deterioration of the country's balance of payments, gauges the size of the external disequilibria, evaluates the authorities' response to the unfolding crisis, and outlines the central elements of an adjustment program that could warrant financial support from the IMF. The staff then makes proposals regarding the type of financial arrangement, the size of the IMF loan and the time profile of the disbursements that appear compatible with the country's external financing needs (the "access" and "phasing" under the arrangement), and the key policy measures that would be advisable to have in place before providing any IMF financing ("prior actions").⁵

A briefing paper summarizing the blueprint and containing a first attempt at gauging its quantitative implications in terms of a simple flow-of-funds accounting framework of key macroeconomic relationships is then prepared and circulated for comments to other (non-area) departments of the IMF. The flow-of-funds framework uses the latest annual estimates for the country's main macroeconomic variables, and preliminary projections for at least one year ahead that incorporate the expected effects of the proposed adjustment measures. Consistent with the primary (and often pressing) goal of restoring balance-of-payments viability, the projections emphasize the expected evolution of international reserves, the current account, domestic credit growth and the public sector balance during the adjustment period; the rates of inflation and of output growth, the ultimate objectives of all adjustment programs, play a central role in the short-run projection exercise but are not regarded as formal targets of the prospective arrangement. A revised blueprint incorporating comments from departments is then submitted to IMF management for clearance. Management evaluates the blueprint and decides on the prior actions that should be sought from the authorities, as well as on the access and phasing proposals made by the staff.

C. Negotiation

After the briefing paper is cleared by management, a mission visits the member to start negotiations (though sometimes negotiations may be held at Fund headquarters or in some other location). Normally, the mission's first task is to revise its estimates of external disequilibrium and of underlying macroeconomic imbalances, and assess whether the adjustment effort envisaged in the blueprint remains broadly adequate. Even if revisions

⁵For a description of the various types of Fund arrangements and facilities and of the terms and conditions of IMF lending (as well as of the peculiar Fund terminology) see IMF, 1998.

are not substantial, which they often are, the mission makes it clear to the authorities that negotiations will be conducted *ad referendum*, and that no agreement is final until the program is cleared by IMF management and approved by the IMF's Executive Board. In general, when agreement is reached it represents a compromise between the blueprint in the staff's briefing paper and the initial negotiating position of the country's authorities.

Negotiations over some key aspects of the program can be contentious, though rarely openly confrontational. Disagreements about goals are not as common as disagreements about the policies necessary to attain those goals. Typically, country authorities tend to advocate less tightening of fiscal and monetary policies and a slower pace of structural reforms than those suggested by the staff, but there are cases where it is the staff who stands for an easing of the policy stance or some rebalancing of the policy mix. When the staff requests that certain actions—e.g., the dismantling of exchange restrictions, the lifting of interest rates ceilings—be taken before Board approval of the program, and disbursement of the first tranche of the IMF loan, the scope for disagreements and dispute tends to increase.

Program negotiations often take place over the course of several missions. If a serious impasse is reached, program discussions are put on hold. Typically, when negotiations resume (and they normally do) the country's situation has worsened markedly, requiring revisions to the staff's blueprint. Once the authorities and the staff reach agreement on the policies needed to underpin the adjustment effort, they negotiate the more technical features of the Fund arrangement. Those features comprise the mode and frequency of monitoring performance under the arrangement (i.e., macroeconomic and structural performance criteria, structural benchmarks, mid-term reviews), and the relation between those performance clauses and the provision of IMF financing. Discussion of these features usually involves updates of the basic macroeconomic framework in the IMF staff's blueprint. This iterative procedure, the hallmark of financial programming, enables the staff and the authorities to assess in simple quantitative terms the interactions between the policy measures agreed and the main targets of the adjustment program.⁶ After reaching agreement on numerical values for the main objectives of the program, normally for at least one year ahead, authorities and staff negotiate numerical values for the quarterly path of a small set of macroeconomic variables used to monitor the authorities' adjustment effort. Two such "intermediate variables" on which almost all IMF programs focus are the public sector deficit and creation of domestic credit by the central bank. Typically, the behavior of those variables during the first 6-12 months of the arrangement become formal performance criteria, while the numerical values for the outer dates are "indicative targets" subject to revision in the program's mid-term reviews.

The outcome of the negotiations is summarized in a "letter of intent." The letter and its attachments spell out the main objectives of the program, the policy actions and reforms that the authorities have taken and intend to take under the arrangement (especially those for the first year), and the modality and frequency of the performance clauses and monitoring

⁶See Robichek, 1985 and Polak, 1997 for discussions of financial programming as practiced by IMF staff. See also Section III.

techniques agreed with the staff. The letter of intent signed by the country authorities is their formal request for IMF financing and marks the end of the (initial) negotiation phase.

D. Approval

Back at headquarters, the mission team prepares a "staff report" containing an account of discussions with the authorities and of the policy understandings reached with them. The report is accompanied by a detailed macroeconomic framework which typically includes a full set of projections of the country's fiscal, monetary, and balance of payments accounts covering at least the first full year under the IMF arrangement, as well as a medium-term scenario showing the progress toward external viability envisaged over a five-year period. The report also includes an appraisal by the staff of the main risks and uncertainties (of both external and domestic nature) surrounding the proposed adjustment program, and a summary of the technical features of the financial arrangement (i.e., duration, access and phasing of the IMF loan, and the performance clauses ascribed to the various tranches).

The staff report and the letter of intent are then circulated for comment to several non-area departments, who check that the proposed program remains broadly consistent with the blueprint in terms of the adjustment effort, the attainability of the program's primary goals, and the application of IMF conditionality. Departments also offer their views about the risks of the proposed arrangement—views which may not coincide fully with those of the originating area department. A revised draft of the staff report is then submitted to management for clearance. Management makes the final decision on the size and phasing of the IMF loan but generally makes no changes to the projections and other technical features of the arrangement or to the policy understandings agreed by the mission. Increasingly, especially in important cases, management's views and guidance are provided on a continuous basis throughout the negotiating process.

When cleared by management, the staff report and letter of intent are distributed to the IMF Executive Board and a date is set for Board discussion of the proposed arrangement, with the actual meeting sometimes made contingent on implementation of prior actions by the authorities. Management must recommend approval of all IMF programs as a requirement of consideration by the Executive Board. Although there often are expressions of concern or even occasional abstentions, management's recommendations have invariably been accepted by the IMF Board. However, the views of Executive Directors and of the national authorities they represent have substantial importance. The Board meeting is the occasion when Executive Directors, representing the 182 member countries, *could* reject the proposed program, thereby providing an incentive for IMF management and staff to take to the Board only programs that they expect will command its support. Board meetings signal the international community's endorsement of the adjustment program. Executive Directors use Board meetings to indicate to IMF management and staff, and to the representatives of the borrowing country, the aspects of the adjustment strategy they consider essential for the attainment of the program's goals—and therefore for the continuation of their support for the arrangement. Through this process the Executive Board exerts, over time, considerable influence on IMF conditionality.

Table 1 reports the number of IMF arrangements approved by the Executive Board in five year intervals, and by type of facility, from 1973 to 1997, as well as the number of countries that received IMF financing during that period, broken down by region. The figures in the table can be interpreted in many ways. However, the sheer fact that in the last twenty-five years the Fund has approved a total of 615 arrangements for 126 (developing) countries that have confronted all types of balance-of-payments difficulties is *prima-facie* evidence that the process leading to the approval of IMF programs possesses enough flexibility to respond to the different and evolving needs of a heterogenous membership. Board approval leads to the release of the first tranche of the IMF loan. What happens thereafter, and in particular what determines the disbursement of remaining tranches of an IMF loan, is decided in the following (fifth) phase of the process.

E. Monitoring

Monitoring is the longest and probably most important phase of IMF-supported programs, covering a one-to-three-year period when the bulk of the IMF loan is usually scheduled to be disbursed. Monitoring involves much more than periodically checking compliance with the numerical and structural performance criteria and benchmarks of the arrangement; it entails a **continuous** assessment by the staff of developments in the borrowing country and of their implications for the attainment of the main goals of the program. Monitoring requires keeping track of the timely implementation of the policy measures agreed by the authorities and of the behavior of variables beyond the authorities' control that impinge on the macroeconomic projections on which the arrangement was based.

Monitoring acquires a formal dimension at the so-called "test dates" at which performance criteria need to be met in order for tranches of the IMF loan to be disbursed. Test dates are typically set at quarterly intervals (though recently some Fund arrangements have used monthly test dates) and can be of two types: those where performance is assessed in an essentially backward-looking manner, mainly in terms of numerical performance criteria, and those which, in addition, require the satisfactory completion of a program review that assesses the forward-looking potential for the program to meet its primary objectives. Both monitoring techniques share "the positive function of ensuring a member's access to Fund resources when the conditions are met, and the negative function of interrupting access when the country has failed to meet them" (Polak, 1991; page 14).

Performance of a country under an IMF-supported program can follow four possible tracks (Chart 1): (1) The country may comply with all performance clauses established at the beginning of the arrangement and with relatively minor updates of the clauses made in program review(s) and hence be eligible to receive all the disbursements from the IMF loan

Table 1: IMF Arrangements 1973-1997 1/

Number of arrangements approved during the period (cumulative flows)	1973-77	1978-82	1983-87	1988-92	1993-97	Total	
Total	<u>85</u>	<u>124</u>	<u>139</u>	<u>126</u>	<u>141</u>	<u>615</u>	
Stand-By	82	99	110	75	75	441	
Extended Fund Facility	3	25	7	10	18	63	
SAF / ESAF			22	41	48	111	
Number of arrangements, by type of country	<u>85</u>	<u>124</u>	<u>139</u>	<u>126</u>	<u>141</u>	<u>615</u>	<i>Number of countries</i>
Industrial Countries	6	2	1			9	<u>5</u>
Developing countries, by region							
Africa	19	60	84	55	46	264	45
Asia	25	20	16	14	17	92	20
Central and Eastern Europe	2	5	3	17	33	60	17
Central Asia and Other				1	16	17	8
Middle East and Europe	4	5	3	3	8	23	6
Western Hemisphere	29	32	32	36	21	150	25
Amounts committed under arrangements (SDR billion) (cumulative flows)							
Total	<u>9.1</u>	<u>29.5</u>	<u>29.2</u>	<u>35.5</u>	<u>73.4</u>	<u>176.6</u>	
Stand-By	8.3	13.8	18.8	15.8	53.9	111.1	
Extended Fund Facility	0.8	15.7	9.2	15.4	13.2	54.2	
SAF / ESAF			1.2	4.3	6.3	11.8	

Countries with 9 or more Fund arrangements approved between 1973 and 1997, by region

Africa	Number of Programs	Asia	Number of Programs
Kenya	12	Pakistan	13
Senegal	12	Philippines	12
Madagascar	11	Korea	9
Congo, Dem. Rep. Of	10		
Mauritania	10	Western Hemisphere	
Togo	10	Panama	13
Liberia	9	Haiti	12
Malawi	9	Jamaica	12
Morocco	9	Uruguay	12
Uganda	9	Costa Rica	10
Zambia	9	Guyana	10
		Argentina	9

Source: IMF, Transactions of the Fund (1998)

1/ Includes stand-by arrangements, EFF arrangements, and arrangements under the SAF and ESAF.

Excludes STF arrangements, and drawings under the first credit tranche and the CCFF.

according to the original schedule. (2) The country may be unable to comply with one or more performance clauses at some point during the arrangement, but a "waiver" of the unmet criterion may be granted or a modification in the program may be rapidly agreed which allows the arrangement and its disbursements to proceed without interruption. (3) Substantial deviations from performance clauses may lead to a situation where it is not possible to agree rapidly on a modification of the program and on policy actions to bring the program back on (modified) track, thereby prompting the interruption of disbursements from the IMF. In many of these cases, following a new round of negotiations, a revised program can be agreed and disbursements can be resumed; sometimes, the amounts of disbursements, their phasing, and the length of the arrangement are modified. (4) The country may be unable to comply with one or more performance clauses at some point during the arrangement and in the ensuing negotiations the staff and the authorities may not reach agreement on a revised program; the arrangement then becomes inoperative and disbursements cease.

Programs that comply fully with all the initial performance clauses are not the norm. The majority of IMF arrangements follow one of the three other tracks. This is not surprising, when one considers the assumptions about the behavior of external and domestic variables and about the timeliness of policy implementation that need to be made when setting numerical values for the intermediate variables chosen as performance criteria and agreeing on the pace of structural reforms. Indeed, recognizing the need to give Fund arrangements sufficient flexibility to withstand departures from their initial assumptions, IMF conditionality became gradually equipped with a number of technical provisions—e.g., adjustors, waivers, rephasing, modifications, extensions—that facilitated making mid-course revisions to the arrangements approved by the Executive Board (see Polak, 1991, and IMF, 1998).

Typically, revisions of IMF programs are triggered by the authorities' (actual or imminent) failure to comply with one or more performance clauses. When large deviations are detected or foreseen, a mission travels to the borrowing country to negotiate possible revisions to the arrangement, based on an updated blueprint that outlines the conditions that would justify maintaining or resuming lending from the IMF. Key issues are whether deviations were caused primarily by slippages in the implementation of agreed policies or by factors beyond the authorities' control, and what remedial policy measures are needed to correct the situation. If the staff and the authorities agree on a revised program, the staff (with management approval) presents a report to the Executive Board indicating the revisions to the arrangement. The country becomes eligible to resume access to the IMF loan immediately after the Board's approval of the report. If the staff and the authorities are unable to reach agreement, however, disbursements from the IMF loan remain suspended and the arrangement stays permanently "off-track," until it expires.

The data in Table 2 show that more than a third of all Fund arrangements approved between 1973 and 1997 ended with disbursements of less than half of the initially agreed support. In a few of these cases, the program was so successful (or conditions improved so rapidly) that the member needed to use only a fraction of the committed IMF financing. Mainly, however, these were cases where the program went off track because policies

Table 2: Fraction of IMF loan actually disbursed under each arrangement, distribution by quartiles

(x=fraction of total IMF loan disbursed under each arrangement) 1/

	x < 0.25	0.25=< x <0.50	0.50=< x <0.75 (in percent)	0.75=< x <1.0	Fully disbursed (x= 1.0)	Number of arrangements
All arrangements 2/						
1973-77	36.5	7.1	5.9	5.9	44.7	85
1978-82	19.4	16.1	10.5	12.9	41.1	124
1983-87	12.9	15.8	19.4	7.9	43.9	139
1988-92	17.5	15.1	20.6	14.3	32.5	126
1993-97 3/	27.0	19.1	26.2	11.3	16.3	141
Full period (1973-97) 3/	21.6	15.3	17.6	10.7	34.8	615
of which:						
Stand-by 3/	23.1	13.4	15.0	9.5	39.0	441
EFF 3/	33.3	22.2	19.0	15.9	9.5	63
SAF / ESAF 3/	9.0	18.9	27.0	12.6	32.4	111

Source: IMF, Transactions of the Fund (1998)

1/ Calculated as the ratio of the total purchases made to the full amount of IMF resources committed under each arrangement.

2/ Includes stand-by arrangements, EFF arrangements, and arrangements under the SAF and ESAF. Excludes STF arrangements, and drawings under the first credit tranche and the CCFF.

3/ The distribution of the ratio x for the 1993-97 period is biased (downward) by the inclusion of arrangements with expiration date posterior to 1997. The bias is also present in the distributions reported for the full period (1973-97).

deviated significantly from those agreed with the IMF and subsequent negotiations failed to reach agreement on a modified program. Cases where 50 to 75 percent of the initially agreed support was disbursed (17.6 percent of all IMF arrangements) are more of a mixed bag: some highly successful, some cancelled programs that were followed rapidly by new arrangements, and some that went permanently off track. Cases where 75 percent or more of the IMF loan was disbursed (45.5 percent of all arrangements) are generally those where the authorities adhered more closely to the policies they agreed to over the course of the arrangement. Even among these cases, however, rare were the instances where every performance criteria, or numerical objective of the program was met as originally envisaged. The relative "success" of IMF programs in these cases signifies that it was possible to sustain an adjustment effort acceptable to both the countries' authorities and the IMF during the program period, not that programs attained the numerical targets of the original arrangement.

F. Completion

Formally, IMF programs are completed when the borrowing country becomes eligible for the last tranche from the IMF loan. Because of revisions during the course of the program, that date may be later than the original expiration date of the arrangement and the disbursement may add to a total that can be higher or lower than the amount contemplated in the original arrangement. Table 3 provides a general indication of the relative frequency of these outcomes. For the total of all 615 Fund arrangements, 73 were extended beyond their original durations. By and large, these were cases where substantial progress was made toward the main program objectives but more time was allowed for the adjustment effort. The 70 arrangements that were cancelled early but were followed promptly by a successor arrangement are most likely cases where weak policy implementation or large unforeseen shocks rendered unattainable the original program objectives, but where it was possible to reach understandings fairly rapidly on a new adjustment blueprint. The 44 arrangements that were cancelled before their expiration date and were not soon followed by a new arrangement, represent mainly a subset of the programs that went permanently off-track during the monitoring phase.

Completion of an IMF arrangement does not usually imply that the numerical targets for the main economic objectives of the country's program originally approved by the Executive Board were met. Completion does not even ensure that the country met the revised numerical targets agreed at the last program review. Completion of an IMF-supported program does imply that, in the IMF's view, the country made substantial and satisfactory progress toward the primary objectives of its adjustment program (especially toward external viability), and that the policies of the authorities were broadly in line with the (often revised) understandings reached with the IMF during the life of the arrangement.

The relationship between the IMF and the borrowing country following completion of a Fund arrangement generally depends on the progress in eliminating the macroeconomic and structural imbalances that gave rise to the expiring IMF program and on the external environment at the time of completion. When progress has been substantial and the external

Table 3: Duration of IMF

By type of arrangement (1973-1997)	Number of arrangements	Original duration (average, in months)	Program Extensions		Early cancellations		
			Number of extensions	Extension length (average, in months)	Number of early cancellations	Length of cancelled segment (average, in months)	o.w.: followed by successor arrangement (no. of arrangements) 1/
Stand-By	441	13.8	33	5.3	63	2.2	43
Extended Fund Facility	63	29.3	7	16.2	28	9.7	16
SAF	38	30.7	2	9.3	10	9.9	10
ESAF	73	40.0	31	6.5	13	5.2	1
Total	615		73		114		70
By sub-period							
(all arrangements)							
1973-77	85	12.4	--	--	7	3.9	7
1978-82	124	15.2	--	--	36	1.0	26
1983-87	139	17.8	10	1.0	28	1.9	13
1988-92	126	24.7	38	13.2	14	8.1	13
1993-97	141	24.6	25	9.7	29	0.8	11

Source: IMF, Transactions of the Fund (1998)

1/ Successor arrangement approved up to one month following the cancellation of a prior arrangement.

environment is not seen as a threat, monitoring of the country's performance usually reverts to the pre-program mode—i.e., to IMF surveillance. When conditions are less favorable the country authorities may request a successor arrangement to help consolidate the (partial) gains from the previous program. Because of the recurrent nature of the shocks affecting many members and the gravity of their structural imbalances, such requests are not uncommon (see Table 1, lower panel). Typically, a successor arrangement will have a medium-term orientation and a goal of deepening structural reforms initiated during the previous program. The authorities' request for a successor arrangement sets in motion a multi-staged process very similar to that followed in their prior request for IMF support.

III. THE ECONOMICS OF IMF-SUPPORTED PROGRAMS

A. Core Components

Despite differences imparted to IMF programs by country-specific characteristics, blueprints of adjustment prepared by Fund staff contain important common elements. These elements are closely linked to the IMF mandate established in the Articles of Agreement, and range from eligibility criteria for securing access to IMF resources—i.e., a situation of actual or potential balance-of-payments need—to priority in the programs for orderly restoration of external viability (see Guitián, 1995). In their practical application over time, these common elements have produced a three-pronged approach for confronting external payments problems: (i) securing sustainable external financing; (ii) adoption of demand-restraining measures—especially in the early stages of a program; and (iii) implementation of structural reforms (see Schadler et al., 1995). The reliance on, and relative importance of, each of the components depends crucially on the specific circumstances of the member country. The blueprint for a country whose international reserves are depleted as a result of unsustainable fiscal imbalances will place considerably more (initial) emphasis on demand-restraining measures than that for a country whose overall external position worsened suddenly as a consequence of an adverse terms of trade shock, a natural disaster, or negative spillovers from events in other countries.

Care should be taken, however, not to exaggerate the degree of substitutability among the three core components of the approach. In the midst of an external payments crisis the scope for, say, relying more heavily on additional external financing than on restraint of aggregate demand, or for further delaying structural reforms likely to have a bearing on the success of the stabilization program is usually quite limited. Hence, it is often more appropriate to regard the three components of the general IMF approach to economic stabilization as complements, especially in the early stages of a program. Once the crisis has been contained and confidence restored, external financing constraints often become less pressing and the macroeconomic policy stance can become more supportive of domestic demand. It should be stressed, however, that the role of the IMF is to contribute to design the adjustment strategy, help the country secure external financing and monitor the progress in overcoming the external crisis, but that it is up to the country's authorities to implement in a timely and credible manner the policy measures contemplated in the strategy.

The availability of external financing, the first component of the strategy, determines the magnitude and pace of the necessary adjustment effort. The amount and terms of the new foreign borrowing obtainable by a country experiencing balance of payments problems are largely predetermined—and typically scarce and onerous—at the outset of a program. Hence, in practice, there is little scope for treating the prospective external financing from official and private lenders as a “slack variable” when preparing the blueprint of the adjustment program, as has been suggested by some IMF critics (e.g., Killick, 1995 and Harrigan, 1996). Financial support from the Fund, of course, can help reduce the country’s financing gap for a temporary period. However, limits on the Fund’s resources—limits which the membership establishes as reasonable and prudent in view of the IMF’s mandate and which place upper bounds on IMF support to individual countries⁷—significantly constrain the extent to which the Fund can substitute for other sources of financing. Indeed, in the large financial support packages arranged for Mexico in 1995 and for Thailand, Indonesia, and Korea in 1997, the IMF provided less than half the announced funding, with the rest being promised by the World Bank, the regional development banks, and bilateral sources. And notwithstanding these exceptionally large packages, the four countries nonetheless had to make large and rapid adjustments to meet the pressures of their external financing constraint.

Precisely because the external financing constraint is often severe, Fund-supported programs aim at restoring the country’s access to a sustainable flow of foreign financing as rapidly as possible. Gauging that sustainable flow, as well as the time it may take to secure it, is a matter of judgement. General conditions in international financial markets and those specific to the program country (the level, composition and maturity of its external liabilities, its debt service profile, and its access to private capital markets) play an important role. Of necessity, however, the estimates of net external financing incorporated in the (initial) adjustment program are tentative, subject to considerable uncertainty, and undergo significant revisions over the course of an arrangement. That uncertainty is much higher in countries where the lion’s share of foreign borrowing is undertaken by the private sector (including private banks), a situation that has become increasingly common in the 1990s.

The main guidelines of the approach followed by IMF staff when gauging the prospective external financing date back several decades, but started to be applied more systematically and uniformly since the debt crisis of the 1980s (see Finch, 1989). Those guidelines require that the country not show an *ex ante* external financing gap, that it remain current in its debt service commitments, and (with some exceptions in special circumstances) that it eliminate external debt arrears it may have accumulated prior to the program approval. In practice, the guidelines require the staff to produce “reasonable” estimates of net financing flows from official and private sources, and to assume a coordinating role with the country’s creditors in various fora—i.e., the Paris Club, the London Club, and special consultative groups of donors. This “concerted lending approach”—which required several modifications to the Fund’s guidelines on foreign borrowing, notably the policy of “financing

⁷For a discussion of the “access limits” applicable to the various IMF facilities and of the criteria regulating access by individual member countries see IMF, 1998.

assurances”⁸—proved instrumental in dealing with the debt crisis of the 1980s, and continues to be useful for countries with limited access to private capital markets. However, the concerted approach has proved less useful for dealing with the complex external debt problems posed by a more diversified set of lenders and borrowers in countries with relatively unrestricted access to global capital markets—for example, for producing “reasonable” forecasts of redemption rates of domestic bonds and equities or of rollover rates of foreign credit lines to private sector borrowers. Recent experience with these problems has generated calls for more effective ways of involving the private sector in forestalling and ameliorating financial crises, but no comprehensive solution, such as a world bankruptcy court, seems likely in the near future.

Demand-restraining measures, the second component of the approach, comprise the macroeconomic policies that seek to restore and preserve viable equilibrium between aggregate expenditure and aggregate income in the program country. These measures are probably the best known ingredient of IMF-supported programs, and are typically regarded as the cornerstone of the “traditional IMF package.”⁹ The measures normally contemplate a tightening of fiscal and monetary policies by an amount deemed necessary to bring aggregate demand in line with the staff’s estimates of prospective output and available external financing and, hence, with a sustainable current account. Sometimes, though not as often as is commonly thought, the measures also contemplate changes in the (level or rate of crawl of the) nominal exchange rate as a means to facilitate external adjustment.

Conceptually, ascribing to fiscal and monetary policies the key task of restoring and preserving viable external balance can be readily understood in terms of a large class of theoretical models based on, or consistent with, the “absorption approach”—e.g., the “dependent-economy” model, the “Mundell-Fleming” model, the monetary approach to the

⁸The policy of “financing assurances” reduced the Fund programs’ reliance on judgmental estimates of voluntary financing from foreign creditors—which often failed to materialize—and made the securing of a critical mass of commitments of external assistance from the country’s creditors a prerequisite for an IMF arrangement (see Polak, 1991 and Guitián, 1995).

⁹This characterization can be found in numerous studies and accounts of IMF programs. See, for example, Edwards, 1989, Killick, 1995, and Feldstein, 1998.

balance of payments.¹⁰ In this regard, the macroeconomic policies normally recommended by the IMF are not significantly different from what most economists would recommend to countries experiencing severe balance of payments problems, allowing for differences over the specific advice in particular situations.¹¹ This is especially so when a large fiscal imbalance and/or excessively rapid credit expansion are at the heart of a country's balance-of-payments difficulties, and when a large exchange rate devaluation or the adoption of an unfettered floating rate regime are not seen as desirable means for adjusting the external payments position. In contrast, as in the recent Asian crisis, when an unsustainable fiscal position is not the main underlying problem but a loss of confidence combined with domestic financial weaknesses induce sudden reversals of capital flows and domestic capital flight, leading to a "currency crash," the macroeconomic policy emphasis should not be on tighter fiscal policy but on a temporary tightening of monetary policy. Although controversial, a monetary tightening in those circumstances would help resist massive currency depreciations that itself tend to crush the domestic economy and induce a huge turnaround in the current account.

The third component of the general framework in the design of IMF-supported programs is the understandings on structural reforms. These comprise all types of policies aimed at reducing government-imposed distortions and other structural and institutional rigidities that impair an efficient allocation of resources in the economy and hinder growth. The reforms cover a wide spectrum of activities beyond the domain of macroeconomic policy, including measures related to trade liberalization, price liberalization, foreign exchange market reform, tax reform, government spending reform, privatization, pension reform, financial sector reform, banking system restructuring, labor market reform, and the strengthening of social safety nets.¹² Moreover, in many cases, and increasingly so in recent years, Fund arrangements are designed in close coordination with programs of the World Bank and/or

¹⁰The absorption approach is discussed in (almost) every textbook of international economics. The interested reader is referred to the seminal article by Alexander, 1952, and to the insightful (and complementary) presentations of the approach in Kenen, 1985, IMF, 1987, Buiter, 1990, and Cooper, 1992.

¹¹In this connection, the well-known (and often cited) conclusion reached by Richard Cooper at a 1982 conference on IMF conditionality, namely, that any five people chosen randomly from the diverse group of participants at the conference would, if confronted with an external crisis from a position of authority, produce an adjustment program "that would not differ greatly from a typical IMF program," seems as pertinent and valid today as it was then (see Williamson, 1983). The assessment of the Fund's macroeconomic advice in a recent survey article by Anne Krueger (Krueger, 1998), seems to support this conjecture.

¹²For general discussions of the rationale for structural reforms see IMF, 1987, Williamson, 1990, and Krueger, 1993. For an overview of the record on structural reforms in recent Fund arrangements see Schadler et al., 1995 and IMF, 1997.

the regional development banks.¹³ As a result, the conditionality on structural aspects of IMF-supported programs often relates to issues under the more direct purview of other international financial institutions, but are included in the Fund arrangement to give a comprehensive picture of the reform effort.

Of course, the specific structural reform content in any arrangement depends on the characteristics and circumstances of the country requesting IMF support. One reason for this is the wide differences in levels of income and stage of development among member countries. For example, in the Asian crisis, the structural reform content of Fund-supported programs focused particularly on the financial sector because this was a critical problem area (Lane et al., 1999); in the arrangements for transition economies, privatization and the building of basic institutions of a market economy were key structural priorities (de Melo et al., 1996); and arrangements under the ESAF normally attach structural conditionality on a number of areas where distortions are particularly damaging (IMF, 1997). Growing emphasis on structural issues in IMF-supported programs also reflects the (not-so-linear) evolution of the profession's views about the prerequisites for a well-functioning market economy.¹⁴ Moreover, structural reforms differ from the other core components of IMF programs in the difficulties for monitoring "progress" in implementation, in their long gestation periods, and in their particularly strong political-economy ramifications. The confluence of these factors has resulted in a gradual but steady rise in the structural reform content of IMF programs, a trend that has sparked strong, but often disparate, criticisms from many quarters.¹⁵

B. Criticisms to the IMF Approach

There is no shortage of criticisms to the basic IMF approach, some are many years old, others relatively new. Some focus on one of the core components of the approach, others take issue with all of them. Not surprisingly, the number, diversity, and intensity of the criticisms increase when the international financial system faces a crisis, as was the case with the breakdown of the Bretton Woods system, the debt crisis of the 1980s, the collapse of the centrally planned economies of Eastern Europe and the (former) Soviet Union, and, most recently, the financial crises in Mexico and Asia.

A driving force behind most criticisms of the IMF approach is the *visible disjunction* between its three core elements and what virtually everyone sees as the desirable objectives

¹³This happens not only for arrangements under the ESAF (the Fund's concessional facility for low income countries) where such coordination is formally required, but for other Fund arrangements as well.

¹⁴Compare, for instance, the structural reform policies discussed in IMF, 1987 and Williamson, 1990, with those stressed by Williamson, 1994 and Burki and Perry, 1998.

¹⁵Polak, 1991 and Killick, 1995 document the increase in the structural reform content of IMF programs; see also Schadler, et al., 1995, IMF, 1997, and Lane et al., 1999.

of economic policy. As noted before, those objectives normally include a high rate of growth and a low rate of inflation, alleviating poverty and avoiding social unrest, and ensuring an adequate supply of public goods. These broad objectives are relevant for program design (in terms of what should be achieved in the medium and long term), and so is the goal of minimizing damage to the international community from a balance of payments adjustment in any given country. But it cannot reasonably be argued that the immediate effect of IMF-supported programs is (or should be) always positive in all the desirable dimensions of economic policy and performance. Economic adjustment and reform are costly and difficult endeavors, and especially so in the crisis or near-crisis conditions where member countries normally come to the Fund to request support (see Santaella, 1996). In those circumstances, there will generally be no quick and easy solutions that will make everyone everywhere feel a whole lot better both immediately and forever after.

A (slight) variation of this general criticism is the view that the *macroeconomics* underlying the IMF approach to stabilization is fundamentally wrong. This is the position taken, often without much analysis, by many critics of the Fund in several nongovernmental organizations and in the popular press. Some academics, such as Lance Taylor and other "neo-structuralists" (Taylor, 1988, 1993), also advance this criticism. In response, one should stress that any country experiencing severe balance of payments difficulties and a shortage of external financing must, eventually, confront and redress its aggregate imbalances. This, in turn, generally requires a contraction of domestic spending usually facilitated by a tightening of fiscal and monetary policies; in addition, when external disequilibria are large, a real depreciation of the currency may be needed. The analytical and empirical support for these basic facts of economic adjustment is overwhelming. To be sure, there are serious issues concerning whether, in specific cases, the policies recommended by IMF staff are the most appropriate, taking account of all of the relevant circumstances and constraints; these issues deserve to be debated, and it should not be expected that the professional consensus will always be that the Fund got it exactly right. But it is simply wishful thinking to believe that there *generally* is some better and easier way to secure, or avoid, macroeconomic adjustment in the midst of an external payments crisis.

Another common criticism stems from the belief that IMF-supported programs not only contain the same *type* of policy recommendations, but that they actually contemplate an adjustment of (approximately) the same *size* for all countries. This perception is surprisingly widespread, even among academics, but is also absolutely false. As noted before, every cross-country analysis of the experience with IMF-supported programs, conducted either by IMF staff or by outsiders, shows unequivocally that the size of the adjustment in those programs—as measured by the projected decline in the fiscal deficit, the projected improvement in the external current account or the projected fall in the rate of inflation—varies considerably across programs and is, by and large, a monotonic function of the size of the (preexisting or prospective) imbalances.¹⁶ For example, in several of the debt-crisis countries of the 1980s, massive and unsustainable fiscal deficits were major

¹⁶For evidence on this point see the references cited in footnote 2; see also Lane et al., 1999.

problems and lay at the heart of balance of payments difficulties and chronic inflation; objectives for fiscal consolidation in Fund-supported programs, correspondingly, had to be very ambitious. This was much less so for the programs with Mexico and Argentina in the tequila crisis and for those with Indonesia and Korea in the Asian crisis, but was again a more critical issue in recent arrangements with Russia and Brazil.

Other criticisms take issue with the *structural reform* component of Fund-supported programs. Here, the focus has shifted over time; whereas the debates in the 1980s revolved around IMF conditionality in trade reform, exchange rate unification, and interest rate liberalization, those of the 1990s have dealt mostly with privatization, pension reform, and, most recently, capital account convertibility and banking sector reform. There are, however, common themes to the criticisms. Prominent are those related to the "ownership" of the reforms, the horizon, sequence, and pace of their implementation (especially as they are seen as conflicting with the relatively short duration of Fund arrangements), and the lack of expertise, and mandate, of Fund staff to impart advice and design conditionality on structural issues.¹⁷ We believe that it is pertinent to highlight two facts often forgotten in discussions of these issues: First, the inclusion of structural reforms in Fund-supported programs was largely a response to requests from the IMF membership for a broadening of the scope (and duration) of Fund arrangements to make them more suitable for tackling structural impediments to sustained growth and external viability (see IMF, 1987 and Polak, 1991). Second, Fund conditionality typically takes account of the difficulties and delays inherent to a process of structural adjustment, most notably by monitoring "progress" in these areas mostly through periodical assessments of the authorities' willingness and (oftentimes constrained) capacity to comply with specific measures, rather than in terms of the realization of the benefits expected from full implementation of the reforms.

Yet another strand of criticisms questions whether the *intellectual doctrine* underlying Fund-supported programs is sufficiently responsive to changing conditions in the global economy and the evolution of professional thinking. Specifically, in dealing with the collapse of the centrally planned economies of Eastern Europe and the (former) Soviet Union, and with the financial crises of Mexico in 1995 and Thailand, Indonesia and Korea in 1997-98, many critics argued that the "traditional IMF approach" was ill-suited for the (widely different)

¹⁷Recent studies by Killick, 1995, Calomiris, 1998, Feldstein, 1998 and James, 1998, discuss these themes in some length. For earlier criticisms see Group of Twenty-Four, 1987, Dornbusch, 1991, and Cooper, 1992.

challenges posed by these fundamentally new types of problems.¹⁸ That the IMF approach to these recent problems was in fact quite different from earlier IMF-supported programs seems to have escaped notice. For example, the Fund arrangements for Mexico during the debt crisis of the 1980s consisted mostly of sizable fiscal adjustments, modest official financing and concerted rollover of commercial bank credits, whereas the 1995-96 stand-by arrangement involved modest fiscal adjustment and very large official financing.

The controversy about the recent Fund arrangements for Thailand, Indonesia and Korea is a prime example of the accusation that IMF programs are based on a misguided and dogmatic approach to macroeconomic stabilization. Interestingly, given other differences among the critics, a sort of consensus emerged that the fiscal and monetary policies recommended—or, as some critics prefer to say, imposed—by the Fund in those countries was “too tight.” For fiscal policy, as documented in the study by Lane et al., 1999 and in the IMF’s *World Economic Outlook* of December 1997 and May 1998, the adjustment called for in the initial programs was fairly small for Indonesia and Korea, and was moderate, by Fund standards, for Thailand. The economic assumptions for these initial programs—which the authorities were reluctant to see downgraded—envisioned slowdowns in but still significantly positive growth for all three countries in both 1997 and 1998 and contemplated only moderate exchange rate depreciations. Under these assumptions, initial fiscal policy prescriptions were reasonable and were accepted as such by the authorities. For Thailand, which entered the crisis with a current account deficit of 8 percent of GDP (much larger than the current account imbalances of Indonesia or Korea) a larger fiscal effort seemed appropriate. As it became clear, to the Fund and everyone else, that the crises would be much deeper than originally expected, programs were revised and prescriptions for fiscal policy shifted from small or moderate restraint to significant stimulus, including through the provision of social safety nets. This shift did not involve a change in Fund dogma, but rather a normal application of the flexibility to respond to unforeseen events embedded in the process described in Section II.

In the case of monetary policy, the IMF advice at the outset of those programs stressed the need for a significant initial and temporary tightening to arrest excessive exchange rate depreciations that threatened both an acceleration of domestic inflation and the spread of contagion to other countries. Some prominent economists have argued that the weak financial systems and faltering domestic demand in those economies called for an easing rather than

¹⁸Developments in the Asian and subsequent emerging market crises of 1997-98 have given rise to a broad debate about reforming the “architecture” of the international monetary and financial system; see Eichengreen, 1999 for an excellent overview of the issues. See also Minton-Beddoes, 1995, Calomiris, 1998, Krueger, 1998, and Folkerts-Landau and Garber, 1999. Although most of the issues in this debate do not directly concern the subject matter of this paper—the Fund’s approach to economic stabilization—it is interesting that many of the reform proposals that do touch on this subject run counter to many criticisms of Fund conditionality. In particular, suggestions for reform generally push for less financing from the Fund and/or stricter conditionality for members accessing Fund resources.

a tightening of monetary policy; some have even suggested that an easier monetary policy would have led to a nominal appreciation of those currencies. Clearly there are circumstances where the tightening of monetary policy to resist some (perhaps significant) exchange rate depreciation is not desirable, for example, after the United Kingdom exited from the ERM in September 1992 or for Singapore and China in 1997-98. Also, even when monetary tightening is appropriate to resist massive and unwarranted exchange rate depreciations, the "right" degree and duration of monetary tightening is a difficult issue of judgement. Nevertheless, when a currency suddenly loses half its value amidst massive capital outflows and collapsing confidence, as was the case for Indonesia, Korea and Thailand, monetary easing is not a sensible policy, and some significant temporary tightening is generally warranted. The ill effects of high interest rates on a weak economy and a fragile financial system must be weighed against the probable consequences of a large depreciation on the burden of foreign currency indebtedness and on the unleashing of inflationary pressures.

In fact, in Thailand and Korea, where the IMF advice on monetary policy was followed after some initial hesitation, exchange rates were stabilized and subsequently recovered to more reasonable levels, and nominal interest rates were then progressively reduced to below precrisis levels. There was nothing bizarre in these cases suggesting a perverse relationship between monetary policy and the exchange rate; the behavior observed followed the pattern seen in earlier episodes of severe exchange rate pressures, such as Mexico in 1995 or the Czech Republic in 1997 (see Lane et al., 1999, chapter 6). In Indonesia, monetary policy was tightened only briefly before massive injections of liquidity to banks facing deposit runs, along with policy switches, political uncertainty, and social unrest, led to a massive 80 percent depreciation of the rupiah and to widespread default on private sector debts. Again, the pattern was what one would expect from the large body of empirical evidence on the relation between monetary policy and the exchange rate. All things considered, the notion that in the context of the Asian crisis, easings of monetary policy would have induced exchange rate appreciations is just nonsense.

C. Why Fund Programs Tend to Look Alike

Although many criticisms of the Fund lack a firm basis, there remains the impression that the IMF approach to economic stabilization is too rigid and dogmatic to accommodate the differing and changing circumstances of member countries that encounter balance of payments difficulties. This impression is not entirely without foundation. The IMF is a highly disciplined bureaucracy that operates in accord with well established, and only gradually evolving, policies and procedures. Key IMF staff involved in program operations typically have long tenure in the Fund. There is a legal framework for IMF operations, based on the Articles of Agreement and established policies of the Executive Board, which imposes constraints on what is and what is not acceptable in Fund arrangements. All of this imparts a degree of conservatism to the IMF approach which is both bad and good. Bad because it implies a lesser degree of flexibility in Fund conditionality than would be desirable in some ideal world. Good because IMF members that may wish to make use of the Fund's resources or members who may be called upon to supply those resources have expressed a desire to have a reasonable understanding of the circumstances, conditions, and terms under which IMF

financing may be made available. There must be reasonable assurance of equality of treatment; members encountering similar balance of payments problems and willing to undertake similar adjustment measures should have similar access to Fund resources. The IMF cannot act with unbridled discretion. As with any powerful institution, there is an unavoidable tension between giving to (and asking from) the IMF too much or too little flexibility.

The general impression of inflexibility in the Fund's actions, policies and doctrine, however, is seriously exaggerated, in part because of the way in which the IMF has described its own activities. When Fund arrangements are announced (or leaked) to the public, they appear to present a rigid blueprint for a country's economic policies and for their expected results, including numerical performance criteria for key macroeconomic aggregates. All arrangements contain numerical targets for output growth, the inflation rate, and the current account for one to three years ahead; and all contain quantitative performance criteria for fiscal and monetary policy variables, usually for quarterly "test dates" covering the first six to twelve months of the arrangement.¹⁹ The natural, but incorrect, perception for many outsiders is that: if the quantitative criteria are met, the program is on track and disbursements of IMF resources continue; if the criteria are not met, the program is off track, and disbursements cease. The flexible process described in Section II, with the possibility of waivers or modifications of performance criteria or of revisions and renegotiations of the adjustment blueprint to strengthen policy actions and minimize the interruptions to the flow of Fund disbursements, is not normally presented or perceived as an integral part of IMF arrangements—even though the member and the Fund fully understand these possibilities.

The impression of unreasonable uniformity in the macroeconomic conditionality of Fund-supported programs is reinforced by the apparent similarity in the numerical performance criteria in the critical areas of fiscal and monetary policy. Specifically, the main fiscal performance criterion in Fund arrangements is normally specified as (quarterly) ceilings on the nominal value of the fiscal deficit or on the portion of that deficit financed with domestic credit.²⁰ For monetary policy, performance criteria are typically specified as (quarterly) ceilings on the expansion of net domestic credit of the central bank and as (quarterly) floors on net international reserves (see Guitián, 1994).

On the substance of these performance criteria, it is straightforward to see why an upper limit on the fiscal deficit (or on credit to finance it) should generally be an element of IMF conditionality. For a country facing balance of payments difficulties, external credit to the government (as well as to the private sector) is usually tightly constrained. Resort to domestic credit to finance the government also has limits, particularly when credit conditions are tight

¹⁹Interestingly, numerical performance criteria were not always a component of Fund arrangements, and their generalized adoption in the 1960s was in large part a response to the *borrowing countries'* demand for more predictability in the access to the (phased) IMF resources allocated in support of their adjustment programs—see Finch, 1989.

²⁰The rationale for this specification is explained in Tanzi, 1987 and Guitián, 1995.

and when additional monetary financing to the public sector (from the central bank or the banking system) may unleash inflationary pressures. Furthermore, in many cases a tightened fiscal stance is important, even central, to assist in redressing imbalances in the external current account. Of course, the degree of fiscal tightening should and does vary greatly across individual cases, depending not just on the size of the initial fiscal disequilibrium but also on the (expected) availability of sustainable and noninflationary means of deficit financing. Of course, mistakes in setting fiscal targets will be made in individual cases, especially when the key assumptions on which a program is based are falsified by actual developments. But this cannot reasonably be an argument that Fund arrangements refrain from an explicit requirement for fiscal restraint. Especially so considering that the arrangements place more emphasis on the adoption of policy measures that appear necessary to redress the existing fiscal imbalance than on attaining a given deficit target. By and large, if the measures adopted are judged appropriate but the bottom line is missed for reasons beyond the authorities' control, compliance with fiscal conditionality is often granted, provided that performance in other areas remains satisfactory.

While the rationale for fiscal conditionality may be recognized, greater controversy surrounds monetary policy conditionality, especially the standard procedure of specifying quarterly quantitative targets on domestic credit and on the stock of net international reserves. The conceptual basis for this procedure is perceived to be deeply rooted in the monetary approach to the balance of payments, a theory of the adjustment process in an open economy that IMF staff contributed to develop.²¹ Much criticism of IMF prescriptions for monetary policy in program countries has centered on the theoretical underpinnings and empirical validity of the monetary approach to the balance of payments and, in particular, of the "Polak model." Specifically, critics have emphasized the large body of evidence that documents the pervasive instability of money demand and the poor performance of operational frameworks for monetary policy depending on targeting of monetary aggregates, especially over the short horizons used for setting performance criteria in Fund arrangements.²² Notwithstanding these criticisms, the specification of monetary policy in IMF-supported programs has remained essentially unaltered. Until recently, the few justifications for this resilience that were given by Fund staff consisted either of highlighting the "encompassing character" of the monetary

²¹The studies by Polak, 1957 and Prais, 1961 are widely regarded as modern precursors of the monetary approach, a theory that was further formalized and brought to the forefront of the academic debate by a group of economists from the University of Chicago in the 1970s. See Frenkel and Johnson, 1976; see also IMF, 1977.

²²For these and other critiques to the (alleged) reliance of Fund programs on the monetary approach to the balance of payments see Dell, 1982, Taylor, 1988, Edwards, 1989, Dornbusch, 1991, Jager, 1994, and Killick, 1995.

approach²³, or of restating the “strong association that is known to exist between an excess of domestic credit and an excess of aggregate spending over aggregate income.” With some basis, those arguments were regarded by critics as symptoms of denial and dogmatism.²⁴ Nonetheless, when account is taken both of the economic situation with which Fund arrangements are typically designed to deal and of the institutional process associated with those arrangements, there is a rationale for setting numerical performance criteria in terms of floors on net international reserves and ceilings on net domestic credit.

The primary rationale for setting a performance criterion for the floor on net international reserves actually has little to do with monetary policy, or especially with the monetary approach to the balance of payments. When a member requests a program, it usually has run down its international reserves and is anticipating continued downward pressures. Even if the exchange rate has been devalued or allowed to float, further substantial declines in reserves are usually undesirable. The policies associated with IMF arrangements are supposed to address this problem by reducing the external payments imbalance and helping to restore confidence; and the financial support of the IMF provides a desired supplement to the member's (gross) international reserves. Fund-supported programs, however, do not always make rapid progress towards their agreed objectives, and oftentimes this reflects (at least partly) the failure of the member to tighten its macroeconomic policies with sufficient resolve. In such situations, if substantial reserve losses continue, there is a clear signal that the adjustment program is not working as intended in an area of critical importance to the IMF. A performance criterion that sets a floor on net international reserves hence assures that when those reserves fall below an agreed threshold, a reconsideration of the program is triggered, with the range of possible outcomes described in Section II. The legal mandate for IMF arrangements and the associated responsibility of the Fund to not put at (too much) risk the

²³For example, when discussing the design of monetary policy in Fund-supported programs, IMF, 1987 states that: “[the monetary] approach can be considered a relatively general theory of long-run behavior that encompasses a variety of models of short-term adjustment. The fundamental equation . . . is thus an outcome of an adjustment process, not a description of the channels through which the policy variables affect changes in net foreign assets” (p.18).

²⁴Two articles by Manuel Guitián, former director of the Monetary and Exchange Affairs department and distinguished IMF official, illustrate this point. There is in fact no substantive change in the theoretical justification he provides for focusing on domestic credit as an indicator of monetary policy in IMF programs between his 1973 seminal article on the subject (Guitián, 1973) and an article written more than twenty years later (Guitián, 1994), at a time when many IMF members had abandoned fixed exchange rates and financial innovation and capital markets integration had wreaked havoc with the stability of monetary aggregates in many industrial and emerging market economies. Tellingly, the conference discussant of the second paper, Henk Jager, expresses uneasiness and surprise at Guitián's unqualified presentation of the monetary approach to the balance of payments as a suitable framework for analyzing monetary policy in the short- and medium-term in the 1990s (Jager, 1994).

revolving character of its resources thus provide a distinct rationale for conditionality focused on the level of reserves.

Quantitative performance criteria for monetary policy come into play primarily in the setting of ceilings on net domestic credit of the central bank (or the banking system).²⁵ In the balance sheet of the central bank, the sum of net domestic credit and net international reserves determine, as fact of accounting, the quantity of base money.²⁶ Hence, given the floor on net international reserves set by the performance criterion on this component of the monetary base, setting a ceiling on net domestic credit establishes a quasi-ceiling on base money; base money can be above this quasi-ceiling and still be in conformance with the performance criteria, but only to the extent that net international reserves are above their specified floor. Why should quantitative performance criteria for monetary policy be set in this way? Many times the reason why a country gets into balance of payments difficulties and suffers reserve losses and exchange rate pressures is because monetary policy has been too expansionary; base money has been allowed to expand too rapidly relative to the growth of sustainable demand, and net domestic credit of the central bank has grown at an even faster rate to offset (sterilize) losses of reserves. In other cases—for example when there is a sharp reversal of foreign capital inflows or a sudden bout of capital flight—reserve losses may not derive primarily from excessive money creation, but central banks typically will resist a large monetary contraction by sterilizing reserve losses through an offsetting expansion of net domestic credit. In either circumstance, under a Fund arrangement it is important to provide some assurance that expansionary monetary policy will not continue to be, or become, a problem that undermines external viability.

A performance criterion that sets ceilings on net domestic credit of the central bank is an admittedly crude way of attempting to provide such assurance. The ceilings are typically set by first estimating (or guessing) a reasonable path for base money under the program's assumptions regarding output growth, inflation, exchange rates, seasonal factors, and the

²⁵Whether the ceilings are set on net domestic credit from the central bank or the banking system is a decision that depends, primarily, on the degree of financial development of the country requesting Fund support. Ceilings at the banking system level are considered more appropriate in countries where the financial system is relatively underdeveloped and the central bank resorts to direct controls or other distortionary means to influence credit conditions. Ceilings at the central bank level are generally used in countries where the authorities rely on indirect instruments of monetary control—see IMF, 1987 and Guitián, 1994. The discussion that follows is confined to the latter cases; however, the thrust of the argument also applies to the other cases.

²⁶Suitable definitions of these aggregates, with adjustments for other items on the balance sheet and other factors affecting reserves (which comprise what Fund staff calls “other items net”) assure that this statement is true.

behavior of velocity and the money multipliers.²⁷ Subtracting the floor on net international reserves yields the ceiling on net domestic credit that is consistent with this path for base money.²⁸ Notably and desirably, this procedure does not impose a ceiling or a floor on the monetary base.²⁹ The rationale for this is quite clear. If the demand for base money turns out to be higher than projected, putting upward pressure on the currency and international reserves, the central bank can accommodate the higher demand by allowing the international reserves component of the monetary base to expand. Granting this flexibility, what about the uncertainties in forecasting the demand for base money? Here, there is no escape from assuming some degree of predictability of the demand for money, in accord with some quantifiable model. In particular, the numerical quasi-ceiling for base money will normally require a judgement about how the demand for money will behave over the coming two to four quarters, given program assumptions about the course of national income, capital flows, the price level, interest rates, the exchange rate, and (very importantly in most cases) seasonal factors. This involves, at least implicitly, numerical values for the short-run point elasticities of money demand. The "estimates" of what will happen to money demand must then be translated into judgements about base money by taking account of the likely behavior of the money multiplier relationships, which are often unstable in environments of economic and financial difficulty. The result is essentially an educated guess about how the economically appropriate supply of base money should be expected to evolve over the following six to twelve months, given the program's economic and policy assumptions. This educated guess, embodied in the performance criteria, is typically an outcome of the negotiations with the authorities, not the result of rigorous statistical estimation.

Admittedly, forecasts of the demand for base money obtained from this procedure can be far off the mark. But the saving grace is the flexibility in the process behind Fund-supported programs. Breaching the ceiling on net domestic credit or the floor on net international reserve triggers a reconsideration and possible revision of the Fund arrangement, not its termination. What happens depends on an assessment of why the performance criterion was breached, on implications going forward, and on the capacity to agree on suitable policy adjustments. While this process does not guarantee perfection, it is surely very different from

²⁷For a fuller discussion see IMF, 1987 and Polak, 1997; see also Fischer, 1997.

²⁸In some cases, the baseline path for net international reserves used to calculate the path for net domestic credit may lie above the performance criterion for the floor on net international reserves. The issue then arises of the extent to which discrepancies between the baseline and the floor should be sterilized through increases in net domestic credit.

²⁹A number of Fund arrangements have in fact included as performance criteria ceilings on the monetary base rather than on domestic credit. The staff's evaluation of monetary policy in those arrangements, however, by and large has followed the same logic as the one described in the text—particularly when reducing inflation was not the primary goal of the Fund arrangement and the rate of disinflation envisaged in the program was not large.

a rigid application of a simplistic version of the monetary approach to the balance of payments.

To ensure minimal consistency among the numerical performance criteria for fiscal, monetary and external debt policy contained in every Fund arrangement it is necessary to employ a quantitative framework. As mentioned before, the framework that IMF staff developed and continues to use for this purpose is called "financial programming." Financial programming is not a formal economic model, but rather a simple flow-of-funds framework that combines basic macro-accounting identities and balance sheet constraints which the staff uses to gauge the size of the adjustment effort required from a country experiencing balance of payments difficulties, *given* assumptions about prospective external financing, output growth, inflation and exchange rates.³⁰ Even in its simplest form, financial programming does involve a small number of behavioral equations and arbitrage conditions—e.g., a demand for money, a demand for imports, uncovered interest parity. Furthermore, the solution for the values of key performance criteria requires (approximate) knowledge of several key elasticities and policy multipliers. However, values for these key parameters are generally not estimated by formal econometric techniques. Because of the predominance of unstable relationships and unreliable data in the countries requesting Fund support, the estimates that are used mainly represent plausible judgements, based on rough statistical work.

In view of the errors that inevitably infect this process—or any alternative process for setting numerical performance criteria—the usefulness of financial programming depends not so much on the accuracy of its forecasts, as on the *flexibility* for revising the main numerical targets as new information becomes available. In fact, all performance criteria in Fund-supported programs are set *conditional* on assumptions about the behavior of a number of variables. The assumptions are rarely kept unchanged for the duration of the program. During the monitoring phase, assumptions are revisited using the latest information for the key exogenous variables, projections about their future behavior are modified, and, if needed, numerical performance criteria are revised. The scope that this "open-loop" feature of the approach affords for exercising judgement when assessing the country's performance under the Fund arrangement, is what explains why IMF financial programming has proved so

³⁰The seminal pieces on financial programming were written by E. Walter Robichek, former director of the IMF's Western Hemisphere Department (Robichek, 1967, 1971, 1985). Oral tradition and training manuals prepared by the IMF's Institute (e.g., IMF, 1981, IMF, 1996) helped disseminate the financial programming methodology. Working papers of Fund staff (e.g., Chand, 1987, Barth and Chadha, 1989, Mikkelsen, 1998) have served the same purpose. For a critique of the increasing, and in his view unwarranted, "sophistication" of financial programming in many of the latter pieces see Polak, 1997.

resilient. The superficial uniformity that financial programming imparts to all Fund arrangements is hence a far cry from the view that portrays it as a standard and rigid economic model that is mechanically applied to all program countries.³¹

D. IMF Programs in Action: Mexico 1995-96

The Fund-supported program for Mexico in 1995-96 provides a notable example of how the process of IMF programs works in practice. During 1994, Mexico was running a current account deficit of 8 percent of GDP and suffered large reserve losses (which were sterilized by the Banco de Mexico) when a variety of internal and external disturbances helped to undermine confidence (see Annex I in the May 1995 *World Economic Outlook*). The Mexican authorities did not approach the Fund for an arrangement until after the peso had been devalued and subsequently allowed to float. At the insistence of the authorities, the arrangement agreed in January 1995 was based on economic assumptions that were quite optimistic, especially in hindsight. Real GDP growth was projected to slow from 3.5 percent in 1994 to 1.5 percent in 1995 and then recover. Exchange rate depreciation was assumed to be contained with the assistance of moderately tight monetary policy. Inflation, on a December to December basis, was projected to rise from 7 to 19 percent and then decline. With support from fiscal measures to improve the primary government balance by 1.1 percentage points of GDP (very modest by the standards of earlier Fund arrangements with Mexico), the current account deficit was projected to shrink from 8 to 4 percent of GDP—a deficit assessed to be financeable with capital inflows and moderate use of official reserves. Performance criteria for the initial program were set on the basis of these assumptions.

Confidence, however, was not restored by this initial program. Massive capital outflows, especially by holders of “tesobonos,” led to large reserve losses and pushed the peso down to half its pre-crisis value by early March. Inflation soared; the December-to-December rate reached 52 percent. Output crashed; real GDP ultimately fell 7 percent in 1995 and real domestic demand fell more than double that amount. The current account improved by 7.6 percentage points of GDP, reaching near balance by year end. To contain the depreciation of the peso and regain monetary control, in March, the Banco de Mexico had to raise overnight interest rates temporarily above 80 percent.

³¹In a recent paper dealing with the legacy of “his” model, Jacques Polak explains why it is mistaken to portray financial programming as a fully-specified economic model; specifically, he notes that: “the Fund has had to forego the comfort of its old model and base its conditionality on a set of ad hoc instruments that seemed plausible in the circumstances.[. . .] *Without much of a model to go by*, the Fund has in recent years tended to adopt an ‘all risk’ policy. . . reserving for periodic reviews a judgment as to the need for additional . . . action” (Polak, 1997; pages 15-16, italics added).

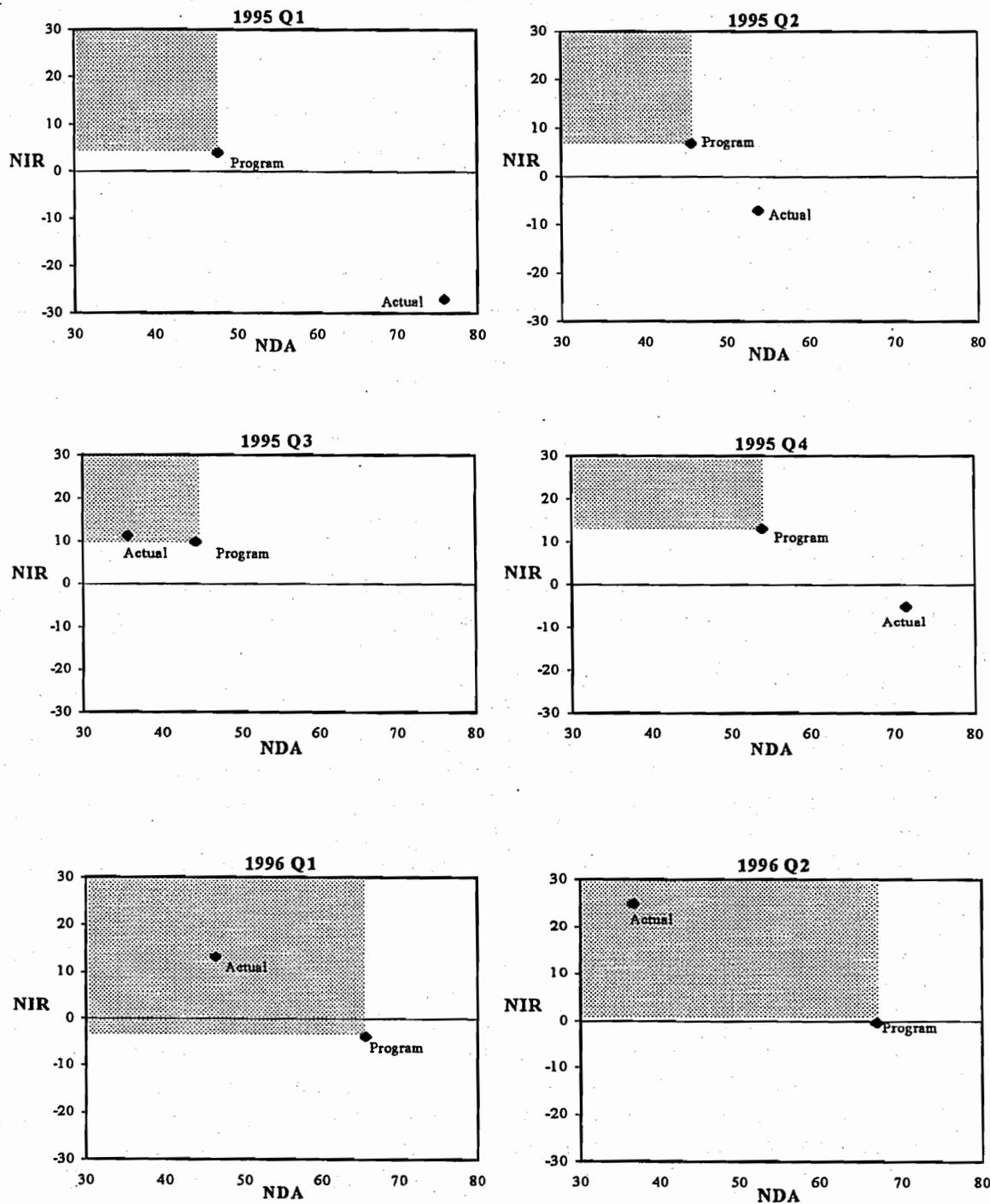
What of the program's performance criteria? The fiscal targets were met scrupulously, despite the unexpectedly deep recession. In fact, the March 1995 program review tightened the annual fiscal target, and this target was more than met. For the monetary program, base money ran significantly below its quasi-ceiling through most of 1995, reaching the ceiling at year end. However, as illustrated in Chart 2, where the shaded areas show the acceptable range of performance, the actual performance criteria for the floor on net international reserves and the ceiling on net domestic credit were both very badly breached in the tests dates corresponding to the ends of the first, second, and fourth quarters of 1995. At the Fund, it was understood that in the face of very large and unexpected capital outflows and reserve losses, the Banco de Mexico had to expand net domestic credit well beyond the agreed ceiling to avoid a catastrophic decline of base money. Given the determination shown by the Mexican authorities in the fiscal area, in interest rate policy, and in the behavior of base money, violations of the performance criteria for net international reserves and net domestic credit during 1995 were waived. The program proceeded without interruption. By late 1995 confidence was clearly recovering. In 1996 growth jumped to 5 percent, and inflation fell by 25 percentage points. All performance criteria of the program for the first half of the year were met, by wide margins in the monetary area, and Mexico regained access to private capital markets and decided not to draw the remaining tranches of the IMF loan.

IV. CONCLUSION

The example of Mexico illustrates how IMF-supported programs work in practice, in accord with the iterative process described in Section II and involving the substantive elements and quantitative approach to macroeconomic policy making discussed in Section III. In this particular case, given the urgency of the situation, the phases of inception, blueprint, negotiation, and approval proceeded very rapidly and concluded with an agreement on a Fund arrangement that involved an exceptionally large financial support. However, the economic assumptions of the initial program proved overly optimistic and the quantitative performance criteria for net domestic credit and net international reserves were seriously breached. In the monitoring phase of the arrangement this was handled, first, by revising the main assumptions of the 1995 program and, more substantively, by granting waivers for the breached performance criteria, as it was judged that the policy efforts of the Mexican authorities had been forceful and appropriate to meet the extremely adverse circumstances they confronted.

Other IMF-supported programs follow somewhat different courses. For instance, in the recent Fund arrangements for Thailand and Korea, initial program assumptions envisioned slowdowns in growth but not the severe recessions that actually ensued. During the monitoring phase, prescriptions for fiscal policy needed to be substantially modified, from moderate restraint to significant support. With these and other agreed modifications, the programs proceeded without interruption. In the case of Indonesia, in contrast, the efforts of the authorities to meet the macroeconomic and structural performance requirements of the initial program approved in November 1997 and of the revised program agreed with the staff in February 1998 were judged to be inadequate, and the Fund arrangement went off track.

Chart 2. Mexico: Domestic Credit (NDA) and International Reserves (NIR) in the 1995-96 Stand-by Arrangement: Program Targets and Outcomes (in billions of pesos)



Sources: Fund staff estimates

Subsequent agreement with a new government on a substantially modified program has proved much more successful and has generally proceeded without serious delay. In the case of Brazil, the interval between inception (involving internal discussions of Fund staff and management) and approval of the IMF program in November 1998 was somewhat longer than in the other cases. The initial program featured significant fiscal consolidation to boost confidence in the continuation of the Real Plan and to contain and curtail a rapidly rising public debt ratio. When the exchange rate policy proved unsustainable in the face of large reserve losses, the arrangement went off track. A revised program, still with fiscal consolidation at its core but with a flexible exchange rate and a monetary policy geared toward low inflation, has so far proved more auspicious.

Other cases show an even wider range of experience with the actual evolution of Fund-supported programs through their six operational phases. Indeed, while the IMF maintains a general policy of uniformity of treatment of its members, the fact is that Fund-supported programs are far from uniform--notwithstanding their superficial appearances. The reason for this is simply that IMF members have quite different economies, face different problems necessitating adjustments in their balance of payments, and display a variety of policy regimes and different ability and willingness to implement policies to correct external payments imbalances and their underlying causes. IMF programs need to be, and are, flexible instruments for addressing those problems, within a general framework that has a quantitative dimension and imposes a necessary degree of consistency and discipline across users of Fund resources.

References

- Alexander, S., 1952, "Effects of a Devaluation on a Trade Balance," *IMF Staff Papers*, Vol. 2, April, (Washington: International Monetary Fund).
- Barth, R., and B. Chadha, 1989, "A Simulation Model for Financial Programming," IMF Working Paper 89/24, (Washington: International Monetary Fund).
- Bernstein, B., and J. Boughton, 1993, "Adjusting to Development: the IMF and the Poor," *IMF Paper on Policy Analysis and Assessment*, 93/4, March 1993, (Washington: International Monetary Fund).
- Buiter, W., 1990, "Some Thoughts on the Role of Fiscal Policy in Stabilization and Structural Adjustment in Developing Countries," in W. Buiter, *Principles of Budgetary and Financial Policy*, (Cambridge, Massachusetts: MIT Press).
- Burki, S. and G. Perry, 1998, *Beyond the Washington Consensus*, World Bank Latin American and Caribbean Studies, September, (Washington: The World Bank).
- Burton, D. and M. Gilman, 1991, "Exchange Rate Policy and the IMF," *Finance and Development*, September, (Washington: International Monetary Fund).
- Calomiris, C., 1998, "The IMF's Imprudent Role as Lender of Last Resort," *The Cato Journal*, Vol. 17 No.3, Winter.
- Chand, S., 1987, "Toward a Growth-Oriented Model for Financial Programming," IMF Working Paper 87/10, (Washington: International Monetary Fund).
- Cooper, R., 1992, *Economic Stabilization and Debt in Developing Countries*, (Cambridge, Massachusetts: MIT Press).
- Dell, S., 1982, "Stabilization: The Political Economy of Overkill," *World Development*, Oxford, Vol.10, August.
- De Melo, M., et al., 1996, "Patterns of Transition from Plan to Market," *World Bank Economic Review*, September, (Washington: The World Bank).
- Dicks-Mireaux, L., et al., 1995, "The Macroeconomic Effects of ESAF-Supported Programs: Revisiting Some Methodological Issues," IMF Working Paper 95/92, September, (Washington: International Monetary Fund).
- Dornbusch, R., 1991, "Policies to Move from Stabilization to Growth," World Bank Research Report, April, (Washington: The World Bank).

- Edwards, S., 1989, "The International Monetary Fund and the Developing Countries: A Critical Evaluation," *Carnegie-Rochester Conference Series on Public Policy*, 31:7-68 (The Netherlands: Elsevier Science Publishers, North-Holland).
- Eichengreen, B., 1999, *Towards a New International Financial Architecture*, (Washington: Institute for International Economics).
- Feldstein, M., 1998, "Refocusing the IMF," *Foreign Affairs*, Vol 77, No. 2, March/April.
- Finch, C., 1989, "The IMF: The Record and the Prospect", *Princeton Essays in International Finance* No. 175, September, (New Jersey: Princeton University).
- Fischer, S., 1997, "Applied Economics in Action: IMF Programs," *American Economic Review, Papers and Proceedings*, Vol.87 No. 2, May.
- Folkerts-Landau, D., and P. Garber, 1999, "The New Architecture in Official Doctrine," *Global Markets Research*, April, (London: Deutsche Bank).
- Frenkel, J. and H. Johnson, 1976, *The Monetary Approach to the Balance of Payments*, (London: Allen & Unwin).
- Goldstein, M. and P. Montiel, 1986, "Evaluating Fund Stabilization Programs with Multicountry Data: Some Methodological Pitfalls," *IMF Staff Papers*, Vol.33, June, (Washington: International Monetary Fund).
- Group of Twenty-Four, 1987, *The Role of the IMF in Adjustment with Growth*, Report of Working Group, March, (Washington: Group of Twenty-Four).
- Gutián, M., 1973, "Credit versus Money as an Instrument of Control," *IMF Staff Papers*, Vol. 20, November, (Washington: International Monetary Fund).
- , 1994, "The Role of Monetary Policy in IMF Programs," in J.A.H. de Beaufort Wijnholds, et al., (eds) *A Framework for Monetary Stability*, (The Netherlands: Kluwer Academic Publishers).
- , 1995, "Conditionality: Past, Present, Future," *IMF Staff Papers*, Vol. 42 No. 4, December, (Washington: International Monetary Fund).
- Gupta, S., et al., 1998, *The IMF and the Poor*, IMF Pamphlet Series No. 52, (Washington: International Monetary Fund).
- Haque, N. and M. Khan, 1998, "Do IMF-Supported Programs Work? A Survey of the Cross-Country Empirical Evidence," IMF Working Paper 98/169, December, (Washington: International Monetary Fund).

- Harrigan, J., 1996, "Review Article-The Bretton Woods Institutions in Developing Countries: Bêtes Noires or Toothless Tigers?" *The World Economy*, Vol. 19 No.2, March.
- Heller, P., et al., 1988, *The Implications of Fund-Supported Adjustment Programs for Poverty: Experiences in Selected Countries*, IMF Occasional Paper No. 58, (Washington: International Monetary Fund).
- IMF Assessment Project, 1992, *IMF Conditionality 1980-91*, (Arlington, Virginia: Alexis de Tocqueville Institution).
- International Monetary Fund, 1977, *The Monetary Approach to the Balance of Payments*, (Washington: International Monetary Fund).
- , 1981, *Financial Programming Workshops: The Case of Kenya*, IMF Institute, (Washington: International Monetary Fund).
- , 1987, *Theoretical Aspects of the Design of Fund-Supported Adjustment Programs*, IMF Occasional Paper No. 55, (Washington: International Monetary Fund).
- , 1996, *Financial Programming and Policy: The Case of Sri Lanka*, IMF Institute, (Washington: International Monetary Fund).
- , 1997, *The ESAF at Ten Years: Economic Adjustment and Reform in Low Income Countries*, IMF Occasional Paper No. 156, (Washington: International Monetary Fund).
- , 1998, *Financial Organization and Operations of the IMF*, IMF Pamphlet Series No. 45 (fifth edition), (Washington: International Monetary Fund).
- Jager, H., 1994, "Comment on Manuel Guitián: The Role of Monetary Policy in IMF Programs" in J.A.H. de Beaufort Wijnholds, et al., (eds) *A Framework for Monetary Stability*, (The Netherlands: Kluwer Academic Publishers).
- James, H., 1998, "From Grandmotherliness to Governance: The Evolution of IMF Conditionality," *Finance and Development*, December, (Washington: International Monetary Fund).
- Johnson, O. and J. Salop, 1980, "Distributional Aspects of Stabilization Programs in Developing Countries," *IMF Staff Papers*, Vol. 27, March, (Washington: International Monetary Fund).
- Kenen, P., 1985, "Macroeconomic Theory and Policy: How the Closed Economy was Opened," in R. Jones and P. Kenen (eds) *Handbook of International Economics*, Vol. 2, (Amsterdam: North-Holland).

- Khan, M., 1990, "The Macroeconomic Effects of Fund-Supported Adjustment Programs," *IMF Staff Papers*, Vol. 37, June, (Washington: International Monetary Fund).
- Killick, T., 1995, *IMF Programmes in Developing Countries: Design and Impact*, (London and New York: Routledge).
- Knight, M. and J. Santaella, 1997, "Economic Determinants of IMF Financial Arrangements," *Journal of Development Economics*, Vol. 54, pp. 405-36.
- Krueger, A., 1993, *Political Economy of Policy Reform in Developing Countries*, (Cambridge, Massachusetts: MIT Press).
- , 1998, "Whither the World Bank and the IMF?," *Journal of Economic Literature*, Vol. 36, December.
- Lane, T., et al., 1999, *IMF-Supported Programs in Indonesia, Korea, and Thailand: A Preliminary Assessment*, IMF Occasional Paper No. 178, (Washington: International Monetary Fund).
- Mikkelsen, J., 1998, "A Model for Financial Programming," IMF Working Paper 98/80, (Washington: International Monetary Fund).
- Minton-Beddoes, Z., 1995, "Why the IMF Needs Reform," *Foreign Affairs*, Vol 74, No.3, May/June.
- Mussa, M., 1997, "IMF Surveillance," *American Economic Review, Papers and Proceedings* Vol. 87 No. 2, May.
- Nashashibi K., et al., 1992, *The Fiscal Dimensions of Adjustment in Low-Income Countries*, IMF Occasional Paper No. 95, April, (Washington: International Monetary Fund).
- Polak, J.J., 1957, "Monetary Analysis of Income Formation and Payments Problems," *IMF Staff Papers*, Vol. 5, November, (Washington: International Monetary Fund).
- , 1991, "The Changing Nature of IMF Conditionality," *Princeton Essays in International Finance*, No. 184, September, (New Jersey: Princeton University).
- , 1997, "The IMF Monetary Model at Forty," IMF Working Paper 97/49, April, (Washington: International Monetary Fund).
- Prais, S. J., 1961, "Some Mathematical Notes on the Quantity Theory of Money in an Open Economy," *IMF Staff Papers*, Vol. 8, May, (Washington: International Monetary Fund).

- Robichek, E.W., 1967, "Financial Programming Exercises of the International Monetary Fund in Latin America," mimeo, Rio de Janeiro.
- , 1971, "Financial Programming: Stand-By Arrangements and Stabilization Programs," mimeo, (Washington: International Monetary Fund).
- , 1985, "Financial Programming as Practiced by the IMF," mimeo, (Washington: The World Bank).
- Santaella, J., 1996, "Stylized Facts Before IMF-Supported Macroeconomic Adjustment," *IMF Staff Papers*, Vol. 43, September (Washington: International Monetary Fund).
- Schadler, S., et al., 1993, *Economic Adjustment in Low-Income Countries: Experience under the Enhanced Structural Adjustment Facility*, IMF Occasional Paper No. 106, September, (Washington: International Monetary Fund).
- , 1995, *IMF Conditionality: Experience under Stand-By and Extended Arrangements. Parts 1 and 2*, IMF Occasional Papers 128 and 129, September, (Washington: International Monetary Fund).
- Schultz, G., 1995, "Economics in Action: Ideas, Institutions, Policies," *American Economic Review, Papers and Proceedings*, Vol.85, No. 2 May.
- Tanzi, V., 1987, "Fiscal Policy, Growth, and the Design of Stabilization Programs," in A. Martirena-Mantel (ed.) *External Debt, Savings, and Growth in Latin America*, (Washington: International Monetary Fund).
- Taylor, L., 1988, *Varieties of Stabilization Experience*, Oxford: Clarendon Press.
- , 1993, (ed.), *The Rocky Road to Reform*, (Cambridge, Massachusetts: MIT Press).
- Williamson, J. (ed.), 1983, *IMF Conditionality*, (Cambridge, Massachusetts: MIT Press).
- , 1990, "What Washington Means by Policy Reform," in J. Williamson (ed.) *Latin American Adjustment: How Much Has Happened?*, (Washington: Institute for International Economics).
- Williamson, O., 1994, "The Institutions and Governance of Economic Development and Reform," *Proceedings of The World Bank Annual Conference in Development Economics*, (Washington: The World Bank).

Financial Programming and Policy

**An Analytical Framework for Medium-Term
Adjustment ***

**IMF Institute
International Monetary Fund**

• Prepared by Anthony Lanyi; edited by Ian Lienert, April 1995.

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I. Economic objectives and policy-making

An economic program consists of a set of policy measures designed to achieve a number of economic objectives, such as an improvement in the balance of payments, a reduction in the rate of inflation, or an increase in the rate of economic growth. These objectives are commonly referred to as *target variables*. Analogously, the economic magnitudes that are more or less directly controlled by government policies—e.g., tax rates, government expenditures, interest rates or domestic credit (depending on which the monetary authority chooses to control), and exchange rates (where these are not allowed to float freely)—are referred to as *policy variables*. In addition to target and policy variables, one may also speak of *intermediate variables*, that is, key economic magnitudes that are directly influenced by policy variables and in turn influence target variables. Examples of these variables are the money supply and the fiscal deficit.

The principal *objectives* of macroeconomic policy are customarily thought of as economic growth, ^{1/} employment, and price stability. To this might be added objectives that are multi-faceted and not easily quantifiable, such as economic development, an equitable income distribution, and provision of “basic needs” for the entire population. The achievement of these objectives—like that of any economic objective, either for a household or on the national level—is subject to a budget constraint. For a country, the budget constraint is derived from the relationship between aggregate expenditure (absorption) and income (output); the difference between these variables is broadly equivalent to the current account of the balance of payments. ^{2/} This constraint is defined specifically by the need to stay within a particular level of the current account deficit, such that the financing (including financing out of own reserves) is both *feasible* (in the sense that it can actually be obtained) and *sustainable*.

Achieving price stability and employment are objectives we associate with the *short run* and the typical instruments of stabilization policy: the level of domestic credit, interest rates, tax rates, the overall level of government expenditures, and exchange rates. Achieving growth and, more broadly, developmental objectives is clearly a task for the *long run*. The policies that are called to mind when one considers this task are, in large part, different from those associated with stabilization: the choice of government investments and infrastructural services, regulation of the financial system, policies directly affecting prices and marketing of domestically produced goods, and the foreign trade regime.

At the same time, however, such factors underlying growth as the mobilization of private saving, private investment choices, and foreign trade opportunities are influenced by real interest rates, the rate of inflation, the allocation of domestic credit, fiscal policy, and the exchange rate. It is this overlapping between stabilization and growth considerations that makes financial programming with a medium-term perspective so particularly complicated. Both short-run and long-run

^{1/} When the term “growth” is used in this paper, it refers to the rate of growth of gross domestic product (GDP).

^{2/} For a derivation of this relationship, see Section II.

considerations come into play when "adjustment policies" are discussed. When we speak of "adjustment" or an "adjustment program," there is the implication that there exist significant imbalances in the economy that require reduction or elimination in order to attain an improved economic performance. Such imbalances may be macroeconomic—i.e., an imbalance between aggregate demand and supply, which may be manifested either by *internal imbalance* (inflation, unemployment) or *external imbalance* (an undesirably large current account surplus or unsustainably large deficit). There may also be imbalances in particular markets or sectors that result in a misallocation of resources; such misallocation, in turn, prevents an economy from achieving either its potential output or its maximum feasible rate of economic growth.

Adjustment implies a realignment of key macroeconomic variables—for example, the difference between aggregate income and expenditure, major components of the balance of payments, and fiscal expenditures and revenues. In the past, the types of macroeconomic adjustment supported by Fund programs were expected to be achievable in the short to medium term. In recent years, however, attention has focused particularly on longer-term "structural" adjustment, which typically involves *microeconomic* changes in particular sectors, markets, and institutions, in order to improve the productivity and efficiency of the economy. Thus, corresponding to the distinction made earlier between short-run and long- or medium-run policy objectives and instruments is a distinction between a "short-run" period of up to two or three years, where the approach is still essentially that related to stabilization policies, and the longer period considered necessary for structural adjustment policies to take hold.

Experience with debt-problem countries in the 1980s and transition economies since 1989 has shown that macroeconomic and microeconomic imbalances are more closely related than had been previously recognized: policies to eliminate both types of imbalance must go hand-in-hand. Another way of putting this is that, for many countries, a more efficiently functioning economy and a higher rate of growth constitute the only path toward improving the debt and balance of payments situation without taking draconian demand-management measures that may be politically and socially intolerable. Improving the growth performance, however, frequently involves changes in long-established economic policies and institutional arrangements that may benefit particular groups. To the extent that these groups are well-organized and politically influential, carrying out such changes may, in fact, prove more difficult than pursuing those policies that provide the traditional arsenal of a IMF-supported stabilization program: namely, monetary, fiscal, and exchange rate policies.

In addition to the political problem just cited, there are two other reasons why it is difficult to put together a well-coordinated package of both stabilization and structural measures. First, policy coordination is not easy, even within highly developed industrial countries, because the various parts of the policy package are formulated in different agencies of the government. Even stabilization policy is not always easy to formulate, because the responsibilities for monetary and fiscal policy are split between the central bank and ministry of finance (or treasury), respectively. In some countries, even the essential public finance functions are split

between two separate ministries. It is far more complicated to combine stabilization and growth policies, since the central bank and finance ministry may not be responsible for long-term planning and government investment policies, which are, in transition countries, often assigned to the ministry of economy, with yet other ministries (industry, agriculture, trade, etc.) often playing important roles in the process as well.

Second, there is a conceptual problem. The theory underlying stabilization policy is couched in conventional macroeconomic comparative statics, while that underlying long-term growth or development planning deals with the dynamic relationships among a somewhat different set of economic variables. Little research has been published on how to bring these two fundamentally divergent approaches into a common framework, and what has been done does not always seem closely related to the institutional framework in which policy decisions must be made.

The purpose of this paper is to provide a framework for policymakers in central banks, ministries of finance and economy, and other economic agencies, so that they can coordinate their efforts to produce a consistent policy package aiming at stabilization, balance of payments, and growth objectives. The approach is not to try to build a super-model, in which all possible short-term and long-term objectives and policy variables are included. Rather, the subject is approached piecemeal—exactly as in a real-life policymaking setting—and looks separately at the growth problem and the shorter-term problem of eliminating macroeconomic imbalances. Once this has been done, the linkages between the two sets of problems can be examined and both the complementary and conflicting elements of the two areas of policy can be defined. The next stage in the process is to weigh the trade-offs underlying any conflict between the two sets of goals and finally to decide upon the overall set of policies to be taken.

II. Medium- to Long-Term Growth and the Balance of Payments

A simple framework for analyzing the growth of output and consequent balance of payments developments can be developed as follows.

1. Determination of aggregate supply

The analysis begins with a version of the well-known neoclassical equation for output, measured by gross domestic product:

$$GDP = f(K, L, x) \tag{1}$$

where K is the capital stock, L is the labor force, x are other factors, including natural resources, the state of technology and the efficiency of organization or management (which affects the productivity of all factors of production). It follows

that the growth of output depends on the growth of the variables on the right-hand side of equation (1). Since the growth of the labor force (although not improvement in its quality) is determined by long-term demographic factors, natural resources are given, and both technology and efficiency are affected only indirectly and in the long term by government policy, growth of output is often represented as the result of growth of the capital stock:

$$dGDP = \frac{1}{k} dK \quad (2)$$

where k is the marginal capital-output ratio and d denotes a one-period change in a variable. Although k is often assumed to be a relatively stable parameter in most economies, it has proven in some cases to be both highly variable in the short run (because of fluctuations in the level of economic activity) and subject to substantial trend changes in the longer run. Such long-run changes may depend crucially on government policies. Major types of policy affecting the productivity of investment include: government investment, public enterprises, and foreign trade. If one abstracts from these factors, the growth of capacity depends on investment (I). Since investment equals the *change* of the capital stock, then

$$dGDP = \frac{1}{k} I \quad (3)$$

If, for simplicity, one describes both the growth in capacity and the corresponding investment as taking place during the same period, one is abstracting from the lags that in fact exist between investment expenditures and the resulting increases in output. This simple formulation also abstracts from the difference between *potential output*, whose determination has just been discussed, and *actual output*, which depends on the level of aggregate demand.

2. National income and output and the balance of payments

It is necessary at this stage to review some well-known national income accounting relationships. First, *gross domestic product* (GDP) ^{1/} is defined as total actual output and is customarily broken down by type of expenditures on output as follows:

$$GDP = C + I + X - M \quad (4)$$

^{1/} "Gross" in this context indicates that no adjustment has been made for depreciation of the capital stock.

where

- C = aggregate consumption expenditure by residents (both private and government)
- I = aggregate gross investment expenditure by residents (both private and government)
- X = exports of goods and services
- M = imports of goods and services.

Gross national income (GNI) is equal to GDP plus primary incomes receivable by non-resident units minus primary incomes payable to non-residents. It differs from GDP by *net* factor income from abroad (Y_f):

$$GNI = C + I + X - M + Y_f \quad (5)$$

Gross national disposable income is obtained by adding to gross national income *net* transfers received from abroad (TR_f), i.e., transfers received from abroad that are unrelated to income earned by factors of production *minus* such transfers remitted abroad:

$$GNDI = GNI + TR_f \quad (6)$$

Next, *gross saving (S)* is defined as gross national disposable income minus aggregate consumption (C):

$$S = GNDI - C \quad (7)$$

Substituting (5) and (6) into (7), one obtains

$$S = C + I + X - M + Y_f + TR_f - C$$

Rearranged, this may be written as

$$S - I = X - M + Y_f + TR_f = CAB \quad (8)$$

where CAB is the current account of the balance of payments. ^{1/}

Defining "absorption" (A), as aggregate expenditure by residents on goods and services (i.e. C + I), then it follows that the current account balance is also equal to the difference between gross national disposable income and absorption:

$$GNDI - A = X - M + Y_f + TR_f = CAB \quad (9)$$

^{1/} CAB is also equal to net foreign savings, i.e., the inflow of savings from non-residents minus the outflow of savings of residents. It follows that investment is equal to the sum of gross saving plus net foreign saving.

To develop this analysis further, it is now necessary to introduce a distinction between private and government activities. ^{1/} The key distinctions concern consumption, investment and saving by these two sectors, indicated by the letters P and G. Government saving is defined as net government revenues (TX) minus government consumption (CG). ^{2/} Private savings, once taxes enter the picture, is defined as GNDI - TX - CP. Bearing these relationships in mind, (7) and (8) can be combined and rearranged in line with the definitions of private and government saving, as

$$(GNDI - TX - CP) - IP + (TX - CG) - IG = X - M + Y_f + TR_f$$

or, more succinctly,

$$(SP - IP) + (SG - IG) = CAB \quad (10)$$

This is an especially important relationship for purposes of financial programming, because it focuses on the separate contributions of the non-government and government sectors to a current account imbalance.

Examining now the financing items of the current account of the balance of payments, one may define such items as changes in the net foreign asset position of the banking system and of nonbanks. It is conventional to define the first of these items as dR, the increase in net foreign assets (or "international reserves" of the banking system) and the second as change in net foreign liabilities (or "indebtedness") of nonbank activities (dFI). ^{3/} Thus,

$$(SP - IP) + (SG - IG) = dR - dFI \quad (11)$$

Since net foreign debt (FD) may be defined as net foreign indebtedness of nonbanks minus the net foreign assets of the banking system, it follows that

$$(SP - IP) + (SG - IG) = -dFD \quad (12)$$

or, from (9) and (10),

$$GNDI - A = -dFD \quad (12a)$$

(12a) describes the fundamental insight of the "absorption approach" to balance of payments analysis, namely that any excess of aggregate expenditure over national disposable income is reflected in the growth of net liabilities to nonresidents.

^{1/} "Private" activity refers to all non-government sectors, i.e. for the purposes of this analysis, it includes state enterprises.

^{2/} Net government revenues (TX) are defined as revenues less government transfers to the non-government sectors, including public enterprises. Government consumption (CG) is government wages and salaries, plus current spending on goods and services.

^{3/} Abstracting from items in the Capital and Financial Account of the Balance of Payments that do not add to financial indebtedness (e.g., direct foreign investment).

3. Investment-growth targets, the balance of payments and external debt

Let us assume that a certain target level of investment corresponds to a target rate of output growth. Using an asterisk to indicate a target value,

$$S - I^* = X - M + Y_f + TR_f = -dFD \quad (13)$$

Meeting this target level of investment, and the associated target rate of output growth, is a major difficulty in many countries. Even if it can be met, however, there is then the question of whether domestic saving is high enough to be compatible with a sustainable increase in foreign debt. This set of problems is indicated in Chart 1, which shows the evolution of gross national disposable income (GNDI) and absorption (A) over time. Line $GNDI = A$ indicates the closed economy solution. When foreign borrowing is introduced, it is possible to accelerate growth in GNDI provided the additional resources obtained through foreign borrowing are used for productive investment. Net foreign borrowing implies, of course, that absorption exceeds gross national disposable income; the distance between the two separate lines for GNDI and A in Chart 1 indicates a deficit in the current account of the balance of payments. In Chart 2 the solid lines GNDI and A indicate the *targeted* paths of these two variables—therefore, by implication, the targeted paths of the current account deficit and net foreign borrowing. It should be noted that the targeted path for absorption is open to two interpretations: it is either the absorption path *implied* by the desired growth of output and a targeted maximum rate of increase in foreign debt; or it is separately derived from *desired* consumption, together with the investment required for targeted growth, at each point in time, in which case the growth of foreign debt becomes a residual. In practice, the joint target growth rates for output and consumption may represent a compromise between ideal paths of the two variables.

A divergence from the targeted paths (for GNDI and A) is indicated by broken lines GNDI' and A' in Chart 2, which are shown in the chart as occurring between times t_d and t_c (the periods of initial divergence and crisis, respectively). The problem for the government is then to find a combination of policies to bring about a return to the targeted paths. Putting the question in this way assumes that such a policy set is feasible. If it is not, the problem must be redefined, for example, by bringing down the absorption path in line with a new, lower rate of growth of gross national disposable income and subject to the constraint of feasible growth in foreign debt.

The latter consideration means that the current account deficit (shown by the gap between lines GNDI and A) may have to be reduced, if not altogether eliminated or even converted into a surplus. The process of carrying out such an adjustment involves the process of reducing absorption by more than GNDI. To analyze this process in realistic terms, it is necessary to introduce a distinction between potential and actual output, since a sharp decline in absorption will almost inevitably lead to at least temporary unemployment: this is true even if policies are successfully pursued that encourage exports and discourage imports, since such

CHART 1.

Gross National Disposable Income (GNDI)
Absorption (A)

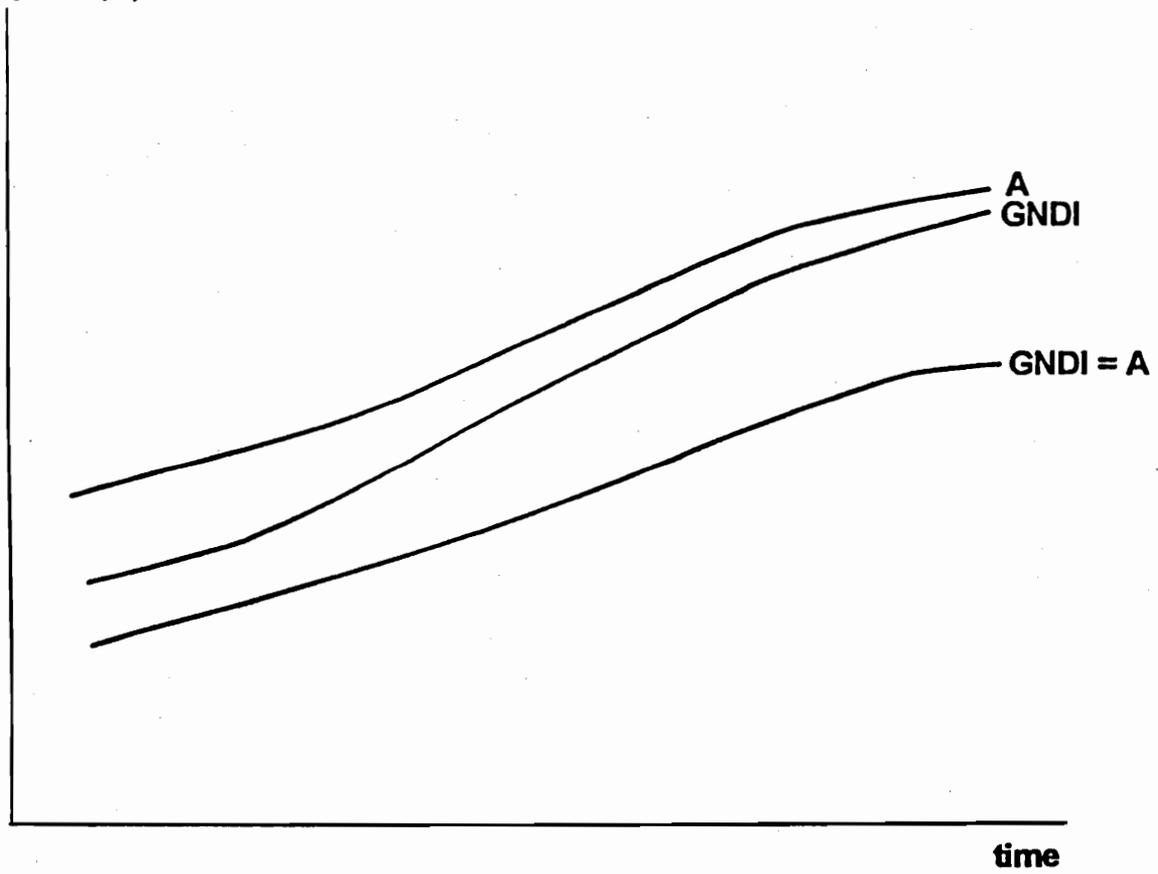
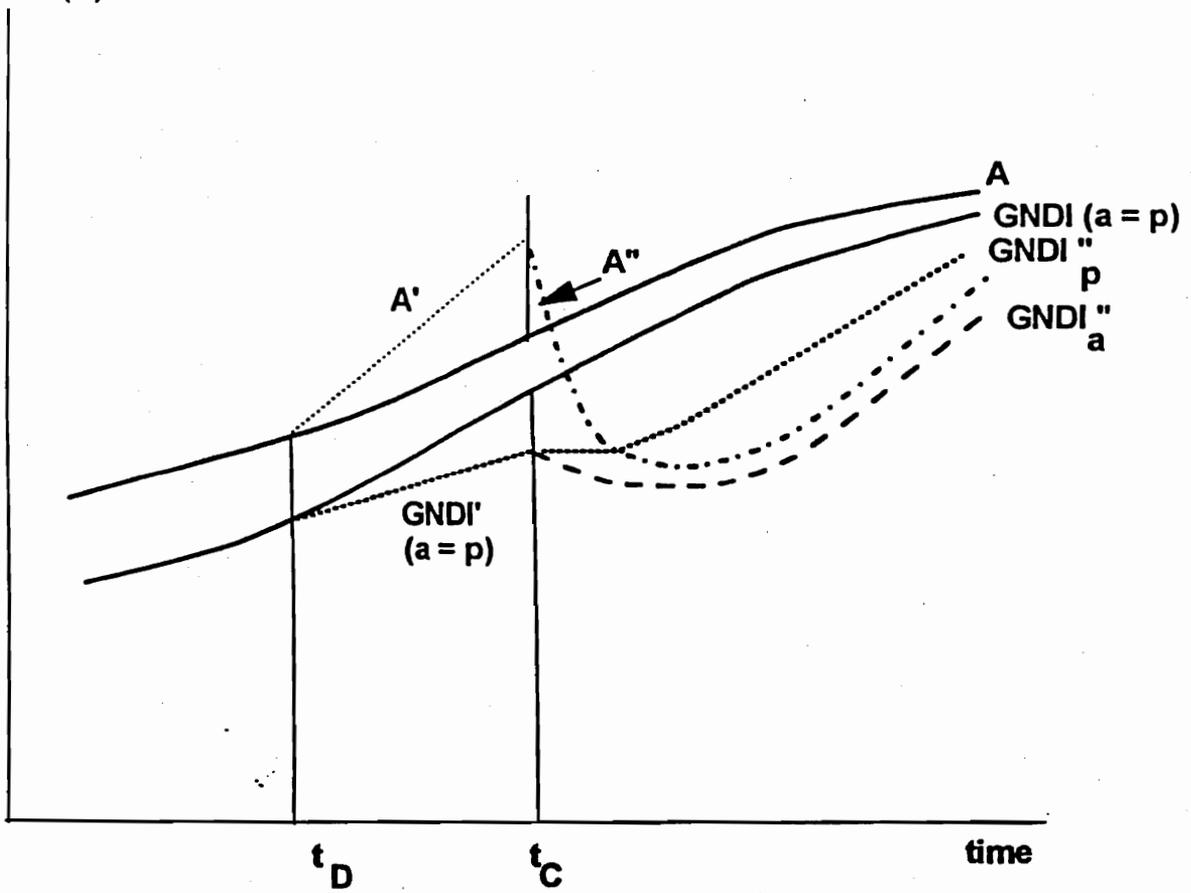


CHART 2.

Gross National Disposable Income (GNDI)
Absorption (A)



policies will involve reallocation of resources and therefore temporary dislocations and increased unemployment of resources during the period in which resources are being reallocated. In Chart 1, and in Chart 2 up to point t_c , it is assumed for simplicity that *actual* GNDI, $GNDI_a$, is equal to *potential* GNDI, $GNDI_p$.

Thus, the policies initiated in the case illustrated by Chart 2 are shown by broken lines A'' and $GNDI_a''$, the much-reduced levels of absorption and *actual* national disposable income under the program. The case shown is of a successful program: hence, the growth of productive capacity, shown by broken line $GNDI_p''$, starts at a rate only a little below that immediately preceding t_c , and gradually converges to the target level of productive capacity, GNDI (implying an acceleration of investment and growth as the program takes hold). At the same time, *actual* GNDI (shown by dashed line $GNDI_a''$) starts out considerably below $GNDI_p''$, reflecting the drastically reduced level of absorption, A'' (shown by the higher of the two dashed lines), but over time gradually converges to $GNDI_p''$ as the program is successfully pursued. Note also that the current account at the beginning of the program is sharply cut but widens slightly with time. Such a positive outcome, however, is not inevitable and may be considerably less favorable in the short run, as discussed further in Section IV.

In order to focus on how such an illustrative program might be pursued—in particular, how the current account deficit can be reduced—let us begin by making the following restrictive assumptions:

- (1) Growth of the labor force and the state of technology and efficiency are given, and the capital-output ratio is fixed, so that growth of output is determined by the level of new investment.
- (2) Exports are determined by the rate of growth of world demand.
- (3) Imports are a fixed proportion of output.
- (4) Interest payments on external debt are determined by an exogenous foreign interest rate and the accumulated level of debt.
- (5) The supply of foreign capital is assumed to be infinitely elastic, but unrequited transfers from abroad are fixed exogenously.

The usefulness of making such restrictive assumptions is that it permits easy construction of an illustrative scenario and dramatizes the types of adjustment that must be carried out if a more satisfactory solution is to be achieved. In this case, referring again to equation (13), it can be seen that with I , X , M , Y_f , and TR_f either given or a fixed proportion of output, S must adjust to maintain equilibrium. Growth in the economy is thus constrained in this simple model by the saving rate that can be achieved, although it would be equally reasonable to regard the fixed ratio of imports to output or the exogenously limited rate of export growth as the limiting factor. Finally, it should be noted that the "solution" in this heavily restricted model may imply an unsatisfactorily high rate of growth of foreign debt; in this event, the authorities would be compelled to reduce their target levels of

investment, output and imports, since, under our restrictive assumptions, any increase in saving cannot be translated into a rise in exports, and a fall in imports cannot occur without a fall in output.

Few, if any, countries actually face constraints as rigid as those just described. It is possible, in fact, to devise a multi-faceted strategy to deal with the medium-term adjustment problem illustrated in Chart 2. For example, a set of policies can be devised that accelerates export growth, reduces certain types of imports, and brings about a decline in the capital-output ratio.

Let us briefly review what some of these policies are, showing how they can bring about a relaxation of our restrictive assumptions.

(1) Capital-output ratio. There are many ways in which capital-output ratios can be lowered in both the short run and the long run. In the short run, there are various policies that can serve to raise actual output. Such policies include the liberalization of price controls, removal of trade restrictions, reform of the exchange rate system, and the liberalization of controls on private trading activities. Policies to improve the capital-output ratio in the longer run include the reform of public enterprises, new taxation systems, improvements in public investment programs, more liberal policies with regard to foreign direct investment, financial market reforms (including realistic interest rates and development of capital market institutions and instruments), and a reallocation of government current expenditures toward improved health and education services, a "social safety net" for protecting the poorer segments of the population, and the maintenance of infrastructures.

(2) Exports. Exports tend to be promoted by all of the above policies, especially by maintaining an appropriate exchange rate. The removal of export quotas, taxes, licensing, and exchange surrender requirements is also important. Encouraging inflow of foreign entrepreneurship specifically for the purpose of export promotion is also useful. Special assistance (e.g. tax advantages, marketing services) could be provided to exporters, but such measures may be less crucial than simply permitting autonomous private sector development.

(3) Imports. An appropriate exchange rate encourages efficient import substitution and induces domestic entrepreneurs to increase the use of domestic factors of production relative to the use of relatively expensive foreign ones. Removing state order systems can stimulate, for example, agricultural production, thereby stemming the tendency to become increasingly dependent on imported foodstuffs.

(4) Foreign debt. Following the "debt crisis" years of the 1980s, countries now realize that careful management of external debt is required to avoid an exorbitant debt service burden in the future.

(5) Domestic saving. The level of domestic saving is an important determinant of the level of investment and the rate of growth of output. In many countries, there are closely related problems of raising aggregate saving itself and of channeling saving into domestic financial intermediaries (as opposed to either capital flight or unproductive hoarding of goods). Financial reform, realistic interest rates, and the

development of new financial institutions are the principal policy requirements for channeling private saving into productive domestic investment. The problem of increasing aggregate saving, however, may often be most directly attacked by cutting wasteful government expenditure and raising additional revenues.

The above analysis suggests that both an increase in domestic saving and a strengthening of the current account balance are required to induce additional investment and output. These joint requirements can be achieved by a combination of "expenditure-switching" and "expenditure-changing" policies. For example, a depreciating real exchange rate "switches" foreign and domestic demand in favor of home output, thereby improving the current account balance. But the exchange rate change may result in an under- or over-shooting of the desired level of aggregate demand, which could be corrected by judicious use of fiscal and monetary policy so as to attain the desired level of aggregate demand. By themselves, fiscal and monetary policy changes may be insufficient to result in the desired current account of the balance of payments.

These considerations apply also to medium-term policies. Policies keeping the economy on the correct absorption path must be supplemented by those designed to induce the desired evolution of exports and imports: otherwise, foreign exchange constraints may force an economy to grow at a slower pace, or at lower levels of real consumption than that warranted by saving behavior and the availability of resources for investment.

The immediate results of the kinds of policy reform just outlined may well be disappointing. Both national and foreign investors may well take a "wait and see" attitude. This problem is compounded in the present highly competitive and uncertain world economic environment. To deal with the closely-related problems of capital flight and sluggish private investment, governments must establish an environment that is perceived not only to be "friendly to business" but also to be based on sound financial policies. Thus, the experience of reform in transition economies indicates that the countries that have taken bold stabilization measures as well as far-reaching reforms in many sectors of their economies are also the ones which saw an early reversal of declining output.

The next section presents the essential elements of the financial programming framework in which such policies are formulated and analyzed by the IMF.

III. A Framework for Financial Programming

An important difference between the formulation of stabilization policies—what we call here "financial programming"—in the short run and that of a medium-term adjustment program is that the growth of output, which is a major objective for the latter exercise, is taken largely as given for the former. Nevertheless, stabilization policies may sometimes have a substantial impact on aggregate output even in the short run. In many instances, however, there is considerable uncertainty about the extent of such an impact, so that it may be best to proceed by tackling the

immediate problems relating to the current account and the level of aggregate demand with the most readily available fiscal and monetary measures, as well as changes in foreign exchange and trade policies when these are called for.

In Section II, medium-term adjustment was analyzed in terms of the relation between the domestic saving-investment balance, on the one hand, and the change in net foreign assets and liabilities of the banking system and nonbanks, respectively.

It is necessary to add a further identity describing the balance sheet of the banking system:

$$M3 = NDA + R \quad (14)$$

where $M3$ is the widest definition of the stock of money (i.e., the main liabilities of the banking system), and NDA is net domestic assets of the banking system (comprising net domestic credit and other items, net) and R is the net foreign assets of the banking system. $NDA + R$ describes the asset side of the balance sheet of the banking system.

In equilibrium,

$$M3 = M3_d = f\left(\frac{GDP}{P}, P_e, i, \dots\right) \quad (15)$$

where $M3_d$ is the demand for nominal money balances and is a function of variables such as real GDP (GDP/P), the expected inflation rate (P_e), and the level of nominal interest rates (i).

By writing equation (14) in differential form ($dR = dM3 - dNDA$) and incorporating equation (15), we have in equilibrium,

$$dR = dM3_d - dNDA. \quad (16)$$

This equation, which is sometimes referred to as the "monetary approach to the balance of payments," has the important policy implication that, under a fixed exchange rate regime, any excess of domestic credit expansion over increases in desired money balances will spill over into an excess of absorption over national income and nonbank foreign borrowing, which is also exactly reflected in an overall balance of payments deficit (dR). Thus, domestic credit creation ($dNDA$) has a key role in determining the outcome for the balance of payments. (Under a freely floating exchange rate regime, $dR = 0$ and credit expansion feeds directly into the money supply and the price level; the discussion here assumes some degree of exchange rate fixity.)

Equation (16) links changes in money and credit to the real sector equations (1) - (13) through the change in net foreign assets of the banking system. Combining equations (11), (12), (12a) and (16), one obtains

$$dM_3 - dNDA = GNDI + dFI - A \quad (17)$$

The equality between the right-hand side of this equation and dR gives a reformulation of the "absorption approach," namely that an excess of absorption over the sum of national income and net nonbank borrowing abroad must result in a corresponding decline in net foreign assets of the banking system. Thus, levels of aggregate demand and net foreign borrowing—both of which may be intermediate variables targeted by policy—play a key role in determining the balance of payments outcome. Equation (17) itself provides the further insight that the level of net foreign borrowing influences the target for domestic credit expansion, given a particular monetary or balance-of-payments target. The equation also shows that in a highly open economy, even domestic credit restrictions may not prevent monetary expansion, since capital inflows can expand the money stock (the resulting rise in the price level will produce an increase on the demand for money, thereby restoring equilibrium).

In formulating a financial program, in the short run, the monetary authorities will try to determine aggregate demand, and therefore the balance of payments (dR), by controlling domestic credit taking also into account the amount of targeted (or forecast) net foreign borrowing. To determine the desirable levels of credit, however, it is first necessary to forecast the demand for money. This, in turn, requires a forecast of real income growth, a target for inflation, and decisions with regard to interest rates (if these are regulated by the authorities). Once dM_d has been forecast and the target dR has been determined, the targeted increase in domestic credit results. The government must decide on the division of this increase between the government and the non-government sectors (including state-owned enterprises). This decision depends not only on the size of the fiscal deficit but also on how that fiscal deficit is to be financed—by foreign borrowing (one component of dFI in equation (17)), borrowing directly from the public, or borrowing from the banking system (a component of $dNDA$).

One approach to formulating a financial program is to take the fiscal deficit as determined by factors unrelated to monetary policy. Once it has been determined what part of this deficit should be financed by borrowing from the banking system, new credit to the private sector then falls out as a residual. Alternatively, the monetary authorities might first target a certain rate of increase in credit to the private sector as necessary to support the projected growth in nominal output, leaving the government with the task of adjusting the fiscal deficit accordingly.

These alternative approaches to formulating targets (or ceilings) for the growth of domestic credit suggest some basic choices in formulating stabilization policy. First, there is the question of whether the fiscal deficit and expansion of credit to the private sector chosen by the authorities will affect the level of real output during the current period. Those who believe such an influence exists may argue that output is especially sensitive to fiscal policy (i.e., that the public sector leads the rest of the economy), or that credit to the private sector is the crucial variable, or that the key variable is in fact total credit. Critics of a stabilization program who argue that overall credit expansion is inadequate are in fact asserting that the projected real output and inflation rate are unrealistic: a higher inflation rate would

be required to stimulate the projected level of output. Clearly, debate on such questions comes down to analysis of the behavior of a particular economy in particular circumstances—for instance, what are the price expectations of the private sector and how difficult are these expectations to defeat if the authorities are aiming at lowering the rate of inflation.

Second, a problem could arise if an unexpected change in the balance of payments outcome renders the programmed credit expansion incompatible with the inflation or output targets. This raises the broad question of whether and how stabilization programs can be formulated and implemented in a flexible manner so as to adjust to unforeseen divergences from projected exogenous developments. One possibility is to set credit ceilings or other policy targets that are allowed to vary depending on movements in economic variables subject to unpredictable changes (e.g. export or import prices). Another is to provide for additional external financing in the event of certain contingencies.

A third possible difficulty is that if the level of real output is considered a separate target, the monetary and fiscal policy instruments are inadequate to meet both this target and the inflation and balance of payments objectives. In this case it may be necessary to use the exchange rate more actively. For example, it may prove useful to “assign” each policy instrument to a particular objective: for example, fiscal policy to the current account balance, monetary policy to the inflation target, and exchange rate policy to the output objective.

IV. The Relationship Between Medium-Term and Short-Term Policy Objectives

In large part, the aims of short-term stabilization policies and those of a medium-term adjustment program are overlapping and complementary. The short run is the first stage of the long run. If the process of policy formulation were perfectly coordinated, it would by definition be impossible for conflicts between short- and medium-term policies to arise.

In general, however, things do not fall out so neatly. Typically, short-run aims and the methods to achieve them will not, at least initially, be perfectly geared to medium-term objectives. Let us briefly review the areas in which difficulties might be expected to arise.

- There may be a conflict between *targeted growth in the medium-term program* and the level of investment implied in the *short-term program*. This is particularly likely to be the case where the short-term program aims at reducing the level of aggregate demand through some combination of reducing a fiscal deficit and tightening credit to the private sector. On the one hand, when there is a need to reduce the fiscal deficit rapidly, a temporary reduction in government investment is often politically expedient—compared, for instance, with raising taxes or reducing the real

wages of government employees. On the other hand, tightening credit to the private sector is likely to lead to higher interest rates and a consequent decline in investment activity. Even if both these measures are considered "temporary," they may lead the economy away from its targeted growth path long enough to make reaching that path unfeasible in the future. (Such a result could be illustrated in Chart 2 by an alternative case in which line $GNDI_p$ remains permanently below the solid $GNDI$ line.)

- Even if a short-run program manages to maintain the investment levels required for longer-term growth objectives, the *actual level of real output programmed for the short run* may be so far below the path of *potential output targeted in the long run* that the future levels of targeted investment and output growth are rendered unprofitable and unrealistic, respectively. There is no reason for additional productive capacity to be built when not justified by anticipated aggregate demand and high levels of unemployment.
- The *level of domestic saving* in the short-run program may differ from that implied in the medium-term program. For example, the short-run program may be modest in its domestic saving goal, choosing to rely instead on relatively more foreign borrowing.
- Closely related to differences in saving rates between the two programs may be different *ratios of imports to GDP* and *targeted amounts of foreign borrowing*. For example, a short-run program that is concerned especially with reduction in inflation may program higher levels of imports and foreign borrowing (in order to increase aggregate supply) than is compatible with medium-term objectives of reducing the import ratio and the rate at which foreign debt is increasing.

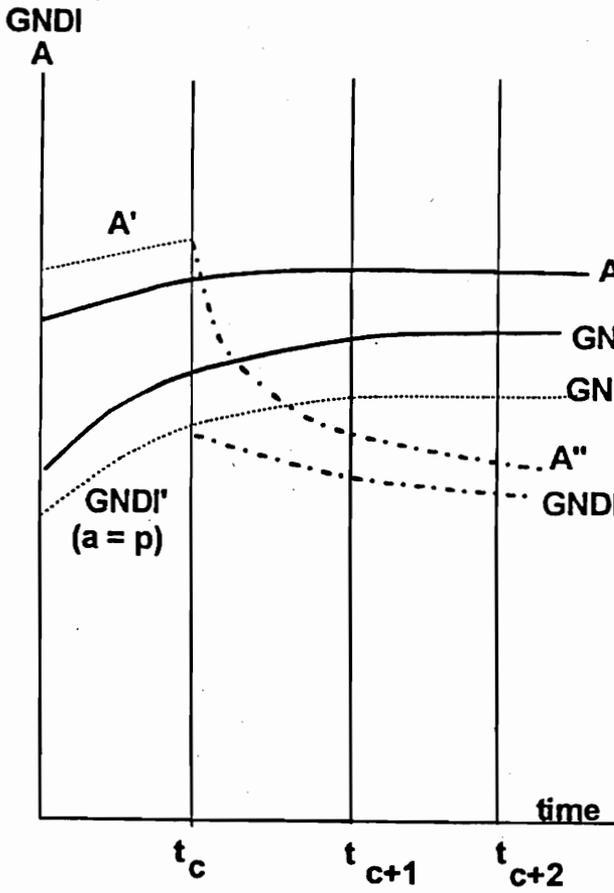
As suggested earlier, such conflicts between short- and medium-term objectives can be regarded as inherent in early stages of policy formulation. The process of resolving these conflicts may involve some element of sacrificing short-run objectives for medium-term goals, or vice-versa. Alternatively, the resolution may come about through eliciting additional external assistance, thereby making it possible to achieve the levels of investment required to meet longer-term growth objectives without sacrificing short-term stabilization goals. Beyond this, more careful analysis of both programs may produce new ideas about the best way to accomplish both sets of objectives. For example, more energetic supply-side measures may even in the short run improve the outcome for output, investment, and the current account balance.

The optimal sequencing and timing of adjustment and stabilization measures need to be addressed when program objectives are being reconsidered. Deciding upon such proper sequencing may involve changes in the original time horizon foreseen for stabilization measures—to the extent that such changes are politically feasible. For example, the desired medium-term improvement in the domestic saving rate may simply not be feasible until an improvement in the fiscal balance has been achieved, and the financial reforms required for an increase in private saving may not be practicable until the fiscal situation has been brought under control. But this

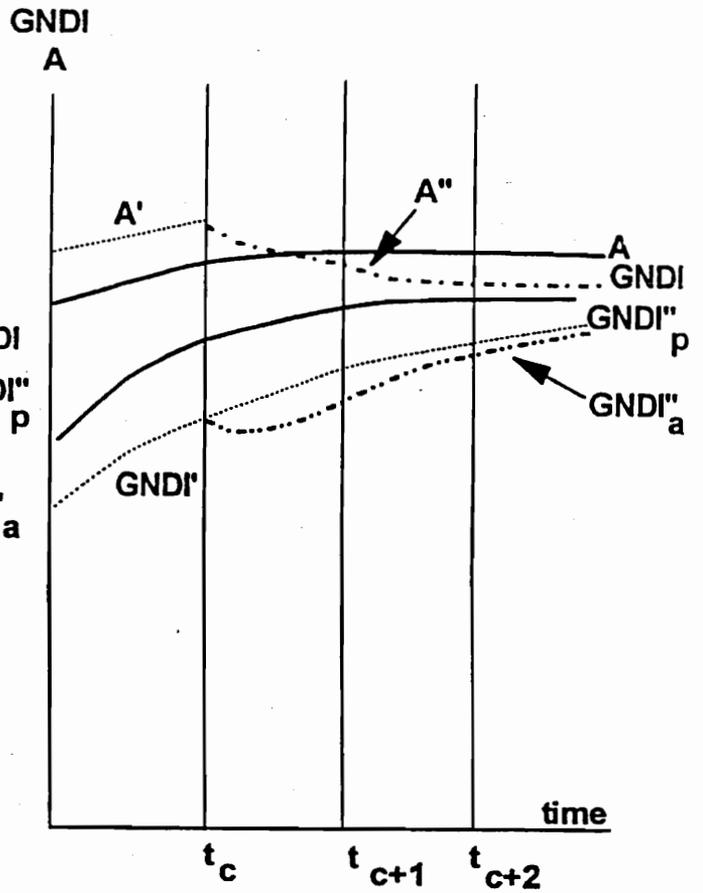
implies also that if the current account objective is to be achieved, that may require a cut in investment incompatible with medium-term growth objectives. The improvement in the current account balance may therefore have to be weakened in the short run in order to permit an improved growth performance in the medium term: This could imply a higher level of external borrowing than that targeted to meet the goal of bringing down external debt and debt-service ratios. Such an outcome is illustrated in Chart 3, which shows (in line with the methodology used in Chart 2) two alternative scenarios, one (in Chart 3a) in which a sharp decline in the current account deficit is required, resulting in severe declines in absorption (broken line A*), in the rate of growth of $GNDI_p$ (shown by a near levelling-off of the dotted line after t_c), and in employment of productive resources shown by a substantial gap between $GNDI_p$ and the broken line $GNDI_a$. In the scenario shown in Chart 3b, a higher level of borrowing permits higher levels of absorption and $GNDI_a$, and consequently a higher rate of growth of $GNDI_p$. What these charts do not show, however, are the higher levels of external debt and debt service resulting from the second scenario.

The possible conflicts between short-run and medium-term objectives discussed briefly here are given only as examples. The complementarities and possible conflicts between structural adjustment and demand management policies lie beyond the scope of this brief review.

CHART 3.



3 a.



3 b.