

Macroeconomic Stabilization and Structural Adjustment

(Class Notes)

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Outline

- I. Country Economic Analysis & Management
- II. Macroeconomic Stabilization
- III. Economic Liberalization
- IV. Reform of the State and Legal Systems
- V. Country Performance
- VI. Country Ratings

I. Country Economic Analysis

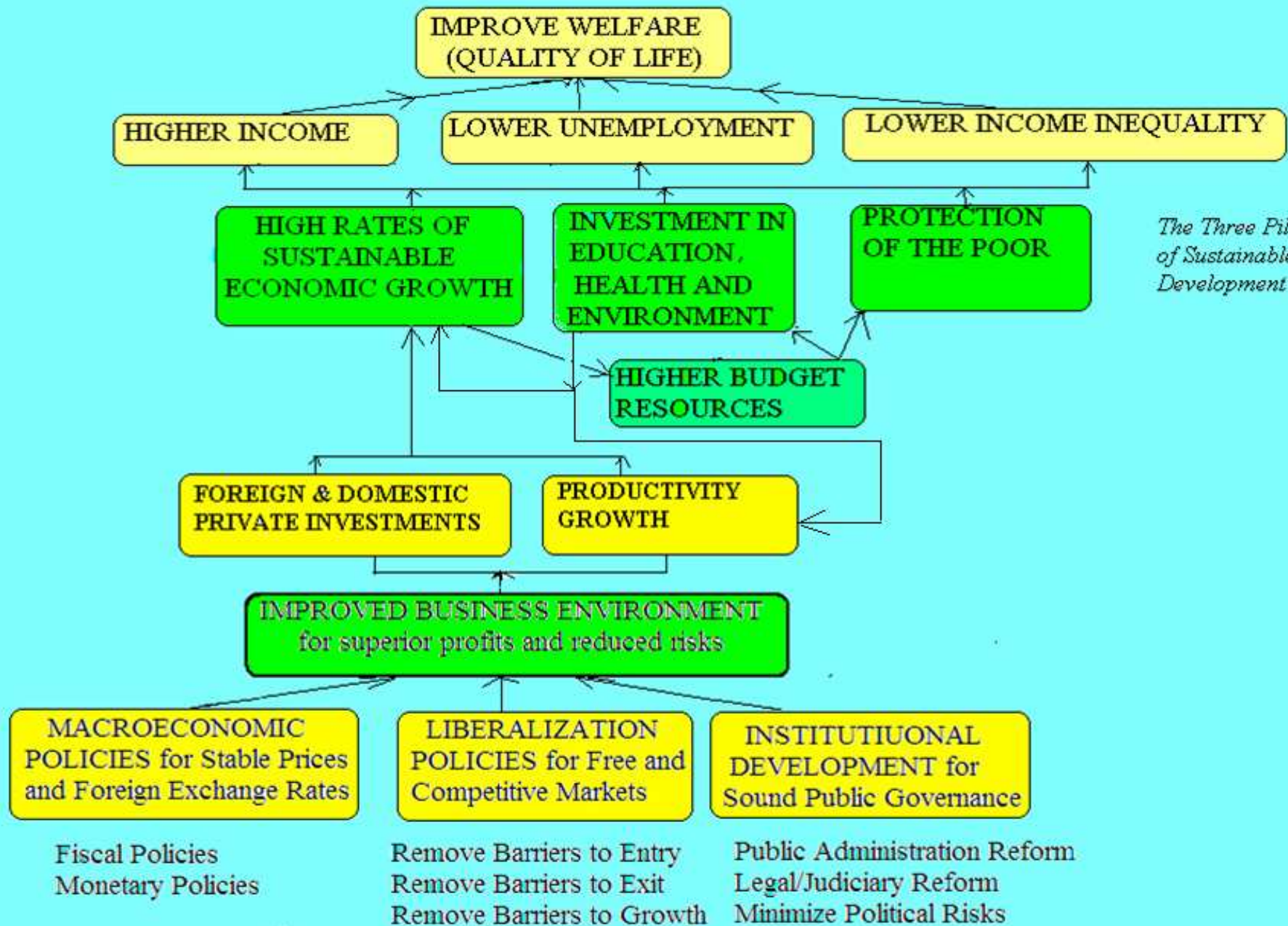
- The performance of the capital markets (stocks and bonds) of an EM is affected by the soundness/strength of its economy.
- Therefore, a successful investor in EMs must be able to analyze systematically the economic conditions of these countries.
- A sound economy is one that has both macroeconomic stability and sustainable economic growth.
 - **Macroeconomic Stability** is defined by stable prices with low inflation (internal stability), and a stable foreign exchange rate (external stability).
 - **Sustainable Economic Growth** is defined by a high rate of GDP growth that can be maintained over a long time.
- Solid macroeconomic stability and sustainable GDP growth are the two key factors affecting the performance of the stock exchange and bonds in an EM.

- **Economic Stabilization Programs** have been sponsored by the IMF and have been practiced since the early 1950's to deal with balance-of-payment disequilibrium.
- However, in the early 1980's, following the Debt Crises of 1982, there was wide recognition that stabilization programs alone were failing to bring back sustainable economic stability.
- This was because of its failure to remove deep-rooted structural economic and social distortions.
- That is, the balancing of fiscal budgets and B/P accounts alone were not sufficient to bring long-term stability and recovery.
- In order to remove these economic and social distortions, many Emerging Markets implemented Government programs to remove structural distortions in order to encourage investments and accelerate growth.

- **Structural Adjustment Programs** were designed to achieve sustainable economic growth. They added two new elements to macroeconomic stabilization programs:
 1. **Economic Liberalization**: These are policies to provide freedom to do business in a competitive environment (Stage 1 reforms) – In a market economy, the “**motivator**” is the freedom to make profits, whereas the “**control system**” is strong competition that discourages power abuse.
 2. **Institutional Development and Public Governance**: Reform of the State and Legal Systems to ensure policy implementation and to make policy changes sustainable over time (Stage 2 reforms).
- The debate is no longer about the merits of these policies. The debate is about issues of timing, sequencing, credibility and fairness, e.g.:
 - should trade be liberalized in one single shot or over time to allow local firms time to adjust?
 - Should liberalization of capital account precede reform of the financial sector or should it come later on?

- Should trade liberalization be gradual to permit EMs to develop environmental policies first?
 - Should more emphasis be put on sharing the benefits of growth with the poor?
- The debate is also about sustainability of structural adjustment efforts: Stage 1 Policy Reforms could be carried out quickly, by a handful of people passing appropriate decrees and legislation.
- But there is more awareness now of the heavy “institutional” requirements (Stage 2) to successfully implement these policy reforms.
- Institutional Development and Public Governance requires more political commitment, stronger efforts, and more people are involved.
- The Stabilization and Adjustment measures and their relationship with broader country goals are outlined in the next chart and table.

Economic Reform and Adjustment



Sources of Economic Growth:

Using a production function one can identify the contributions to output growth (Y) from additional factors, Investments (I) and Labor (N); such as Cobb-Douglas: $Y = A \cdot I^a \cdot N^{(1-a)}$

The residual "A" could be important: output could increase more than proportional to the increases in I and N due to better education (Human Capital), better incentives, stronger profit motives, better management and strategy, technology, restructuring, reengineering, IT, etc.: This source of growth is called "**Total Factor Productivity (TFP) Growth**"

In the US, TFP explains 20%-40% of GDP growth (if GDP grew by 3% pa, 2% pa is due to increases in I & N and 1% due to TFP).

In Europe, TFP growth lags US numbers by about 20%.

In transition and developing countries, TFP depends on the adequacy of business environments: if they are favorable (such as in Chile, China) TFP can be as high as 50% of total GDP growth; but with inadequate business environments, TFP is negligible (all growth would come just from additional investments or labor.)

- Cross-country studies by Robert Barro and Sala-i-Martin also showed that the **Business Environment** as well as **Human Capital** (education and health) were key determinants of high economic growth (Robert Barro, *Determinants of Economic Growth: A Cross Country Empirical Study*; Cambridge, MA, MIT Press 1997; Sala-i-Martin, Doppelhofer and Miller; *Determinants of Long-Term Growth: a Bayesian Approach*, JEL, February 2003), as follows:
 - **Business Environment variables:**
 - Low inflation rates
 - Smaller government consumption
 - Openness of the economy (with better terms of trade)
 - Rule of Law
 - **Human Capital variables:**
 - Enrolment in secondary and higher education
 - Health indicators for the population (life expectancy)
- Other studies by SigmaBleyzer, the World Bank, EBRD & others have found good correlations between the business environment and growth.

Determinants of an Improved Business Environment

(I) Macroeconomic Stabilization Policies:

- Fiscal Policies under which the Government's fiscal budget has a deficit that can be financed by borrowings on a sustainable basis (normally no more than 3% of GDP).
- Monetary Policies, under which the creation of money (money supply) will not exceed the demand for money (which is affected by income, prices and interest rates).

(II) Liberalization of the Economic Environment

- Liberalization of the Formation and Operation of Enterprises
- Liberalization of the Closure of Failing Enterprises
- Liberalization of Product Pricing and Trade
- Liberalization of the Financial Sector
- Liberalization of Labor and Land Markets

(III) Sound Institutions and Public Governance

- Sound & efficient Government services without corruption
- Stable and predictable legal environment
- Low political risks.

Macroeconomic Stabilization

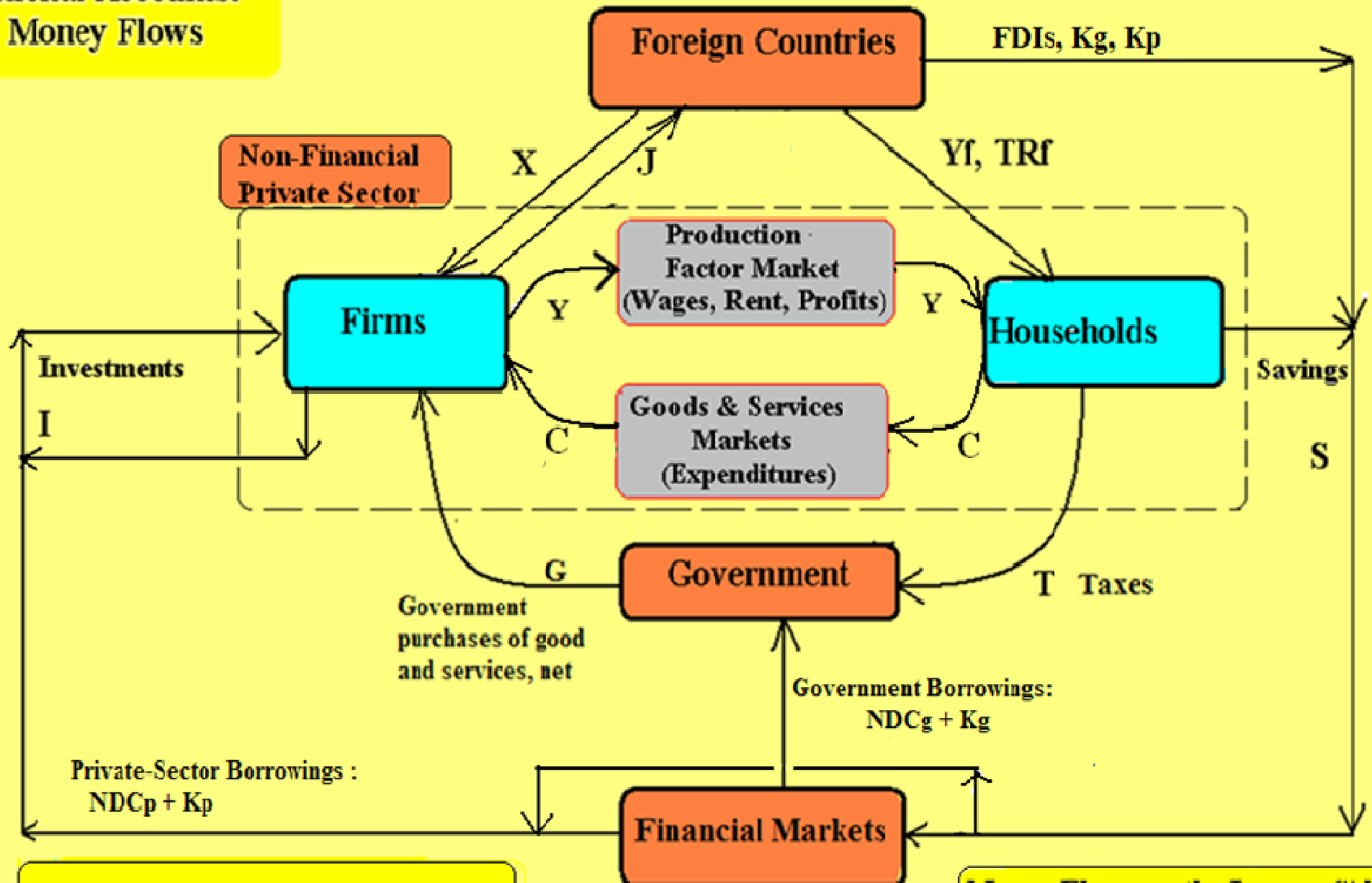
- Macroeconomic instability increases the risk of doing business.
- Investors will require significantly higher rates of returns to compensate for the risks of instability.
- As a result of this high risk premium, few projects would qualify for investments, reducing the overall level of investments and growth.
- Stabilization programs are based on the IMF's **Monetary Approach to the Balance of Payments**: it postulates that the excess growth of **Net Domestic Credit** over growth in money demand equals the deficit in the **balance of payments**.
- It is based on the realization that both **internal and external stability are closely related**: both are dependent of the size of fiscal budget deficits or degree of overspending by the private sector.
- The IMF tool is called **Monetary Programming**, which aims at determining fiscal and monetary policies (the size of the Fiscal Budget Deficit or level of domestic credit) that are “**consistent**” with the country’s objectives in terms of (i) GDP growth, (ii) level of inflation, and (iii) level of international reserves.

A. Relation Between Internal and External Stability: Fiscal and Current Account Deficits

Definitions:

Y	=	Gross Domestic Product
Y_d	=	Gross Disposable Income (C+S)
C	=	Consumption, private
I	=	Investment, private
G	=	Government Expenditures
X	=	Exports
J	=	Imports
S	=	Savings, private
T	=	Taxes
TR_f	=	Net Transfers Received from Abroad
Y_f	=	Net Factor Income from Abroad
R	=	International Reserves
K	=	Foreign Capital
A	=	Absorption (Expenditures)
CAB	=	Current Account Balance

**National Accounts:
Money Flows**



Money Flows on the Demand Side:

$$Y = C + I + G + X - J$$

Government Financing:

$$G - T = NDC_g + K_g$$

Money Flows on the Income Side:

$$Y + Y_f + TR_f - T = C + S = Y_d$$

$$Y = C + S + T - Y_f - TR_f$$

(1) On the expenditure side: $AD \Rightarrow Y = C + I + G + X - J$

(2) On the Income (supply) side: $Y = C + S + T - Y_f - TR_f$

Since Aggregate Demand must equal Income, then (1)=(2); or

$$C + I + G + X - J = C + S + T - Y_f - TR_f$$

Then:

$$\frac{X - J + Y_f + TR_f}{\text{Current Account Balance (CAB)}} = \frac{(S - I)}{\text{Private Sector Balance (PSB)}} + \frac{(T - G)}{\text{Fiscal Budget Balance (FBB)}}$$

If PSB=0, **Current Account Balance = Fiscal Budget Balance**

A Fiscal Deficit will yield an equally-sized CA Deficit

If FBB=0, **Current Account Balance = Private Sector Balance**

A Private Sector Deficit will yield an equal CA Deficit

Note: All Savings (private sector, Gvt and foreign savings) must equal Investments for equilibrium in the goods market ($I = \Sigma S$)

(B) Current Account Deficits & Excessive Expenditures.

$$(1) \quad AD = Y = C + I + G + X - J$$

$$(2) \quad Y = AS = Y_d + T - Y_f - TR_f \quad \text{where } Y_d = C + S$$

$$Y_d + T - Y_f - TR_f = C + I + G + X - J$$

$$Y_d - [(C + I) + (G - T)] = X - J + Y_f + TR_f = CAB$$

$(C + I) =$ Expenditures of Private Sector = Private Absorption

$(G - T) =$ Excessive Govt. Expenditures = Govt. Absorption

$Y_d - [\text{Priv. Abs} + \text{Govt Abs}] = \text{Current Account Balance}$

$Y_d - \text{Absorption} = \text{Current Account Balance}$

- The excess of absorption (expenditures) over disposable income will be reflected as a deficit in the current account of the B/P.
- To correct a B/P deficit, you need to reduce Exp. or increase Y_d .
- A devaluation would improve the B/P if it leads to an increase in income (Y_d) that is greater than an increase in expenditures (Abs), including those expenditures generated by the higher income.

(C) Expenditures (Absorption) and Foreign Debt

- If FDIs are constant, the Current Account Deficit can be financed by:
 - (i) a reduction in International Reserves (R), or
 - (ii) an increase in Foreign Debt (K), assuming constant FDIs.

$$\mathbf{CAB = X - J + Y_f + TR_f = - \Delta R + \Delta K}$$

since: $\mathbf{CAB = Y_d - Absorption}$

therefore: $\mathbf{Y_d - Absorption = - \Delta R + \Delta K}$

- If expenditures (Absorption) are too high compared to Income, then: International Reserves would be falling or Foreign Debt would be increasing.
- To maintain International Reserves and avoid excessive Foreign Debt, expenditures (Absorption) should be reduced, normally by cutting Government expenditures, increasing tax revenues (reducing the fiscal budget deficit) or reducing private expenditures.
- All these identities are useful relationships, but provides little guidance to economic policy decisions: They do not establish causality and do not identify concrete policies. For this purpose, we need to add a number of behavioral relationships and the Financial / Monetary Block which are needed to close the system and quantify remedies needed.

Monetary Programming of the IMF

In order to use the previous macroeconomic identifies to define Stabilization Policies, first we need to introduce the **Financial Sector** and some key monetary and behavioral relationships.

Abbreviations:

M^d = Money Demand

M^s = Money Supply (Normally M3)

P = Prices

E = Exchange Rate

i = Interest rates

NDC_p = Net Domestic Credit to Private Sector

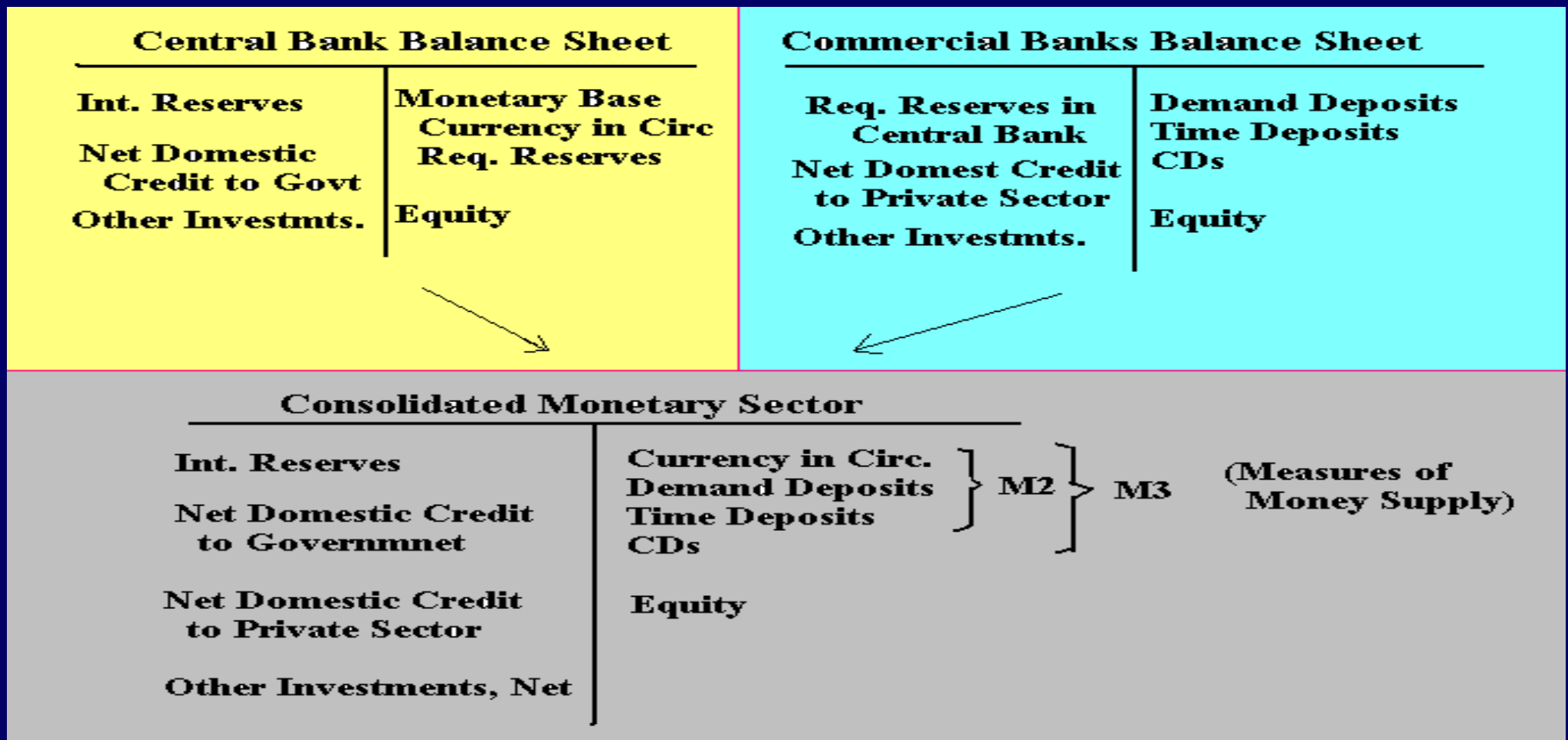
NDC_g = Net Domestic Credit to Government

OIN = Other Investments, Net

A key monetary relationship is given by the balance sheet of the Banking Sector: its **Financial Assets** (International Reserves, Net Domestic Credit and Net Other Investments) will equal its **Financial Liabilities** (Money Supply) plus Equity:

$$M^s + Eq = R + NDC + NOI$$

If Equity and ONI are fixed, then: $\Delta M^s = \Delta NDC + \Delta R$



Key behavioral relationships include:

1st Relation: The Demand for Money

- The Quantity Theory of Money is its simplest formulation. Example:
 - In an economy there are 100 pesos of money (M), which are spent exclusively in the purchase of goods.
 - In this economy the quantity of goods (Q) is 100 goods .
 - Then, the price of each good (P) will be 1 peso (P).
 - Later on, the Central Bank prints money and the amount of money goes to 200 pesos, but there are still 100 goods.
 - Then the price of each good will be 2 pesos: a 100 inflation rate.

$$\mathbf{M = P \times Q}$$

- This example assumes a velocity of money circulation (**V**) of 1.
- Generalizing to a velocity different to one but postulating that it is stable, we get the formulation of the Quantitative Theory of Money:

$$\mathbf{M \times V = P \times Q}$$

$$\mathbf{(1 + \Delta M) \times (1 + \Delta V) = (1 + \Delta P) \times (1 + \Delta Q)}$$

$$\mathbf{(1 + \Delta M) = (1 + \Delta P) \times (1 + \Delta Q) = \Delta Yn}$$

$$\mathbf{(1 + \Delta P) = (1 + \Delta M) / (1 + \Delta Q) \gg \gg \Delta P = f(\Delta M)}$$

- If the amount of money in the economy grows by 20%, real GDP grows by 3%, and velocity is constant, then inflation will be 16.5%, (ie, 1.20/1.03).

- **M** can be seen as the amount of money that is "**demanded**" for **transactional** purposes.

$$\mathbf{M}^d = (\nu^{-1}) \mathbf{x} (\mathbf{P} \mathbf{x} \mathbf{Q}) = \nu^{-1} \mathbf{Y}$$

and

$$\Delta \mathbf{M}^d = \nu^{-1} \Delta \mathbf{Y}$$

- But total Money demand would also depend on how much money people will be willing to hold for **liquidity** purposes. This will be a function of the cost and risks of holding money – versus other alternative financial assets -- which depends on the level of interest rates (*i*), the level of inflation (*P*), and the exchange rate (*E*).
- Therefore, the **demand for money** (\mathbf{M}^d) will depend on the level of real Income (*Y*), on the price level (*P*), on the level of interest rates (*i*), and on the exchange rate (*E*):

$$\mathbf{M}^d = \mathbf{f}(\mathbf{Y}, \mathbf{P}, \mathbf{i}, \mathbf{E})$$

- This relationship must be estimated econometrically, through regressions analysis.
- In many EMs, Income *Y* is the only statistically significant variable.

2nd Relation: For Equilibrium in the Money Market:

Money Demand = Money Supply

$$\Delta M^d / M^d = \Delta M^s / M^s$$

- Money supply (M^s , M3) is the sum of currency in circulation, demand deposits, time deposits and CDs of commercial banks.
- Money supply is determined mainly by the Central Bank, given its ability to create and put money in circulation and affect the level of deposits through interest rates.
- Given the rate of income growth, the level of interest rates, exchange rates, and inflation, the growth in Money Demand is fully defined.
- Therefore, for equilibrium, Money Supply is also fully defined.
- An increase in Money Supply **above** this defined level of Money Supply will just result in an increase in inflation: that is,

$$\Delta P = f(\Delta M^s / \Delta M^d)$$

1. In turn, inflation (ΔP) will reduce exports (as local goods become more expensive) and increase imports (as foreign goods become cheaper). This leads to a balance of payments deficit.
2. Therefore the excess of money supply over money demand is reflected as a deficit in the balance of payments.

3rd Relation: Imports will depend on the level of Income.

$$J = \alpha Y$$

where α is the import elasticity

4th Relation: Income will depend on the level of Investments, which will also depend on the level of domestic credit to the private sector. Given a level of income, the NDC to the private sector is defined:

$$\Delta NDC^p = \theta \Delta Y$$

1. Original Polak Model on Monetary Programming

- *The original IMF Monetary Programming (developed in 1957) was designed for BOP crises prevention & resolution, not growth.*
- *It therefore focused on the Financial and Balance of Payments blocks, ignoring the Government and Private Sector blocks.*
- It assumed fixed exchange rate regimes (the original mandate of the IMF and the prevalent regime in the 1950's and 1960's).
- Reserves are key to credibility of fixed ERRs (Krugman [1979])
- Control over net domestic credit expansion is the key to stabilize BOP
- Described by Four Equations (1) to (4):
 - $\Delta M^s = \Delta M^d$ (1)
 - $\Delta M^s = \Delta NDC + \Delta R$ (2)
 - $\Delta M^d = v^{-1} \Delta Y$ $v > 0$ (3)
 - $\Delta R = X - J + \Delta K = X - \alpha Y + \Delta K$ $0 < \alpha < 1$ (4)
- *Note: If $\Delta M^s > \Delta M^d$ then $\Delta P \uparrow$, $\Delta J \uparrow$, $\Delta X \downarrow$ and $\Delta R \downarrow$*

Focus of the Polak Model:

Determine the effects of changes in net domestic credit on reserves.

Using (1), (2), and (3), one gets

$$\Delta R = \Delta M^s - \Delta NDC = \Delta M^d - \Delta NDC$$

$$\Delta R = v^{-1} \Delta Y - \Delta NDC$$

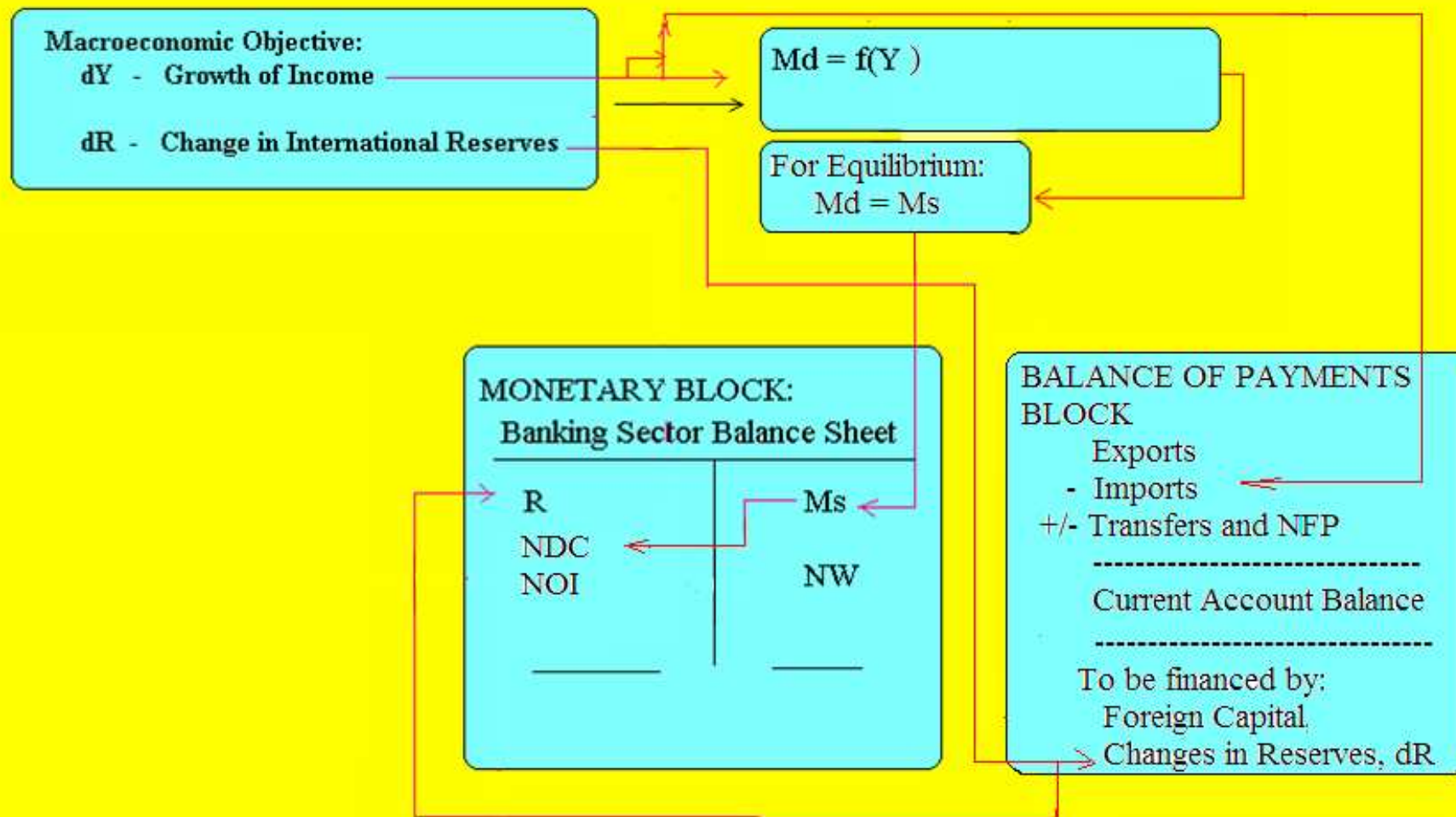
- Reserves will decline (B/P deficit) when increases in net domestic credit (ΔNDC) exceeds increases in nominal money demanded (ΔM^d), which in turn depends on the rate of income growth (ΔY).
- Reserves stable if growth of domestic credit \Rightarrow nominal output growth
- If Y grows, M^d will grow and NDC can grow somewhat with R stable. But if NDC grows over and above growth in M^d , then R will fall.

Management of net domestic credit crucial in obtaining BOP objective:

$$\Delta NDC = v^{-1} \Delta Y_{target} - \Delta R_{target}$$

- Given a target level of income change (ΔY), and a target level of reserves (ΔR) one can estimate the required change in NDC
- This allows policy makers to estimate a credit ceiling, i.e. Net Domestic Credit growth is a performance criterion in IMF programs
- **Transmission channels:** Assuming that $Y \uparrow$ $J \uparrow$ CAB deteriorates $R \downarrow$ then, if: $NDC \downarrow$ $M^s \downarrow$ $M^d > M^s$ $i \uparrow$ $I \downarrow$ $AD \downarrow$ $J \downarrow$ CAD improves $R \uparrow$; also as: $i \uparrow$ $K \uparrow$ $R \uparrow$ $\therefore \Rightarrow$ A reduction of NDC lead to improved B/P

Original Polak Model



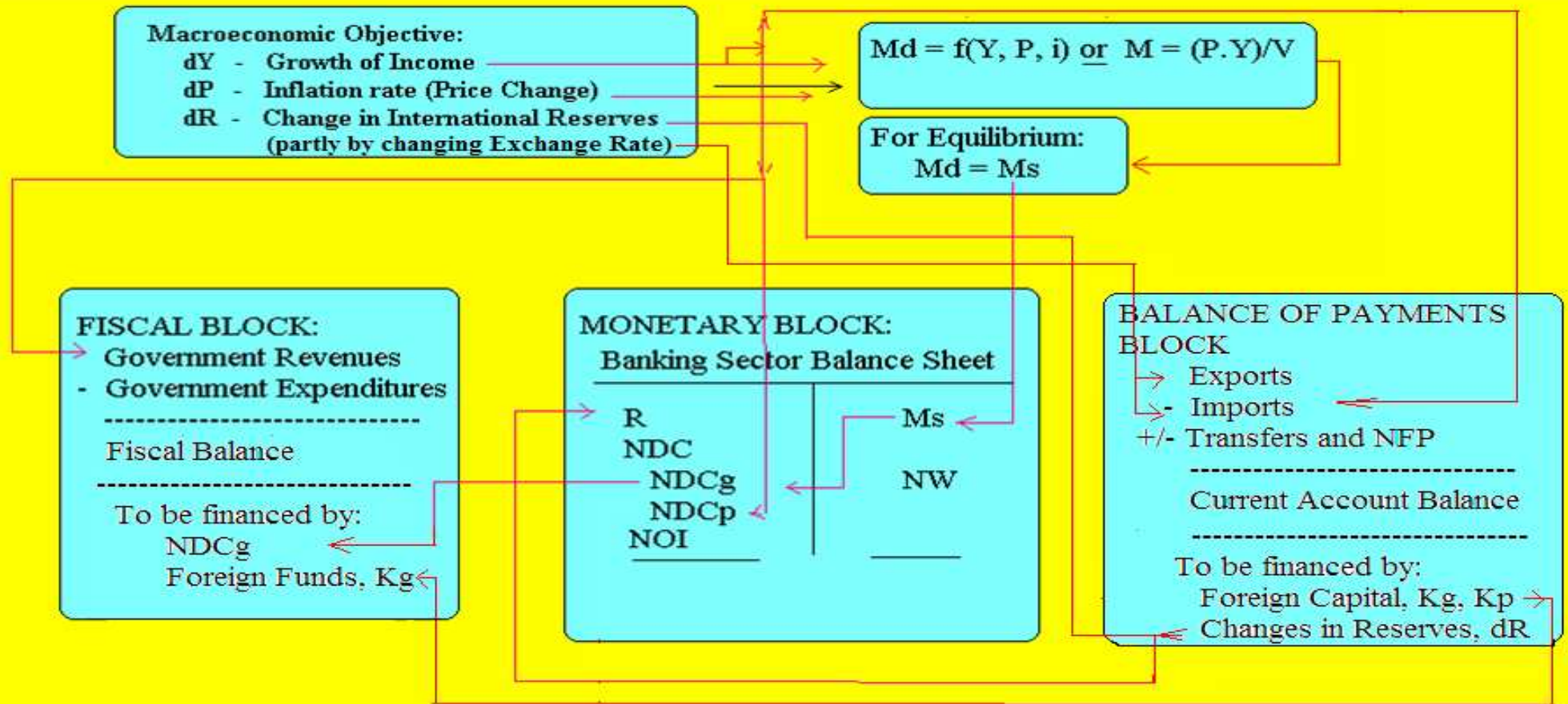
For the economic system to be in equilibrium:

Money Supply should not exceed money demand; Otherwise the inflation rate will be higher than dP .

IMF Performance Criteria: In order to maintain a pre-determined level of International Reserves (which is necessary for the credibility of fixed exchange rates, there should be a limit on the size of Net Domestic Credit

2. Extended Monetary Programming of the IMF

- In the 1970's, the model introduced the effects of changes in Prices & Exchange Rates (given the abandonment of fixed exchange rates in 1973.)
- It also introduced the Government's fiscal block:
 Govt Revenues (T) – Govt Expenditures (G) = Fiscal Balance = NDCg + Kg



For the economic system to be in equilibrium:

Money Supply should not exceed money demand; Otherwise the inflation rate will be higher than dP.

The Fiscal Deficit can not exceed the amount financed by NDCg and K.

IMF Performance Criteria: (i) Maximum Size of Fiscal Deficit; (ii) Ceilings on Public Sector Borrowings
 (iii) Minimum Level of International Reserves (adj. in exchange rates)

Maximum Domestic Credit to the Government

Taking the Balance Sheet of the Banking Sector:

$$M_s + NW = R + NDC_p + NDC_g + OIN$$

$$\Delta M_s = \Delta R + \Delta NDC_p + \Delta NDC_g \quad \text{-since } NW \text{ \& } OIN \text{ are fixed.}$$

- ΔM_s is defined from its identity to money demand, given interest rates and targets on inflation and income.
- ΔR is defined by the outcome of the Balance of Payments.
- ΔNDC_p is defined by the requirements for working Cap/income growth of the private sector.
- Therefore, ΔNDC_g will be the residual amount.
- This residual amount, Net Domestic Credit to Govt., is all the lending from domestic sources that can be given to the Government if the country were to have equilibrium in the money markets (inflation at target level).
- The size of a “consistent” fiscal deficit will depend on the amount of financing available: the amount of ΔNDC_g plus any additional foreign loans that the Government may obtain.

$$T - G = NDC_g + Kg$$

This model is still widely used by the IMF. BUT: it ignores equilibrium in the non-financial private sector (good markets -- I and S)

3. The Original World Bank's RMSM (Revised Minimum Standard Model)

- Developed in the early 1970s (Chenery & Strout) with the objective of making explicit the link between medium-term growth and equilibrium in the goods markets
 - Economic Growth is the target, not just Reserves (or BOP crisis) or fiscal deficits.
 - It is forward looking (savings-investment gap)
 - “Ministry of Economics” is focus, not Ministry of Finance nor Central Bank
- Assumptions & Growth Theory behind the RMSM:
 - Linear positive relation between investment and output growth rates (Harrod [1939] -Domar [1946] model). Emphasis on capital accumulation and its effects on Income through an Incremental Capital-Output ratio. Ignores Total Factor Productivity growth.
 - Additional foreign flows go to investment (Chenery and Strout [1966] model)

Five relationships define the RMSM model:

→ National income identity:

$$y_{-1} + \Delta y = C^p + G + I + (X - J) \quad (1)$$

→ Private consumption:

$$C^p = (1 - s)(y - T) \quad 0 < s < 1: \text{marginal propensity to save} \quad (2)$$

T = taxes

→ Investment:

$$I = \Delta y / \sigma \quad \sigma: \text{inverse of the incremental capital-output ratio} \quad (3)$$

→ Imports:

$$J = \alpha y \quad 0 < \alpha < 1 \quad (4)$$

→ Balance-of-payments identity:

$$X - J = \Delta R - \Delta K \quad (5)$$

The structure of RMSM:

Target variables: $\Delta y, \Delta R$

Endogenous variables: I, C_p, J

Exogenous variables: X

Policy instruments: $G, T, \Delta K$

Predetermined: y^{-1}

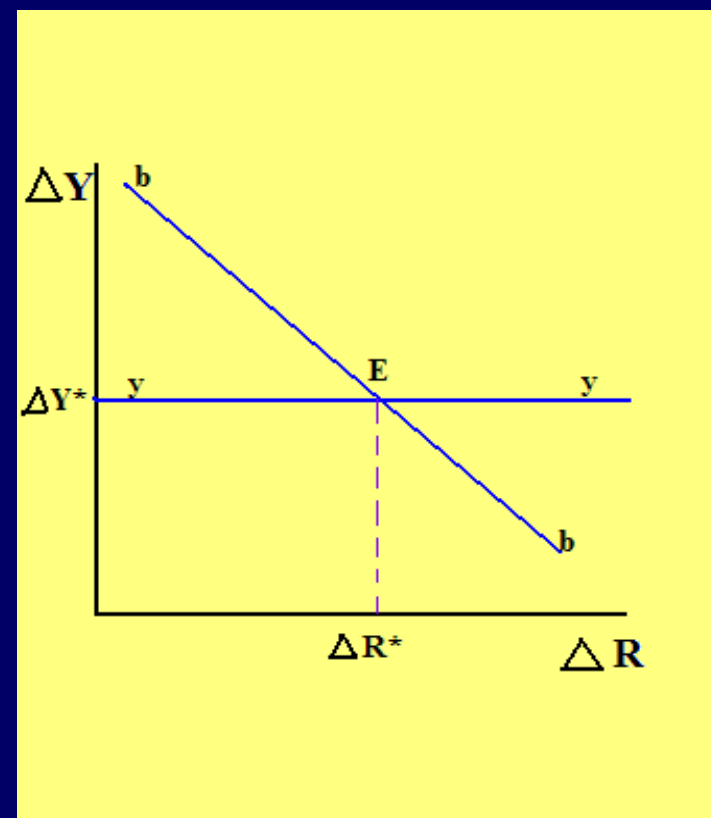
Parameters: $ICOR$ (σ^{-1}), *marginal propensity to save* (s), and *import elasticity* (α)

Target equations (derived by substitutions):

$$(s + \alpha)y_{-1} + (1 - s)T - (X + G)$$

$$\Delta y = \frac{(s + \alpha)y_{-1} + (1 - s)T - (X + G)}{\sigma^{-1} - (s + \alpha)} \quad (yy)$$

$$\Delta R = X - \alpha(y_{-1} + \Delta y) + \Delta K \quad (bb)$$



These two Equations can be solved (i.e. a numerical Δy and ΔR can be obtained) in a Simultaneous Mode or in a Recursive Mode:

- **Simultaneous mode:** The first equation will give Δy (growth rate) for given y_{-1} , T , X , and G . Then substituting this Δy into the second equation, will give ΔR for a given ΔK (or viceversa).
- **Recursive mode:** Set the income growth target and the targeted ΔR and given y_{-1} , T , X and G , through recursive (iterative) solution, model will calculate $\Delta K =$ financing needs. Alternatively, can use same approach to get G . This is also called **Programming Mode** (if $Y = f(G, M)$, we can reverse it for $G = f^{-1}(Y_{\text{target}}, M)$).

Criticisms of RMSM:

- Difficult to identify binding constraint a priori. Assumes import constraint as essential for investment and growth; however, foreign trade gap can also be closed by a combination of import reductions or exports increases, thereby providing foreign exchange necessary for investment.
- Relative prices and induced substitution effects among production factors (and their possible impact on exports) are neglected.
- Incomplete: a growth-oriented model with emphasis on a small number of real variables but **no government side and no financial side**, hence no use of huge literature on this relation.

4. The Merged IMF-World Bank Model: The RMSM-X Model

- Adds the World Bank's RMSM to the IMF's Monetary Programming model.
- It covers the four major blocks: Monetary, Govt., B/P, and private sector.
- As in the IMF Extended model, relative prices and the exchange rate affect imports and domestic absorption.

Basic Model Equations:

(1) Money supply and domestic credit

$$\Delta M^s = \Delta NDC^p + \Delta NDC^g + \Delta R,$$

with $\Delta NDC^p = \theta \Delta Y$ (*Credit proportion for working capital*)

and $\Delta R = E \Delta R^*$

(2) Money demand

$$\Delta M^d = v^{-1} \Delta Y$$

(3) Flow equilibrium of the money market

$$\Delta M^s = \Delta M^d$$

(4) Government budget financing constraint

$$G - T = \Delta NDC^g + \Delta K^g$$

(5) Balance of payments

$$\Delta R = X - J + \Delta K$$

with: $\Delta K = E \Delta K^*$, and: X is exogenous.

Nominal imports: $J = J_{-1} + (Q_{J-1} - \eta E_{-1}) \Delta E + E_{-1} (\alpha \Delta y + \eta \Delta P_D)$

With (Q) as import volume, (η) price and (α) income elasticities of imports (see Note 1).

(6) Changes in investments, output and prices

$I/P = \Delta y / \sigma$ where I is Nominal Investment & σ^{-1} is the ICOR

$Y = Py$ where Y & y are Nominal & Real Income

$$\Delta Y = Py - P_{-1}y_{-1} = Py - P_{-1}(y - \Delta y) \approx \Delta P y_{-1} + P_{-1} \Delta y$$

$$\Delta P = \delta \Delta P_D + (1 - \delta)(\Delta E + \Delta P^*)$$

Where:

δ is the relative weight of domestic goods in the price index

$(1 - \delta)$ is the proportion of imports (devaluation pass-through effect).

ΔP is domestic inflation and depends on the weighted domestic prices (P_D) and foreign prices (P^*)

ΔP^* is foreign inflation which is thereafter assumed to be zero.

(7) Private sector budget constraint:

Starting from the national income identities:

$$AD = Y = C^p + I + G + (X - J)$$

$$AS = Y = C^p + S + T - Y_f - TR_f$$

$$\text{Since } AD = AS: (I-S) + (G-T) = - (X - J + Y_f + TR_f)$$

$$(I-S) + (G-T) = CAB = \Delta K - \Delta R$$

$$\text{Since: } \Delta R = \Delta M_s - \Delta NDC$$

$$\Delta M_s = \Delta M_d$$

$$\Delta K = \Delta K^p + \Delta K^g$$

$$\Delta NDC = \Delta NDC^g + \Delta NDC^p$$

Then:

$$(I-S) + (G-T) = \Delta K^p + \Delta K^g - \Delta M_d + \Delta NDC^g + \Delta NDC^p$$

$$\text{Since } (G-T) = \Delta K^g + \Delta NDC^g \text{ from equation (4)}$$

Then:

$$I - S = \Delta NDC^p + \Delta K^p - \Delta M^d$$

Which defines the private sector budget constraint: The excess of private investments over private savings must be financed from national domestic credit to the private sector (ΔNDC^p), foreign capital for the private sector (ΔK^p), and/or by a reduction in the demand for money.

Model Consistency

- Another way of looking at the above is to combine the Government and Private Sector budget constraints in equations (4) & (7) to give the overall budget constraint for the economy (or savings-investment balance). This balance relates total savings (public and private) and investments to domestic & foreign financing (ΔNDC^g , ΔNDC^p , ΔM^d and ΔK^p).
- In fact, with some transformations, we obtain the sum of equations (4) and (7) as the following:

$$(I-S) + (G-T) = \Delta NDC + \Delta K - \Delta M^d$$

Since $\Delta NDC = \Delta M^s - \Delta R$ and $\Delta M^d = \Delta M^s$, then:

$$(I-S) + (G-T) = \Delta K - \Delta R = CAB$$

As we saw earlier, this last equation implies that the Monetary and National Income identities do hold (that is, $\Delta M^d = \Delta M^s$ and that $AS = AD$; $I = \Sigma S$):

$$AD = AS = Y = C^p + G + I + (X - J) = C^p + S + T - Y_f - TR_f$$

Footnote 1: Imports under the RMSM-X

$$J = E Q_J \quad (\text{with } P^*_J = 1)$$

J : imports in nominal terms; Q_J : import volume; E : nominal exchange rate

- Changes in import volume, related to the change in output and the relative price of foreign goods,

$$\Delta Q_J = \alpha \Delta y + \eta [\Delta P_D - (\Delta E + \Delta P^*)]$$

$\eta > 0$: import elasticity to relative price changes.

- Nominal value of imports: $\Delta J \cong Q_{J-1} \Delta E + E_{-1} \Delta Q_J$

so that: $J = J_{-1} + (Q_{J-1} - \eta E_{-1}) \Delta E + E_{-1} [\alpha \Delta y + \eta (\Delta P_D - \Delta P^*)]$

- With Q_{J-1} relatively small, a devaluation in the nominal exchange rate ($\Delta E > 0$) will lower the nominal value of imports, improve the trade balance and thus increase official reserves.
- The last term of the equation can be dropped if we assumed that foreign inflation is small.

Structure of the Merged Model:

Target Variables: $\Delta y, \Delta P_D, \Delta R$

Endogenous Variables: $\Delta Y, \Delta NDC^p, \Delta M, \Delta P, \Delta J, T$

Exogenous Variables: $X, \Delta K = \Delta K^p + \Delta K^g$

Policy Instruments: $\Delta NDC^g, \Delta E, \text{ and } G$

Predetermined: y_{-1}, P_{-1}

Parameters: money velocity (v), devaluation pass-through (δ), coefficient of credit proportion for working capital (θ), price elasticity of imports (η), income elasticity of imports (α), incremental capital-output ratio (σ^{-1}), marginal propensity to save (s).

Solution of the Merged Model:

- Objective is to relate targets, exogenous variables, and policy instruments to find the equilibrium values for $\Delta y, \Delta P_D$ and ΔR (in which $M^d = M^s$ and $I = \Sigma S$).
- Starting with the private sector budget constraint (7) in the Basic Model,

$$S - I = \Delta M^d - \Delta NDC^p - \Delta K^p \quad \text{But since } S = Y - C^p - T:$$

$$\text{Then: } (Y - C^p - T) - I = \Delta M^d - \Delta NDC^p - \Delta K^p$$

Since $C^p = (1 - s)(Y - T)$ where s is the marginal propensity to save.

$$\text{Then: } I = s(Y_{-1} + \Delta Y - T) + \Delta NDC^p + \Delta K^p - \Delta M^d \quad \text{but since } \Delta M^d = v^{-1} \Delta Y$$

$$\text{Then: } I = s(Y_{-1} + \Delta Y - T) + \Delta NDC^p + \Delta K^p - v^{-1} \Delta Y$$

- Re-arranging and using credit to private sector, $\Delta NDC^p = \theta \Delta Y$, and assuming $\tau = s + \theta - v^{-1}$ is positive (or $v(s + \theta) > 1$), we obtain the target equations of the Merged Model by substitutions in the Basic Model equations.

Target Equations of the RMSM-X Model

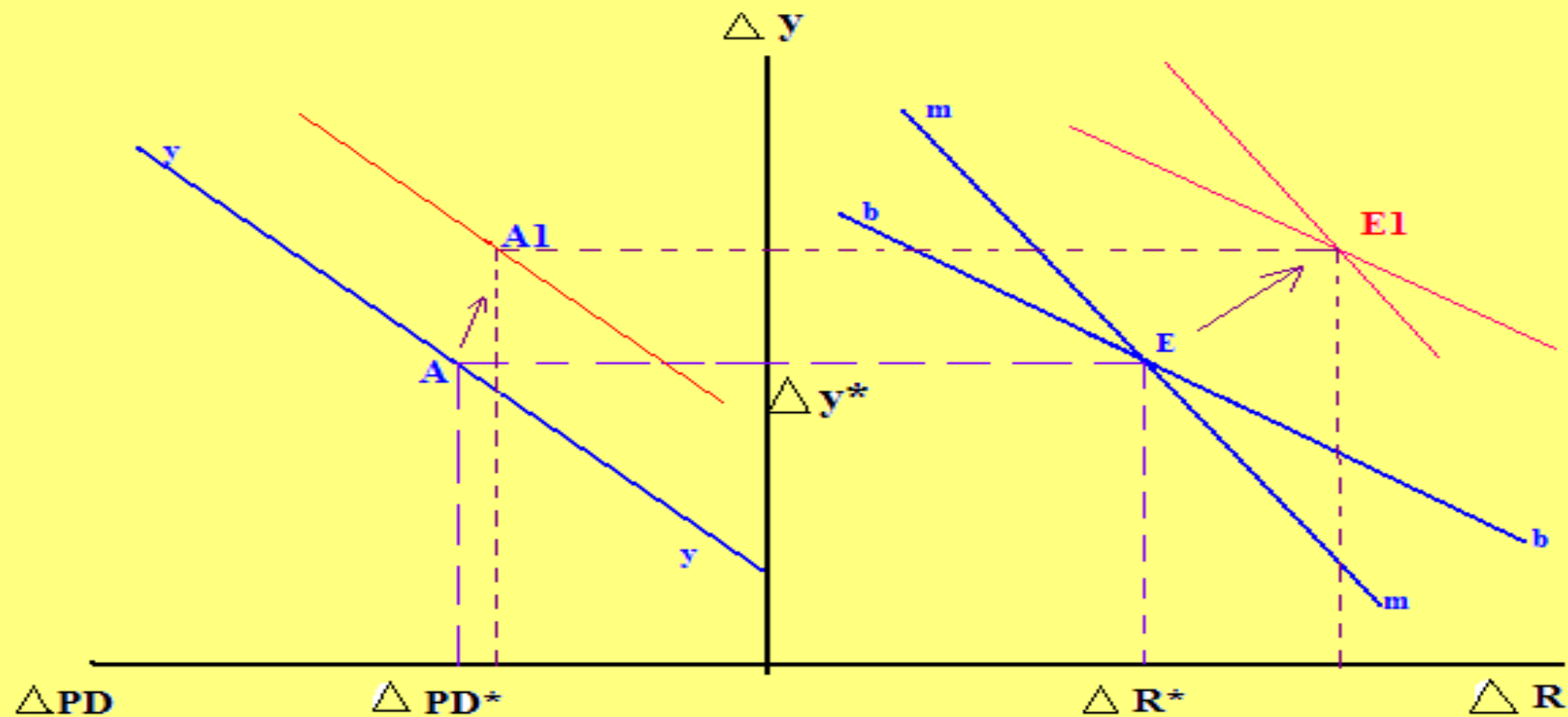
$$(1) \Delta P_D = \frac{-\kappa + (\sigma^{-1} - \tau)\Delta y}{\delta\tau y_{-1}} - (1 - \delta)\delta^{-1}\Delta E \quad (\text{yy})$$

where: $\kappa = sY_{-1} + (1 - s)T - G + \Delta K + \Delta NDCg$

$$(2) \Delta R + (\tau - s)(y_{-1}\delta\Delta P_D + \Delta y) = -(\tau - s)y_{-1}(1 - \delta)\Delta E - \Delta NDCg \quad (\text{mm})$$

$$(3) \Delta R = X - J_{-1} - (Q_{J-1} - \eta E_{-1})\Delta E - E_{-1}(\alpha\Delta y + \eta\Delta P_D) + \Delta K \quad (\text{bb})$$

- Equation (1) relates ΔP_D and Δy based on equilibrium in the goods market (equation (7) of the Basic Model with $I=\Sigma S$) (the **yy** curve in the chart)
- Equation (2) relates ΔR and Δy based on equilibrium in money markets (equation (3) of the Basic Model with $Md=Ms$) (the **mm** curve in the chart)
- Equation (3) also relates ΔR and Δy but based on equilibrium in the balance of payments (equation (5) of the Basic Model) (the **bb** curve in the chart)
- These equations can be solved in a simultaneous or in a recursive basis.
- From these equations, one can see that a change in the policy instruments (G , $\Delta NDCg$ and ΔE) changes the equilibrium solution for Δy , ΔP_D and ΔR



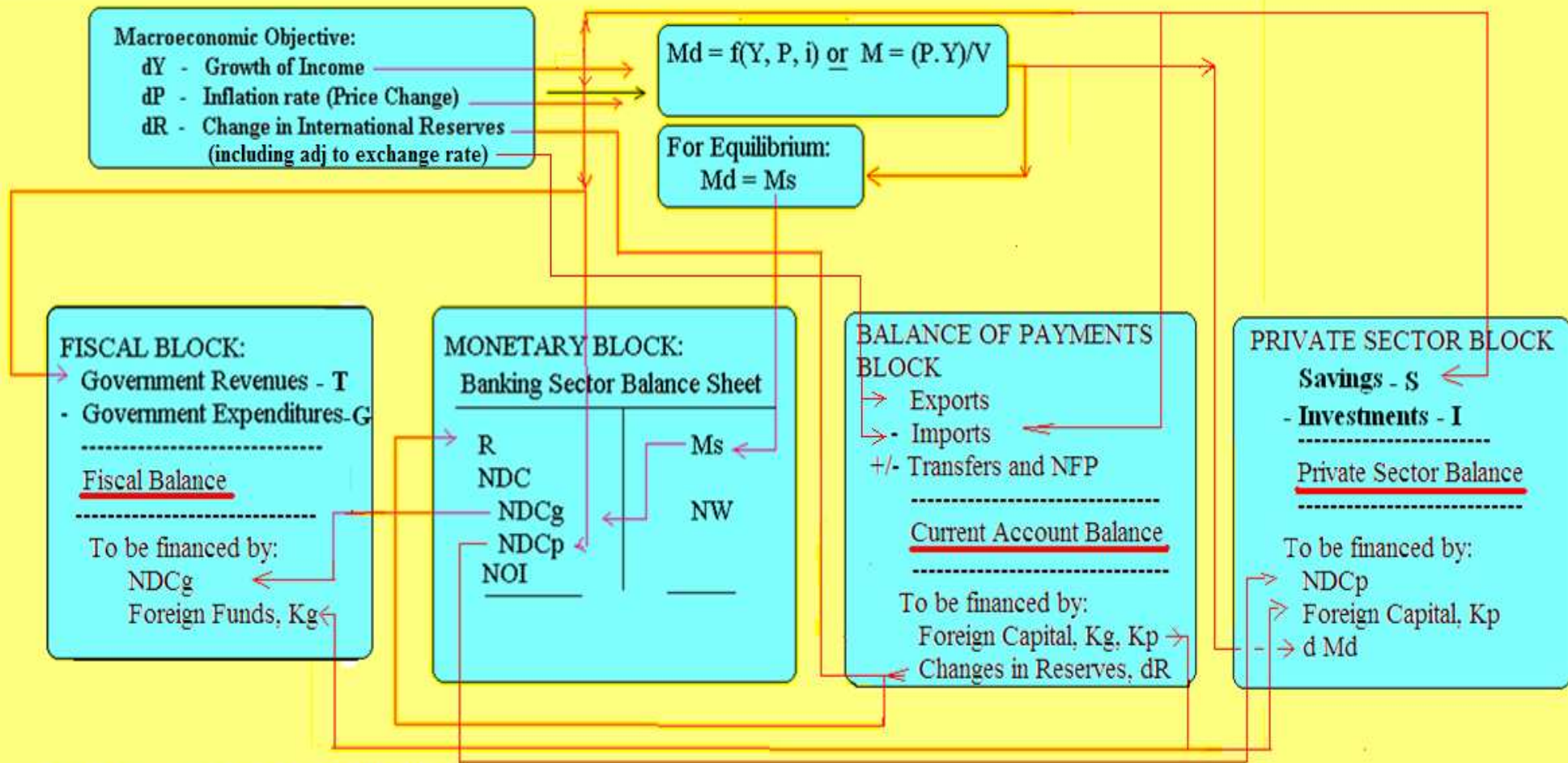
Equilibrium in the RMSM-X Model

- The above chart shows the simultaneous solution for the RMSM-X at equilibrium points E-A (giving Δy^* , ΔP_D^* and ΔR^*)
- If the decision makers want to change the solution from points E-A to points E1- A1, this can be achieved through a combination of changes in the exogenous policy variables G , ΔNDC_g and ΔE .
- But to achieve final equilibrium, all these policy variables need to be adjusted.

Principles of Recursive (Programming) Solution

- Income growth (Δy), domestic price level (ΔP_D), and reserves (ΔR) are targets.
- Policy Instruments are the government budget (G), the exchange rate (ΔE), and net credit to the government (ΔNDC^g)
- To increase output, lower inflation, and increase reserves \Rightarrow reduce government spending, G , devalue exchange rate, E or lower NDC^g .
- ***Other examples of analysis:***
- Increasing NDC (domestic credit) to achieve higher growth will just result in higher inflation: $\delta y / \delta NDC > 0$; but $\delta P_D / \delta NDC > 0$
- To get higher reserves, reduce income growth and/or domestic credit, and devalue: $\delta R / \delta y < 0$; $\delta R / \delta NDC < 0$;
- To achieve higher reserves, lower Government spending:
$$\delta R / \delta G < 0$$

Merged IMF-World Bank RMSM+X Model



For the economy to be in equilibrium:

1. Money supply should not exceed money demand. Otherwise the inflation rate will be higher than dP
2. The Fiscal Deficit can not exceed the amount financed by NDCg and Kg
3. The Private Sector Deficit can not exceed the amount financed by NDCp, Kp and dMd
4. The Current Account Deficit can not exceed amounts financed by K and dR

These four relations implies that the national identities hold: $AD = AS = Y = C + I + G - x + J = C + S + T - TR$; Therefore:

$$CA \text{ balance} = (S - I) + (T - G)$$

The IMF Performance criteria include: (i) Maximum size of the fiscal deficit;

(ii) Ceiling on public sector borrowings;

(iii) Minimum international reserves of three months of imports

(Including need to adjust the exchange rate)

EGYPT's RMSM-X MODEL

Market for goods and services: $GDP = CP + CG + IP + IG + X - M$

Money Supply

$$M2 = DTG + DTO + DTP + CUP$$

$$DTG = (1 + g_{DTG}) * DTG_{-1}$$

$$DTO = (1 + g_{DTO}) * DTO_{-1}$$

$$DTP = (1 + g_{DTP}) * DTP_{-1}$$

$$CUP = (1 + g_{CUP}) * CUP_{-1}$$

Money Demand:

$$M2 = p_{GDP} * GDP / v$$

Bond market

$$ABP = aBG$$

Domestic credit market

$$CR = CRG + CRP + CRO$$

Foreign credit market

$$AFT = AFGI + APGU + AFM + AFO + AF$$

Exchange Rate:

$$e = p_{GDP} - p_M + ADDe_0$$

Deflator for Consumer Exp:

$$p^{cp} = (p^{GDP}GDP + P^mM - p^xX - p^1I) / CP$$

Private consumption:

$$CP = + g_{SIY}b + j_{22}(inCP_{-1}, - a_0 - a, InYD)$$

Export market :

$$XV = 00 + \#3GDP + (32(pX_m - pG_6P))$$

Total imports:

$$M = MFO + MOC + MCA + MIN + MPE + MNF$$

$$MFO = MFO_{-1} * (CPICP_{-1})^F * (q/q_{-1})^O F$$

$$MOC = MOC_{-1} * (CPICP_{-1})^{oc} * (qIq/q_{-1})^{Oc} * X_{tI.X.I}$$

$$MCA = MCA_{-1} * (111, /)^{oc} * (q/9q_{-t}), CA$$

	$MIN = MIN * (GDP/GDP_{-1})$
	$EGDP = (q/q_{-1}) * VJN$
	$MPE = (1 + g_{MPE}) * MPE_{-1}$
	$MNF = (1 + g_{MNF}) * MNF_{-1}$
Government Revenues:	$TD + TI + NTR + NTR_{paut} - C_g - PF_g - iPYMT_g$ $- SUB - GASC = I_g + NKI_g + AREXP_g + dDTD_g$ $- KOG - DIV_o - INVRECT - KTpg - dAF_g - dCR_g$ $- AFdsocsec - dBpg$
Government Consumption:	$CG = (1 + g_{CG}) * CG_{-1}$
Government Investments	$IG = v * (GDP * pGDP) / pI$
Commodity Price projections:	$pMFO = e * pMFO_{-1}$ $pMOC = e * pMOC_{-1}$ $pMCA = e * pMCA_{-1}$ $pMIN = e * pMIN_{-1}$
Expenditures deflator:	$II = pMCA * pGDP / psc$
Private Expend Deflator:	$pCP = (pGDP * GDP + pM.M - pX.X - p!II) / CP$
Reserves:	$RES = caMC / 12$
Foreign capital	$KFS = (1 - \delta) * KFS_{-1} + KF$ $FS = pI [(1 - \delta) * KF_{-1} + K_{-1}]$ $FS = P1 [(1 - \delta) * FS_{-1} + F.]$
Profit Remittances:	$PRM = USLIBR * FS + ADDPRM$
Investments:	$ICOR = I^{-1} / (y - y^{-1})$

Steps to Carry out Monetary Programming

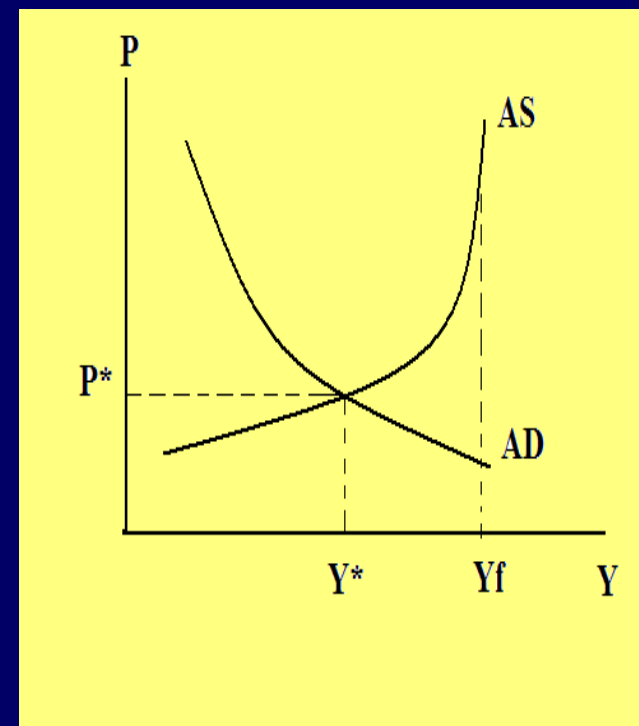
- (1) Evaluate Economic Problems: nature/source of imbalances.
- (2) Identify exogenous factors: world economy/trading partners.
- (3) Set preliminary targets for the objectives of the country in terms of (a) GDP growth, (b) inflation and (c) level of International Reserves and set a preliminary policy package for other variables.
- (4) Formulate a monetary program: money demand, banking sector.
- (5) Prepare a balance of payment forecast: exports, imports, capital.
- (6) Prepare a fiscal budget forecast: Govt revenues, expenditures.
- (7) Prepare the private sector block balance, calculating investment requirements, given estimates of ICOR and income growth rate.
- (8) Ensure consistency of forecasts with accounting and behavioral identities, through a recursive (iterative) process until you reach a fully consistent program, including external financing from IFIs.
- (9) Review the conditionality attached to required external financing (IMF, IBRD), and decide how to monitor the program: prior actions, performance criteria, structural benchmarks, reviews.

General characteristics of the RMSM-X model:

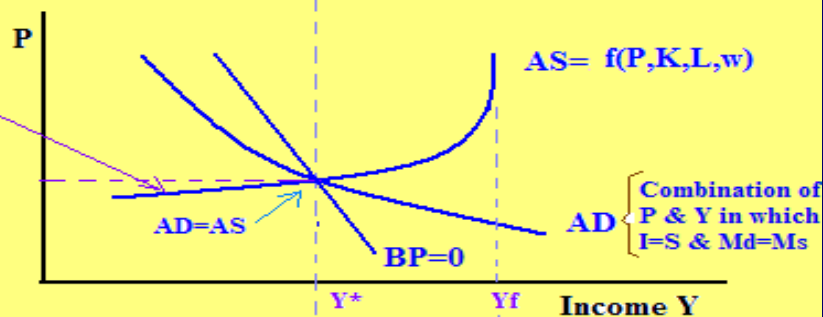
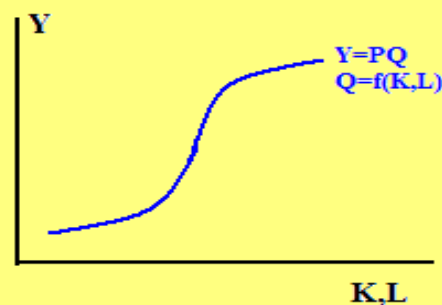
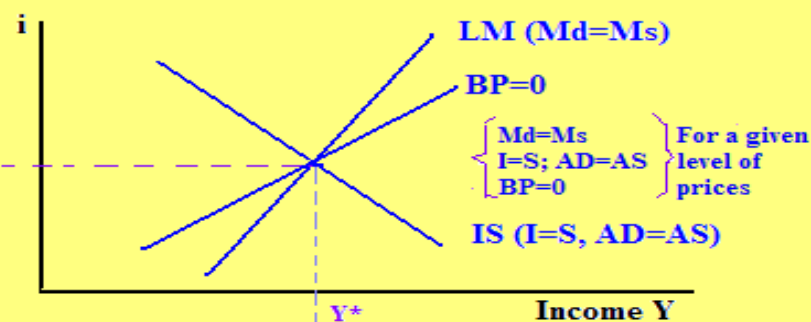
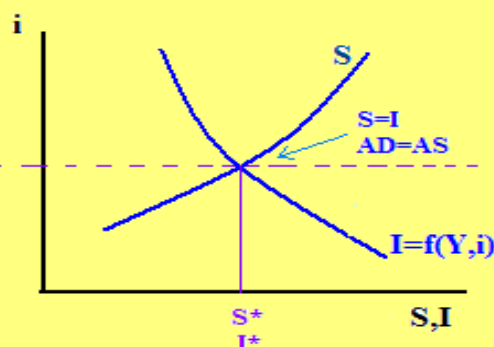
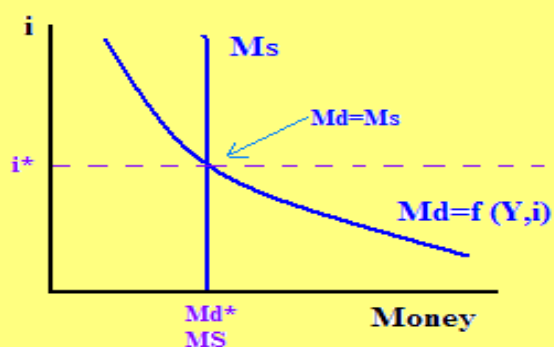
- Consists of four economic sectors: the public sector, the private sector, the consolidated banking system, and the external sector.
- Each sector is subject to its own budget constraints.
- National accounts, derived via aggregation of the sectoral budget constraints, serve to close the RMSM-X model.
- Two types of financial assets (money and foreign assets) in a standard model. For middle-income countries, some models include bonds.
- The money demand function frequently follows Polak Model in assuming constant income velocity of money.
- Some models disaggregate the banking system structure: instead of $M^s = \text{NDC} + R$, M^s is rather obtained as the product of the **monetary base** and a **constant money multiplier**.
- Imports consist of several categories with the demand for imports a function of the real exchange rate and either real GDP or gross domestic investment (for imports of equipment).
- Consumption is generally assumed to depend only on disposable income -- thereby excluding consumption-smoothing effects.
- Investments is based on a simple ICOR formula

Aggregate Demand-Aggregate Supply (AD-AS) Models

- The RMSM-X model has a very simple Aggregate Supply (ICOR; $AS=Y=C+S+T-Y_f-TR_f$). It ignores the effects on the supply of goods of such factors as domestic prices, labor wages, employment levels, level of capacity utilization, and the effects of total factor productivity growth.
- AD-AS models with more elaborated Supply Functions would also permit setting a relationship between AS and Prices. It would also include more elaborated effects of Prices on Money Demand and Aggregate Demand. This will yield a relationship between AD and Prices.
- Overall equilibrium will occur where $AD=AS$, thereby establishing the equilibrium level of Income and Prices (Y^*, P^*), and the wage rate, the level of employment, along with the values of all the other economics variables obtained from the RMSM-X model.
- Due to poor supply-side data in EMs, these AD-AS models are only occasionally used by the IFIs.

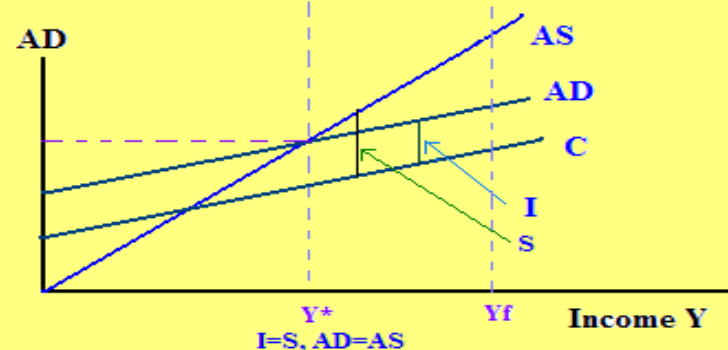


Note 2: The RMSM-X model seeks equilibrium in the money markets ($M_d=M_s$) and the goods market ($I=\Sigma S, AD=AS$). It is a variant (and competitor) of the original IS-LM/Mundell-Fleming model (shown below) for open economies, but with $\Delta Y-\Delta R$ and $\Delta Y-\Delta P_D$ in the axis.



$M_s \downarrow, i \uparrow, I \downarrow, Y \downarrow, S \downarrow \rightarrow$ With new Y^*
 But: $Y \downarrow, M_d \downarrow, i \downarrow, I \uparrow, Y \uparrow$
 On the long-term, back to equilibrium.

The equilibrium income level Y^* may not coincide with full employment income Y_f . In this case, Keynes postulated that the government should increase I (i.e., G) until Y_f is reached. Hopefully, interest rate would not vary due to a liquidity trap. The IS-LM curves would just move to the right, at highest levels of M_d, M_s, I and S .



The IS-LM/Mundell-Fleming Model

Policy Options if the RMSM-X Model shows a Fiscal Gap

- If the fiscal deficit is higher than the amount of financing available, the Government has only four alternative policy options:
 1. To reduce Government expenditures
 2. To increase Government revenues
 3. To change other conditions in the economy to yield a larger volume of financing to the Government, such as: reduce credit to the private sector, increase money demand (by increasing growth, reducing interest rates and allowing higher inflation).
 4. To print money, which will lead to inflation.
- The “quality” of the measures to be taken to achieve a reduction in the deficit and achieve equilibrium is fundamental for the economic, social and political sustainability of the program.

Measures to Improve the Fiscal Budget:

Goal: To achieve and sustain Price stability and Foreign Exchange stability, through the elimination of Fiscal Deficits.

- **Improve Government Revenues:**

- Improve Tax Structure -- Introduce VAT, excise taxes
- Increase the Tax Base -- Tax all sectors, inc. agriculture
- Improve Tax Administration -- focus on large taxpayers
- Eliminate Tax Exemptions -- Eliminate privileges/subsidies
- Improve Cost Recovery of Public Services - Inc. Power tariffs

- **Improve Management of Public Expenditures:**

- Reduce Current Expenditures of Government -- Reduce Government Size
- Improve Treasury Operations -- introduce Information systems
- Reform the Pension System -- introduce fully funded systems
- Eliminate Subsidies to Public Enterprises

- **Decentralize Public Services to local Governments**

- Transfer responsibilities and financing to local Govts.

Size of a “Sustainable” Fiscal Deficit

A key question is what determined the amount of financing available to the Government on a "sustainable" basis.

Definitions:

FD = Primary Fiscal Deficit

Y = Real GDP

Y_n = Nominal GDP

fd = D/Y_n (deficit as a share of GDP)

B = Debt Stock

b = B/Y_n (debt as a share of GDP)

Δ B = Increase of debt

B% = Growth rate of debt

i = Nominal Interest Rate

r = Real Interest Rate

P = Price Level

A Sustainable Fiscal Deficit is one that can be financed over time without increasing the debt/GDP ratio, b . That is, the debt load of the country is in equilibrium and remains constant over time. If b were to increase over time, it would not be sustainable.

(1) Budget Constraint

$$FD + iB = \Delta B$$

The overall fiscal deficit (D) plus its interest payments (iB), must equal its financing (ΔB).

(2) Sustainability Condition

$$FD = \Delta B - iB$$

If $B\%$ is the growth rate of debt, then:

$$FD = B\%B - iB$$

Dividing by GDP (Y_n), we will get:

$$fd = B\%b - ib$$

These are the corresponding GDP ratios
“fd” is FD/Y_n and “b” is B/Y_n .

The condition of sustainability is that the ratio of debt to GDP “b” will not be increasing over time. For this ratio of B/Y_n to be constant, B and Y_n will need to increase at the same rate; that is:

$$B\% = Y_n\%$$

or $B\% = Y\% + P\%$

since Nominal = Real + Δ Prices

$$fd = (Y\% + P\%)b - (r + P\%)b \quad \text{where: } i = r + P\%$$

$$\mathbf{fd = (Y\% - r) b}$$

- The size of a sustainable fiscal deficit to GDP “fd” will depend on: (i) the growth rate of real GDP, $Y\%$; (ii) the real interest rate on debt, r ; and (iii) the ratio of debt to GDP, b that lenders would tolerate.
 - The higher the rate of growth of GDP, the higher the deficit can be.
 - The lower real interest rates, the higher the deficit can be.
 - The higher the ratio of debt to GDP (willingness of lenders to provide debt), the higher the deficit can be.
- Furthermore: If $\Delta fd = 0$; then $\Delta(Y\% - r) b = 0 \blacktriangleright Y\% = r$
- For the fiscal deficit “fd” to be constant at the level “fd” (not increasing over time,) the rate of growth of GDP should equal the real rate of interest.

If $Y\% < r$, then the deficit and debt/GDP will be increasing over time.

If $Y\% > r$, then the deficit and debt/GDP will be declining over time.

Examples:

- A BBB country borrows at 7% pa and inflation is 3%, then real interest rate is 4%.
- The maximum debt/GDP that lenders wish to hold is 50%.
- And GDP is growing by 5% pa.
- Then, the maximum sustainable deficit is 0.5% of GDP :

$$\begin{array}{cccc} \underline{Y\%} & \underline{r} & \underline{b} & \underline{\text{fd (fiscal deficit/GDP)}} \\ 0.05 & 0.04 & 0.50 & (0.05 - 0.04)(0.50) = 0.5\% \text{ of GDP} \end{array}$$

Other scenarios:

$$\begin{array}{cccc} 0.10 & 0.04 & 0.50 & (0.10 - 0.04)(0.50) = 3.0\% \text{ of GDP} \\ 0.06 & 0.04 & 0.60 & (0.06 - 0.04)(0.60) = 1.2\% \text{ of GDP} \\ 0.06 & 0.05 & 0.60 & (0.06 - 0.05)(0.60) = 0.6\% \text{ of GDP} \\ 0.08 & 0.05 & 0.90 & (0.08 - 0.05)(1.00) = 3.0\% \text{ of GDP} \end{array}$$

Under most conditions, it is unlikely that a country can have a fiscal deficit of more than **3% of GDP on a sustainable basis.**

In this model, if we replace **CAD** instead of **FD** (with the same sustainability condition that debt/GDP must be constant), we will get the same result that the Current Account Deficit can not exceed 3% of GDP on a sustainable basis, unless it is financed by non-debt means, such as Foreign Direct Investments, and/or International Reserves are allowed to drop.

Seignorage and the inflation tax could allow temporarily for a higher deficit, but should not be counted on for the long term.

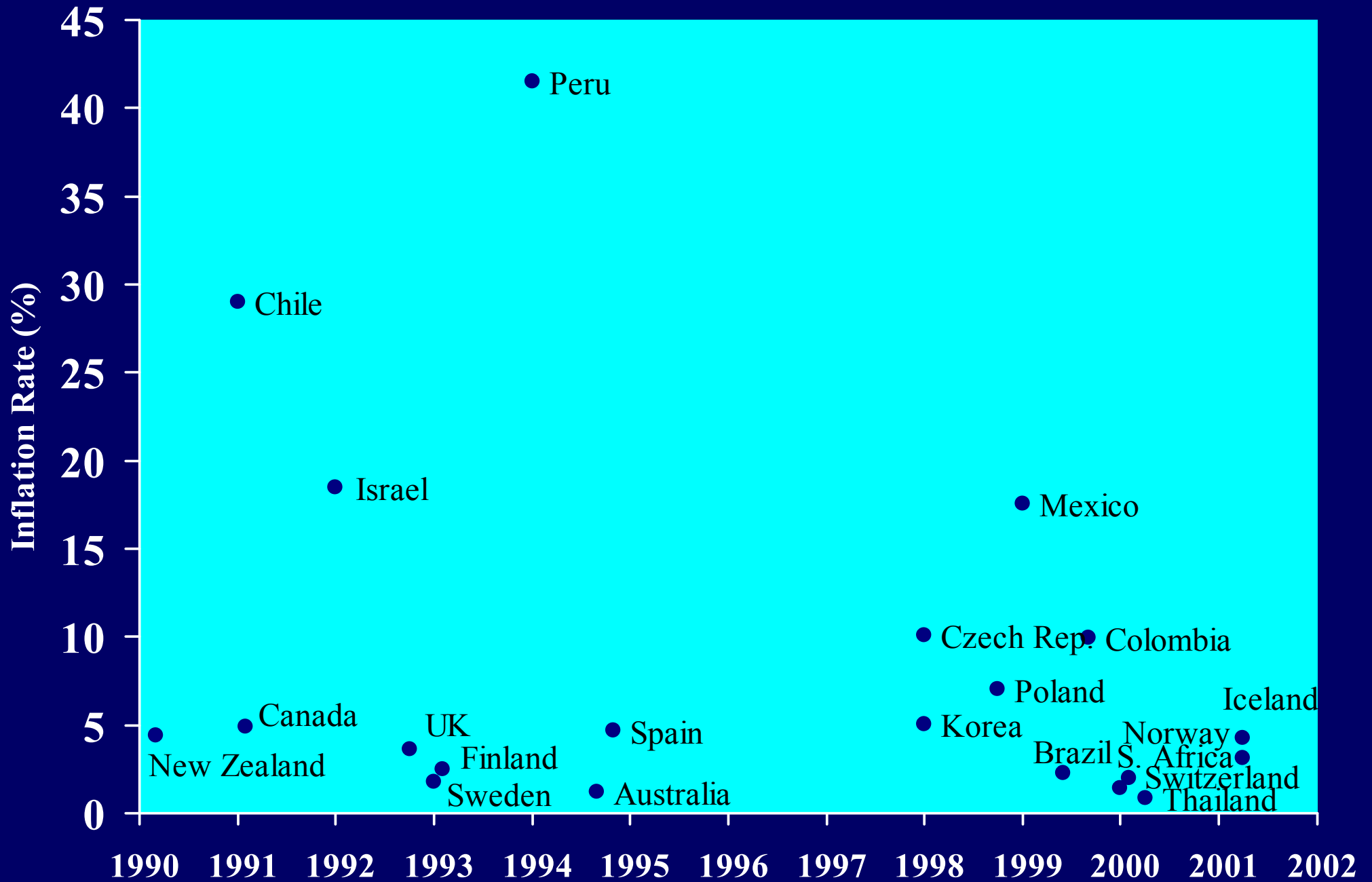
- **Seignorage** is the increase in real money demand that the Government can extract, which is due to increases in income and inflation.
- As income increases, the real and nominal demands for money would also increase. If in addition, there is inflation, people would wish to retain their real balances (real money demand), thus increasing their nominal money demand.
- These increases in nominal money demand can be matched by money supply increases and the monetary base could be expanded accordingly.
- The increases in the monetary base could finance the Government without inflationary pressures. It is a free lunch for the Government.
- The **Inflation Tax** represents the benefits that the Government (CB) extracts because it pays no interest (or little interest) on the monetary base. It amounts to a “subsidy” to the government that has to be paid by a “tax” to the rest of the economy. Some definitions add the Inflation Tax to the concept of Seignorage.
- Seignorage and the inflation tax are not sustainable over the long term, since inflation will eventually reduce the demand for money.

Monetary Policy and Inflation Targeting

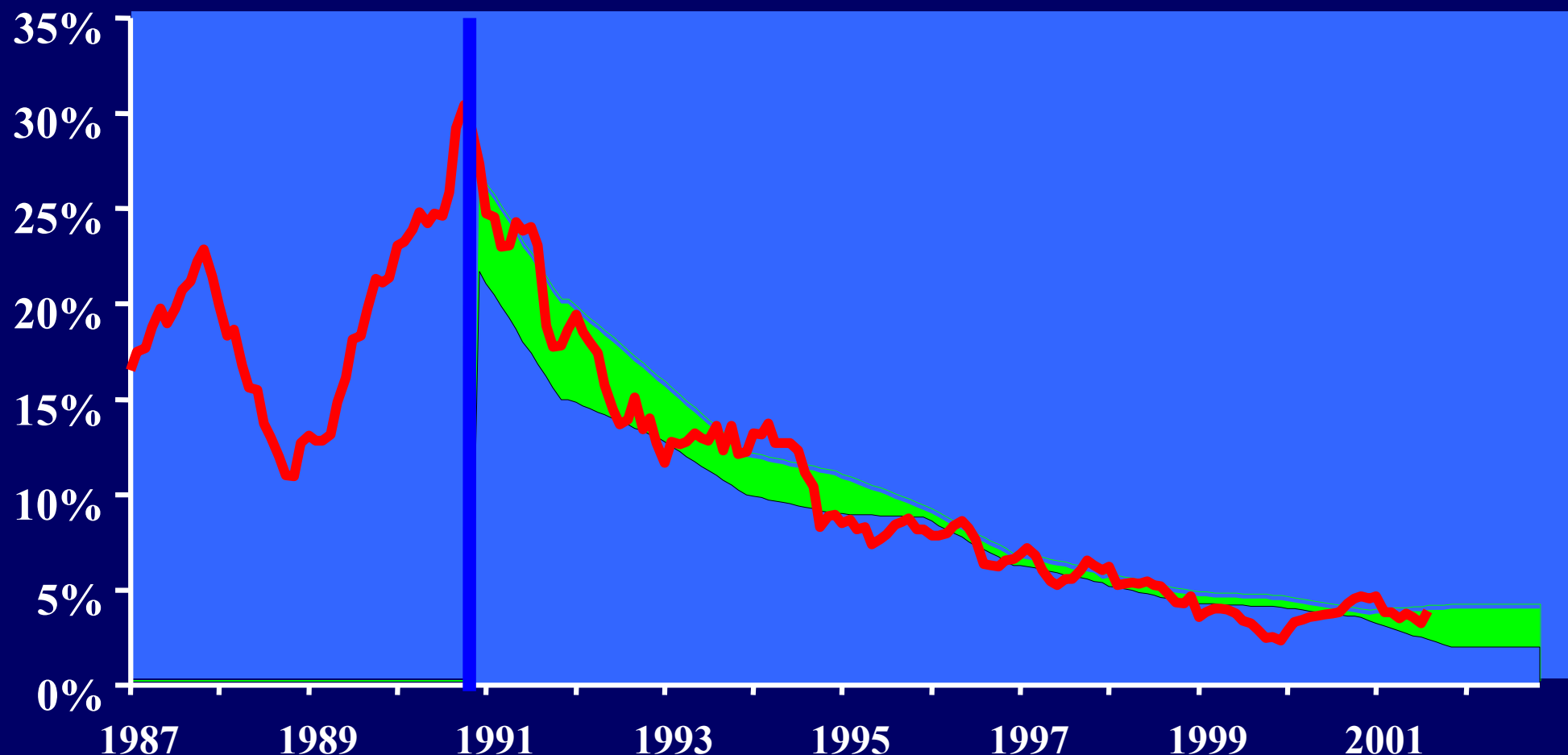
- The central task of the previous IMF-World Bank models is the design of a consistent set of policies intended to move an economy toward internal and external balance. They give central importance to fiscal policies: the control of the fiscal deficit (public sector borrowings) to deliver the dual objectives of GDP growth and controlled inflation.
- The monetary sector enters only through the monetary aggregates and the identity of money supply and money demand.
- A main monetary policy tool – the level of interest rates- enters only through its effect on money velocity and money demand. Thus, a major ingredient in monetary policy is not used.
- When there is a need to reduce an excessive rate of inflation to “normal” levels, more direct action on inflation may be needed. The Central Bank has three possible routes:
 1. The CB can use a “nominal foreign exchange anchor”: monetary policy aims at pegging the exchange rate to a country with low inflation to bring inflation to this level. This option however has made countries more vulnerable to balance of payments crises: As the peg is introduced when inflation is high, the currency becomes overvalued, depressing exports and encouraging imports. If the B/P deficits are covered by inflows of FDIs, these inflows also lead to inflationary pressures as the Central Bank buys foreign exchange to maintain the peg.

2. The CB can use a “money growth anchor”: monetary policy aims at controlling the rate of growth of money supply. This policy however has been almost abandoned now by CBs, since the relation between money supply and inflation is unstable. Inflation is caused by the difference between money supply and money demand and money demand is unstable. Studies in many countries show that there is no predictive power to monetary aggregates when forecasting inflation: whatever information monetary aggregates have seems to be already contained in measures of past inflation, economic activity, and interest rates.
3. The CB can use “inflation targeting (IT)” as a nominal anchor to bring inflation down to desired levels. Inflation targeting has worked well in many countries: It is consistent with modern view of the power and limits of monetary policy. It addresses directly the need to determine a long-run inflation objective. It provides more transparency and accountability to monetary policy. It provides an stable policy guidance (forces the CB to take into account long-term consequences of short-term actions). It shields CB from political pressures from government and private sector to relax monetary policy for short-term gains. It provides a “framework of constrained discretion” (Bernanke et al.)

Many countries have adopted IT under different inflation levels



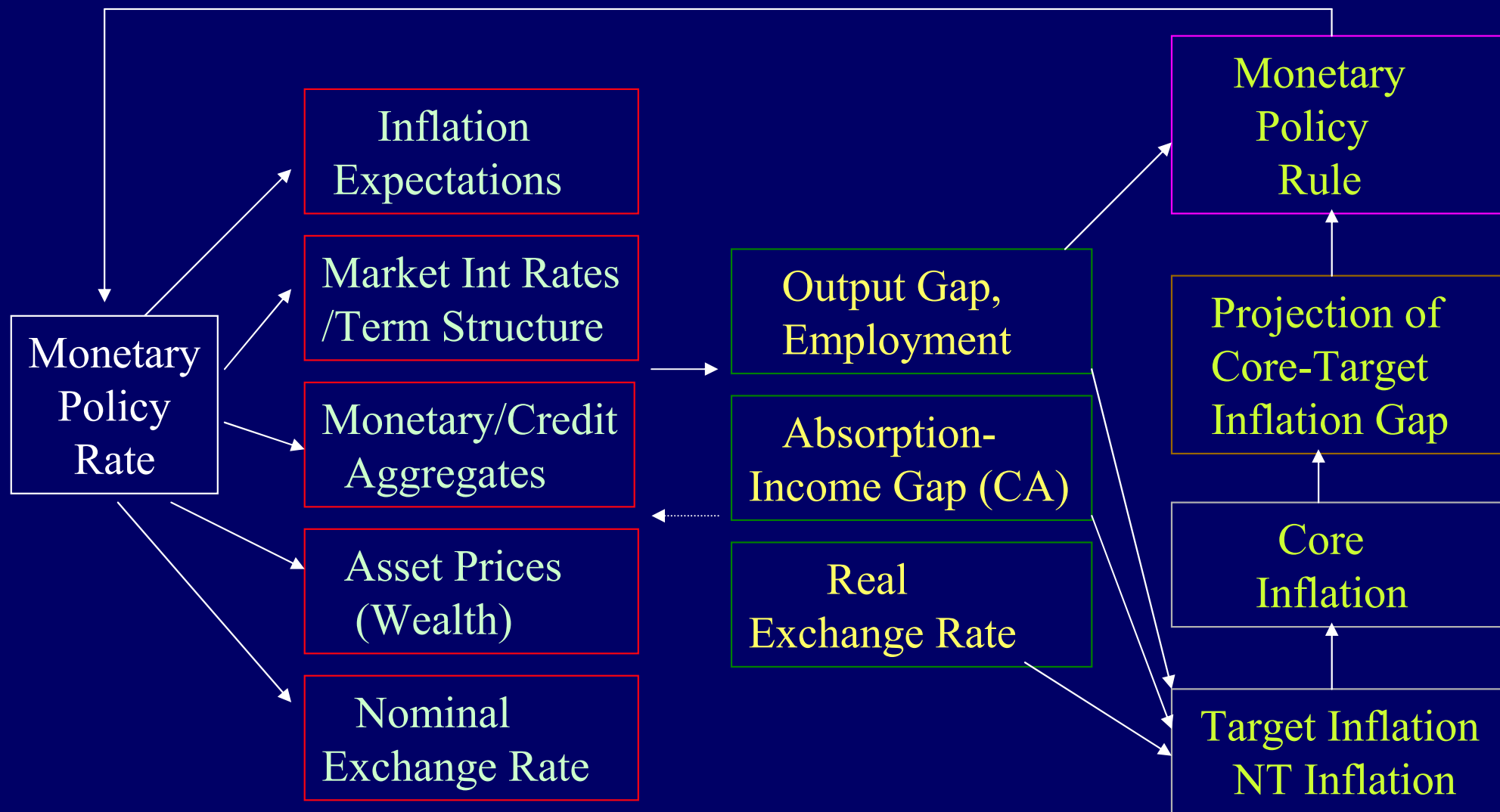
Chile: Inflation and Inflation Targets: 1987-2002



Sound Policy Framework: (1) Robust fiscal stance and healthy banking system; (2) Fiscal policy anchored by a 1% of GDP structural surplus; (3) Non-performing loans as low as 1.8% reflect the strength of the banking system; (4) Central Bank enjoys complete legal and instrument independence; (5) Exchange Rate float - clean between September 1999 and July 2001, dirty since August 2001.

- Under the IT system, the central bank manages monetary policy instruments with the direct goal of containing inflation over the medium run. In this setup, inflation becomes the overriding goal of monetary policy.
- All the other indicators (output gap, money stock growth, the exchange rate, etc) become auxiliary variables; the central bank will take them into account only if this information helps it to improve its inflation forecast.
- IT involves the following three steps:
 1. The CB sets a “target” rate of inflation for the country for the “medium” term: experience with monetary policy management in developed countries has shown that the impact of monetary policy changes on inflation works its effects with a significant lag (at least nine months, and up to two years for a full impact).
 2. The CB makes forecasts of the likely rate of inflation based on current conditions. This step requires the developing of sound inflation forecasting methods. This inflation forecast may indicate that inflation may be likely to be above the “target”.
 3. The Central Bank uses monetary policies (particularly the level of interest rates) to close the gap between the likely inflation rate and the “target” rate. This requires the central bank to have a good model of the “transmission mechanisms” from changes in monetary policy (such as interest rates) into aggregated demand and then into inflation rates.

Monetary Transmission and Policy Rule in Open Economies



IT design features:

- **Inflation index:**

- Most countries use the annual rate of headline CPI
- A few countries adjust CPI to exclude volatile items, interest payments, taxes (Core Inflation).

- **Inflation Target range:**

- Choice between a point forecast, a central point forecast with a range, a range, or just upper bounds.
- Trade off between target accuracy and policy credibility.
- Range targets are adopted when uncertainty is high (usual range 1 to 3 points variation).
- Point target adopted when seeking credibility.

- **Inflation target horizon:**

- Time period long enough to for monetary policy to have an effect on aggregate demand and inflation.
- One calendar year horizon when far from stationary inflation.
- Multi-year horizon when closer to stationary inflation.

Forecast Procedure

Most Central Banks have two types of models:

- a. Models to Forecast Inflation based on current conditions without any monetary policy action
- b. Models to Target Inflation based on the adjustment over time of interest rates and their transmission mechanisms to affect demand and inflation.

For these models, CBs follow a well-defined sequence of steps for preparation and presentation to policy-makers and public:

1. Gathering information
2. Input data into the database
3. Maintaining a system to monitor and record news that could affect inflation outlook
4. Presenting interest rate scenarios to Monetary Policy Committee
5. Discussing technical proposals of the staff at policy level
6. Interact with staff on impact of alternative scenarios for future policy interest rates
7. Communicating inflation forecast to the market
8. Follow up

I. Models to Forecast Inflation based on Current Conditions without Monetary Policy Actions

Short-term forecasting:

- A. Consumer Surveys and Expert Judgments
- B. Statistical (time series) Econometric Techniques

Medium-term forecasting:

- C. Structural Models based on Economic Parameters

Empirical studies show that no one single model predict inflation consistently better than others.

For this reason, many researchers and central banks use a combination of various models to forecast inflation.

A. Consumer Surveys and Expert Judgments

- Many countries include surveys of inflation expectation (for one or two years ahead) in their periodic consumers surveys. Surveys could be directed to consumers or to a pre-selected group of expert analysts.
- The monthly European Commission's Consumer Survey ask by phone 50,000 consumers in the Euro area on their inflation expectations one-year ahead.
- Results in the Euro area suggest that surveyed expectations are unbiased predictors of future prices and they incorporate – though not always completely – a broad set of macroeconomic information.
- In addition, although persistent deviations between consumers' expectations and rational outcome occur, consumers are shown to rationally adjust their expectations in order to eventually “weed out” any systematic expectational errors.
- Inflation expectations are also important from the perspective of aggregate price formation: the expectations augmented Phillips curve posits a relationship whereby the actual change in the price level is driven - in part - by expectations of its future change.

B. Statistical Inflation Forecasting Models

- Statistical time-series techniques: e.g., changes in inflation 12-month ahead depends on recent (Lagged – L) changes in 1-month inflation:

$$\pi_{t+J} - \pi_t = \alpha + \beta(L)(\pi_t - \pi_{t-1}) + \varepsilon_{t+J}$$

$$\pi_t = \ln p_t - \ln p_{t-1}$$

Linear Stationary Models:

- Autoregressive Moving Average Models (ARMA –or Box-Jenkins), consists of two parts, an autoregressive part (lag of previous observations) and a moving average part (of the forecasting errors) .
- Autoregressive Integrated Moving Averages Models (ARIMA), an ARMA with differenced time series to make it stationary.
- Autoregressive Fractionally Integrated Moving Average (ARFIMA), which generalizes the previous ones.

Non-Stationary and Nonlinear Models:

- Autoregressive Conditional Heteroskedasticity (ARCH) models, which captures changes in variance over time.
- Artificial intelligence models, including artificial neural networks (inspired from the real neuron present in our nerve system) and multilayer feed-forward networks, which capture the non-linearity of data and “train” the model based on actual experience.

C. Structural Inflation Forecasting Models

- 1. Standard Philips-Curve model** (NAIRU) represents an empirical relationship between inflation and the gap between actual and potential output (or unemployment). When the output gap is positive, inflation accelerates:

$$\pi_t = \gamma (y_t - y_t^p) + \varepsilon_t$$

- 2. Expectations Augmented Philips-Curve model**, based on Lucas's rational expectations in which workers "forecast" wages and supply labor accordingly (which yields a demand/supply shifter Δx).

$$\pi_t = -\alpha_2 + (1 - \alpha_1)\Delta x_t + \alpha_1 \Delta x_{t-1} - \alpha_1 (y_{t-1} - y_{t-1}^n)$$

- 3. New Keynesian Phillips curve**, introducing inflation expectations:

$$\pi_t = \beta E_t \pi_{t+1} + \lambda(y_t - y_t^p) + \eta_t$$

- 4. Generalized Philips-Curve model**: changes in annual inflation depends on recent (Lag) changes in inflation and on current and past (Lag) values of real economic activity index (α_t)

$$\pi_{t+J} - \pi_t = \alpha + \beta(L)(\pi_t - \pi_{t-1}) + \gamma(L)\alpha_t + \varepsilon_{t+J}$$

5. The P Star model (P*) disregards output gaps (since potential output is hard to measure and the curve is unstable, with coefficients changing over time). It is derived from the quantity theory of money, assuming that velocity (v) and income (y) will converge relatively quickly to their long-term equilibrium, v^* , y^* :

$$p_t^* = m_t + v^* - y_t^*$$

- On this basis, inflation in the **backward-looking P*** model is:

$$\pi_t = A(L^k)\pi_{t-k} + B(L^k)(p_{t-k}^* - p_{t-k}) + \varepsilon_t$$

- Inflation for the **forward-looking P*** model will be:

$$\pi_t = \pi_t^e + \beta(p_t^* - p_t) + \eta_t$$

- Other variants of the P* model:

Real-Money gap: $\pi_t = E_t\pi_{t+1} + \beta(m_t^* - m_t) + \varepsilon_t$

Exchange rate: $p^* = E p^* f / ER^*$

E -equilibrium nominal fixed exchange rate;

R^* -equilibrium real exchange rate.

Interest rate : $\pi_t = E_t\pi_{t+1} + \gamma(i_t^* - i_t) + \varepsilon_t$

Forecasting Accuracy

1. Ability to forecast magnitude of inflation. Comparing out-of-sample forecast performance of different statistical models based on Root Mean Squared Error (RMSE)

$$\text{RMSE} = \sqrt{1/N \sum (\hat{x}_{t+h+i} - x_{t+h+i})^2}$$

2. Ability to forecast direction of change of future inflation: percentage of directional prediction that are correct (PDPC) in a particular sample period

$$\hat{D}_{t+J} = \begin{cases} +1 & \text{if } \pi_{t+J} > \pi_t \\ -1 & \text{otherwise} \end{cases} \quad \text{PDPC} = 1/T \sum I\{\hat{D}_{t+J} = D_{t+J}\}$$

Forecast accuracy can vary significantly depending on variable being forecasted, the type of forecast model, theoretical assumptions, available information

The Chilean Inflation Forecast Models

Chile has developed a toolkit comprised by various models:

- Leading indicators of prices and activity.
- Small semi-structural Vector AutoRegressive models (4 to 7 variables).
- Flow-stock (IMF) consistency model.
- Small backward-looking macro model for key relations and variables (π , Phillips curve unemployment, output, absorption (or CA), potential output, imperfect interest parity, yield curve).
- Micro-founded forward-looking rational expectations model for key relations and variables.
- Forecasts are made for a base scenario (most probable), with deviations derived from an assessment of the main risks.
- Base Scenario:
 - Key exogenous variables: international conditions (external borrowing costs, terms-of-trade, exchange rate), productivity, fiscal policy, trend growth
 - Policy assumption: current policy rate is maintained in the future (consistency, commitment)
 - Base scenario forecasts are the result of the interaction of predetermined and endogenous variables
- Alternative scenarios: based on forecasts reflecting alternative assumptions for the trajectory of predetermined variables.

II. Transmission Mechanism Models to Target Inflation

- These models aim at establishing the effects of interest rate policy rules on the economy and identifying the sequence of interest rate changes that would generate a target inflation rate in the future.
- The models consist of a number of equations that include measures of aggregate demand, aggregate supply, and the transmission mechanism of the monetary policy tool (interest rates) into aggregate demand and then on inflation.
- They are Based on the New Neoclassical Synthesis/New Keynesian Economics, the model usually has the following equations:
 1. New Keynesian Phillips curve
 2. IS curve
 3. Interest rate rule
 4. Exchange rate equation based on uncovered interest rate parity extended with risk factor
 5. In the long-run, supply shocks represented by Cobb-Douglas/CES production function

A Typical Transmission Mechanism Model for Monetary Policy under IT

- Consider a closed economy characterized by the following two equations:
The first one is a Phillips curve for **inflation (π)** and the **output gap (y)**:

$$(1) \quad \pi_t - \pi_{t-1} = \alpha_1 y_{t-1} + \varepsilon_t$$

- This equation is closely related to the short-term aggregate supply curve with sticky prices/wages.
- The second equation is related to the aggregate demand - IS curve that relates output to the (policy) lagged real interest rate ($i - \pi$):

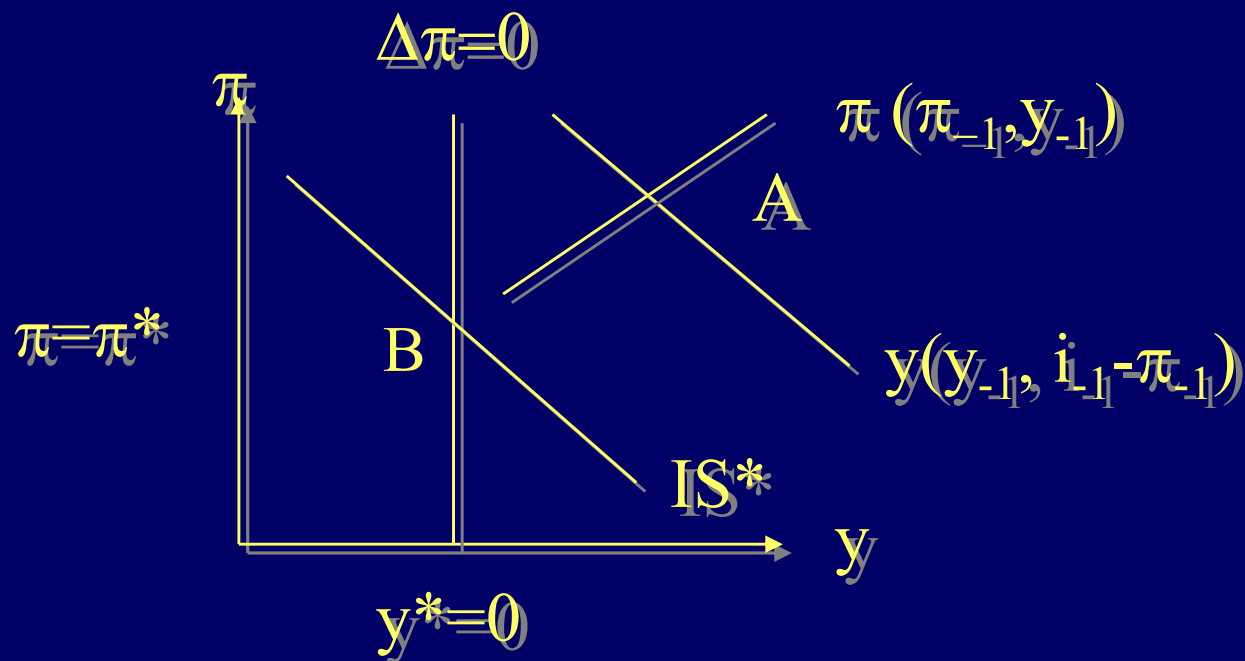
$$(2) \quad y_t = \beta_1 y_{t-1} - \beta_2 (i_{t-1} - \pi_{t-1}) + \eta_t, \quad \beta_1 < 1,$$

- The negative coefficient on the real interest rate on future output in the *IS* relationship can reflect intertemporal substitution effects on consumption as in recent new Keynesian models as well as traditional effects on investment operating through both the cost and availability of credit.

- Next, we assume that the CB seeks to stabilize both inflation and the output gap. Thus, the CB sets its policy instrument to further these objectives. Subject to (1) - (2), the CB minimizes the expected discounted infinite sum of inflation deviations from CB's inflation target (π^*) and output deviations, as follows:

$$(3) \quad U_t = E_t \left\{ \sum_{h=t}^{\infty} \delta^{h-t} \left[\frac{(\pi_h - \pi^*)^2}{2} + \lambda y_h^2 \right] \right\}$$

- Hence the problem faced by the CB is how to bring the economy from the current (short-term) equilibrium at A to long-term equilibrium at B:



- The CB's problem can be broken down into a series of one-period problems because of the two-period lag from i to π : $i_t \rightarrow y_{t+1} \rightarrow \pi_{t+2}$.
- Hence π_t predicts π_{t+2} , π_{t+3} ,
- The result of this problem is a policy function (an analytically-derived “Taylor rule”) that sets the policy interest rate (i_t) as a function of inflation and output gaps:

$$(4) \quad i_t = \gamma (\pi_t - \pi^*) + \rho (y_t)$$

where γ and ρ are non-linear reaction parameters that depend on CB preferences and the economy's behavioral coefficients. The CB's anti-inflation stance, compared with growth (“hawkishness”) is reflected by:

$$(5) \quad \gamma - \rho = f(\lambda, \alpha_1, \beta_1, \beta_2, \delta)$$

(-) (+) (-) (?) (?)

- Hence CB hawkishness: rises with inflation; rises with Phillips curve verticality; falls with output inertia, and is ambiguous regarding IS interest-sensitivity and CB's discount rate.

IT Model extensions

- Introducing other monetary transmission mechanisms
- Open economy: Introducing the exchange rate S in the transmission mechanism of the model. This could be done by introducing foreign exchange gaps in selected equations and a separate equation reflecting the uncovered interest parity condition:

$$E(S)/S = (1+i)/(1+i^*)$$

- Introducing imperfect policy credibility, model uncertainty, CB aversion to policy changes, conflicting fiscal-monetary objectives, etc.
- These models are also used to forecast inflation (unconditional on policy rules) by omitting the policy rule and assuming that deviations from the target are zero.

Need for Better Understanding of Monetary Transmission Mechanisms

- Channels: expectations, interest rate and term structure, monetary and credit aggregates, asset prices (wealth), exchange rate.
 - Emerging economies: Channels are more blurred because of less developed financial markets and more pervasive price rigidities
 - Chile and Israel: widespread indexation (raises devaluation-inflation passthrough).
 - Brazil: financial sector does little lending to the private sector.
- Asymmetries and non-linearities: More prevalent in emerging economies
- Uncertainty of model structure, parameters, exogenous variables: Stable time series are rather short and/or unstable in emerging countries with long inflation histories or recent economic reforms
- Leads and lags: More uncertain / unstable in emerging economies

Requirements for successful IT:

1. Ability of CB to conduct independent monetary policy
 - Strong fiscal budget position to avoid fiscal dominance in setting monetary policy
 - Central bank independence to enhance credibility -- de jure (New Zealand, Chile) or de facto (UK, Israel, Brazil)
2. A clear CB mandate for price stability over other conflicting objectives (such as exchange rates or GDP growth). For many emerging economies a case could be made to add a maximum current account deficit as a policy objective. This leads to a more conservative monetary policy.
3. A reasonably well-developed ability to forecast inflation;
4. A well understood transmission mechanisms between monetary policy instruments and inflation;
5. a well-developed financial system;
6. Transparency and accountability for monetary policy.

Main Technical Requirements for Conducting Monetary Policy under IT

- (a) Technical capability:
 - to understand and model monetary transmission mechanisms
 - to model and forecast inflation
- (b) (Timely) availability of relevant information to monitor the economy and technical capability to do it right
- (c) A set of criteria for using policy instruments to keep the economy on track to meet the target (policy rule)
- (d) Timely use of effective policy instruments, making full and unconstrained use of available instruments

Inflation Forecasting: Poland

Forecasting system

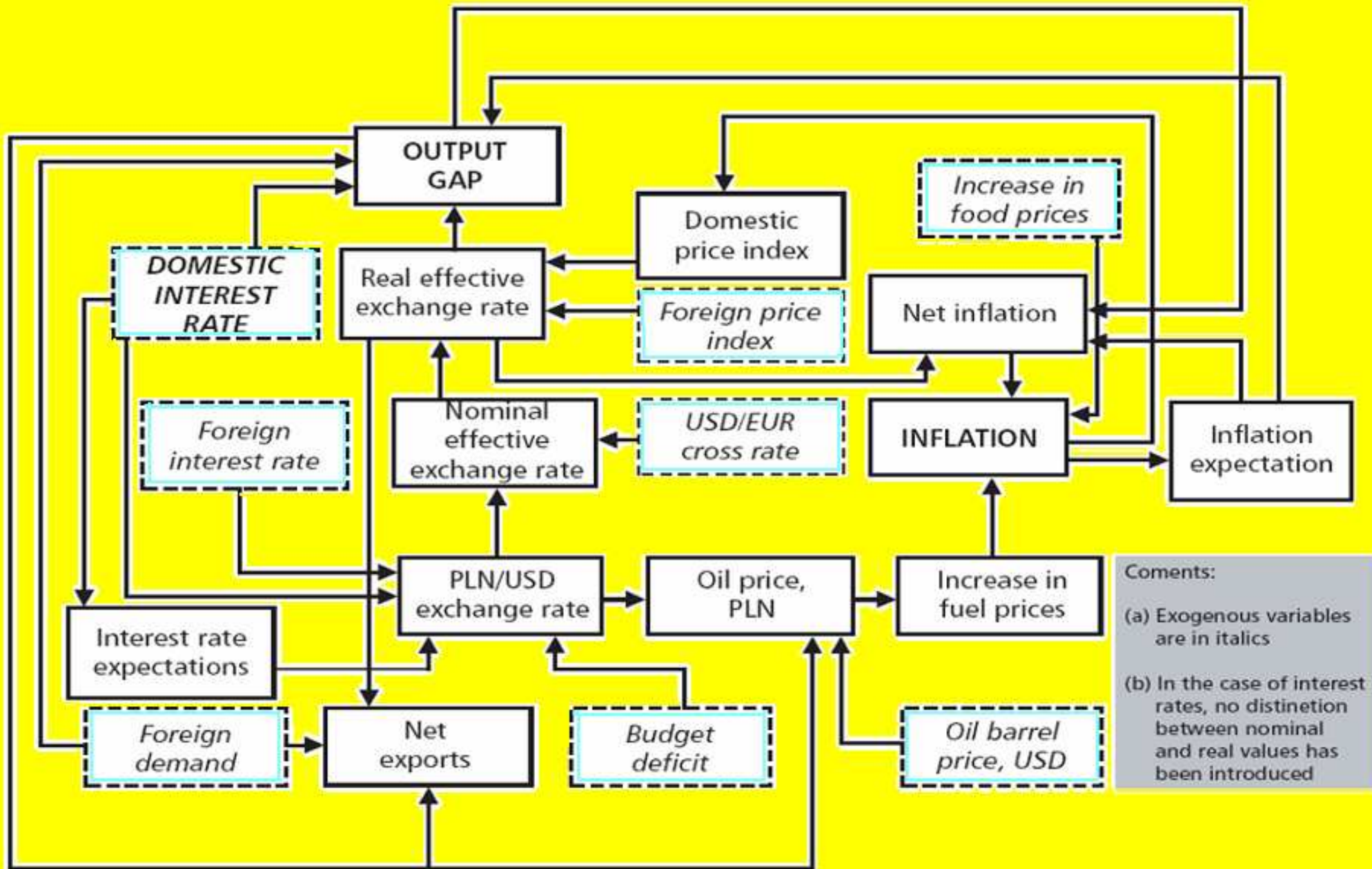
- Forecast result: point estimates and scenarios
- Horizon and frequency: near-term (4-6 quarters), medium-term (up to 4 years); monthly
- Transparency: quarterly publication of backward-looking analysis
- Methodology: structural models, time series models, expert judgment

Inflation Forecasting: Poland

Forecasting Methodology

- Linear combinations of forecasts derived from two structural models with weights obtained from minimizing historical errors of forecast:
- New Analytical Scheme (NAS): an aggregate structural model describing the monetary transmission mechanism
- Small Structural Inflation Model (MSMI) focused on the supply side

Poland- Basic building blocks of the NAS



Core Model of Poland

- \hat{Y} – output gap
- y^{EU} – real GDP growth rate in the euro zone
- i – WIBOR 3M interbank market rate in nominal terms
- i^{WIBOR1M} – WIBOR 1M interbank market rate in nominal terms
- i^{r} – WIBOR 3M interbank market rate in real terms
- i^{f} – LIBOR 3M foreign interbank market rate in nominal terms
- e^{n} – nominal effective exchange rate (in logs)
- e^{r} – real effective exchange rate (in logs)
- $e^{\text{USD/PLN}}$ – USD/PLN exchange rate (in logs)
- $e^{\text{EUR/USD}}$ – EUR/USD exchange rate (in logs)
- w^{EUR} – euro weight used for the determination of the nominal effective exchange rate (55%)
- π^{C} – rate of growth of consumer price index net of food and fuel prices, quarter over quarter

Core Model of Poland

- π^F – rate of growth of food prices, quarter over quarter
- π^P – rate of growth of fuel prices, quarter over quarter
- π – inflation, quarter over quarter
- π^* - central bank inflation target
- π^e – households' inflation expectations (for the next quarter)
- w^C – weight of consumer goods and services net of food and fuel prices in the CPI basket
- w^F - weight of foods in the CPI basket
- w^P - weight of fuels in the CPI basket
- p^F – food price index
- p – consumer price index (goods and services)
- g – budget deficit related to GDP
- b^{USD} – oil price per barrel on world markets (USD, in logs)

Core Model of Poland (New Analytical Scheme)

Aggregate demand curve for open economy:

$$\hat{y}_t = c_{\hat{y}} + \alpha_1 \hat{y}_{t-1} + \alpha_2 i_{t-1}^r + \alpha_3 e_{t-2}^r + \alpha_4 \Delta(\Delta_4 y^{EU}_t) \quad - \text{Output gap equation}$$

$$\pi_t = w_t^C \pi_t^C + w_t^F \pi_t^F + w_t^P \pi_t^P \quad - \text{Inflation identity}$$

$$\pi_t^C = c + \beta_1 \pi_t^e + \beta_2 \hat{y}_{t-1} + \beta_3 e_{t-2}^r \quad - \text{Philips curve}$$

$$\pi_t^F = c + \gamma_1 \pi_t + \gamma_2 \pi_{t-1}^F + \gamma_3 (p_{t-1}^F - p_{t-1}) \quad - \text{Food inflation equation}$$

$$\pi_t^P = \pi_t^O \quad \text{lub: } \pi_t^P = \lambda_1 \pi_t^O + \lambda_2 \pi_{t-1} + \lambda_3 \Delta \hat{y}_t \quad - \text{Fuel inflation equation}$$

$$\text{where } \pi_t^O = \Delta b_t^{\text{USD}} - \Delta e_t^{\text{USD/PLN}}$$

$$\pi_t^e = \theta_1 \pi_{t-1} + (1 - \theta_1) \pi_{t+1} \quad - \text{Households' inflation expectations}$$

Exchange rate equation with uncovered interest rate parity:

$$e_t^{\text{USD/PLN}} = c + \varphi_1 e_{t-1}^{\text{USD/PLN}} + (i_t - i_t^f) + \varphi_2 (i_t - i_t^{\text{WIBOR1M}}) - \varphi_3 g_{t-1} - e_t^{\text{EUR/USD}}$$

$$e_t^{\text{USD/PLN}} = e_{t+1}^{\text{USD/PLN}} + (i_t - i_t^f)$$

$$e_t^n = e_t^{\text{USD/PLN}} + w_t^{\text{EUR}} e_t^{\text{EUR/USD}} \quad - \text{Nominal effective exchange rate}$$

Monetary policy rule:

$$i_t = 0.5 \hat{y}_t + 1.5 (\pi_t - \pi_t^*) \quad \text{lub: } i_t = \pi_t^e + 0.8 i_{t-1} + 0.2 [0.5 (\pi_{t+1} - \pi_{t+1}^*) + 0.5 \hat{y}_t]$$

Rules of Thumb for Economic Sustainability:

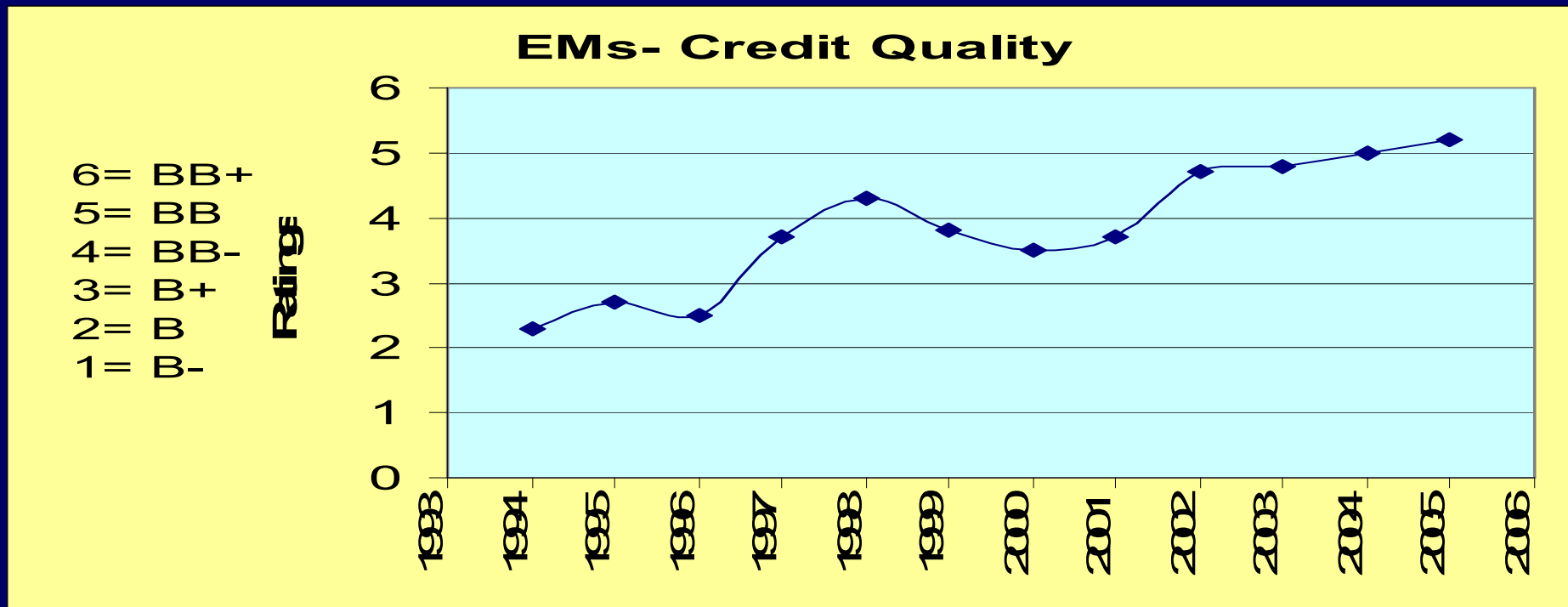
Fiscal Deficit/GDP	<	- 3%	(-2%) <u>1/</u>
Current Account Deficit/GDP	<	- 3%	(+3%)
Public Debt/GDP	<	60%	(40%)
Public Debt/Exports	<	200%	(110%)
Public Debt Service/GDP	<	5%	(5%)
Public Debt Service/Exports	<	25%	(15%)
Inflation Rate	<	5% (max 10%)	(5%)
International Reserves/Imports	>	25% (3 months of imports)	

- For EMs similar ratios are used for External Debt (public/private): This comes from the previous model, by replacing CAD instead of the FD (assuming FDI and R are constant).
- These rules are not uniform. A lot depends on growth prospects, creditors' attitudes and level of Foreign Direct Investments.
- If the country numbers were to exceed these values, it does not mean that the crisis is imminent; but that you should get concerned and analyze the situation carefully.

1/ The numbers in parenthesis represent the average numbers for key EMs

Improvements in Macroeconomic Stability in EMs

	<u>1997</u>	<u>1999</u>	<u>2001</u>	<u>2003</u>	<u>2005</u>
External Debt/GDP	38.0	45.4	40.4	39.1	31.9
External Debt/Exports	150	167	135	115	82
Ext Debt Service/Exports	23	26	23	18	12
Fiscal Deficit/GDP	-2.9	-4.0	-3.3	-2.9	-1.1
Current Account/GDP	-1.3	-3.1	+0.6	+2.0	+3.4
Inflation Rate	12	10	7	6	5



III. Economic Liberalization

The main objective of Economic Liberalization is to improve the business environment to encourage the private sector to invest and expand production, by giving them the freedom to operate in a competitive environment.

The main areas of economic liberalization are:

- Liberalization of the Formation and Operation of Enterprises
- Liberalization of the Closure of Failing Enterprises
- Liberalization of Product Pricing and Trade
- Liberalization of the Financial Sector
- Liberalization of Labor and Land Markets

1. Liberalization of the Formation and Operation of Enterprises

- Facilitate the formation of companies.
- Reduce licensing and registration requirements to establish new businesses.
- Reduce hardship to businesses from undue inspections by Govt. agencies and other interference in business activities.
- Improve Corporate Governance to define the role of the Boards of Directors, protect small shareholders, and minimize fraud and abuse of power. This requires changes in the Commercial Code.
- Reduce the cost of doing business, particularly high corporate and business taxation.
- Eliminate Monopolies and introduce Anti-trust legislation.
- Minimize number of state-owned enterprises through privatization.

2. Liberalization of the Closure of Failing Enterprises

- Improve bankruptcy law and procedures
- Institute a “hard budget” for enterprises: the Government will not bail them out if they are not viable.
- Enforce financial discipline with commercial banks to avoid bail out of their owned enterprises.
- Public utilities, particularly energy, should not be a source of subsidized financing for uneconomic firms.
- Eliminate barter transactions that obscures financial situations.
- Eliminate undue constraints to employment reduction
- Close uneconomic state enterprises

3. Liberalization of Product Pricing and Trade

- Liberalize domestic trade, eliminating price controls, trade monopolies and barter trade.
- Liberalize foreign trade, eliminating Quantitative Restrictions, reducing the level of import tariffs, and reducing their variability.
- Improve customs codes, administrations and regulations
 - o There is consensus today on the underlying benefits of trade liberalization policies.
 - o But less agreement on the dangers:
 - Doing it fast without institutional basis
 - Affecting subsistence of local firms
 - Credibility of the reforms and speed of reform.
 - Need to devalue to “help” local industry-- Proper role of Foreign Exchange policy

4. Liberalization of the Financial Sector

- Remove restrictions to the inflow and repatriation of capital
- Facilitate establishment of foreign banks
- Cancel licensing requirements for foreign borrowings and permit firms to have multiple bank accounts
- Institute effective autonomy for the Central Bank, with its main goal to maintain internal and external stability.
- Liberalize Interest Rates and Credit Policies by financial institutions.
- Improve prudential regulations for banks, including introduction of international accounting standards, loan loss provisioning, external audits, and tax treatment of provisions.
- Improve banking supervision and mechanisms to deal with troubled banks.

- Address structural issues, such as the governance and financial situation of the Saving Bank, and bank lending to insolvent state enterprises.
- There is agreement that financial sector distortions do not help.
- But there is less agreement on the speed of liberalization:
 - International capital mobility makes financial sectors more vulnerable to crisis, principally if banking sector is unprepared and poorly supervised.
 - Many banks are already quite fragile in EMs.
 - Financial sector liberalization often leads to high interest rates with little additional savings, due to depth of distortions.

5. Liberalization of Labor and Land Markets

- Improve labor mobility (hiring and firing of labor)
- Reduce excessive labor costs (excessive minimum wage, payroll taxes, excessive wages due to centralized wage bargaining)
- Improve pension plans
- Improve un-employment compensation, removing impact on individual enterprises.
- Permit land privatization
- Improve land property rights, including right to buy and sell land
- Improve Land tenure, land titling and cadastral systems
- Facilitate use of land as collateral for agricultural loans

IV. Public Governance and Institutional Development: Reform of the State and Legal Systems

- Reform in Public Administration to establish sound & efficient Government services without corruption.
- Reform of the Legal Environment to achieve a stable and predictable legal environment

1. Reform Public Administration

The implementation and sustainability of economic policy reforms over time require strong Government management and administrative capacity.

A Reform program should include:

- Establishing a clear strategy and vision for the role of the Government as complementary to the private sector
- Undertaking a “Macro Functional” review for the role of the entire government to eliminate unnecessary and inconsistent activities.
- Consolidating ministries, state committees and agencies and decentralize functions along with budgets.
- Undertaking “Functional” reviews for individual ministries and agencies to further crop out, privatize or decentralize functions
- Undertaking “Operational” reviews for individual ministries and agencies to improve operational efficiency and procedures
- Reforming and modernizing the Civil Service by providing adequate incentives for performance and “market” controls.
- Reforming Government Procurement Practices.
- Reforming central-local government fiscal relationships.

2. Reform the Legal Environment for the Market

- Establish stable and predictable laws and regulations for businesses and free-market activities (Companies Law, Civil Codes, etc)
- Improve judicial and court procedures and decisions
- Ensure the independence and professionalism of judges
- Ensure enforceability of commercial contracts
- Limit discretionality & deal with corruption by officials
- Pass on legislation to protect intellectual property rights, patents, technology transfer policies, direct foreign investments.

Corruption:

An Anti-corruption Program should be based on three elements: (i) prevention; (ii) enforcement; and (iii) public awareness

1. PREVENTION.

The focus of prevention is:

- (i) to reduce opportunities for corruption, and
- (ii) to make corruption more difficult to undertake by improving transparency and accountability.

- Prevention would involve:
 - Privatization of Government enterprises and services to minimize corruption opportunities.
 - De-regulation, to reduce number of licenses and registrations that require individual intervention of officials.
 - Eliminate Government discretionality, by eliminating “exemptions” to laws and regulations and making laws more precise.
 - Streamline tax collections and audits.
 - Introduce competitive procedures for public procurement.
 - Reduce the size of the Government and re-focus its role to minimize opportunities for improper interventions and corruption.
 - Decentralize Government functions to bring decisions closer to the public and improve accountability
 - Reform the Civil Service to make it more professional, including (i) increasing salaries of key government officials; (ii) rotate frequently public servants in “vulnerable” positions; (iii) mandate public servants to declare their income/assets.

2. ENFORCEMENT

Develop the legal framework to ensure discipline and strong prosecution.

This would involve:

- Development of adequate avenues for “appeals” of Government decisions, including a system for review of tax decisions.
- Develop effective channels for complains of Government actions.
- Develop a strong “watchdog” agency (Audit).
- Ensure that the laws will clearly define penalties for corruption.
- Improve the court system (Judiciary) to expedite the processing and resolution of cases.
- Strengthen Enforcement agencies, such as FBI equivalents.

3. PUBLIC AWARENESS

Make people aware of their rights and the rules of the game.

For this:

- Improve Government Information Systems at all levels to keep the Government and the public informed of payments, expenditures, subsidies, etc.
- Publish widely Government rules, such as Tax Bulletins, customs regulations, quality certifications, etc.
- Enlist the support of the Press and NGOs in dealing with corruption.
- Use surveys of opinions to disseminate widely concerns on corruption.

V. Country Economic Performance

To assess country performance, two sets of issues need to be reviewed:

- (1) **The adequacy of Policy and Institutional Framework** to sustain macroeconomic stability and economic growth: (i) internal and external economic stabilization, (ii) economic liberalization, and (iii) public governance and institutional development.
- (2) **Actual Results** in the key areas above:
 - a. Actual Internal and External Stability
 - Domestic Inflation Rate
 - Stability of Foreign Exchange Rate & Balance of Payments
 - Level of Foreign Debt in relation to GDP, Exports & Reserves
 - a. Actual Economic Growth
 - GDP Growth Rates and structure of sources of growth
 - Saving Rates
 - Investment Rates

VI. Country Ratings

Country Policy and Institutional Assessments

Ratings Scale: 1 (low) through 6 (high)

- 1 Unsatisfactory for an extended period
- 2 Unsatisfactory
- 3 Moderately Unsatisfactory
- 4 Moderately Satisfactory
- 5 Good
- 6 Good for an extended period

A Macroeconomic Management and Sustainability of Reforms

- 1 General Macroeconomic Performance
- 2 Fiscal Policy
- 3 Management of External Debt
- 4 Macroeconomic Management Capacity
- 5 Sustainability of Structural Reforms.

B Policies for Sustainable and Equitable Growth

- 6 Trade Policy
- 7 Foreign Exchange Regime
- 8 Financial Stability and Depth
- 9 Banking Sector Efficiency and Resource Mobilization
- 10 Property Rights and Rule-based Governance
- 11 Competitive Environment for the Private Sector
- 12 Factor and Product Markets
- 13 Environmental Policies and Regulations

C Policies for Reducing Inequalities

- 14 Poverty Monitoring and Analysis
- 15 Pro-poor Targeting of Programs
- 16 Safety Nets

D Public Sector Management

- 17 Quality of Budget and Public Investment Process
- 18 Efficiency and Equity of Revenue Mobilization
- 19 Efficiency and Equity of Public Expenditures
- 20 Accountability of the Public Service