Topics in Development and Transition

Handout 2

Issues in Fiscal Financing

Domestic Economic Management Introduction

Role of Government in the Development Process is Extraordinarily Contentious but Three (Historical) Strands are evident

1. The 1950-1980 Consensus. Government as the key agent of Development and Change. This was thought necessary because:
   - The major structural changes then deemed necessary (e.g. “Big Push”) would not occur spontaneously
   - Entrepreneurship was a scarce resource – governments had to make up for the lack of it
   - Markets were endemically imperfect in developing countries and government interventions were justified even by neo-classical logic
   - Two gap models demonstrated the need for foreign capital transfers – these would mainly come as govt to govt transfers

The Washington Consensus

2. Faith in the previous Consensus dissipated by around 1980 and was replaced by this new Consensus. Why was this?

- The obvious failings of comprehensive Govt. planning and direct industrialisation programmes-severe price distortions, ridiculously high rates of effective protection, pervasive rent-seeking etc.
- The serious and unsustainable burdens imposed on agriculture and other key sources of livelihoods by such approaches
- The partial evidence that less *dirigiste* approaches appeared to have produced better development outcomes (notably East Asia)
- Abundant evidence that government interventions were wholly inadequate to redress neoclassical problems of market failure – Government failure was often a much bigger problem
- The implicit economists assumption that “Government” was an objective, even-handed guardian of broad-based social welfare was belatedly recognised to be wholly unrealistic

New Dimensions in the Role of Government

3. As the Washington Consensus ("get prices/polices right") began to lose its gloss, a range of new approaches moved into the vacuum, including:

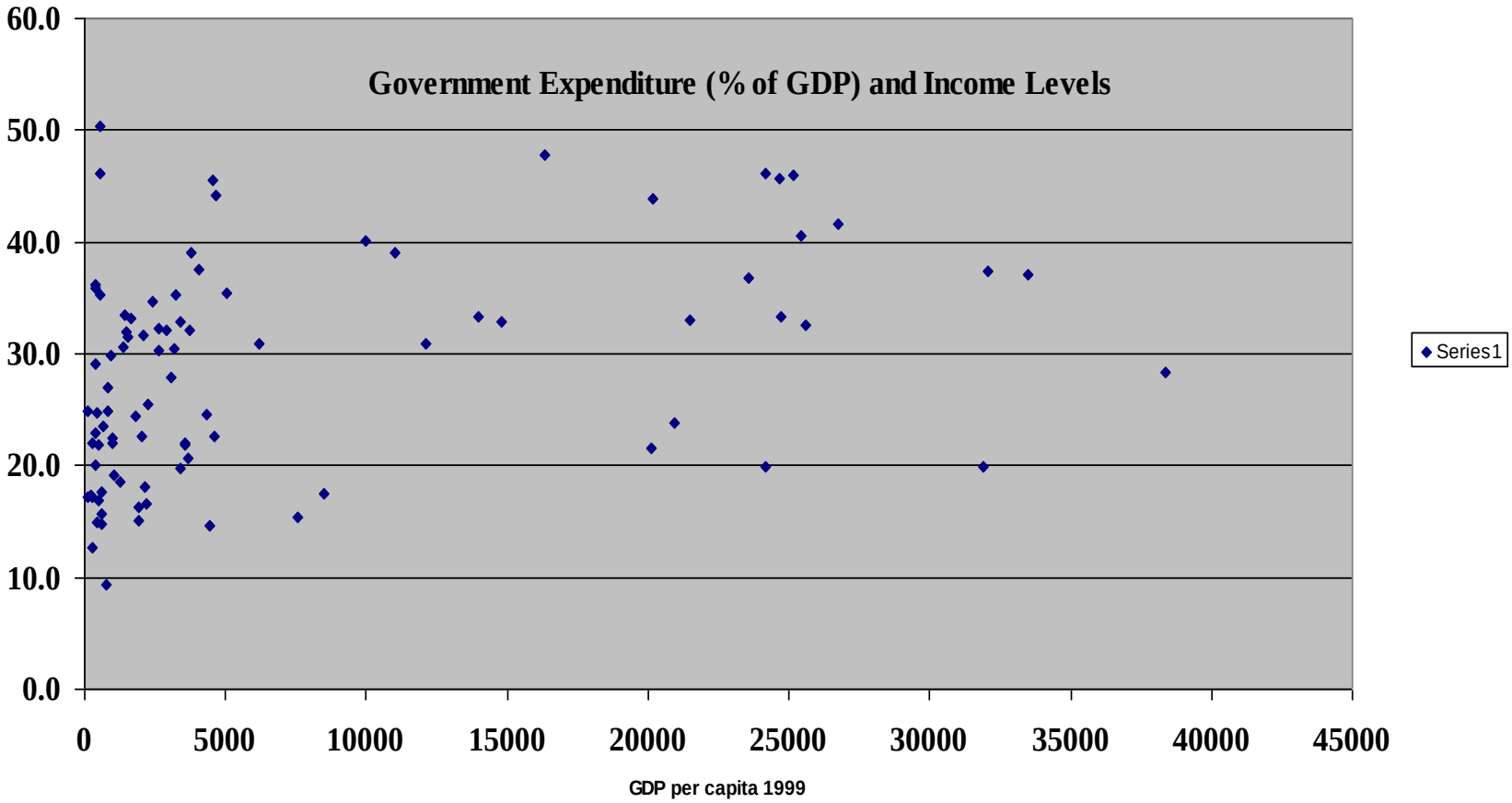
– Possible new catalyst role for Government based on "new growth theory" and its ideas of non-rivalrous knowledge-learning-increasing returns (see Easterly 2001)

– Explicit political-economy models of the "endogenous" state or political decisions – more attention to the incentives that motivate the "government" and its constituent decision-making or influencing components (link to analysis of governance, corruption etc.)

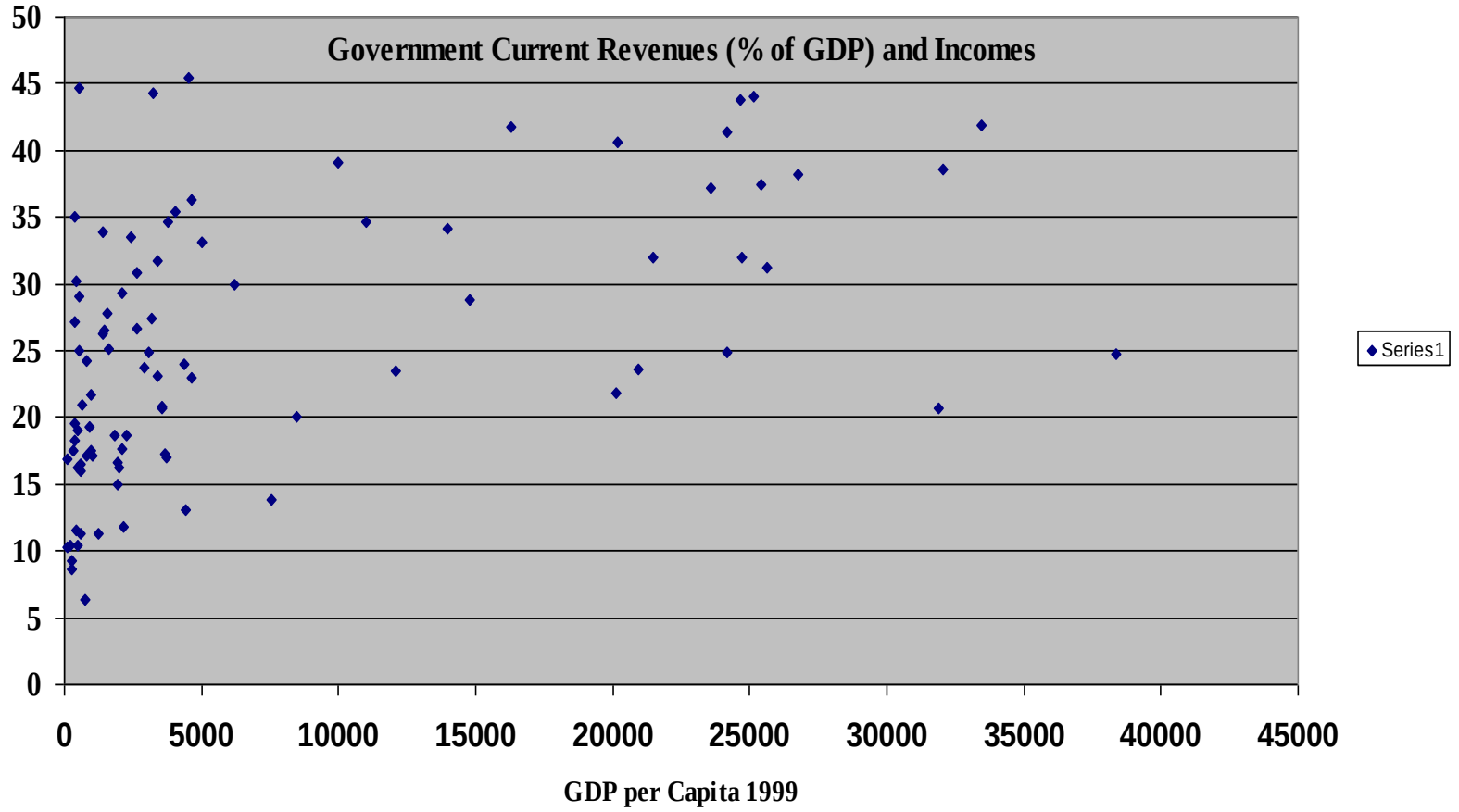
– New Institutional Economics (North 1994) and ideas about "Social Capital" (Collier (1998)) suggest an explicit role for governments in filling institutional gaps

– New types of market imperfection to correct –especially information gaps

The Size of Government



GOVERNMENT REVENUES



Why do Developing and transition countries need to worry about Fiscal Deficits?

Global Trends in Fiscal Outcomes

	Revenue (% of GDP)		Expenditure (% of GDP)		Overall Deficit (including grants) (% of GDP)	
	1990	1998	1990	1998	1990	1998
World	***22.5***	**26.4**	***25.8***	**27.9**	***-3.0***	**-1.5**
Low income	*15.5*	13.9	*18.3*	17.0	*-4.8*	-4.0
Middle income	*17.4*	19.1	*21.5*	20.5	*-2.5*	-3.0
Lower middle income	*12.7*	14.2	*15.3*	18.8	*-1.5*	-4.0
Upper middle income	*20.4*	22.2	*25.5*	22.8	*-3.1*	-3.5
Low & middle income	*17.1*	18.6	*21.1*	20.1	*-2.8*	-3.1
East Asia & Pacific	*13.2*	10.1	*14.4*	13.2	*-0.8*	-3.0
Europe & Central Asia	..	25.0	..	30.8	..	-4.7
Latin America & Carib.	*18.8*	20.1	*25.5*	21.0	*-3.5*	-4.2
Middle East & N. Africa	..	..	..	..	..	..
South Asia	*13.8*	12.4	*17.6*	16.3	*-7.3*	-5.1
Sub-Saharan Africa	*24.0*	..	*27.7*	..	*-3.5*	..
High income	*23.9*	28.7	*27.0*	30.2	*-3.0*	-1.1
Europe EMU	*34.7*	37.1	*38.6*	40.0	*-3.7*	-2.3

Source: WDI

Can Fiscal Policy Affect Long-Run Growth?

The answer from the Solow neo-classical model is:

- Government policy will not affect the long run steady state growth unless it permanently impacts one of the key determinants of this (mainly “s” and exogenous technical progress
- But government fiscal actions could be one of several shocks that can temporarily divert growth from its steady state path

A richer menu of possibilities can be derived from some of the more recent models of growth – see next slide

Continued

There are several possible channels of influence;

- fiscal effects on factor accumulation—either indirectly via incentives to private accumulation or directly via public investment in physical or human capital.
- productivity growth—fiscal policy may influence innovation, R&D etc. Another channel is the impact of fiscal policy on the acquisition of foreign technologies through FDI
- production externalities—public capital/investment or education may enhance private sector production.
- crowding-out—to the extent that ‘unproductive’ public expenditures crowd-out ‘productive’ private or public investment (including education) long-run growth can be reduced
- redistribution policies can affect long-run growth by a number of mechanisms: altering savings rates; providing social insurance; overcoming capital market imperfections.

Why do short-term Fiscal Deficits Matter?

- In low income countries fiscal deficits are often the basic cause of severe inflationary problems
  - Because tax administration and capital markets, are relatively underdeveloped
- So governments often have no option but monetize deficits i.e. print money to finance them.
- But monetary growth has direct effects on inflation
- High inflation in turn can negatively impact economic growth Bruno and Easterly (1998)

From Bruno and Easterly (1998)

"Articles in the new growth literature find that growth and inflation are negatively related, a finding that is usually thought to reflect a long run relationship. But the inflation-growth correlation is only present with high frequency data and with extreme inflation observations: there is no cross-sectional correlation between long-run averages of growth and inflation. We propose that examination of discrete high inflation crises (periods when inflation is above some threshold, which we propose to be 40 percent annual) helps unravel these empirical paradoxes. We establish a robust finding that growth falls sharply during discrete high inflation crises, then recover surprisingly strongly after inflation falls". *Journal of Monetary Economics* 41, 1998

Fiscal Financing in Thin Markets

Let's Examine THREE Cases to confirm this dilemma

- 1. Deficit Financing Under A Fixed Exchange Rate Regime When Zero Local Borrowing Is Possible
- 2. Deficit Financing Under A Regime Of Flexible Exchange Rates – Again With Zero Local Borrowing
- 3. Deficit Financing When Local Borrowing Is Possible But Limited And (Possibly) Expensive In Real Terms

Case 1 Shows How Deficits Can Easily Lead To Foreign Exchange Crisis

Case 2 Derives A Simple Calculating Tool For Assessing How Much Inflation Is Needed To Finance Any Given Deficit –Often a Lot

Case 3. Leads the Discussion to External Debt Management

Case 1: A Fixed Exchange Rate

Define the Government Deficit (D) as

$$P_d(G + I_g - T) + i_d B_{t-1} + S(i_f Bf_{t-1}) \quad [1]$$

Within this the PRIMARY Deficit is:

$$P_d(G + I_g - T).....[2]$$

And the rest of the Deficit is Interest Payments

The Deficit is Financed as follows

$$(B_t - B_{t-1}) + (M_t - M_{t-1}) + S(Bf_t - Bf_{t-1})....[3]$$

If we assume zero local borrowing (i.e. no domestic capital market)

Then the task facing the authorities reduces to:

$$P_d.\text{Def} = (M_t - M_{t-1}) + S(Bf_t - Bf_{t-1}) + Interest.....[4]$$

Definitions & Implications

G = public spending on goods and services;

T = government revenue (tax and non-tax)

B = the stock of domestic public debt and Id is the associated interest rate

B_f = the stock of foreign debt and is denominated in foreign currency

M = the domestic money supply

S = the nominal exchange rate

Pd = the domestic (general) price index

Note that with “S” fixed by assumption, ANY monetary Financing of the deficit depends on there being a rise in M from period t-1 to period t . How large this can be depends on the public’s willingness to hold money balances – see next slide

Money Demand

The simplest form of this demand would be

$$M_d / P_d = f(Y, i_d) \text{ or } P_d \; f(Y, i_d) = M_d = M_t \text{.....[5]}$$

But for a small open economy (many developing countries fit this definition)

$$P_d = P_f . S \text{.....[6]}$$

Equations[5] and [6] tell us that with S fixed we must mainly rely on increases in Y in order to achieve an increase in money demand – the effectiveness of changes in i_d being effectively ruled out by the absence of a local securities market.

Equation[4] in turn shows that if growth of Y is close to zero then M_t-M_{t-1} also approaches zero and financing effectively comes from foreign borrowing

A Numerical Example

Foreign Reserves	=	3 Months Imports
Imports	=	24% GDP
So Foreign Reserves	=	6% GDP

These Numbers Are Not Unrealistic For A Typical Developing Or Transition Economy Although The Reserves Level Is High For Some Countries.

African Deficits Through The 1980s averaged around 6-7% GDP

The Implication Is That Fiscal Deficits At This Level Would Exhaust Foreign Reserves In One Year Or Less.

Linking this to Financial Crisis

Equations for Agenor and Montiel based on Krugman *Journal of Money, Credit and Banking*, 1979

Crisis Model (1st Generation)

(notation as in Agenor and Montiel Ch 16)

Money Demand $$m_t - p_t = \bar{y} - \alpha_{i_t} \qquad [1]$$

also set $$\bar{\gamma} - \alpha_{i_t}{}^{*} = \delta$$

(this assumes a more or less constant level of real income and a fixed *foreign* interest rate – the model for other cases generates slightly less rigid results)

Money Supply $$m_t = \gamma D_t + (1-\gamma) R_t \qquad [2]$$

Growth of Domestic Credit $$\dot{D}_t = \mu \qquad [3]$$

Continued

Exchange Rate (via Purchasing Power Parity and Pf = constant)

$$P_t = \varepsilon_t \qquad [4]$$

i.e the domestic price level is largely fixed by reference to foreign prices

Interest Rate (using Uncovered Interest Parity)

$$i_t = i^* + \dot{\varepsilon}_t \qquad [5]$$

Then Combining [1], [4] and [5] we obtain

$$m_{tt} - \bar{\varepsilon}_t = \delta_t - \alpha\dot{\varepsilon}_t \qquad [6]$$

Continued

and if the Exchange Rate is FIXED as in Case 1:

$$\varepsilon_t = \bar{\varepsilon}_t = \text{constant} \quad \text{and} \quad \dot{\varepsilon} = 0$$

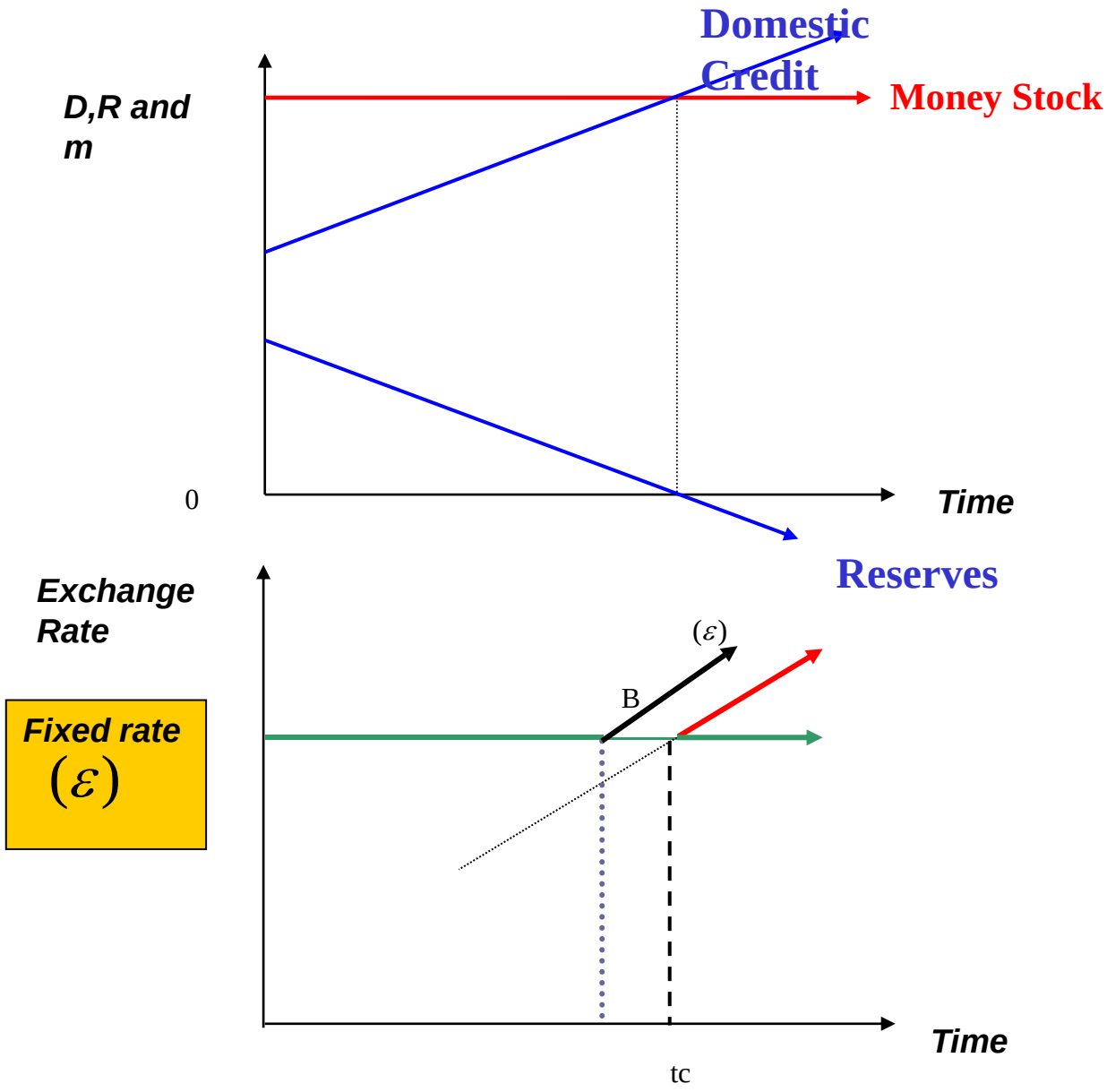
So Money DEMAND is $$m_t - \varepsilon_t = \delta \qquad [7]$$

Then Combining [2] and [7] we obtain

$$R_t = (\delta + \bar{\varepsilon}_t - \gamma D_t)/(1-\gamma) \qquad [8]$$

and $$\dot{R}_t = \frac{-\mu}{(1-\gamma)/\gamma} \qquad [9]$$

if μ is high , foreign reserves will deplete very fast.


Domestic Credit
Money Stock
D,R and m
0
Time
Reserves
Exchange Rate
Fixed rate
(ε)
(ε)
B
Time
tc

Case 2: A Flexible Exchange Rate

The crucial importance of the flexibility of the exchange rate is that it allows domestic prices (inflation) to detach themselves from international prices (inflation)

With the same money demand as before, price level changes can now contribute to the difference between Mt and Mt-1 that is crucial to monetary financing of the deficit.

Definitions

$$Seignorage = \mu m_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots [A]$$

$$where \ldots\ldots \mu_t = M_t - M_{t-1} / \ M_{t-1}$$

$$and \ldots\ldots m_t = \frac{M_t}{P_t}$$

$$Inflation\ Tax \ldots\ldots = \pi m_t \ldots\ldots\ldots\ldots\ldots [B]$$

$$where \ldots\ldots \pi = \frac{P_t - P_{t-1}}{P_{t-1}} = \dot{P}_t / P_{t-1}$$

In the Long Run Steady State when the rate of money growth is equal to the rate of inflation, we will have Seignorage = Inflation Tax

Since Mt/Pt = constant

In the Short Run they are ADDITIVE conceptually and empirically IF m_t in Equation [2] is lagged one period.

Case 2: Deficit Financing but with Flexible Exchange Rates

N.B. This Could be the Situation after the abandonment of a Fixed ER Peg

NOW ASSUME NO LOCAL OR EXTERNAL BORROWING

Then

$$P_d.Deficit = M_t - M_{t-1} \ldots\ldots\ldots [7]$$

Or

$$Deficit = \frac{M_t - M_{t-1}}{P_d} \ldots\ldots\ldots [7a]$$

Case 2 Continued

USING EQ [5] AND SAME ASSUMPTIONS BUT ALLOWING P_d to DIVERGE FROM P_f, we have

$M_{dt} = P_{dt}Y_t/V(i_d) = Ms$ ……..[5a]

Further assuming that both Y and id are constant

THIS SIMPLIFIES TO

$$\frac{M_t - M_{t-1}}{M_t} \cdot \frac{M_t}{P_{dt}} = \left[\frac{P_{dt}Y_t/V(i_d) - P_{dt-1}Y_{t-1}/V(i_d)}{P_{dt}Y_t/V(i_d)} \right] \cdot \frac{M_t}{P_t} \text{.....[8]}$$

$$DEFICIT = \left[\frac{P_{dt} - P_{dt-1}}{P_{dt}} \right] \cdot \frac{M_t}{P_{dt}} = \text{Infl.Tax} = \pi mt$$

Case 2 Continued

In this case, Seignorage = Inflation Tax

Since $V(i_d)$; Y_t; and i_d are all constant

Note:

• If some foreign borrowing by government is allowed then the pressure to rely on the inflation tax is reduced

•But foreign inflows to the **private sector** could compete (lending) business away from domestic banks and this could reduce domestic deposit mobilisation and so reduce $M_d/P_{d.}$ This in turn would require a higher rate of inflation for any given deficit (Mathieson and McKinnon)

Could Taxes on Banks (e.g. Forced Sales of Govt Debt to banks) Help?

How Much Inflation is Required in Case 2 ?

Reference is to R Dornbusch in S. Commander (1991)

Assumptions As For Case 2 but with

- Variable Velocity
- Positive Real Growth

$$\frac{Md}{PdY} = \frac{1}{\alpha + \beta\pi} = MONEYDEMAND.....[9]$$

$$\frac{PdY}{Md} = \alpha + \beta\pi.....VELOCITY..FUNCTION.....[10]$$

Where alpha is the STABLE (NORMAL) Element of Money Demand

And beta is the INFLATION SENSITIVE Element (as in the Cagan Money Demand Equation)

Dornbusch Continued

Define μ = the rate of monetary growth

And g = fiscal deficit as a % of GDP

THEN

$\mu\ (M/P_d) = gY$ ……[11]

OR $\mu = gY.P_d/M$

$$From Eq[10].....u = g(\alpha + \beta\pi)$$

$$IN..STEADY...STATE.. \quad \pi = u - y.....[12]...$$

Substituting [11] and [12] gives

$$\pi = (\alpha g - y)/(1 - \beta g).....[13]$$

Numerical Example *(Y growth = 1% and the fiscal deficit = 5% of GDP, β = zero, inflation rate = π)*

For Beta = 0; y=1% and g=5%

1/α	α	β	g	y	π	M depth- Eq [9]
0.05	20.00	0	0.05	0.01	99.0%	5.0%
0.15	6.67	0	0.05	0.01	32.3%	15.0%
0.2	5.00	0	0.05	0.01	24.0%	20.0%
0.3	3.33	0	0.05	0.01	15.7%	30.0%
0.35	2.86	0	0.05	0.01	13.3%	35.0%
0.45	2.22	0	0.05	0.01	10.1%	45.0%
0.5	2.00	0	0.05	0.01	9.0%	50.0%
0.6	1.67	0	0.05	0.01	7.3%	60.0%
1	1.00	0	0.05	0.01	4.0%	100.0%

- Notice that a 5% deficit causes quite different inflation consequences depending on whether we have a small or a large financial system (see first and last columns)

Same Example but now with β rising with inflation

Same but with Beta gradually rising

1/α	α	β	g	y	π	Monetary depth- Eq [9]
0.05	20.00	15	0.05	0.01	396.0%	1.3%
0.15	6.67	9	0.05	0.01	58.8%	8.4%
0.2	5.00	8	0.05	0.01	40.0%	12.2%
0.3	3.33	6	0.05	0.01	22.4%	21.4%
0.35	2.86	5	0.05	0.01	17.7%	26.7%
0.45	2.22	3	0.05	0.01	11.9%	38.8%
0.5	2.00	2	0.05	0.01	10.0%	45.5%
0.6	1.67	0.5	0.05	0.01	7.5%	58.7%
1	1.00	0	0.05	0.01	4.0%	100.0%

- Notice how even a (low) 5% deficit can promote seriously high inflation when the β value is high and combines with an already low degree of (normal) monetary

See Examples

From Kazakhstan and Sub-Saharan Africa in sheets attached

Case 3: Allowing for Some Local Borrowing

Deficit (real)is:

$$\frac{M_t - M_{t-1}}{P_{dt}} + \frac{B_t - B_{t-1}}{P_{dt}} .....[14]$$

Using the earlier reasoning:

$$Def = \pi \frac{M_t}{P_{dt}} + \frac{B_t - B_{t-1}}{P_{dt}} .....[15]$$

So with any given PRIMARY Deficit, increased use of borrowing today results in lower inflation today but to a larger overall deficit in future (through the $i_d B_{t-1}$ term in Eq[1]

IF id real > the growth rate of income (government revenues), the ratio of debt service in total income (government revenues) will rise. So such an inequality is acceptable; only for BRIEF periods during short-term stabilisation and even then is risky

See T.J. Sargent and N. Wallace “Some Unpleasant Monetarist Arithmetic” Federal Reserve Bank of Minneaoplis Review, 1981

The Reality Is Often Quite Different

See examples of unstable LOCAL Borrowing in attached sheets for Russia and Ukraine

Also later lectures on Debt Sustainability

Projected Debt Service in Ukraine as as January 1996