



Macroeconomic policy – with focus on stabilization and structural adjustment and underlying analytical approaches

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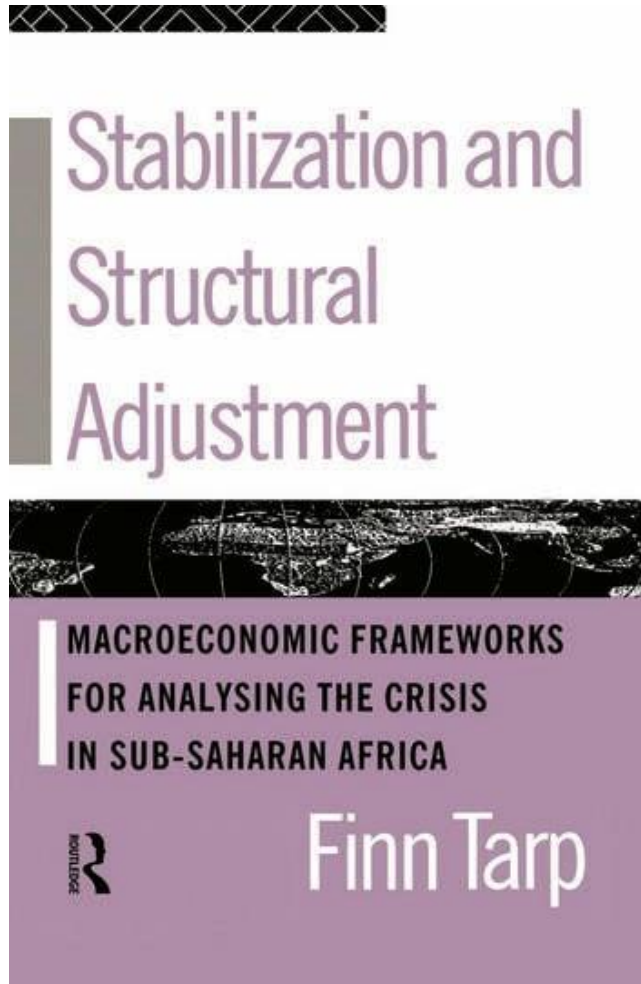
Outline

- Introduction to the theme (and some personal reflections)
- The development crisis in Africa during the 1980s
- Macroeconomic consistency and economic policy
 - Point of Departure
 - Basic Macroeconomic Accounting Identities and Economic Policies
 - Material Balance
 - Savings-investment Gap
 - Balance of Payments
 - Monetary Balance
 - Data-framework in a SAM formulation
 - Summing-up
- IMF financial programming (FP)
- World Bank growth programming
- Conclusion

Introduction

- The debt and disastrous development crisis in Africa during the 1980s (including some personal notes – where does Mozambique fit in? What is special about Mozambique? And lecture approach in what follows)
- The nature of the African economies (small, poor and open economies – discuss how structural characteristics frame our work and need to be considered in actual policy making)
- Why stabilization and adjustment became necessary (from independence and change to crisis and debt) – what happened?
- Detailed background to the crisis:
 - Two slides (with indicators) for Sub-Saharan Africa on external and internal imbalances and lack of growth, transformation and development (keep standard model of transformation in mind as comparator)
 - Key insights from debt modelling and one slide about Tanzania

Three books + journal articles (see <https://web.econ.ku.dk/ftarp/>)





Indicator ^a	1965-73	1973-80	1980-89
GDP	4.8	3.2	2.1
GDP per capita	3.3	-0.3	-1.1
Agricultural production	2.4	1.1	2.0
Industrial production	10.4	4.3	0.7
Service production	3.4	4.2	2.3
Government consumption	9.0	7.0	1.1
Private consumption	3.9	2.6	0.7
Gross domestic investment	9.8	4.0	-3.9
Merchandise export ^b	15.1	0.2	-0.6
Merchandise import ^b	3.7	7.6	-5.9
GNP per capita	1.7	0.6	-1.2
Inflation	7.5	6.8	19.0
Term of trade	-6.7	5.4	-4.9
Long-term debt outstanding and disbursed ^c	20.1 ^d	23.9	14.5
Population growth	2.6	2.8	3.2

Notes:

^a Data refer to average annual (real) change in % for SSA unless otherwise indicated.

^b Do not include services.

^c Average annual %-change of nominal amounts.

^d Data refer to 1970-73.

Source Tarp (1993)

Indicator ^a	1965	1980	1989
General government consumption	10	13	14
Private consumption ^b	73	66	73
Total consumption	83	78	87
Gross domestic investment	14	20	15
Absorption	97	98	102
Gross domestic savings	14	21	13
- <i>excluding Nigeria</i>	18	13	11
Exports of goods and non-factor services	23	26	25
Resource balance ^c	1.0	1.0	-3.0
- <i>excluding Nigeria</i>	1.4 ^d	-6.1	-5.4
Total external debt (% of GNP)	13.4 ^d	27.4	98.3 ^g
Debt service (% of GNP) ^e	1.4 ^d	3.1	5.9 ^g
Debt service as share of total export ^e	7.1 ^d	10.9	22.2 ^g
Debt service as share of scheduled obligations ^f	..	96.6	38.9
Share of long-term debt with variable interest	6.3 ^d	23.7	23.8

Notes:

^a Stated in % of GDP unless otherwise indicated.

^b Includes some statistical discrepancies.

^c Indicates the difference between exports (f.o.b.) and imports (c.i.f.) of goods and non-factor services.

^d Data refer to 1970.

^e Debt service in 1970 excludes interest payments on short-term debt.

^f Calculated by adding outstanding arrears as well as principal and interests forgiven or rescheduled to actual payments.

^g 1990 figures for the debt/GNP ratio, the debt ratio and the debt service ratio are 111.9, 7.8 and 24.2, respectively, as projected by the World Bank

Source: Tarp (1993)

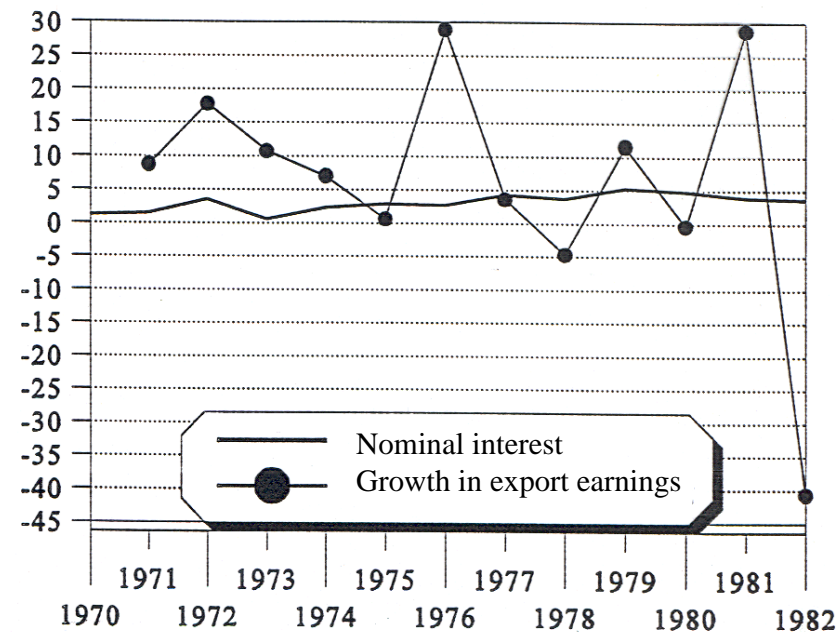
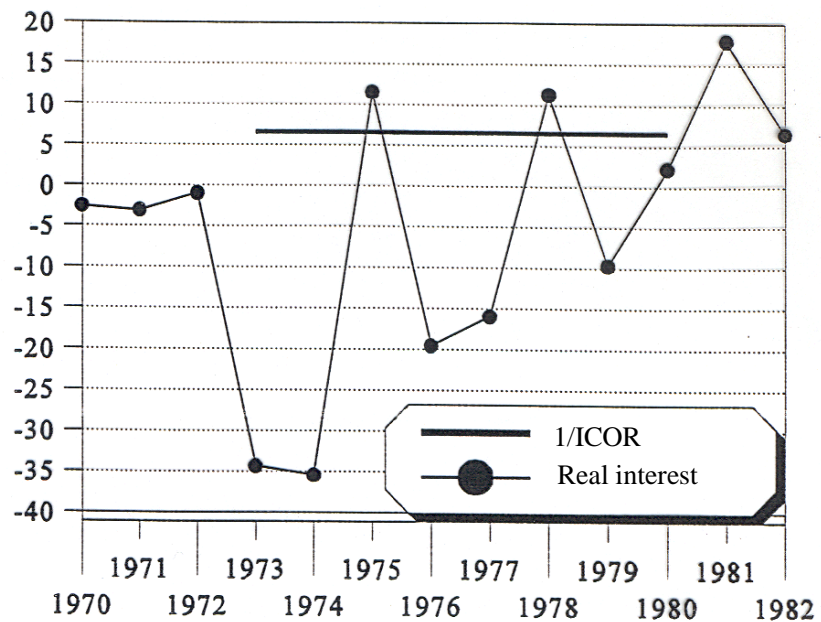
Debt modelling

- **Growth with debt**

- $MP_k > r \Rightarrow g_y > 0$
- MP_k = marginal product of capital ($= 1/ICOR$); r = real rate of interest on loans; g_y = growth in real income
- Borrowing and building up debt can be a rational decision, but must analyse how r and $1/ICOR$ (i.e. MP_k) relate to each other) to avoid macroeconomic problems

- **Debt dynamics (focus on $M-X$) (ignoring other capital flows)**

- Nominal debt in USD = D is the sum of: debt from the past, nominal interest payments and $[M - X]$ (in period under study) $\Rightarrow \Delta D = iD + (M - X)$
- Let: $d = D/X$, i = nominal rate of interest, $M - X$ = resource balance (import – export) and $B = (M - X)/D$
- $g_d = g_D - g_X = i + [(M - X)/D] - g_X = i + B - g_X$
- If we wish have $g_d = 0$ then positive resource inflow ($B > 0$) only possible if $g_X > i$, and if $g_X < i$ then d can only be constant (i.e. $g_d = 0$) if $B < 0$ (i.e. $X > M$)
- What explains a massive increase in g_d : i up, B up or g_X down



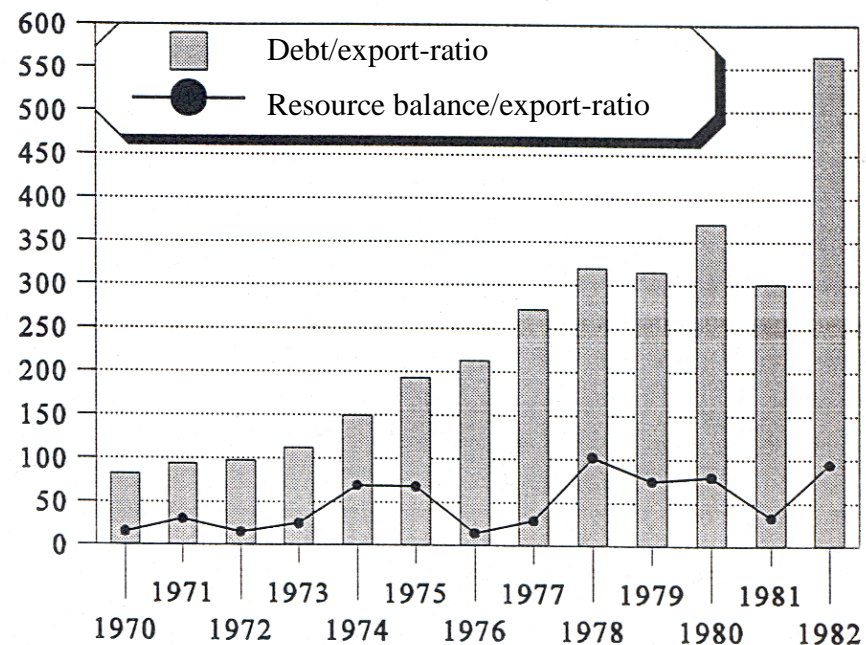
Note: Tanzania data

1/ICOR (Incremental capital-output ratio): a measure of marginal product of capital calculated by the World Bank as an average for the period 1973-80 from constant price series.

Real interest is calculated as nominal interest deflated by the annual growth in export prices.

Source:

Figures are reproductions from: Svendsen (1994), *Udviklingslandenes gældskrise: økonomiske analyser og strategier*, kap. 2 figure 2.6-8 (data from World Bank)



The Paradigm Shift in Development Economics (1970s-80s)

- Domestic policy shortcomings (ag. bias, IS restrictions, exchange rate policy) versus external shocks (terms of trade, foreign transfers, interest rate on loans, history)
- Political regime shift (Reagan and Thatcher)
- The neoclassical counterrevolution
 - Lal – anti-dirigisme
 - Getting prices right! (Berg)
- From market failure to government failure
- Political economy (nature of states)
- How does one get the issues right? (an anecdote of how not to do it)

Different perspectives on reform and adjustment

- (i) A **transitory** phase in which a series of economic balances (such as balance of payments and domestic fiscal balances) are restored in an orderly manner (often identified as the IMF approach – focus on monetary aggregates and demand restraint, no explicit attention to supply-side issues, though ‘restoring the conditions for renewed growth’ a stated objective)
- (ii) (ii) A **transitory** process of policy reform intended to address policy changes to raise the efficiency of resource use, strengthen basic institutions and revive the balance of payments (often identified with the World Bank, focus on macro prices, price liberalisation etc, and concerns are about the real economy and growth)
- (iii) (iii) A part of a **continuous** process of structural change and economic transformation, reflecting induced or planned adaption and adjustment policies as instruments chosen to respond to long-run development objectives and trends (identified with structuralists and broader in its inspiration, concerned with growth and transformation)

Original objectives and purposes (to be "traced" in what follows)

- (i) Strengthening the balance of payments (BOP) position
- (ii) Reduction in domestic financial imbalances, including less government deficit financing
- (iii) Elimination of price distortions in various sectors of the economy
- (iv) Promotion of domestic savings in public and private sectors
- (v) Increasing trade liberalization
- (vi) Revival of orderly relationships with trading partners and creditors
- (vii) Mobilization of additional external resources

Subsequent objectives (from orthodoxy to broader approaches)

- (i) Restoring positive per capita growth
- (ii) Averting pauperisation of the poor and vulnerable groups
- (iii) Avoiding such drastic compression of personal consumption and basic services as to rend the fabric of society

Specific policies included (to be "traced" in what follows)

- (i) Credit ceilings and control of money supply
- (ii) Exchange rate adjustment, mainly devaluation
- (iii) Interest rate policy
- (iv) Deregulation of prices of goods, services and factor inputs
- (v) Fiscal policy, including measures for resource mobilization as well as the reduction of public expenditure
- (vi) Trade and payments liberalization, entailing for example the removal of import quotas
- (vii) Institutional reforms with emphasis on increased capacity to implement public investments and privatization
- (viii) Debt reschedulings

Policy packages and IMF and World Bank conditionality

- Above policies combined in complex policy packages
- Have served as the basis for the definition of criteria (**conditionalities**) against which a given government's performance has been assessed (and still is)
- Increasing role and influence of IMF and World Bank
- Analytical frameworks used by these institutions and how they influence policy thinking and formulation (note: demand versus supply focused approaches to escape the crisis, and real versus monetary focus)

Point of Departure

- An economy with four sectors:
 1. The private sector (P)
 2. Government (G)
 3. The monetary system (MS)
 4. Rest of the world (ROW)
- Remember throughout:
 - Savings plus loans = increase in physical and financial assets
 - Income from production plus net transfers = expenditures plus savings
 - Examples (with reference to P, G, MS and ROW) – see next slide

Examples of budget constraints (to which we come back)

- **Private sector** (savings + loans = increase in assets):

$$S_p + \Delta DC_p = I_p + \Delta M + \Delta NPB_g + \Delta NFA_p$$

$$\Rightarrow S_p - I_p = \Delta M + \Delta NFA_p + \Delta NPB_g - \Delta DC_p$$

- **Government** (savings + loans = increase in assets):

$$S_g + \Delta DC_g + \Delta NPB_g = I_g + \Delta NFA_g$$

$$\Rightarrow (S_g - I_g) = \Delta NFA_g - \Delta NPB_g - \Delta DC_g$$

- **Monetary system** (has neither income nor savings) (assets = liabilities):

$$\Rightarrow \Delta DC + \Delta R = \Delta M$$

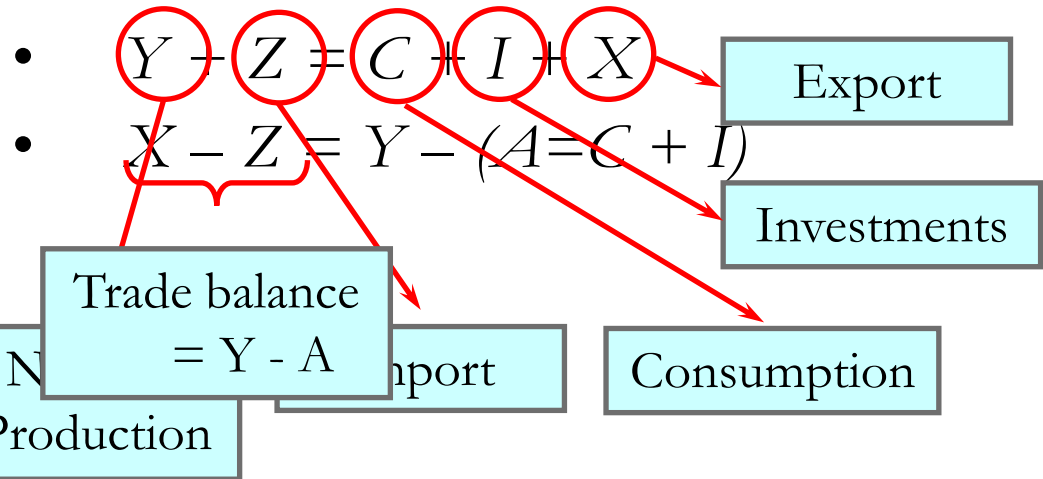
- **Foreign sector** savings (having netted out external sector borrowing):

$$S_f = -(\Delta NFA_g + \Delta NFA_p + \Delta R)$$

$$\Rightarrow \text{Current account } CA = X - Z - INP + NTR = \Delta NFA + \Delta R$$

Basic Macroeconomic Accounting Identities and Economic Policies (1)

Material balance:



- Y = Production
- C = Consumption
- I = Investment
- X = Export
- Z = Import
- A = Absorption

Basic Macroeconomic Accounting Identities and Economic Policies (2)

- **Material balance:**
- $Y + Z = C + I + X$
- $X - Z = Y - (C + I)$
- $X - Z = Y - A$

- **Savings-investment gap:**
- $X - Z = Y - A = S - I$

Y = Production

C = Consumption

I = Investment

X = Export

Z = Import

A = Absorption

Material Balance: some examples

(Current prices, 2001)

	Vietnam^a (bill. dong)	Mozambique (bill. meticaís)	Bolivia (mill. bolivianos)
Y – GDP	481295	74675	53010
Z – Import	273828	28721	13525
C – Consumption	342607	55920	48547
I – Investment	150033	31095	7552
X – Export	262846	16380	10436
(C+I)/Y	1.02	1.17	1.06
C/Y	0.71	0.75	0.92
I/Y	0.31	0.42	0.14
X/Y	0.55	0.22	0.20
Z/Y	0.57	0.38	0.26
(X-Z)/Y	-0.02	-0.17	-0.06

^aStatistical discrepancy of -363.

Material Balance - Vietnam

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
(C+I)/Y	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
C/Y	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
I/Y	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
X/Y	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.5	0.6
Z/Y	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6
(X-Z)/Y	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0

*Estimated.

Basic Macroeconomic Accounting Identities and Economic Policies (3)

- **Material balance:**

- $Y + Z = C + I + X$
- $X - Z = Y - (C + I)$

Y = Production
 C = Consumption
 I = Investment
 X = Export
 Z = Import

- **Savings-investment gap:**

- $X - Z = S - I$

- **Balance of payments:**

- $X - Z = (INP - NTR - NFP) + CURBAL = (INP - NTR - NFP) + \Delta NFA + \Delta R$



BOP (USD)

	Vietnam	Bolivia	Mozambique
	(2002)	(2002)	(2001)
Current Account	-391	-338	-380.2
Tradebalance	-875	-460	-413.9
<i>Export</i>	16706	1310	703.6
<i>Import</i>	-17581	-1770	-1117.5
Other current	484	122	33.6
<i>Net investment income</i>	-766	-202	..
<i>Debt service</i>	-648	-43	-435.7
<i>Net Transfers**</i>	1898	367	469.3
Capital Account	1801	740	-0.1
FDI	686	573	182.5
Medium/long term loans	487	334	-182.6
Short term loans*	628	-167	0
Cash Account	-1410	-403	380.3
Decrease in Reserves***	-464	292	418.7
Errors and ommiss.*	-946	-695	-38.4

*For Mozambique Short term loans is included in Errors and ommiss.

**For Mozambique; unrequited official transfers (grants).

***For Mozambique this number consists of; debt relief of 425.4 and financing of -6.7

BOP – Vietnam (USD)

	1993	1994	1995	1996	1997	1998	1999	2000	2001*	2002
Current Account	-1395	-1872	-2648	-2431	-1664	-1067	1285	642	670	-391
Trade balance	-1177	-1865	-3155	-3143	-1315	-981	1080	378	627	-875
<i>Export</i>	2985	4054	5198	7337	9145	9365	11540	14449	15027	16706
<i>Import</i>	4162	5919	8353	10480	10460	10346	10460	14071	14400	17581
Other current	-218	-7	507	712	-349	-86	205	264	43	484
<i>Net investment income</i>	-560	-328	-279	-427	-611	-669	-429	-597	-635	-766
<i>Debt service</i>	78	19	159	-61	-623	-539	-547	-615	-572	-648
<i>Net Transfers</i>	264	302	627	1200	885	1122	1181	1476	1250	1898
Capital Account	442	1476	2326	2079	1662	216	-334	-772	-370	1801
FDI	922	1627	2268	1757	1899	428	97	199	18	686
Medium/long term loans	-597	-275	-253	98	375	432	605	729	623	487
Short term loans	117	124	311	224	-612	-644	-1036	-1700	-1011	628
Cash Account	953	396	322	352	2	851	-951	131	-363	-1410
Decrease in Reserves	1056	387	23	281	4	524	-768	-115	-194	-464
Errors and ommiss.	-103	9	299	71	-2	327	-183	246	-169	-946

*Numbers do not sum to zero.

Basic Macroeconomic Accounting Identities and Economic Policies (4)

- **Material balance:**

- $Y + Z = C + I + X$
- $X - Z = Y - (C + I)$

Y = Production
 C = Consumption
 I = Investment
 X = Export
 Z = Import

- **Savings-investment gap:**

- $X - Z = S - I$

- **Balance of payments:**

- $\Delta NFA + CURBAL = (INP - NTR - NFP) + \Delta NFA + \Delta R$

Changes in Credit to
 Private and Public Sector

- **Monetary balance:**

- $\Delta R = \Delta M - \Delta DC$

Monetary Survey

(Annual change in % of broad money)

	1995	1996	1997	1998	1999	2000	2001	2002
Vietnam								
Net foreign assets	9.1	6.5	10.4	12.5	29.3	21.5	9.8	-0.1
Net domestic assets	13.5	16.3	15.7	13.1	27.3	17.5	15.7	17.7
Broad money	22.6	22.7	26.1	25.6	56.6	39	25.5	17.6
Mozambique								
Net foreign assets		38.6	12.6	8.3	11.2	30.8	20.6	
Net domestic assets		-17.5	11.8	9.3	23.9	11.6	9.1	
Broad money		21.1	24.4	17.6	35.1	42.4	29.7	
Bolivia								
Net foreign assets		12.7	1.1	-0.8	5.9	6.6	9.1	-10.8
Net domestic assets		7.4	13	9.9	-6.6	-8.6	-11.1	0.7
Broad money		20.1	14.1	9	-0.7	-2	-2	-10.1

Initial framing of macro policy

- Increased S must come from domestic economy or ROW – direct S policies or from trade policy, for example
- The S - I mechanism
- The investment process
- Typical objectives and trade offs
 - Objectives may differ
 - Growth not always the target
- Accounting identities are useful

Policy notes & discussion (what to do when imbalances arise)

Goods that are consumed or invested (A) must come from domestic production or ROW. Is production not big enough $\Rightarrow Z > X$ so resource balance vis-à-vis ROW negative. A too high or incentive to export too low? Or increase Y? etc.

$$1. C + I = Y + Z - X \text{ (or } Y = C + I + X - Z = A + X - Z)$$

$$2. X - Z = Y - A$$

If savings ($S = Y - C$) is too low cannot finance I, and either foreign financial resources must close S-I gap or savings must increase - financial policies (interest increases) and liberalization often in focus (squeeze I - be careful!)

$$3. (Y - C) - I = S - I$$

$$4. S - I = (S_p - I_p) + (S_g - I_g)$$

Government and fiscal policy as the cause and solution, how finance government deficit and if not? Is a balanced budget required?:

$$5. (S_g - I_g) = \Delta NFA_g - \Delta NPB_g - \Delta DC_g$$

Policy notes - continued

Monetary balance and policy: inflow of real resources from ROW depends on CA (debt relief, foreign aid can help close)

$$6. CA = X - Z - (INP - NTR) = \Delta NFA + \Delta R$$

Next equation similar to equation 5 but for private sector (note ΔM because people hold money)

$$7. Sp - Ip = \Delta NFAp + \Delta NPBg + \Delta M - \Delta DCp$$

Lack of balance between absorption and production can lead to inflation so problem may be too liberal credit expansion

$$8. (Sg - Ig) + (Sp - Ip) = \Delta NFA + \Delta M - \Delta DC$$

International reserves will fall if credit expansion bigger than monetary demand – so how to address BOP problems

$$9. \Delta R = \Delta M - \Delta DC$$

Data Framework

- SOCIAL ACCOUNTING MATRICES (SAMs)
 - Overview – the basic idea
 - The individual cells
 - Macroeconomic accounting identities in a SAM context

Simple Open Economy Real SAM

	GOODS	AGENTS	S-I	ROW
GOODS		C	I	E*X
AGENTS	GDP			
S-I		S		E*CURRE
ROW	E*Z			

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acct.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Additional variables

S_h = Private Savings

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acct.	-	S _h	S _g	-	S _f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Additional variables

S_g = Government Savings

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acct.	-	S _h	S _g	-	S _f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Additional variables

T = Tax Payments

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acct.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Additional variables

S_f = Foreign Savings

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S _h	S _g	-	S _f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Additional variables

G = Government Spending

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S _h	S _g	-	S _f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Accounting Identities:

Mat. Bal.

$$Y + Z = C + G + I + X$$

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Accounting Identities:

Income

$$\mathbf{C + T + S_h = Y}$$

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Accounting Identities:

Govt. Budget

$$\mathbf{G + S_g = T}$$

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Accounting Identities:

Saving-Investment

$$I = S_h + S_g + S_f$$

Social Accounting Matrices (SAMs)

			<u>Expenditures</u>			
<u>Receipts</u>	1	2	3	4	5	Total
1. Suppliers	-	C	G	I	X	Demand
2. Households	Y	-	-	-	-	Income
3. Government	-	T	-	-	-	Receipts
4. Capital Acc.	-	S_h	S_g	-	S_f	Savings
5. Rest of World	Z	-	-	-	-	Imports
Total	Supply	Expendi- ture	Expenditure	Invest- ment	ROW	

Accounting Identities:

Trade Balance

$$\mathbf{X + S_f = Z}$$

Some intermediate conclusions

- Identities are useful for identifying potential problems and economic policies to address imbalances (remember adjustment will take place in any case – but planned/managed or ad hoc? What is to be preferred?)
- Accounting is NOT causality
- Economic policy if production is close to capacity
- Economic policy if production is below capacity
- Next steps – the IMF and World Bank analytical models

IMF financial programming

- Purpose and why study it
- The 'empty framework'
- Theory
 - Polak-model
 - Chicago
 - FP (MOBOP) modellen - summing up
- FP in practice
- Discussion

IMF objectives (and "hard" central bank governors)

- Eliminate temporary (no-sustainable) deficits in BOP
- From fixed exchange until 1973 to flexible exchange rate system
- Keep inflation under control
- Facilities and nature of the IMF (increasingly involved in de facto development finance)
- From the absorption to the monetary approach to the BOP

The Empty Framework

- **FP revolving around key accounting identities, in particular:**

- $Y = (C + I) + (X - Z)$ National Account

- $(X - Z) - (INP - NTR - NFP) = CURBAL = \Delta R + \Delta NFA$ External Balance

- $\Delta R = \Delta M - \Delta DC$ Monetary Balance

- $Sg - Ig = \Delta NFAg - \Delta NPBg - \Delta DCg$ (focus on public sector (or fiscal) balance)

Fiscal Balance

Is this a model? Ex ante gaps will close ex post. But how? Where are the **causal relations** and is BOP essentially a monetary phenomenon?

The Polak (1957) model (from DC to R)

Small open economy with fixed nominal exchange rate: key objectives improve BOP and ensure reasonable level of inflation as preconditions for development (linking absorption approach with monetary and credit factors to help inform policy making)

1) $M_d v = Y$ [money demand is a constant share of nominal income (stable relationship)]

2) $Z = mY$ (imports depend on output)

3) $\Delta M_s = \Delta R + \Delta DC$

4) $\Delta R = \bar{X} - Z + \Delta \bar{F}$ (exports are exogenous)

Assume money market clears and solve for endogenous variables. What happens when you change DC? $\rightarrow DC \rightarrow \Delta M_s \rightarrow M_d \rightarrow Y \rightarrow Z \rightarrow \Delta R$. Focus on ΔDC as key policy tool.

Chicago (separate nominal and real variables explicitly)

$$1) y = \bar{y}$$

$$2) Y = P_d \bar{y}$$

$$3) P_d = e P_f$$

$$4) M_d = P_d f(\bar{y})$$

$$5) M_s = R + DC$$

$$6) M_s = M_d = M \text{ (in continuous equilibrium)}$$

Note: $R = P_d f(\bar{y}) - DC \Rightarrow dR/dt = -dDC/dt$ (if foreign prices exchange rate and real output remain constant). M_s is endogenous and any increase in DC will decrease R

MABOP: Summing up (i)

Fundamental assumptions:

1) $y = \bar{y}$ (real output is exogenous, may be growing over time), and $Y = P\bar{y}$ (and assume $P = (1-\vartheta)P_d + \vartheta e\bar{P}_f$ to which we revert)

2) $M_d v = P\bar{y}$ (money demand is a constant share of nominal income (stable relationship))

3) $M_d = M_s$ (money demand and supply balance)

Money supply = international reserves (R) + domestic credit (DC).

$$4) M_s = R + DC$$

ΔR can be represented as follows:

$$5) \Delta R = \frac{1}{v} (\Delta P y_{-1} + P_{-1} \Delta y) - \Delta DC$$

MABOP: Summing up (ii)

Note also:

$$6. \Delta R = \bar{X} - Z + \Delta \bar{F}$$

$$7. Z = mY = m(Y_{-1} + P_{-1}\Delta y) + my_{-1}\Delta P$$

These two gives the following expression for ΔR

$$8) \Delta R = (\bar{X} - \Delta \bar{F}) - m(Y_{-1} + P_{-1}\Delta y) - my_{-1}\Delta P \text{ (when } \Delta DC \text{ we can solve (8) and (5) for } \Delta R \text{ and } \Delta P. \text{ But not independent as we only have one policy variable } \Delta DC \text{ and two targets. Introduce } \Delta e \text{ and above definition of } P, \text{ i.e. } P = (1-\vartheta)P_d + \vartheta e\bar{P}_f$$

Final result after introducing the exchange rate (two equations with two targets and two policy variables):

$$10) \Delta R = (\gamma_0 + \gamma_1 \Delta e - \Delta DC) + \gamma_2 \Delta P_d$$

$$11) \Delta R = (\rho_0 + \rho_1 \Delta e) - \rho_2 \Delta P_d$$

FP in practice

- (i) Level of international reserves and price targets
- (ii) Projecting exogenous variables
- (iii) Are resulting imports realistic – if too small the gap must be closed – exchange rate devaluation
- (v) Calculate money demand
- (vi) Calculate domestic credit expansion – targets for public and private sector (former often the residual)
- (vii) Is domestic credit to government realistic given budgets – bring into balance
- (viii) Agree on programme and implementation monitoring

FP discussion

- Domestic failure behind need for adjustment
- The importance of growth as integral part underestimated
- Structural constraints and price rigidities
- Crowding in or out?
- Social dimensions?
- New approaches

World Bank and Growth Programming (revised minimum standard model - RMSM)

- **Key accounting identities:**

- $Y = C + I + X - Z$
- $Y = C + S$
- $S - I = X - Z$

- **Key assumptions:**

- Output is targeted (exogenous)
- Capital-output ratio treated as historic or technological constant ($k = K/y$)
- X exogenous and Z depends on output

RMSM summing up

$$1) \Delta y = \Delta y^*$$

$$2) I = k\Delta y^*$$

$$3) X = \bar{X}$$

$$4) Z = my$$

Solve with C as residual from $y = C + I + X - Z$ – one gap model 5. $C = y - I - \bar{X} + Z$

But may not be realistic: so suppress trade gap instead

$$6) C_p = (1-s)(y-T)$$

$$7) C = (C_p + C_g) = y - I - \bar{X} + Z$$

$$8) \Delta R = \Delta R^*$$

With closure $\Delta F = Z - \bar{X} + \Delta R^*$. But is ΔR^* controlled by government? How complete model: introduce exchange rate adjustment to affect Z

Growth programming in practice

- (i) Fix growth targets (by sector) and changes in international reserves
- (ii) Estimate capital-output ratio and import parameter, export projection
- (iv) How much consumption feasible – alternatively how much external financing needed
- (v) If imports are constrained then iterate until consistent projection

RMSM discussion

- Constant use of capital
- No behaviour (except imports and consumption)
- No relative prices – including exchange rate
- Inflow of resources positive – but is building up debt always positive?
- Distributional issues

Conclusion

- Identities are useful for identifying potential problems and economic policies to address imbalances – but accounting is **not** causality
- Two simple models used in practice – the IMF and World Bank analytical models, and their influence
- Where does theory and advanced applied modelling stand?
- Looking into the future



Questions & comments?