INTRODUCTION

Macroeconomic statistics cover either:

✓the whole economy (example : *National Accounts*)

✓or a large and well-defined part of it (example : *Government Finance Statistics*)

Accounting relationships link the various accounts to form a coherent data **system**

Interrelated economic variables are measured by means of a statistical system

Statistics Department

INTRODUCTION

Aggregate Economy ("Real Sector")

General Government

Four major components of the system of Macroeconomic Accounts

Rest of the World ("External Sector")

Depository Corporations ("Monetary Sector")

OBJECTIVES

Why put together data from these four accounts?

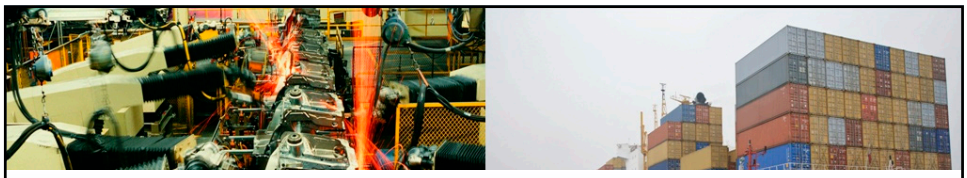
To build a **coherent picture** of a country's economy (the *"macroeconomic framework"*) that can be used for:

✓**analysis** and policy prescriptions

✓**scenario building** assessing the macroeconomic impact of a hypothetical shock to the economy

OUTLINE

- Introduction
- Key Accounts
- Accounting Links
- Need for Data Consistency
- Income-Absorption Gap
- Saving-Investment Gap
- Foreign Savings
- Monetary Approach to the BOP
- Introduction to Flow of Funds Tables
- Data Consistency Checks
- Behavioral Consistency



Reconciling Data

INTERNATIONAL MONETARY FUND

KEY ACCOUNTS

Economic agents engage in transactions in the markets for goods and services, factors of production, and financial assets

Macroeconomic accounts are linked because agents in the various sectors transact with one another

KEY ACCOUNTS

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

$$Y + M = C + I + X$$

$$Cp + Ip$$
$$Cg + Ig$$

The GDP identity linking aggregate supply and demand for goods and services illustrates this

KEY ACCOUNTS

Numerical example

$$Y + M = Cp + Cg + Ip + Ig + X$$

Let us assume government expenditures increase. What would be the potential impact on the other sectors?

KEY ACCOUNTS

Linkages among the various economic aggregates are of two types : accounting links and behavioral relationships

✓Accounting links give a starting point to the analysis

✓Behavioral relations show what factors precisely determine economic transactions between sectors

KEY ACCOUNTS

REAL SECTOR

GDP by expenditures, from National Accounts (SNA2008, domestic currency, transactions)

Private consumption

Final government consumption

Private investment

Government investment

Exports of goods and nonfactor services

Imports of goods and nonfactor services

Gross Domestic Product

KEY ACCOUNTS

EXTERNAL SECTOR

Balance of Payments (BPM06, US dollars, transactions)

Current account (surplus +, deficit -)
- Exports of goods and services
- Imports of goods and services
- Primary income (net)
- Secondary Income (net)
  - Official
  - Private

Capital account (surplus +, deficit -)

Financial account (net lending +,net borrowing -)
- Direct investment
- Portfolio Investments
- Financial derivatives a.o.
- Other investments

Net errors and omissions

Overall BOP balance (surplus +, deficit -)

Change in reserve assets (increase +, reduction -)

KEY ACCOUNTS

GENERAL GOVERNMENT

Fiscal Accounts (GFSM 2001,domestic currency, transactions)

Revenue
Grants
Expense
  Interest payments
Operating balance

Transactions in nonfinancial assets

Net lending/borrowing
  Domestic financing (net)
    Banking system
    Nonbanking sector
  External financing (net)

KEY ACCOUNTS

MONETARY SECTOR

Central Bank (domestic currency, stocks)
Net foreign assets
Net domestic assets
  Net claims on government
  Claims on Other Depository Corporations
  Other items (net)
Monetary base
  Currency
  Banks' reserves

Other Depository Corporations (domestic currency, stocks)
Net foreign assets
Banks' reserves
Net domestic assets
  Net claims on government
  Claims on nongovernment
  Other items (net)
Liabilities to Central Bank
Private sector deposits

Consolidated Depository Corporations Survey (domestic currency, stocks)

Net foreign assets

Net domestic assets
  Net claims on government
  Claims on nongovernment
  Other items (net)

Broad money liabilities
  Currency
  Deposits

KEY ACCOUNTS

What about the non-bank private sector?

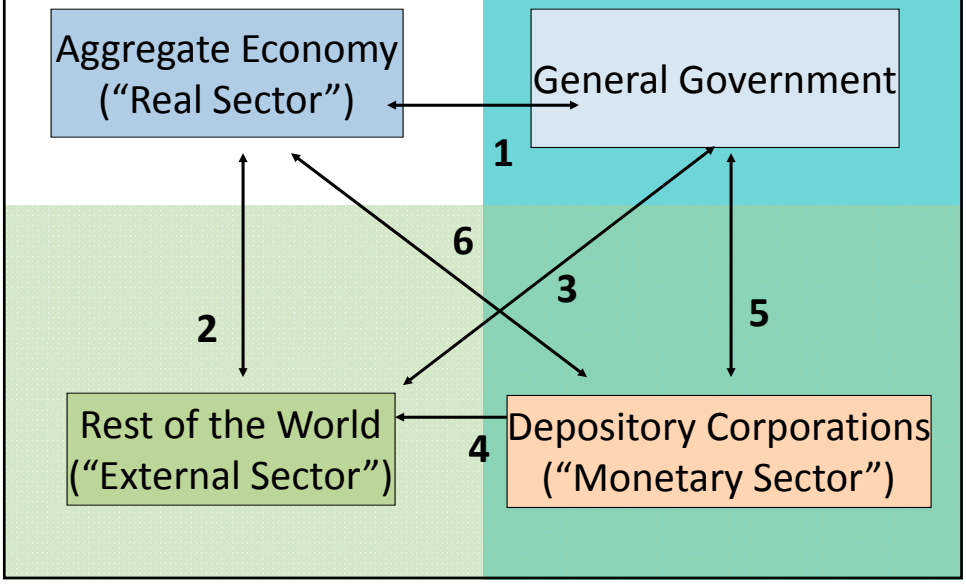
The private sector (other than depository corporations) includes mainly resident corporations and households

Data for this sector is often incomplete or available with a long lag. What to do about it?

Private sector data can usually be estimated as the residual between its value for the economy as a whole and for the government sector

ACCOUNTING LINKS

Interrelations among Macroeconomic Accounts



ACCOUNTING LINKS

REAL SECTOR
From National Accounts (domestic currency, transactions)

Private consumption

Final government consumption

Private investment

Government investment

……

GENERAL GOVERNMENT
GFSM2001 (domestic currency, transactions)

Revenue

Grants

Expense

Goods and services

Salaries

Operating balance

Transactions in nonfinancial assets

……

Link 1: Fiscal and national accounts

ACCOUNTING LINKS

The *accounts reconciliation* process implies reducing or eliminating measurement discrepancies between the same or related items compiled from different sources

The value of transactions are generally estimated from different sources. Discrepancies may arise in the original data

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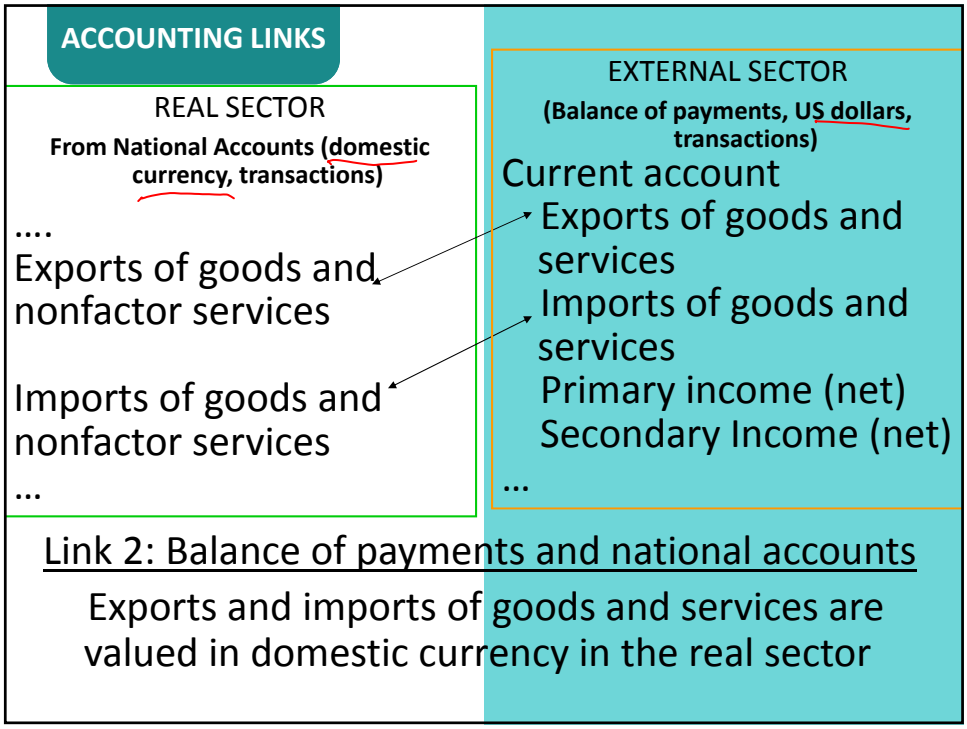
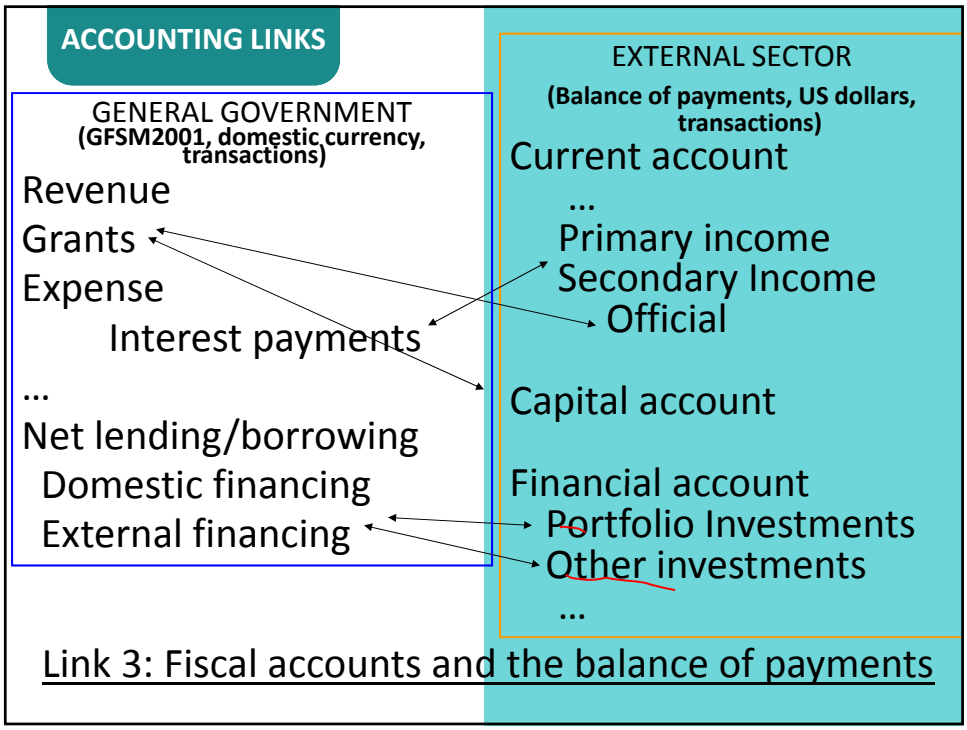
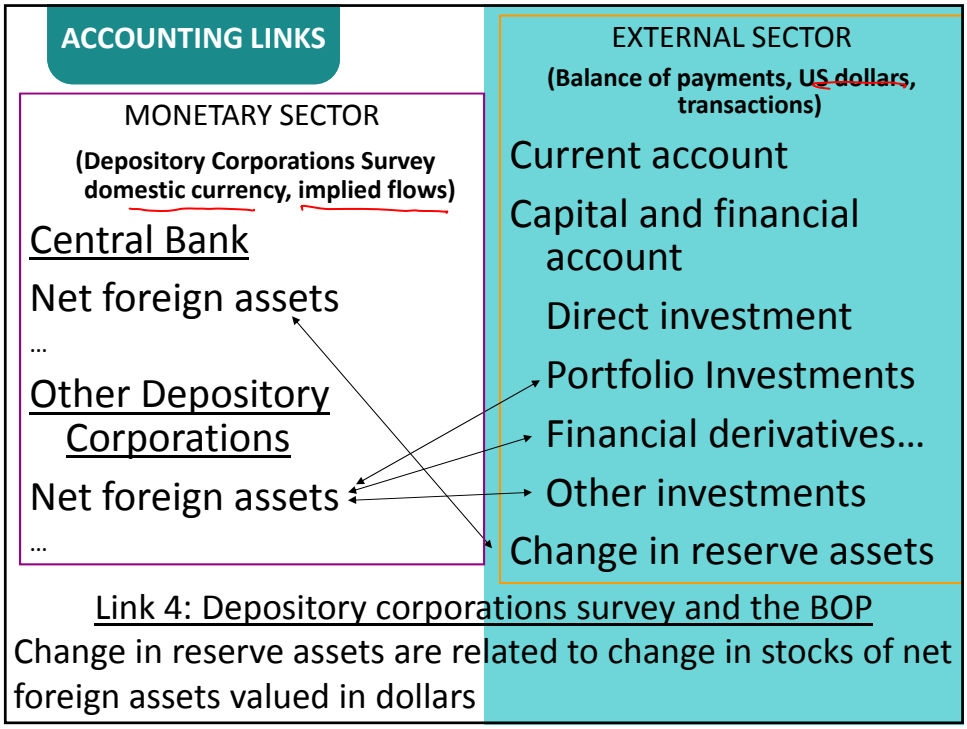
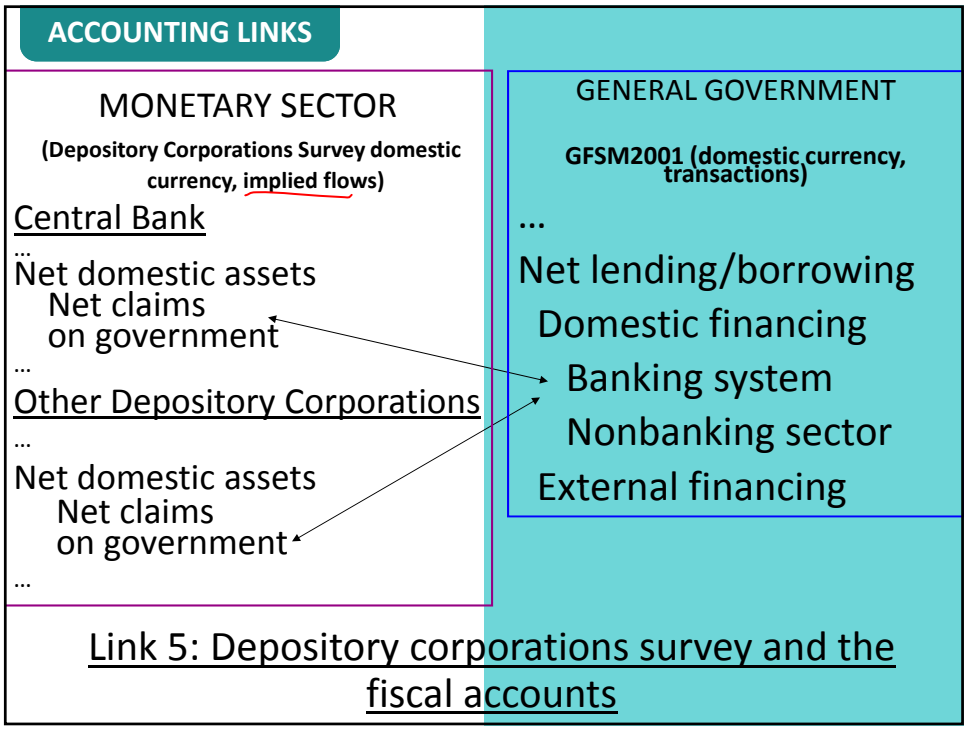

ACCOUNTING LINKS
REAL SECTOR
From National Accounts (domestic currency, transactions)
....
Exports of goods and nonfactor services
Imports of goods and nonfactor services
...
EXTERNAL SECTOR
(Balance of payments, US dollars, transactions)
Current account
Exports of goods and services
Imports of goods and services
Primary income (net)
Secondary Income (net)
...
Link 2: Balance of payments and national accounts
Exports and imports of goods and services are valued in domestic currency in the real sector


ACCOUNTING LINKS
GENERAL GOVERNMENT
(GFSM2001, domestic currency, transactions)
Revenue
Grants
Expense
Interest payments
...
Net lending/borrowing
Domestic financing
External financing
EXTERNAL SECTOR
(Balance of payments, US dollars, transactions)
Current account
...
Primary income
Secondary Income
Official
Capital account
Financial account
Portfolio Investments
Other investments
...
Link 3: Fiscal accounts and the balance of payments



Link 4: Depository corporations survey and the BOP

Change in reserve assets are related to change in stocks of net foreign assets valued in dollars



Link 5: Depository corporations survey and the fiscal accounts

ACCOUNTING LINKS

Δ Net Foreign Assets

Plus

Δ Net Domestic Assets

Δ Net Domestic Credit

Δ Net claims on government

Δ Claims on nongovernment

Δ Claims on Public Enterprises

Δ Claims on Private Sector

Δ Other Items Net

Equals

Δ Broad Money

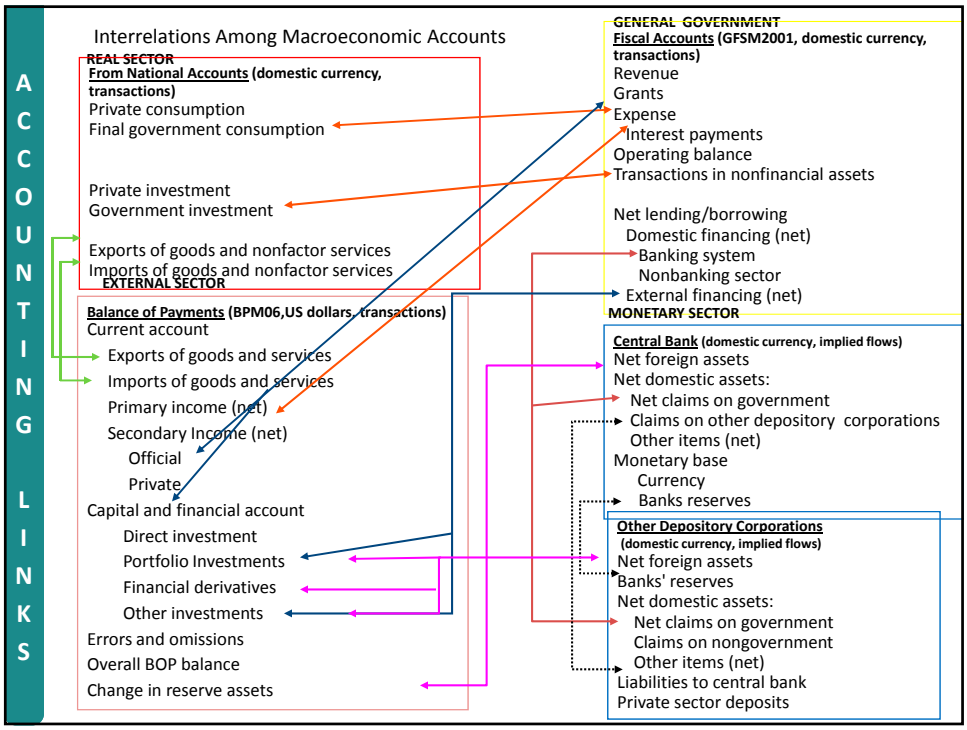
Link 6

A Broader View of linkages of the consolidated Depository Corporations Survey (domestic currency, implied flows)

Two behavioral relationships

✓Change in the stock of claims on nongovernment must be related with developments in the real sector

✓Broad money growth must be consistent with developments in the demand for money



ACCOUNTING LINKS

An animated version of the previous slide showing the main accounting links is available

Go retrieve it and run it!

THE NEED FOR DATA CONSISTENCY

What do we mean by *accounting consistency* ?

A macro framework is consistent when the different accounts reflect the transactions among the sectors in the same way

THE NEED FOR DATA CONSISTENCY

Same Concepts Allow Linking

Same concepts for

- ✓ Sectors
- ✓ Instruments
- ✓ Recording rules

Allow to:

- ✓ Link major macroeconomic statistics
- ✓ Fill data gaps in related macroeconomic statistics
- ✓ Get early data from other datasets

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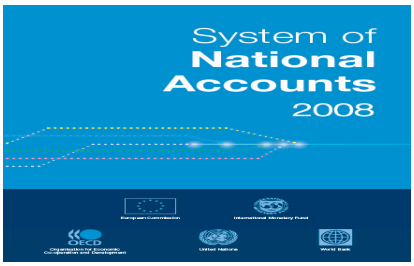
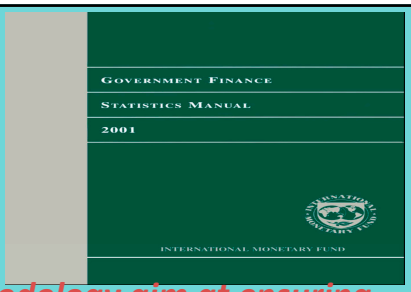
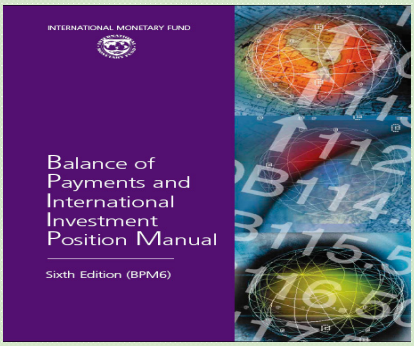
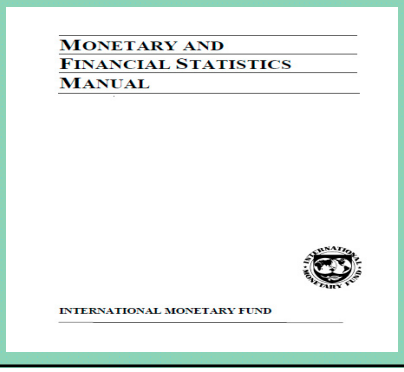




Manuals of statistical methodology aim at ensuring consistent methods





THE NEED FOR DATA CONSISTENCY

Main Manuals

- ✓ System of National Account (SNA 2008)
- ✓ Balance of Payments Manual, *6th edition* (BPM6) (2008)
- ✓ Monetary and Financial Statistics Manual (MFSM) (2000)
- ✓ Manual on Government Finance Statistics (GFSM2001): currently being harmonized with the 2008 SNA

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THE NEED FOR DATA CONSISTENCY

In some cases, discrepancies in historical data across sectors may be traced to identified factors, such as

✓differences in the timing of recording

✓different coverage of sectors

✓use of different values of exchange rates

As a matter of fact, inconsistencies in data that are reported to the IMF exist for most countries

THE NEED FOR DATA CONSISTENCY

What can be done about this?

✓If we can identify the origin of a discrepancy, then as a second-best solution we can try to make ad-hoc adjustments to the original data

✓If there is no valid explanation for apparent inconsistencies, there may be errors in the data

Errors in the data should be corrected

RECAP

Need for Data Consistency

Accounts need to be consistent, i.e. transactions are reflected in the same way

In practice there are many possible sources of discrepancies

Solutions?

Try to explain the discrepancy

Unexplained discrepancies may reflect data errors and should be corrected

Scenarios should be consistent

Economic consistency

Not enough for scenarios to be consistent. Specify the behavioral relations among aggregates. This will become clearer in the last video

INTERRELATIONS BETWEEN THE BOP AND DOMESTIC SECTORS ANALYZED FROM A POLICY PERSPECTIVE

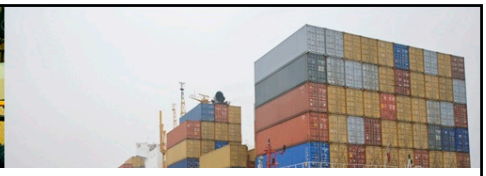
Income-Absorption Gap

Saving-Investment Gap

Foreign Savings

Monetary Approach to the BOP

The underlying themes of these four approaches are
✓the sustainability of the country's external position
✓ and the evolution of its reserve assets



Absorption, Savings and the Current Account

INTERNATIONAL MONETARY FUND

THE INCOME-ABSORPTION GAP

There are various analytical ways to look at the relationship between the current account and domestic aggregates

Here we look at the *absorption approach to the balance of payments*

THE INCOME-ABSORPTION GAP

Let's do the simple math

primary income (net)
secondary income (net)

$$GNDI = Y + Y_f + TR_f$$

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

$$GNDI = A + (X - M + Y_f + TR_f)$$

GNDI – A = CAB

A current account deficit is associated with an excess of absorption over disposable income

EXAMPLE

If disposable income exceeds domestic demand the current account must show a surplus

INDONESIA: Income-absorption gap (in current prices)

	As percent of GDP		
	2000	2001	2002
Gross domestic product	100	100	100
Domestic Demand (Absorption)	**87**	**89**	**90**
Consumption	65	68	70
Investment	22	21	20
Exports of goods and nonfactor services	47	43	37
Imports of goods and nonfactor services	-34	-32	-27
Net factor income	-9	-8	-6
Net transfers	1	1	1
Gross national disposable income	**92**	**93**	**95**
Current account balance	**5**	**4**	**5**

THE INCOME-ABSORPTION GAP

Let us suppose that a country experienced a near-zero current account balance for an extended period of time. Suddenly the current balance turns into a large deficit

What drives the change?

The identity does not indicate the direction of causality. Analysis is needed

THE INCOME-ABSORPTION GAP

The shift could among other possibilities be:

- the result of a substantial exogenous rise in the price of imports with the volume of imports unaffected
- the result of an endogenous consumption boom fueling an increase in the volume of imports

Whatever the underlying cause is, the identity holds and is useful in framing the analysis

THE INCOME-ABSORPTION GAP

In the Case of a Current Account Deficit:

Contracting consumption or investment to reduce absorption

Tightening monetary and fiscal policies to achieve this

What about Raising Output and Income?

In the short term exchange rate depreciation can help

In the medium term, higher investment and adequate structural reforms can raise output

Policy options?

THE SAVING-INVESTMENT GAP

Let us rearrange the previous equation to highlight the interaction between saving and investment in the domestic economy and the current account balance

Here we look at the *saving-investment approach to the balance of payments*

THE SAVING-INVESTMENT GAP

$$GNDI - A = CAB$$

$$GNDI - C - I = CAB$$

$$S = GNDI - C$$

$S - I = CAB$

The resources needed to cover the excess of investment over saving must come from abroad

EXAMPLE

Canada: Selected Economic Indicators. 2008–11

	2008	2009	Projections 2010	2011
Balance of Payments (in percent of GDP)				
Current account balance	0.3	-3.0	-3.1	-3.5
Saving and Investment (in percent of GDP)				
Gross national saving	23.6	17.9	19.1	19.9
General government	2.9	-0.9	-1.2	-0.6
Private	20.7	18.8	20.3	20.4
Personal	5.4	6.2	6.2	5.5
Business	15.1	12.1	13.4	14.9
Gross domestic investment	23.2	20.9	22.2	23.4

THE SAVING-INVESTMENT GAP

The saving-investment gap ($S_g - I_g$) of the government corresponds broadly to the overall fiscal balance: government's disposable income less final government consumption and investment

Disposable income of the government= revenues and grants - interest and transfers

The government's saving-investment gap

THE SAVING-INVESTMENT GAP

The breakdown of gross national income into the private sector, government and the rest of the world yields the identity:

$$CAB = (S - I) = (Sp - Ip) + (Sg - Ig)$$

Disaggregating the economy-wide saving-investment gap

THE SAVING-INVESTMENT GAP

$S_p - I_p > 0$ and $S_g - I_g < 0$ Situation 1	$S_p - I_p < 0$ and $S_g - I_g < 0$ Situation 2
$S_p - I_p < 0$ and $S_g - I_g > 0$ Situation 3	**Identifying policies that target the source of the imbalances**

THE SAVING-INVESTMENT GAP - SITUATION 1

A fiscal deficit is the main source of the current account deficit

Reducing the current account deficit will require fiscal adjustment

$$S_p - I_p > 0 \quad \text{and} \quad S_g - I_g < 0$$
$$CAB < 0 \text{ if } |S_g - I_g| > |S_p - I_p|$$

This case involves "twin deficits"

THE SAVING-INVESTMENT GAP - SITUATION 2

The current account deficit represents both a government and a private sector deficit

In many developing countries, saving might be Low both in both in the public and private sector, yet considerable investment opportunities exist

$$S_p - I_p < 0 \quad \text{and} \quad S_g - I_g < 0$$
$$CAB < 0$$

Typical of many developing countries

THE SAVING-INVESTMENT GAP - SITUATION 3

A current account deficit coexists with a fiscal surplus and a private saving shortfall. The latter may reflect

✓ a private investment boom financed by foreign capital inflows

✓ a private consumption boom

✓a lack of savings opportunities

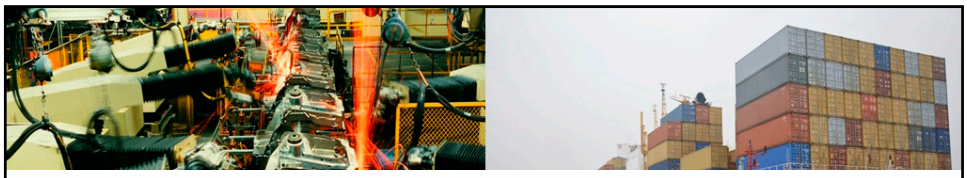
$$S_p - I_p < 0 \quad \text{and} \quad S_g - I_g > 0$$
$$CAB < 0 \text{ if } |S_p - I_p| > |S_g - I_g|$$

Booming private sector?

EXAMPLE

Russian Federation

(Percent of GDP)	2008	2009	2010 Estimate
Gross domestic investment	25.5	18.9	22.8
Private sector	20.8	14.3	18.4
Public sector	4.7	4.6	4.4
Gross national savings	31.7	22.9	27.6
Private sector	22.7	24.6	28.8
Public sector	9.0	-1.7	-1.2
External current account balance	6.2	4.1	4.8



Financial Links

INTERNATIONAL MONETARY FUND

FOREIGN SAVINGS

A third way to look at the links between the domestic economy and the external sector is through **financial** links

Looking at financial flows of the balance of payments

FOREIGN SAVINGS

$$S-I = CAB$$

$$CAB+KAB = FAB^{*}+\Delta RES$$

$$CAB+KAB-FAB^{*}-\Delta RES=0$$

(BPM6 sign conventions)

- A deficit in the current account is matched by a current account surplus of the rest of the world
- The surplus reflects **foreign savings**
- Foreign savings finance the deficit country through flows in the capital and financial account, and changes in reserve assets

The rest of the world has an excess of saving over investment when its current account is in surplus

EXAMPLE

Ghana: Selected Economic and Financial Indicators

(Percent of GDP)	2006	2007	2008	2009
Investment and saving				
Gross investment	21.6	22.9	21.5	19.6
Private[3]	21.6	16.6	18.5	17.9
Central government	0.0	3.5	2.9	1.7
Gross national saving	15.5	15.1	12.0	15.6
Private[3]	10.6	10.4	9.2	12.3
Central government	4.9	4.7	2.8	3.3
Foreign savings	6.2	8.0	10.8	4.0
External sector				
Current account balance (including official transfers)	-6.2	-8.0	-10.8	-4.0

FOREIGN SAVINGS

Is the recourse to foreign savings sustainable?

A country's recourse to foreign savings can be maintained only as long as capital inflows persist or reserve assets decline

THE MONETARY APPROACH TO THE BOP

Abstracting from changes in NFA of commercial banks and of valuation changes:

$\Delta NFA = \Delta RES$ (in same currency)

$\Delta M2 - \Delta NDA = \Delta RES$

- ✓ Recall that changes in NFA must be consistent with changes in reserves in the balance of payments
- ✓ Assuming no changes in OIN:

a difference between domestic credit expansion and the increase in broad money is reflected in a change in reserve assets

THE MONETARY APPROACH TO THE BOP

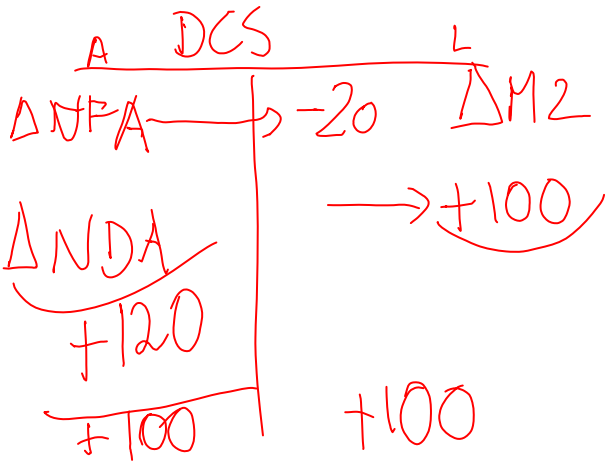
$\Delta M2 - \Delta NDA = \Delta RES$

This approach is widely used in IMF-supported programs

This relation constitutes the basis of the *monetary approach to the BOP*

THE MONETARY APPROACH TO THE BOP

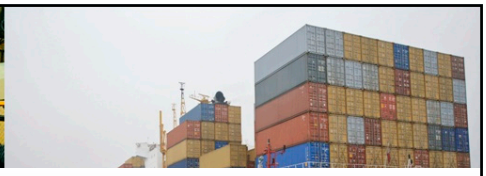
Example



What if credit expansion exceeds increases in M2?

FURTHER ASPECTS OF THE MACROFRAMEWORK AND ITS USE

- Introduction to flow of funds tables
- Data consistency checks
- Behavioral consistency



Flows of Funds

INTERNATIONAL MONETARY FUND

INTRODUCTION TO FLOW OF FUNDS TABLES

The flow of funds table shows both nonfinancial and financial transactions of each of the domestic sectors

Let us look at a simplified example in the next slide

The savings-investment balance for each sector and for the aggregate economy must be completely financed

Simplified flow of funds table

Transactions \ Sectors	Domestic Economy: Aggregate Economy	Domestic Economy: Government Sector	Domestic Economy: Private Sector	Domestic Economy: Monetary Sector	Rest of the World	Check
GNDI	100	20	80			
Absorption	-105	-24	-81			
Net exports					5	
Non-financial balance	-5	-4	-1	0	5	0
Foreign financing		2	3		-5	0
Domestic credit		1	-6	5		0
Broad money			5	-5		0
Non-bank financing		1	-1			0
Check		0	0	0	0	0

INTRODUCTION TO FLOW OF FUNDS TABLES

Accounting conventions:

In the financial part of the table, a positive sign represents an increase in liabilities (borrowing) or a decrease in assets (a loss of foreign reserves, for example). A negative sign means the opposite

Under these sign conventions:
✓For each sector in columns the vertical sum of operations is zero
✓The horizontal sum of each row is zero

Transactions \ Sectors	Domestic Economy: Aggregate Economy	Domestic Economy: Government Sector	Domestic Economy: Private Sector	Domestic Economy: Monetary Sector	Rest of the World	Check
GNDI	100	20	80			
Absorption	-105	-24	-81			
Net exports					5	
Non-financial balance	-5	-4	-1	0	5	0

		G	P	M	R	
Non-financial balance	-5	-4	-1	0	5	0
Foreign financing		2	3		-5	0
Domestic credit		1	-6	5		0
Broad money			5	-5		0
Non-bank financing		1	-1			0
Check		0	0	0	0	0

INTRODUCTION TO FLOW OF FUNDS TABLES

May be Helpful in Analytical Work

Helps identify the origins of the surpluses and deficits

Shows how the surpluses are utilized and the deficits are financed in each sector

Helps to Ensure the Consistency of the Historical Data, Scenarios and Projections

Summarizes the interrelationships among the different sectors in a systematic and coherent way

INTRODUCTION TO FLOW OF FUNDS TABLES

More details and examples about flow of funds tables are available in the optional material of this module

Take the time of studying it!

Optional- more on flow of funds tables

DATA CONSISTENCY CHECKS

EXTERNAL SECTOR

Balance of Payments (BPM06, US dollars, transactions)

Current account (surplus +, deficit -)
- Exports of goods and services
- Imports of goods and services
- Primary income (net)
- Secondary Income (net)
  - Official
  - Private

Capital account (surplus +, deficit -)

Financial account (net lending +,net borrowing -)
- Direct investment
- Portfolio Investments
- Financial derivatives a.o.
- Other investments

Net errors and omissions

Overall BOP balance (surplus +, deficit -)

Change in reserve assets (increase +, reduction -)

DATA CONSISTENCY CHECKS

Often differences arise because

- The data come from different sources…
- which may use different definitions…
- or differ in their coverage

Differences in the statistics may also be due to the use of different recording methods

For example, one data set may record transactions on a cash basis, and another on an accrual basis

DATA CONSISTENCY CHECKS

From National Accounts (domestic currency, transactions)

Private consumption
Final government consumption
Private investment
Government investment
…

Fiscal Accounts (GFSM2001, domestic currency, transactions)

Revenue
Grants
Expense
  Interest payments
…

- *Consistency test: Final government consumption can be reconciled with expenses on "wages and salaries", "use of goods and services" and some other expenses*

- Discrepancies may arise from
  - ✓ the breakdown of fiscal accounts not showing exactly the two expenses named above; and
  - ✓ fiscal accounts often reported on a cash basis, when the national accounts are on an accrual basis

DATA CONSISTENCY CHECKS

From National Accounts (domestic currency, transactions)

…
Private investment
Government investment
…

Fiscal Accounts (GFSM2001, domestic currency, transactions)

Revenues
Grants
Expenses
  …
Transactions in nonfinancial assets

- *Consistency test: Government investment can be reconciled with to transactions in nonfinancial assets*
- Discrepancies may arise from the coverage of the fiscal tables and the use of cash versus accrual accounting.
  - ❖ Note that capital expenditures by public enterprises are considered "private sector investment" in the national accounts

DATA CONSISTENCY CHECKS

From National Accounts (domestic currency, transactions)

Absorption

Exports of goods and nonfactor services

Imports of goods and nonfactor services

Balance of Payments (US dollars, transactions)

Current account

Exports of goods and services

Imports of goods and services

Primary income (net)

Secondary Income (net)

…

- *Consistency test: Exports and imports in the national accounts should correspond to exports and imports in the BOP converted to domestic currency*
- Discrepancies may occur owing to the average exchange rates used and other accounting differences

DATA CONSISTENCY CHECKS

Fiscal Accounts (GFSM2001, domestic currency, transactions)

…

Operating balance

Net lending/borrowing

Domestic financing

External financing

Balance of Payments (US dollars, transactions)

Current account

Capital and financial account

Direct investment

Portfolio Investments

Financial derivatives

Other investments

…

- *Consistency test: External financing in the fiscal accounts can be reconciled with "other investment" and "portfolio investment," pertaining to the government sector in the BOP*
- Discrepancies are expected owing to the exchange rate used. Official flows in the BOP may include borrowing by the general government and borrowing by public enterprises

DATA CONSISTENCY CHECKS

Balance of Payments (US dollars, transactions)

Current account

Capital and financial account
Net errors and omissions
Overall BOP balance

Change in reserve assets

Central Bank (domestic currency, implied flows)

Net foreign assets

Net domestic assets

Monetary base

- *Consistency test: The change in reserves recorded in the BOP can be reconciled with the change in net foreign assets of the central bank*
- The main sources of discrepancies are changes in the valuation of existing reserves due to exchange rate fluctuations, and net versus gross reserve concepts

DATA CONSISTENCY CHECKS

Balance of Payments (US dollars, transactions)

Current account

Capital and financial account
Portfolio Investments
Financial derivatives
Other investments
…

Other Depository Corporations (domestic currency, implied flows)

Net foreign assets

Net domestic assets
…

- *Consistency test: The change in the net foreign assets position of the other depository corporations can be related to net capital flows in the financial account of the BOP*
- An exact relationship is difficult to establish for many reasons, including discrepancies in the valuation of assets due to exchange rate fluctuations

DATA CONSISTENCY CHECKS

Fiscal Accounts (GFSM2001, domestic currency, transactions)

...

Operating balance

Net lending/borrowing

Domestic financing

External financing

Consolidated Depository Corporations Survey (domestic currency, implied flows)

Net foreign assets

Net domestic assets

Net claims on government

Broad money

- *Consistency test: Domestic financing from the banking system can be reconciled with "net claims on the government"*
- Discrepancies may arise from
  - ✓ depository corporations survey data including revaluations of claims
  - ✓ Including claims on public enterprises guaranteed by the government
  - ✓ other coverage differences

BEHAVIORAL CONSISTENCY

A prerequisite to scenario use

The team that is building a scenario must reconcile the data to the extent feasible

A scenario is not credible if the numbers in the monetary and in the government sectors, for example, are in conflict!

Consistency of the accounts is the first test of accuracy and reliability of a scenario

BEHAVIORAL CONSISTENCY

Understanding **both** accounting and behavioral relationships between the accounts is fundamental to constructing a consistent overall macroeconomic "storyline"

Recall : it is not enough for accounts to be consistent

BEHAVIORAL CONSISTENCY

Economists need to understand the current state of the economy ("forecasting the present" or "nowcasting")

Economists also need to assess where the economy is heading under current trends and policies, and under alternative scenarios

Diagnosing the state of the economy and trends

BEHAVIORAL CONSISTENCY

- Working with a macroeconomic framework that is consistent in an accounting and behavioral sense will allow the analyst to best perform these tasks
- This is key for, among other things, the preparation of next year's budget

BEHAVIORAL CONSISTENCY

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

One common starting point in building a scenario is a preliminary assessment for inflation and real GDP growth from the supply side

Assessing Y from the supply side…

BEHAVIORAL CONSISTENCY

- On the demand side, behavioral relationships link exports primarily to world demand conditions and competitiveness
- There are relationships linking imports and income to inflation, real GDP growth, and the real exchange rate

… and from the demand side

BEHAVIORAL CONSISTENCY

The expected absorption should be consistent with the behavioral relationships for the consumption and investment functions

Reconciling the estimates of GDP on the supply and demand side requires generally a judgment call by the analyst

BEHAVIORAL CONSISTENCY

- Scenarios of the capital account of the BOP should take into account the relationships that link capital flows to interest rate differentials, confidence, and other factors
- The resulting monetary expansion can affect absorption

Large capital inflows in turn can affect domestic credit expansion and reserve accumulation

BEHAVIORAL CONSISTENCY

Changes in fiscal revenue may affect private consumption through its impact on the disposable income of households

The size of the output gap may affect fiscal revenue and expenses

BEHAVIORAL CONSISTENCY

- Scenarios for the monetary sector usually make an assumption about average aggregate velocity of money, based on past trends and future policies
- The historical relationship between private sector credit, investment, and economic growth can be used to calibrate this relation

The projected level of bank credit to the private sector needs to be broadly consistent with projected GDP growth

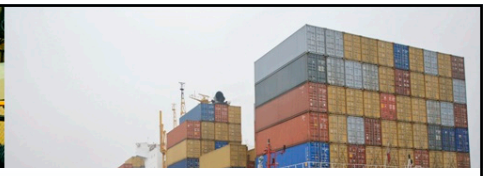
RECAP

The macroeconomic framework aims at building a coherent picture of a country's economy that can be used for analysis, policy prescription and scenario building

What remains to be done to complete a financial programming exercise, that is not covered in this introductory course?

RECAP

- Studying forecasting methods
- Constructing a baseline scenario
- Analyzing the set of possible macroeconomic policies
- Constructing a policy scenario



The Flow of Funds Tables

INTERNATIONAL MONETARY FUND

MORE ON FLOW OF FUNDS TABLES

RECAP

The flow of funds table shows both nonfinancial and financial transactions of each of the domestic sectors

It follows the principle that the savings-investment balances for each sector and for the aggregate economy must be completely financed

Simplified flow of funds table

Transactions \ Sectors	Domestic Economy: Aggregate Economy	Domestic Economy: Government Sector	Domestic Economy: Private Sector	Domestic Economy: Monetary Sector	Rest of the World	Check
GNDI	100	20	80			
Absorption	-105	-24	-81			
Net exports					5	
Non-financial balance	-5	-4	-1	0	5	0
Foreign financing		2	3		-5	0
Domestic credit		1	-6	5		0
Broad money			5	-5		0
Non-bank financing		1	-1			0
Check		0	0	0	0	0

MORE ON FLOW OF FUNDS TABLES

Recall the accounting conventions. In the financing part of the FOF table in the next slide (sections (B) and (C)) :

- a positive sign indicates an increase in liabilities or a decrease in assets
- a negative sign indicates a decrease in liabilities or an increase in assets

The vertical sum of all operations in each column (1 to 5) is zero. The horizontal sum of all operations in each row (sections A,B,C,D) is zero

Accounting conventions

Schematic FOF Table

Transactions/Sectors	Domestic Economy (1)	General Government (2)	Private Sector (3)	Depository Corporations (4)	Rest of the World (5)	Horizontal check (6)
Gross national disposable income (GNDI)	$GNDI$	$GNDI_g$	$GNDI_p$			
Final consumption	$-C$	$-C_g$	$-C_p$			
Gross investment	$-I$	$-I_g$	$-I_p$			
Exports of goods and nonfactor services					$-X$	
Imports of goods and nonfactor services					M	
Net factor income					$-Yf$	
Net transfers					$-TRf$	
(A) Nonfinancial balances	$S-I$	S_g-I_g	S_p-I_p	0	$-CAB$	0

Transactions/Sectors	Domestic Economy (1)	General Government (2)	Private Sector (3)	Depository Corporations (4)	Rest of the World (5)	Horizontal check (6)
(A) Nonfinancial balances	$S-I$	S_g-I_g	S_p-I_p	0	$-CAB$	0
(B) Foreign financing						
Monetary						
Change in net foreign assets	$-\Delta NFA$	0	0	$-\Delta NFA$	ΔRES	0
Nonmonetary						
Direct investment	FDI	0	FDI	0	$-FDI$	0
Net foreign borrowing	NFB	NFB_g	NFB_p	0	$-NFB$	0
(C) Domestic financing						
Monetary						
Domestic credit	0	ΔNDC_g	ΔDC_p	$-\Delta DC$	0	0
Broad money	0	0	$-\Delta M2$	$\Delta M2$	0	0
Nonmonetary						
Government net lending	0	$-NL$	NL	0	0	0
Nonbank	0	NB	$-NB$	0	0	0
(D) Net errors and omissions	OIN_e	0	$OIN_e + \Delta OIN_m$	$-\Delta OIN_m$	$-OIN_e$	0
Vertical check: (A) + (B) + (C) + (D)	0	0	0	0	0	0

SIMPLIFIED EXAMPLE

Table 3
Simplified flow of funds table

1. The government decides to increase expenditure.

4. To be able to lend more to the government, this sector has to cut its own expenditure.

Transactions \ Sectors	Domestic Economy				Rest of the World	Check
	Aggregate Economy	Government Sector	Private Sector	Depository Corporations		
GNDI	100	20	80			
Absorption	-105	-28	-77			
Net exports					5	
Non-financial balance	-5	-8	3	0	5	0
Foreign financing		2	3		-5	0
Domestic credit		1	-6	5		0
Broad money			5	-5		0
Non-bank financing		5	-5			0
Check		0	0	0	0	0

2. To finance the added expenditure, the government sector needs to borrow more.

3. Another sector then has to increase its lending to the government.

Impact of a change in budget policy?

MORE ON FLOW OF FUNDS TABLES

Consider a more comprehensive flow of funds table, such as the one in the next slide from the Excel file, in billions of domestic currency and in percent of GDP

Think about an alternative scenario following an increase in government capital expenditure of, say, 100 billion

Scenario analysis

EXAMPLE

Syldavia: Flow of funds table, 2004

(in billions of Syldavian Pounds)

Transactions \ Sectors	Domestic economy: Aggregate economy	Domestic economy: Government sector	Domestic economy: Private sector	Domestic economy: Depository Corporations sector	Rest of the world	Check
Gross national disposable income (GNDI)	2,318.0	168.3	2,149.8	0		
Consumption	-1,809.9	-250.0	-1,559.9	0		
Gross fixed capital formation	-567.7	-70.0	-497.8	0		
Change in stocks 1/	106.4		106.4	0		
Exports of goods and services 2/					-518.6	
Imports of goods and services 2/					468.8	
Income from abroad, net					58.0	
Transfers from abroad, net					-54.9	
Nonfinancial balances	**46.8**	**-151.7**	**198.5**	**0.0**	**-46.8**	**0**
Foreign financing	-84.1	-36.2	-7.5	-40.4	84.1	0
Nonmonetary	-43.7	-36.2	-7.5	0.0	43.7	0
Direct investment	9.9		9.9		-9.9	0
Net foreign borrowing 3/	-53.6	-36.2	-17.4		53.6	0
Monetary 4/	-40.4	0.0	0.0	-40.4	40.4	0
Change in NFA of commercial banks	-72.3			-72.3	72.3	0
Change in NFA of central bank	31.9			31.9	-31.9	0
Net reserve assets	-9.6			-9.6	9.6	0
Other net foreign assets	41.5			41.5	-41.5	0
Domestic financing	0.0	187.9	-77.2	-110.7		0
Monetary		181.9	-71.3	-110.7		0
Domestic credit		181.9	168.2	-350.1		0
Broad money			-239.4	239.4		0
Nonmonetary		6.0	-6.0			0
Net errors and omissions 5/	37.4	0.0	-113.7	151.1	-37.4	0
Check	0	0	0	0	0	0

Syldavia: Flow of funds table, 2004

(in percent of 2004 GDP)

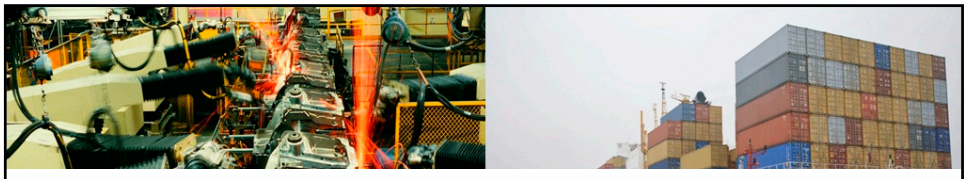
Transactions \ Sectors	Domestic economy: Aggregate economy	Domestic economy: Government sector	Domestic economy: Private sector	Domestic economy: Depository Corporations sector	Rest of the world	Check
Gross national disposable income (GNDI)	99.9	7.3	92.6	0.0		
Consumption	-78.0	-10.8	-67.2	0.0		
Gross fixed capital formation	-24.5	-3.0	-21.4	0.0		
Change in stocks 1/	4.6		4.6	0.0		
Exports of goods and services 2/					-22.3	
Imports of goods and services 2/					20.2	
Income from abroad, net					2.5	
Transfers from abroad, net					-2.4	
Nonfinancial balances	**2.0**	**-6.5**	**8.6**	**0.0**	**-2.0**	**0.0**
Foreign financing	-3.6	-1.6	-0.3	-1.7	3.6	0
Nonmonetary	-1.9	-1.6	-0.3	0.0	1.9	0
Direct investment	0.4		0.4		-0.4	0
Net foreign borrowing 3/	-2.3	-1.6	-0.7		2.3	0
Monetary 4/	-1.7	0.0	0.0	-1.7	1.7	0
Change in NFA of commercial banks	-3.1			-3.1	3.1	0
Change in NFA of central bank	1.4			1.4	-1.4	0
Net reserve assets	-0.4			-0.4	0.4	0
Other net foreign assets	1.8			1.8	-1.8	0
Domestic financing	0.0	8.1	-3.3	-4.8		0
Monetary		7.8	-3.1	-4.8		0
Domestic credit		7.8	7.2	-15.1		0
Broad money			-10.3	10.3		0
Nonmonetary		0.3	-0.3			0
Net errors and omissions 5/	1.6	0.0	-4.9	6.5	-1.6	0
Check	0	0	0	0	0	0
Memorandum:						
2004 GDP *(billions of pounds, current pr*	2,321.0					

MORE ON FLOW OF FUNDS TABLES

What if the 100 billion increase in government expenditure is financed by borrowing from the rest of the world?

Remember to make at least four changes in the flow of funds table for every scenario. You may make assumptions, when necessary, about the behavior of economic agents and about the state of the economy

Study examples of scenarios in the Excel file!



Country Examples

INTERNATIONAL MONETARY FUND

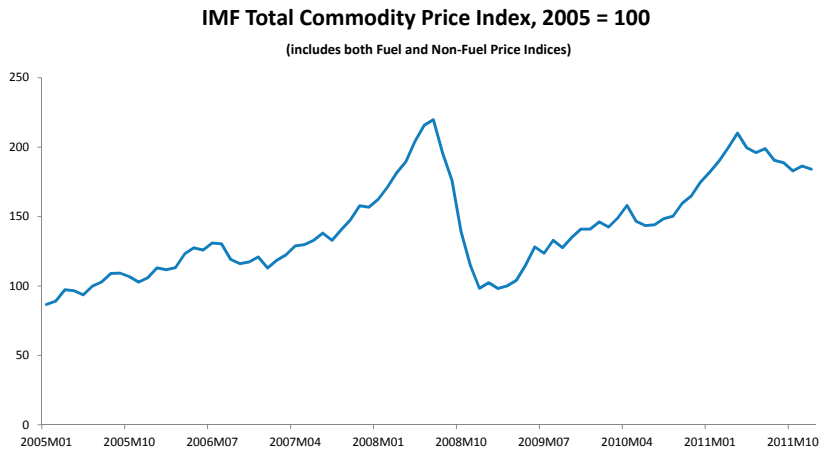
Country A: Main Economic Indicators, 2008–10

The 2009 Exogenous Shock

	2008	2009	2010
Real economy (percent change)			
Real gross domestic product	11.7	2.1	2.9
Nominal gross domestic product	30.8	-4.4	22.6
GDP Deflator	16.7	-6.3	19.0
Consumer prices (annual average)	10.6	11.7	12.3
Central government (percent of GDP)			
Total revenue	43	29	37
Of which: commodities-related	35	21	28
Total expenditure	36	34	31
Current expenditure	24	23	23
Capital expenditure	12	11	8
Overall fiscal balance (budget basis)	8	-4	6
Money and credit (end of period, percent change)			
Broad money (M2)	56.3	53.2	11.2
Velocity (GDP/M2)	3.8	2.2	2.5
Credit to the economy (12-month percent change)	55.8	50.6	21.2
Net international reserves (end of period, billions of U.S. dollars)	14.9	10.7	14.7
Balance of payments			
Trade balance (percent of GDP)	30	15	25
Exports, f.o.b. (percent change)	37.4	-30.7	20.2
Imports, f.o.b. (percent change)	45.5	6.8	-22.5
Terms of trade (percent change)	12.0	-22.0	16.2
Current account balance (percent of GDP)	7	-9	8
Exchange rate			
Nominal exchange rate change (depreciation -)	-2.3	-0.4	-13.6

The 2009 Exogenous Shock

	2008	2009	2010
Balance of payments			
Trade balance (percent of GDP)	30	15	25
Exports, f.o.b. (percent change)	37.4	-30.7	20.2
Imports, f.o.b. (percent change)	45.5	6.8	-22.5
Terms of trade (percent change)	12.0	-22.0	16.2
Current account balance (percent of GDP)	7.3	-8.5	7.6



Source: IMF

The 2009 Exogenous Shock

	2008	2009	2010
Central government (percent of GDP)			
Total revenue	43.3	29.3	36.9
Of which: commodities-related	35.0	20.6	28.0
Total expenditure	35.7	33.5	31.2
Current expenditure	23.7	23.0	22.9
Capital expenditure	12.0	10.5	8.2
Overall fiscal balance (budget basis)	7.6	-4.2	5.8

The 2009 Exogenous Shock

	2008	2009	2010
Real economy (percent change)			
Real gross domestic product	11.7	2.1	2.9
Nominal gross domestic product	30.8	-4.4	22.6
GDP Deflator	16.7	-6.3	19.0
Consumer prices (annual average)	10.6	11.7	12.3

The 2009 Exogenous Shock

	2008	2009	2010
Money and credit (end of period, percent change)			
Broad money (M2)	56.3	53.2	11.2
Velocity (GDP/M2)	3.8	2.2	2.5
Credit to the economy (12-month percent change)	55.8	50.6	21.2
Net international reserves (end of period, billions USD)	14.9	10.7	14.7

Country B: Main Economic Indicators, 2007–10

Exogenous Shock

	2007	2008	2009	2010
Real sector	(Percentage Change)			
Real GDP	-1.7	-3.7	-13.2	-2.4
GDP Deflator	4.8	6.7	22.2	37.4
CPI Inflation, avg	5.8	5.3	16.8	33.5
Terms of trade	-7.9	-0.8	4.6	-1.6
Monetary sector	(Percentage Change)			
Net foreign assets (in millions of US dollars)	1987	2441	-218	76
Credit to the private sector (constant exch. rate)	0.4	-4.6	-19.9	-2.9
Public sector	(In Percent of GDP)			
Revenue	38	39	37	36
Expenditure	43	43	43	40
Overall balance	-5	-5	-5	-4
Balance of Payments	(In Percent of GDP)			
Current account	-3	-3	1	3
Financial Account	5	5	-16	4
Net foreign direct investment	2	2	1	2
Portfolio investment (securities etc.)	2	4	3	-3
Other net inflows (deposits, loans, trade credits, etc.)	1	0	-19	6
Of which: nonresident deposit flows	10	11	-30	0
Gross International Reserves (- increase)	-1	-2	14	-7
Exchange rate change (- depreciation, percentage change)	-7.9	-11.0	-44.4	-20.0

Exogenous Shock

	2007	2008	2009	2010
Real sector	(Percentage Change)			
Real GDP	-1.7	-3.7	-13.2	-2.4
GDP Deflator	4.8	6.7	22.2	37.4
CPI Inflation, avg	5.8	5.3	16.8	33.5
Terms of trade	-7.9	-0.8	4.6	-1.6

Exogenous Shock

	2007	2008	2009	2010
Public sector	(In Percent of GDP)			
Revenue	38	39	37	36
Expenditure	43	43	43	40
Overall balance	-5	-5	-5	-4

Exogenous Shock

	2007	2008	2009	2010
Balance of Payments	(In Percent of GDP)			
Current Account	-3	-3	1	3
Financial Account	5	5	-16	4
Net foreign direct investment	2	2	1	2
Portfolio investment (securities etc.)	2	4	3	-3
Other net inflows (deposits, loans, trade credits, etc.)	1	0	-19	6
Of which: nonresident deposit flows	10	11	-30	0
Gross International Reserves (- increase)	-1	-2	14	-7
Exchange rate change (- depreciation, percentage change)	-7.4	-11.0	-44.4	-20.0

Exogenous Shock

	2007	2008	2009	2010
Monetary sector	(Percentage Change)			
Net foreign assets (in millions of US dollars)	1987	2441	-218	76
Credit to the private sector (constant exch. rate)	0.4	-4.6	-19.9	-2.9