

Chapter 2

Macroeconomic Accounts

The Plan

Gross domestic Product (GDP)

Flows of Income and Expenditures

Balance of Payments

Language of Macroeconomics

no theory (today)

important concepts

national income accounts & balance of payments

relationships among these: accounting identities

biology:

(i) living organism as collection of cells

(ii) how cells function and affect each other

Three basic definitions of GDP

(1) GDP = sum of **final** sales (demand) in *area* during *period*

final sales exclude intermediate sales

(2) GDP = sum of **value added** during chain of economic activities

Example: Retailer sells 1 barrel of beer for € 100
Farmer barley €10 – Energy €20 – barrel producer €5 –
brewery €45 – wholesaler €10 – retailer €10

Query. What are stock- versus flow variables? Which one is GDP?

Three basic definitions of GDP

(3) GDP = sum of **incomes earned** in *area* during *period*

Query. Which kinds of income?

Query. How is GDP measured, respectively, according to the three definitions?

Comparing GDP across countries and time

Countries: GDP versus GDP per capita

Time (I): How to add apples and oranges?

- prices: **nominal** $GDP = P^a Q^a + P^o Q^o$

- effects of prices versus quantities

nominal versus **real** GDP (GDP deflator)

Time (II): growth rates versus levels

Real vs. nominal GDP

Price deflator or Index

GDP inflator: nominal GDP/real GDP (“inflation”)

rate of inflation: nominal *minus* real GDP growth rate

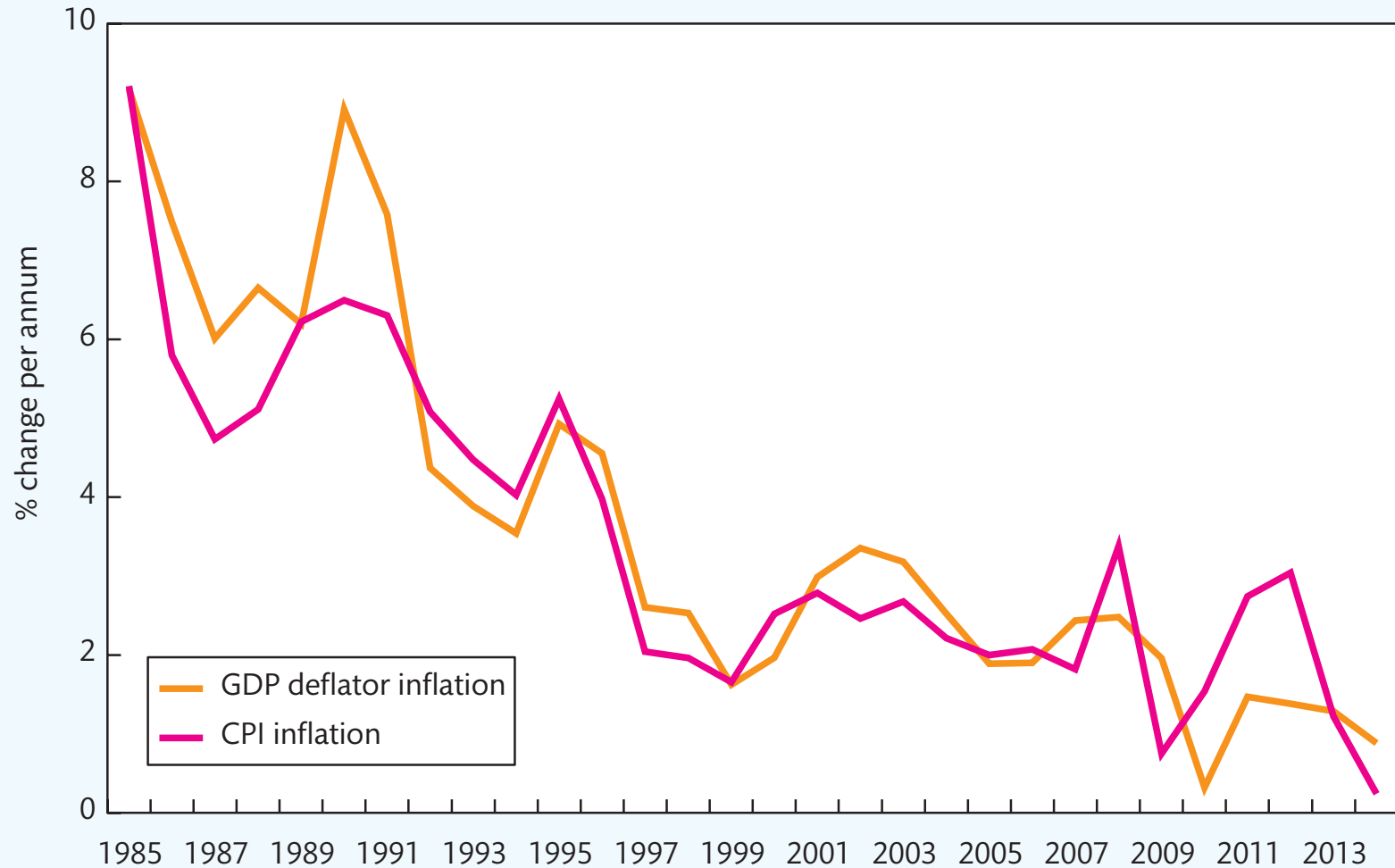
Query. Argue in a 1-good economy, why this approximation should hold.

Query. Which other measures of inflation are you aware of?

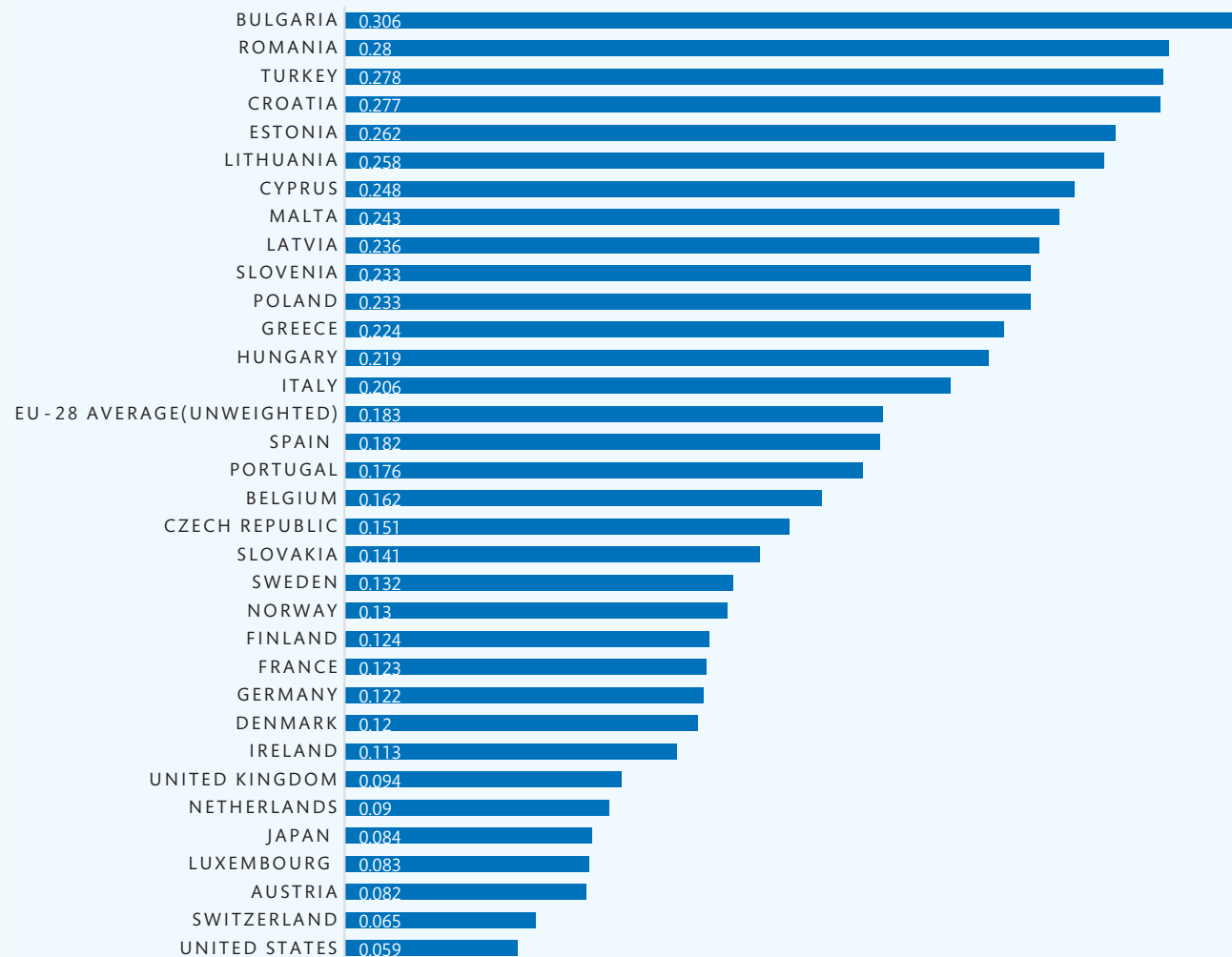
Euro Area: Growth Rates (% per annum)

	Nominal GDP	Real GDP	GDP deflator
2005	3.6	1.7	1.9
2006	5.2	3.2	1.9
2007	5.5	3.1	2.4
2008	2.4	0.5	1.9
2009	-3.6	-4.5	1.0
2010	2.8	2.1	0.7
2011	2.7	1.6	1.1
2012	0.4	-0.9	1.2
2013	1.0	-0.3	1.3
2014	1.8	0.9	0.9
2015	2.8	1.6	1.2

Inflation in Italy, 1985-2010 (in %)

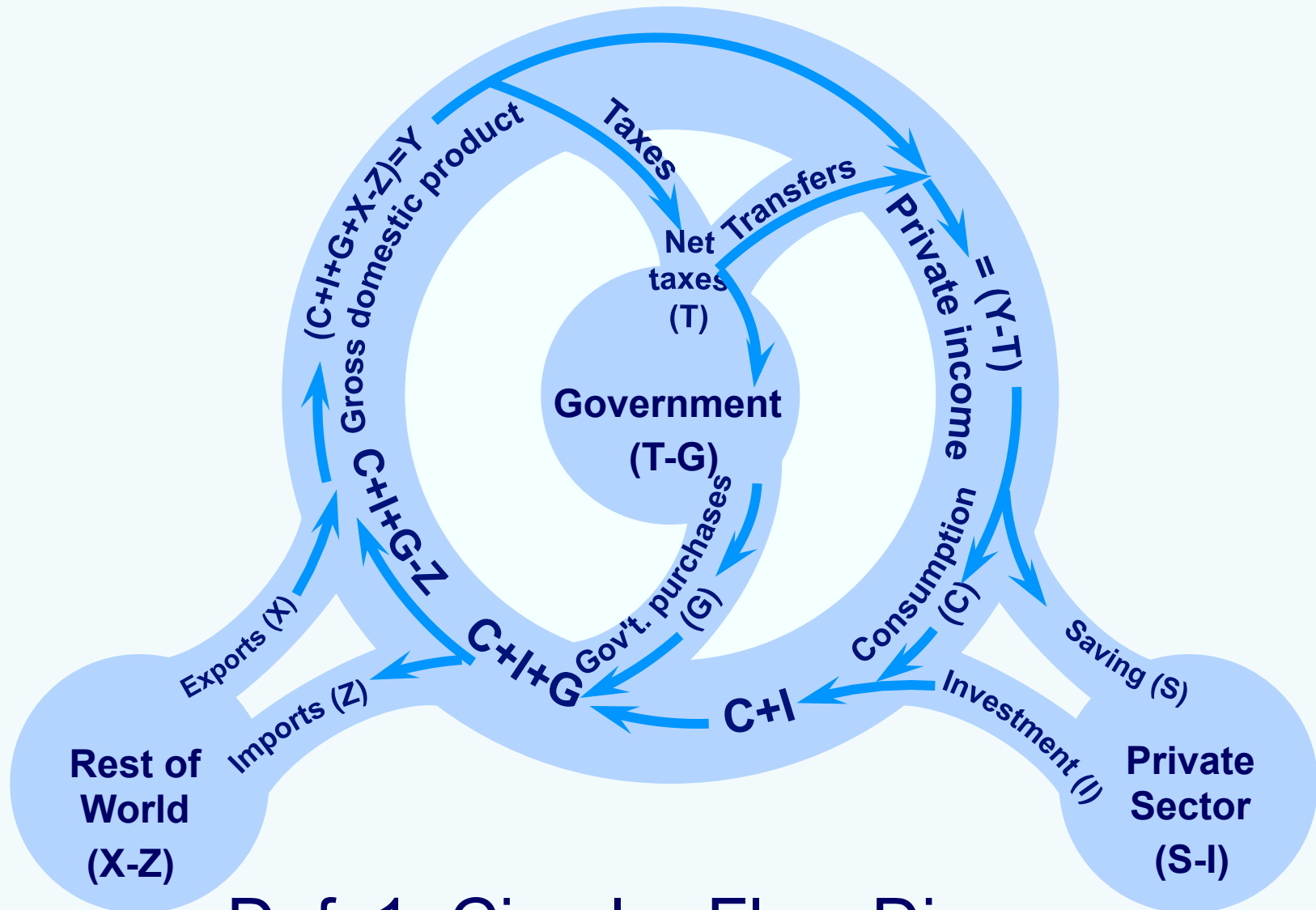


Size of the Underground Economy: Estimates (% of GDP)



Estimates of 2008 German Nominal GDP

Date of publication	GDP (bn Euro of 2000 prices)	% difference from previous estimate	% difference from Jan 2009
Jan 2009	2489.4	--	--
Feb 2009	2489.4	0.00%	0.00%
May 2009	2492.0	0.10%	0.10%
Aug 2009	2491.4	-0.02%	0.08%
Nov 2009	2495.8	0.18%	0.26%
May 2010	2495.8	0.00%	0.26%
Nov 2010	2481.2	-0.58%	-0.33%
Feb 2011	2481.2	0.00%	-0.33%



Def. 1: Circular Flow Diagram

Components of GDP by Expenditure (1999-2015, % of GDP)

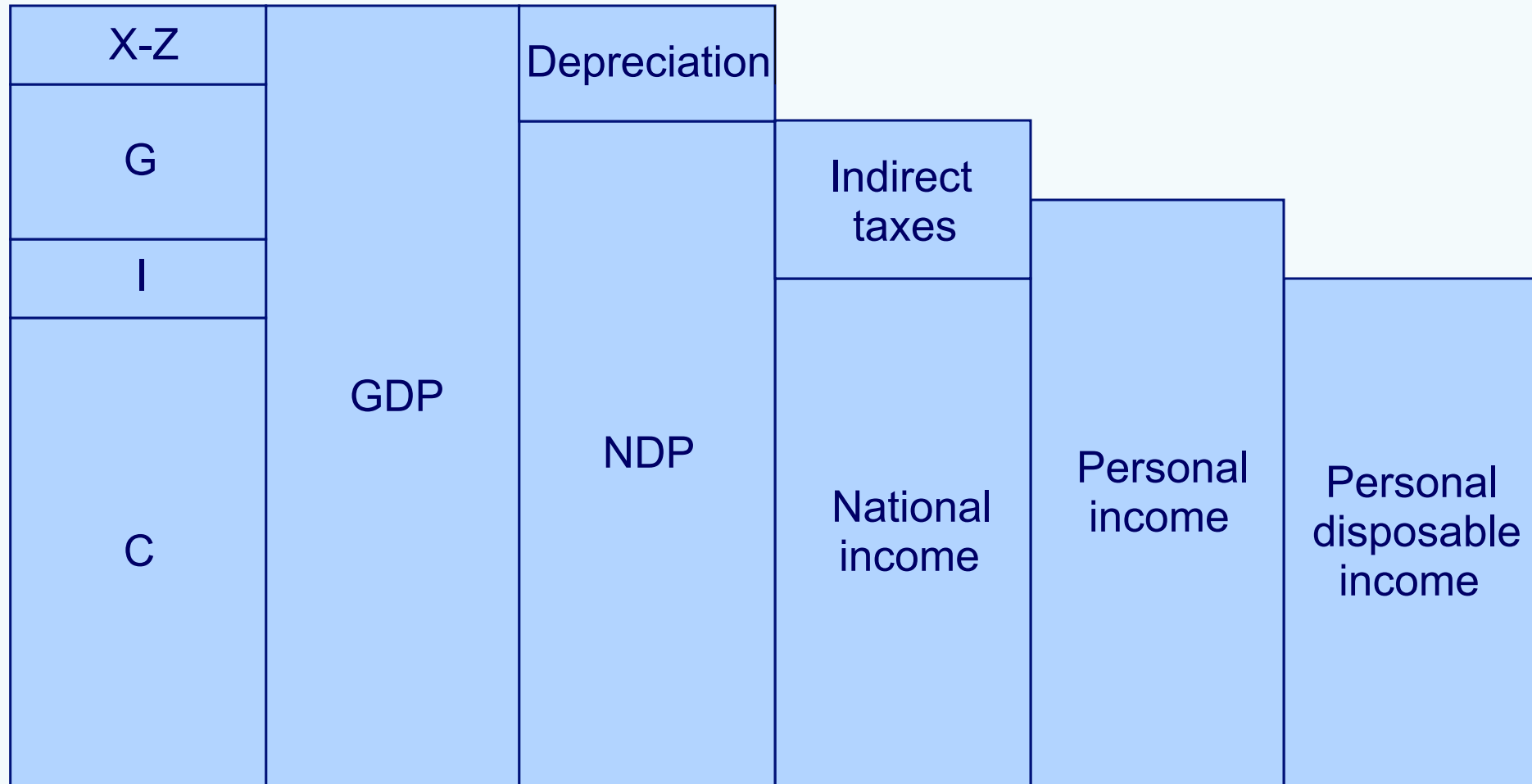
	Consumption (C)	Investment (I)	Government Purchases (G)
Australia	56.5	26.9	17.6
Canada	55.4	22.2	20.4
France	55.2	21.8	23.1
Germany	56.3	20.3	18.7
Italy	60.3	19.8	19.2
Japan	58.6	22.4	18.9
Switzerland	56.0	24.1	11.0
United Kingdom	64.5	17.6	19.9
United States	67.6	20.8	15.3
Euro area	56.1	21.5	20.3

GDP and Household Disposable Income, 2009

	GDP (billions of €)	Households Disposable Income	
		in €	% of GDP
Germany	2916	1710	58.7
France	2132	1307	61.3
Sweden	431	216	50.1
Switzerland	516	315	61.1
United States	13058	9399	72.0
United Kingdom	2253	1352	60.0

Query. Disposable income is much lower in Sweden than the US. What are your welfare conclusions?

From Expenditure to Income to Personal Disposable Income



We begin by adding up (i.e. aggregating) all expenditures on final goods and services produced domestically.

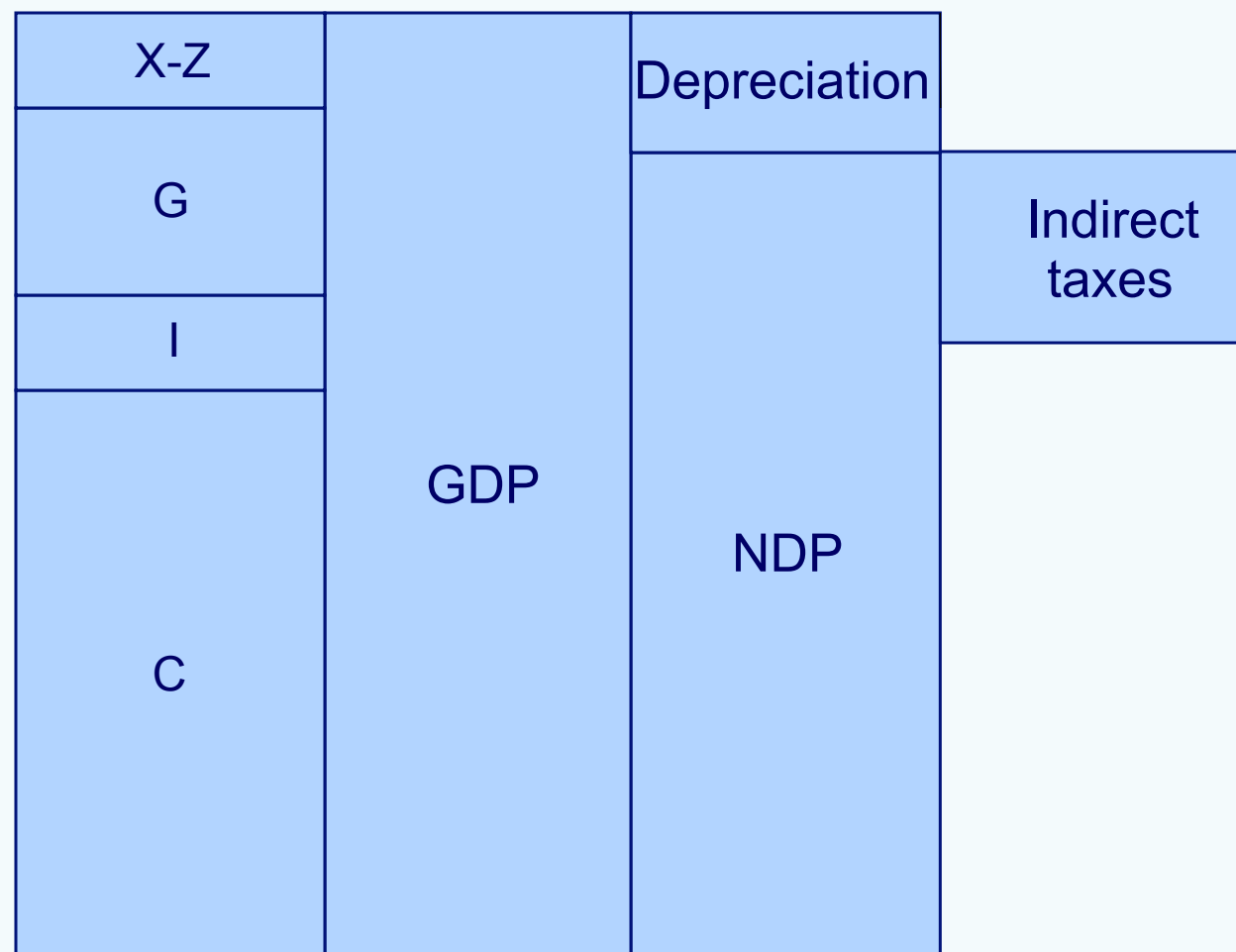
X-Z
G
I
C

This sum is defined as the gross domestic product.

X-Z	GDP
G	
I	
C	

X-Z	GDP	Depreciation
G		NDP
I		
C		

We deduct depreciation to obtain net domestic product.

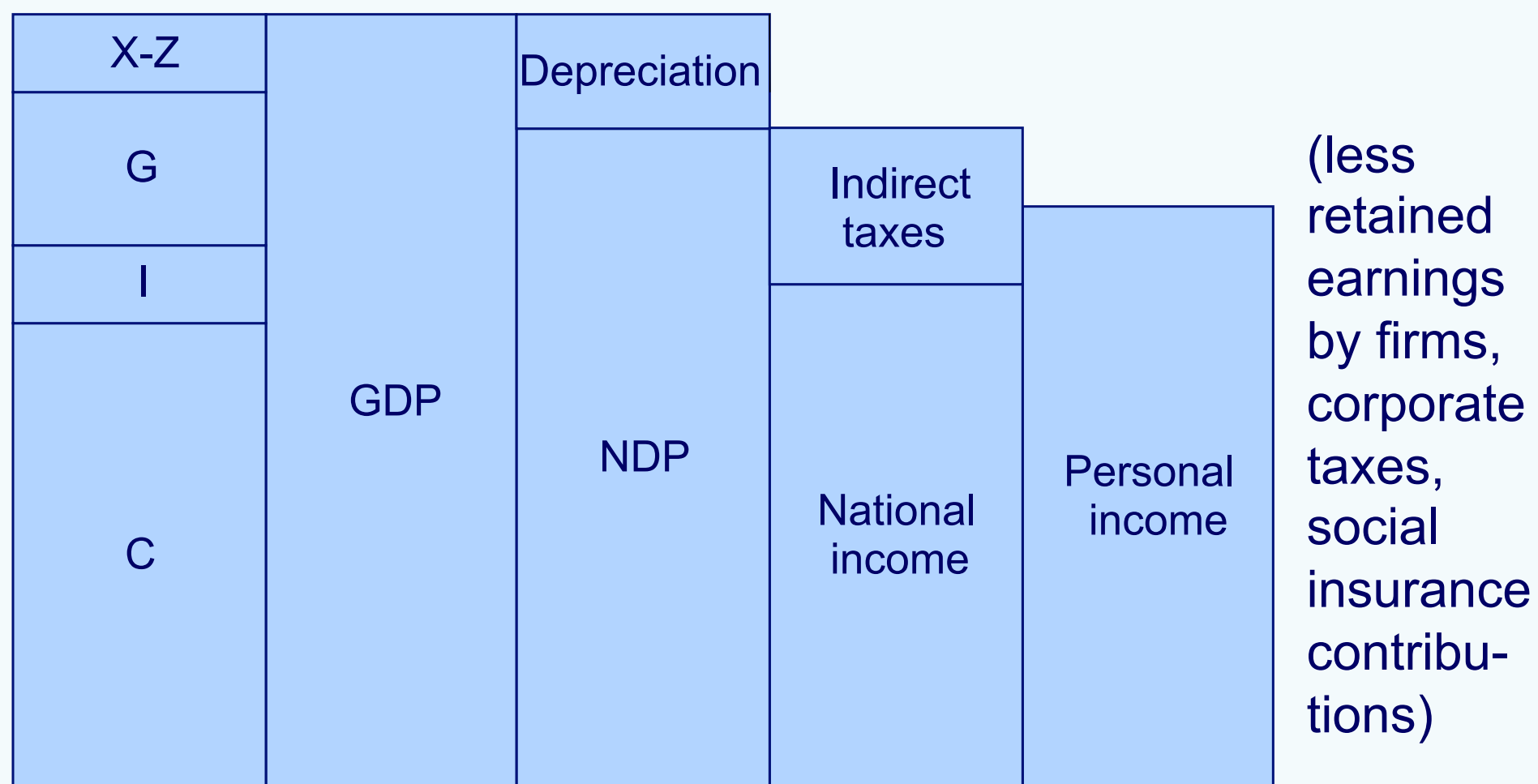


Market prices are different from factor costs due to indirect taxes (and subsidies).

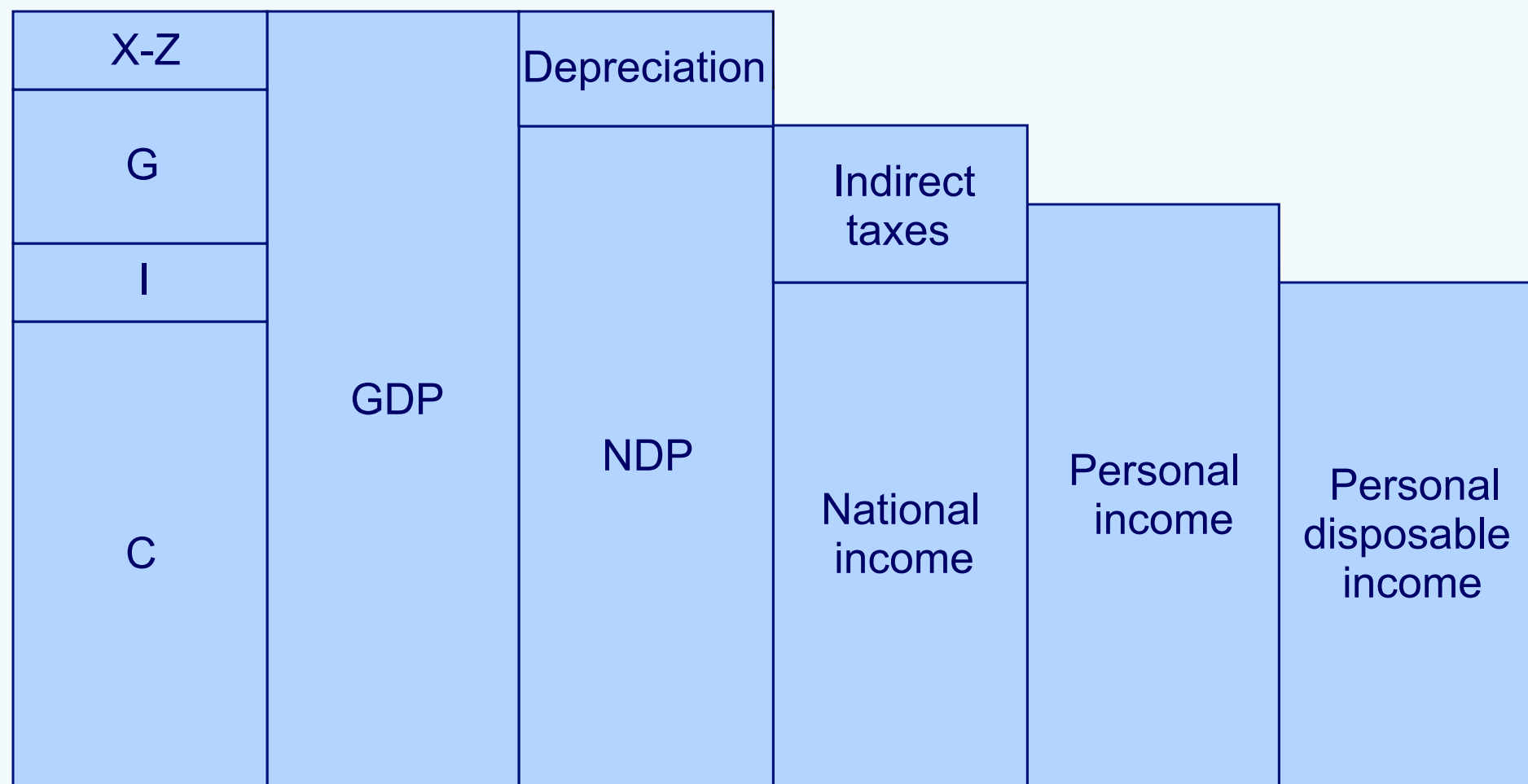
X-Z	GDP	Depreciation	
G		NDP	Indirect taxes
I			National income
C			

National income is what is distributed to the factors of production.

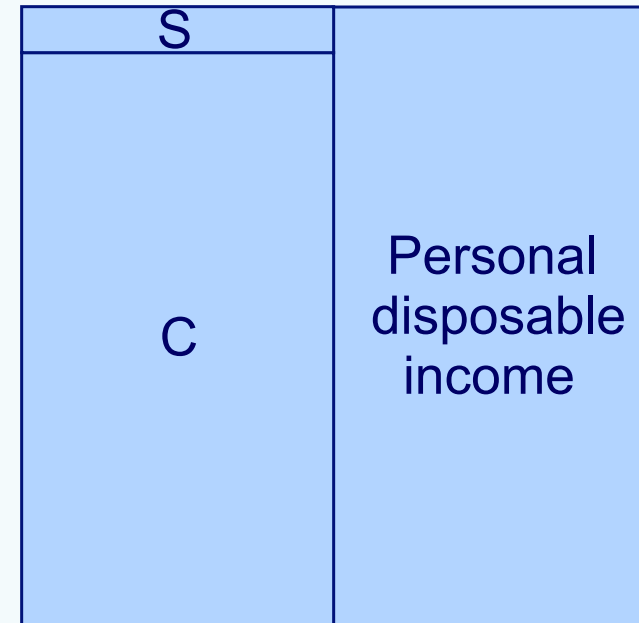
Personal income needs two more adjustments...

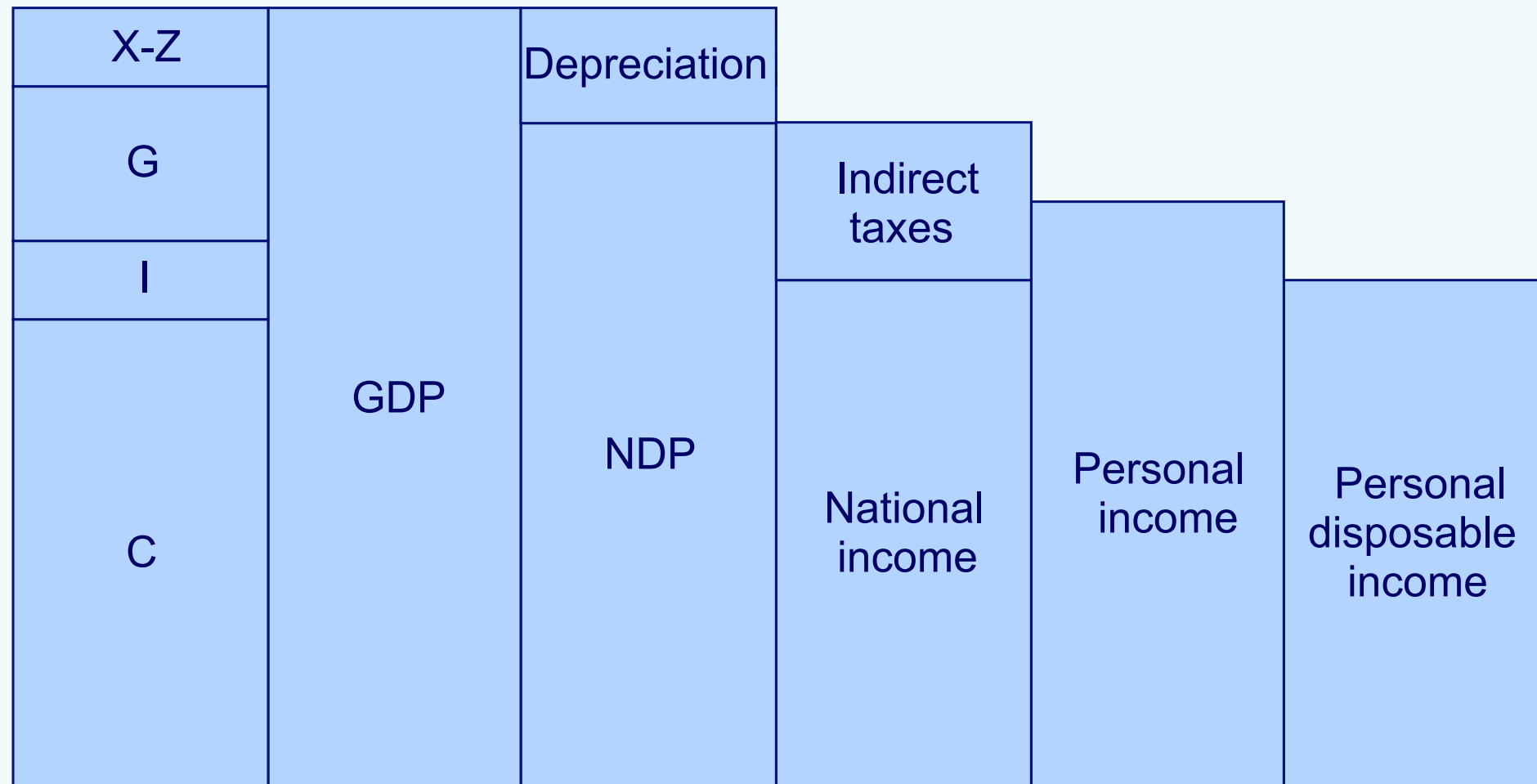


...less personal taxes plus transfers



...which can be used for consumption or saving.





The Accounting Identity in 2010 (% of GDP)

	<i>S - I</i>	<i>T - G</i>	<i>CA</i>
USA	5.6	-8.8	-3.2
Japan	10.3	-6.7	3.6
Belgium	3.9	-2.6	1.3
Denmark	4.7	0.8	5.5
France	2.6	-4.8	-2.2
Germany	8.1	-2.5	5.6
Italy	-1.3	-2.2	-3.5
Netherlands	11.5	-3.8	7.7
Spain	0.7	-5.2	-4.5
Sweden	4.7	1.6	6.3
UK	5.8	-8.3	-2.5
Euro area	4.1	-3.9	0.2

Identities vs. Economics

Identities hold by definition

many newspaper articles flawed b/c violate identities

many political programs flawed b/c violate identities

politicians are confused: don't understand identities

Any statement about economy/policy must respect identities.
otherwise nonsense; **independent of economics**

The Balance of Payments

I. Current Account

a. Goods and Services

1. Goods
2. Services

b. International Primary Income

1. Wages and
Compensation
2. Investment Income

c. Secondary Income

II. Capital and Financial Accounts

a. Capital Account

b. Financial Account

1. Direct Investment
2. Portfolio Investment
3. Other Investment
4. Reserve Assets

c. Errors and Omissions


Table 2.8 Balance of Payments, Various Countries, 2014 (US\$ billion)

	Eurozone	US	Sweden	Turkey	Brazil	China	Russia	UK
Current account	320	-390	33	-47	-104	220	58	-152
Balance on goods	332	-741	18	-64	-7	435	190	-203
Balance on services	94	233	9	25	-48	-151	-55	146
Primary income balance	79	238	15	-9	-52	-34	-68	-54
Secondary income balance	-186	-119	-10	1	3	-30	-8	-41
Capital account	27	0	-1	0	0	0	-42	-2
Net lending	346	-390	32	-47	-104	220	16	-154
Financial account balance	403	-240	13	-45	-100	79	23	-166
Direct investment, net	62	489	4	-7	-71	-209	34	-134
Portfolio investment, net	97	-167	21	-20	-39	-82	40	-189
Other investment, net	183	-240	-7	-17	-3	253	51	170
Reserve assets	6	-4	0	0	11	117	-108	12
Net errors and omissions	56	150	-17	2	3	-140	6	-12

Balance of Payments: Some Examples

Transaction	Credit (+) or debit (-)	Country	Account
UK exports chemicals to France to the amount of £1 million	+ £1 m	UK	Goods and services
	- £1 m	France	Goods and services
French school trains German cyclists for €500,000	+ €500,000	France	Goods and services
	- €500,000	Germany	Goods and services
German construction company is paid SF5 million to build a Swiss bridge	+ SF5 m	Germany	Goods and services
	- SF5 m	Switzerland	Goods and services
Swiss ski instructor is paid salary of €80,000 for work performed in Austria	+ €80,000	Switzerland	International income
	- €80,000	Austria	International income

Balance of Payments: Some Examples

Transaction	Credit (+) or debit (-)	Country	Account
UK fast food franchises remit £1 million in profits to headquarters in the USA	+ £1 m	USA	International income
	- £1 m	UK	International income
Austrian government gives €3 million in relief aid to tsunami victims in Thailand	+ €3 m	Thailand	Current transfers
	- €3 m	Austria	Current transfers
Estonian worker in Denmark sends DK100,000 to family in Tallinn	+ DK100,000	Estonia	Current transfers
	- DK100,000	Denmark	Current transfers
Spanish government forgives debt of €10 m owed by Peru	+ €0 m	Peru	Capital account
	- €0 m	Spain	Capital account

Balance of Payments: Some Examples

Transaction	Credit (+) or debit (-)	Country	Account
Swedish investor purchases a factory in Germany for €100 million	+ €100 m	Germany	Financial account / direct investment
	- €100 m	Sweden	Financial account / direct investment
Portuguese bank buys €20 million of stock in German company from French bank based in France	+ €20 m	France	Financial account / portfolio investment
	- €20 m	Portugal	Financial account / portfolio investment
UK bank based in London lends £50 million to subsidiary in Ireland	+ £50 m	Ireland	Other investment
	- £50 m	UK	Other investment

Balance of Payments: Some Examples

Transaction	Credit (+) or debit (-)	Country	Account
Slovenian resident transfers €100,000 from home account to a bank account in Italy	+ €100,000	Italy	Financial account / portfolio investment
	- €100,000	Slovenia	Financial account / portfolio investment
Bank of England purchases €5 billion from the European Central Bank (ECB) paying with pound sterling	- €5 b	UK	Reserve assets account
	+ €5 b	Eurozone	Reserve assets account

Balance of Payments and the GDP

(1) **balance of goods and services** = $X - Z$

absorption $A = C + I + G$

$$X - Z = Y - A$$

(2) Current account (CA) = $(X - Z) + IAB$

gross national disposable income $YD = Y + IAB$

$$CA = Y + IAB - A = YD - A$$

Balance of Payments and the GDP

$CA > 0$: net lender, $CA < 0$: net borrower

net lending = Current Account (CA) = Financial Account (FA)

$$E\&O = FA - CA$$