

Structure and Functioning of the European and Global Economic System

Macroeconomic Interdependence

Lectures 6 and 7

Basic National Accounting Identities

A brief presentation of the meaning and the interrelationships between the main macroeconomic aggregates, such as:

- GDP and GNI
- National Saving, Investment, and the Current Account Balance
- Net Foreign Assets and National Wealth

Basic National Accounting Identities

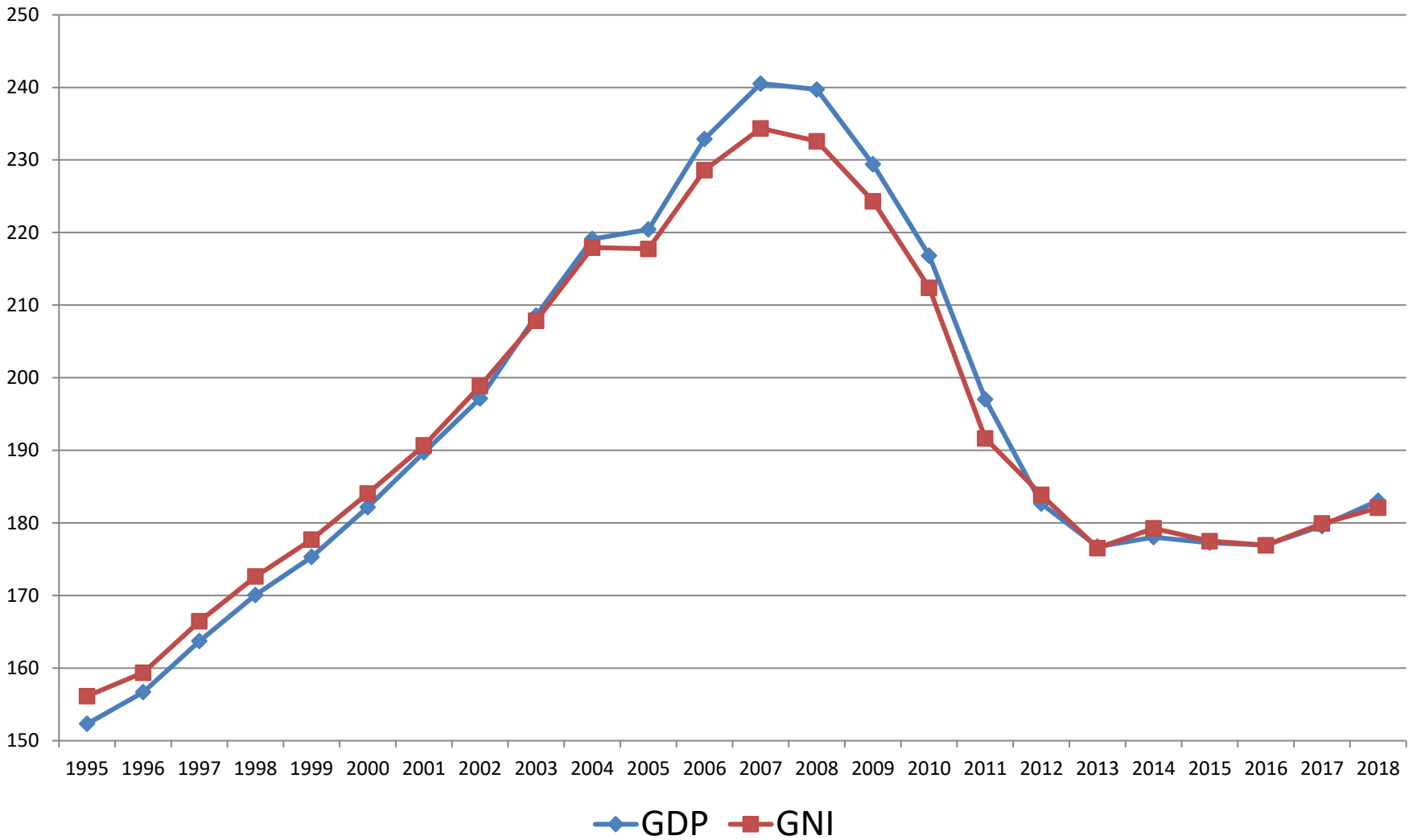
- **Gross Domestic Product (GDP)** is the total value added of goods and services produced during a time period by factors of production located within the country. It is also equal to the total value of incomes accruing to all factors of production located within the country.
- **Gross National Income (GNI)** is the total value added generated by factors of production owned by domestic nationals, including those employed in foreign countries.
- Example: A Greek firm's profits from producing in Bulgaria would count in Greek GNI but not in Greek GDP. (They would also count in Bulgarian GDP.)
- Thus,

GNI = GDP –

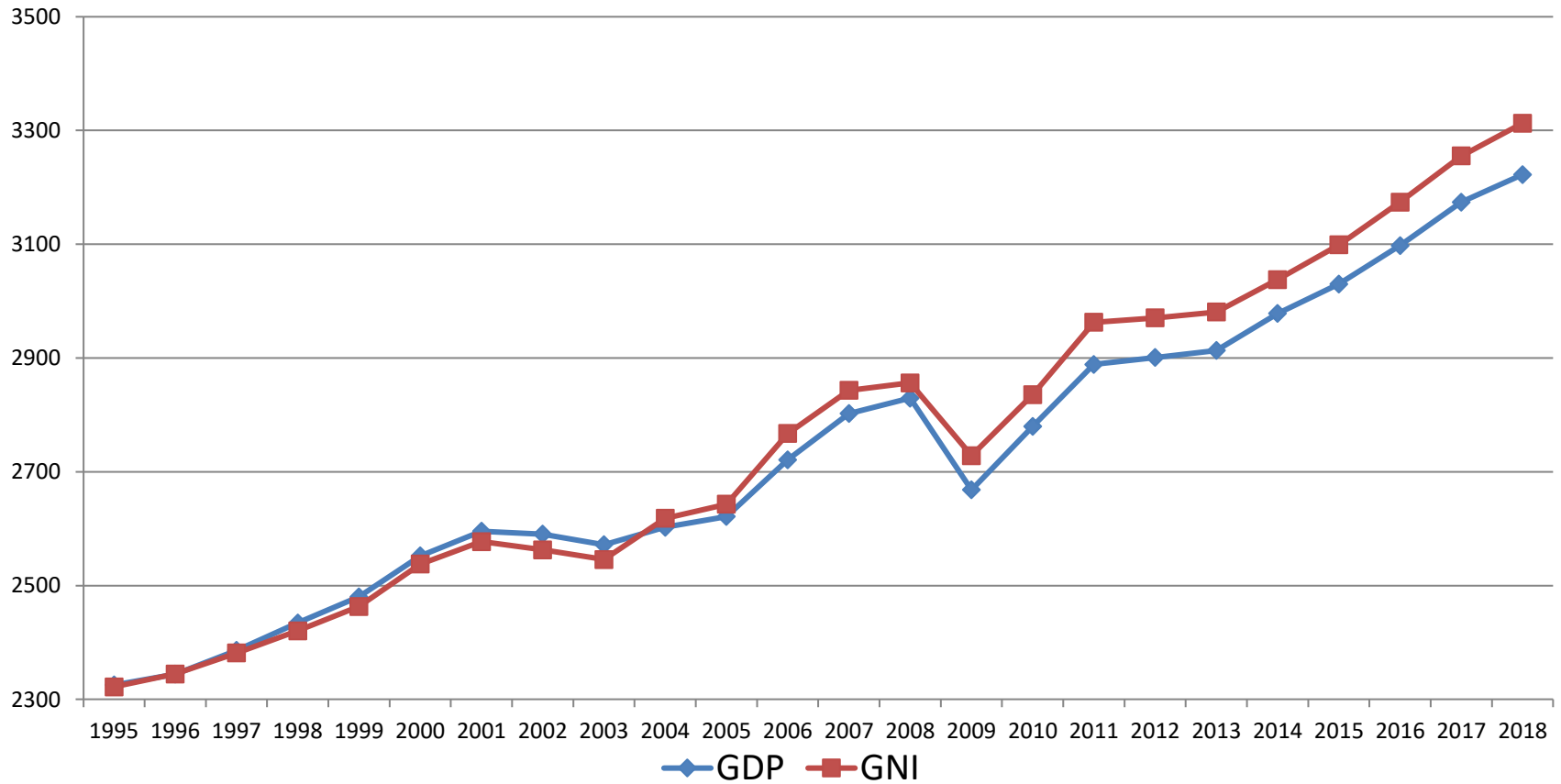
– factors payments made to foreigners (dividends, interest, rent to foreigners owning assets in Greece and wages of foreigners working in Greece) +
+ factor payments received from abroad (dividends, interest, rent to Greek residents owning assets abroad and wages of Greeks working abroad).

- Difference between GDP and GNI not large in most countries (i.e. usually less than 2% of GDP), but for some countries (e.g. Mexico, Bangladesh, Germany lately) can be substantial, and in some cases it can be even as high as 18% of GDP (Ireland) or even 35% of GDP (Luxembourg).
- The difference is shaped by the evolution of Net Foreign Assets (**NFA**), and by migration flows.
- **NFA** = Assets owned by Greeks abroad – Assets Owned by Foreigners in Greece
- Assets include stocks, bonds, loans, real estate, etc.
- The biggest (in absolute terms) net debtor country in the world is the USA (its NFA are about **-9.5** trillion USD in 2018). As a percentage of GDP, its NFA are about **-45%**.
- Greece is one of the biggest net debtors in terms of GDP. Its NFA (as approximated by the NIIP), are (in 2018) about **-140%** of GDP (its NFA were about **-10%** in 1995).
- If (negative) NFA exceed 50% of GDP, this is usually a sign that the country must quickly adjust (i.e. either to accept a devaluation of its currency, or, to undergo what is called “an internal devaluation” – sometimes also to default).

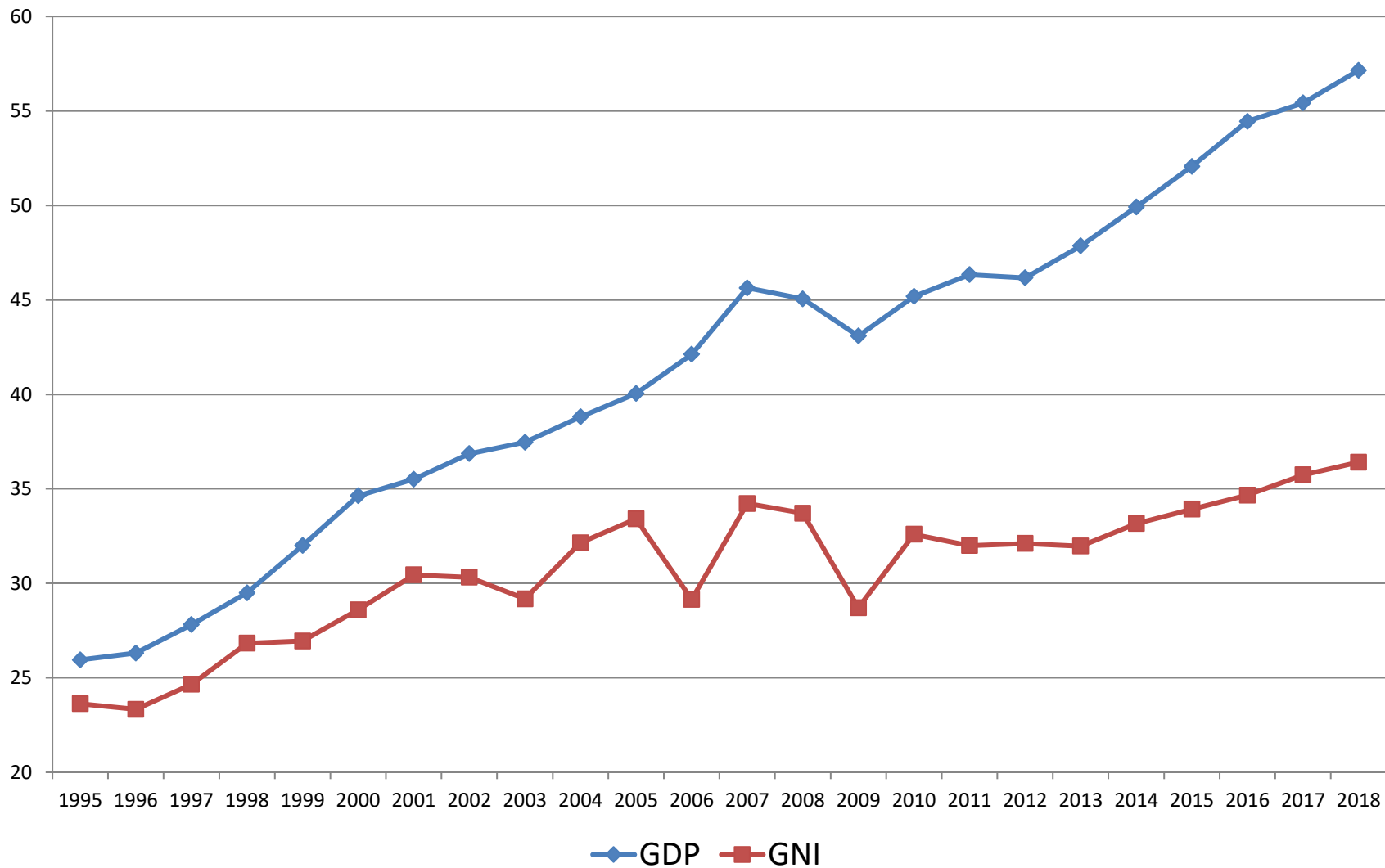
GREECE: GDP and GNI (billion euros at constant prices)



GERMANY: GDP and GNI (billion euros at constant prices)



LUXEMBOURG : GDP and GNI (billion euros at constant prices)



Three Equivalent Ways to Understand the Current Account Balance (CAB)

- It is the difference between exports and imports, plus the net primary income balance
- It is the difference between national income and national spending
- It is the difference between national saving and investment

Current Account Balances (% GDP)

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Germany	1,9	1,4	4,5	4,7	5,8	6,9	5,7	5,8	5,7	6,2	7,1	6,6	7,2	8,6	8,5	8,1	7,3
Ireland	0,2	0,5	-0,1	-3,5	-5,4	-6,5	-6,2	-4,7	-1,2	-1,6	-3,4	1,6	1,1	4,4	-4,2	0,5	10,6
Greece	-6,8	-8,5	-7,7	-8,9	-11,5	-15,2	-15,1	-12,3	-10,0	-8,6	-3,5	-1,4	-0,7	-0,8	-1,7	-1,9	-2,8
Spain	-3,7	-3,9	-5,5	-7,3	-8,9	-9,4	-8,9	-4,1	-3,7	-2,7	0,1	2,0	1,7	2,0	3,2	2,7	1,9
France	1,1	0,8	0,5	0,1	0,3	-0,1	-0,7	-0,6	-0,6	-0,9	-1,0	-0,5	-1,0	-0,4	-0,5	-0,7	-0,6
Italy	-0,5	-0,8	-0,5	-0,9	-1,5	-1,4	-2,8	-1,9	-3,3	-2,8	-0,2	1,1	1,9	1,4	2,6	2,7	2,6
Cyprus	NA	NA	NA	NA	NA	NA	-14,7	-6,6	-10,8	-2,4	-4,5	-1,5	-4,3	-0,6	-4,2	-5,1	-4,4
Netherlands	NA	NA	7,6	7,1	9,1	6,9	5,0	5,4	7,0	8,6	10,2	9,8	8,5	6,3	8,1	10,8	10,9
Austria	2,1	1,5	2,1	2,3	3,3	3,8	4,5	2,6	2,9	1,6	1,5	1,9	2,5	1,7	2,7	1,6	2,3
Poland	NA	NA	-5,5	-2,6	-4,0	-6,3	-6,7	-4,0	-5,4	-5,2	-3,7	-1,3	-2,1	-0,6	-0,5	0,1	-1,0
Portugal	-8,4	-6,6	-8,0	-9,6	-10,3	-9,6	-11,8	-10,3	-10,3	-6,0	-1,6	1,6	0,2	0,2	1,1	1,2	0,4

Definition of CAB according to the Balance of Payments Statistics

- **CAB=Exports of goods and services**
 - Imports of goods and services
 - + Net primary income balance
 - + Current Transfers Balance =
 - = Net Exports + NPIB + CTB
- The current transfers balance (CTB) comprises mostly (in the case of Greece) the net transfers Greece receives from the EU. For ease of exposition we assume that $CTB=0$.
- *Assume, also, that no Greeks are working abroad, or foreigners in Greece.*
- Let, i = average interest rate (rate of return) on net foreign assets (foreign assets - foreign liabilities)
- *Then, i NFA = NPIB , and so*
CAB=NX + i NFA

CAB is the difference between national income and national spending

- **GDP = consumption + investment + government spending + net exports**
- **$NX = X - M$**
- **$GDP = C + I + G + NX$**
- **$GNI = GDP + iNFA = C + I + G + (NX + iNFA)$**
 $= C + I + G + CAB \quad (1)$

where **$CAB = NX + iNFA$**

- **(1) implies that $CAB = GNI - (C + G + I)$**
- ***(C + G + I) is total domestic spending, thus the CAB is also the difference between (a country's) income and spending.***
- **What happens to an individual if her spending exceeds her income? She accumulates debt. In the case of a country, it accumulates foreign debt (or its NFA are reduced)whenever its CA is in deficit.**

The CAB is the difference between National Saving and Investment

- **Gross National Saving (GNS)** is the sum of private sector saving and government saving, i.e., $GNS = PS + GS$.
- Since $PS = GNI - T - C$, and $GS = T - G$,
 $GNS = (GNI - T - C) + (T - G) = GNI - C - G$ (1)

which just says that GNS is the difference between Gross National Income ($GNI=Y$) and total current (as opposed to investment) spending (We assume that the government doesn't invest – nothing depends on this assumption).

- Since, $GNI = GDP + iNFA = C + I + G + NX + iNFA$
 $= C + I + G + CAB$ (2)

From (1) and (2) we get $GNS = C + I + G + CAB - C - G$, which implies, **$CAB = GNS - I$** , and so the current account balance is the difference between national saving and investment.

- **How can you invest more than what you have saved? By borrowing (or, by “exporting” assets – we ignore this). Thus, a country that invests more than it saves, and thus has a CA deficit, borrows from abroad, and accumulates foreign debt.**

How do a country's NFA evolve?

- A current account (**CA**) surplus results in an increase in the NFA of a country while a CA deficit results in a decrease of NFA or, if the country is already a net debtor, it results in an increase in the net foreign debt of the country. (We ignore the case of receiving capital transfers from abroad – we discuss this below.)
- For example, and ignoring valuation effects (e.g. the “Nokia effect”),

NFA at the end of 2019=

$$= \mathbf{NFA} \text{ at the end of 2018} + \mathbf{CAB} \text{ in 2019}$$

- Is it possible that a country has a positive NPIB even if its NFA are negative. Yes, if rates of return on your assets are higher than rates of return on your liabilities (e.g. USA).

- A CA deficit allows a country to maintain a higher rate of investment than what national savings would allow.
- Important Note:

IT IS IMPOSSIBLE TO IMPORT FOREIGN CAPITAL WITHOUT A CA DEFICIT (this implies that an increase in inward FDI in Greece will be associated –ceteris paribus- with LARGER CA deficits)

- However, the corresponding foreign capital inflow is essentially a loan; therefore, it represents claims on future national income.

Whether current account deficits and the associated foreign debt burden represent a policy concern depends on one's view of the trade-off between higher investment and higher external indebtedness.

- One possibility is that the source of the CA deficit is a favorable domestic investment climate, which acts as a magnet for foreign capital. According to this view, foreign investment funds raise the domestic capital stock. By boosting future domestic GDP, the higher capital stock makes it easier for the nation to pay off the higher foreign debt. (Although, not necessarily, if investment is in the non-traded sector.)
- A less optimistic view is that the source of the deficit lies in a falling national saving rate, which forces the country to rely on foreign capital to maintain its current level of investment, i.e. there is no rise in total investment. In this case, the country's CA deficit has financed the increased consumption of the private sector and/or the government sector.

Balance of Payments Accounting

- Due to double-entry bookkeeping (i.e., every transaction enters as a credit and debit in the BOP accounts) the sum of the current account balance, the capital account balance, and the financial account balance,
$$\text{CAB} + \text{KAB} + \text{FAB} = 0, \text{ or, } \text{CAB} + \text{KAB} = - \text{FAB} \quad (1)$$
- Like the CAB, which is the difference between the exports and imports of goods and services, the FAB is the difference between the exports and imports of assets (both financial and “real” assets like land or buildings).
- The KAB measures transfers of wealth between countries (e.g. debt forgiveness), as well as transactions involving the acquisition or disposal of non-produced, non-financial assets (e.g. copyright and franchise payments). It is usually small relative to the CAB and the FAB, and in the case of Greece consists mostly of transfers (structural funds) from the EU for investment in fixed capital.
- In 2018, for Greece, CAB = - 5.2 bn, KAB = 0.4 bn, FAB = 3.9 bn .
- These do not sum to zero! Thus, there is an “errors and omissions” variable of 0.9 bn. (also, IMF and EU data differ!)
- A positive FAB measures the amount that the country borrows from the rest of the world (ROW), by being a net “exporter” of assets to the ROW. Typical asset exports (for Greece) are Greek government bonds and bank bonds.

The Triple Deficits

- $PS = GNI - T - C$, or, $GNI = C + T + PS$ (1)

- $GNI = C + I + G + CAB$ (2)

- (1) and (2) imply,

$$T + PS = I + G + CAB, \text{ or,}$$

$$- \mathbf{CAB} = (\mathbf{I - PS}) + (\mathbf{G - T}) ,$$

i.e., a CA deficit is the sum of private-sector and government-sector imbalances.

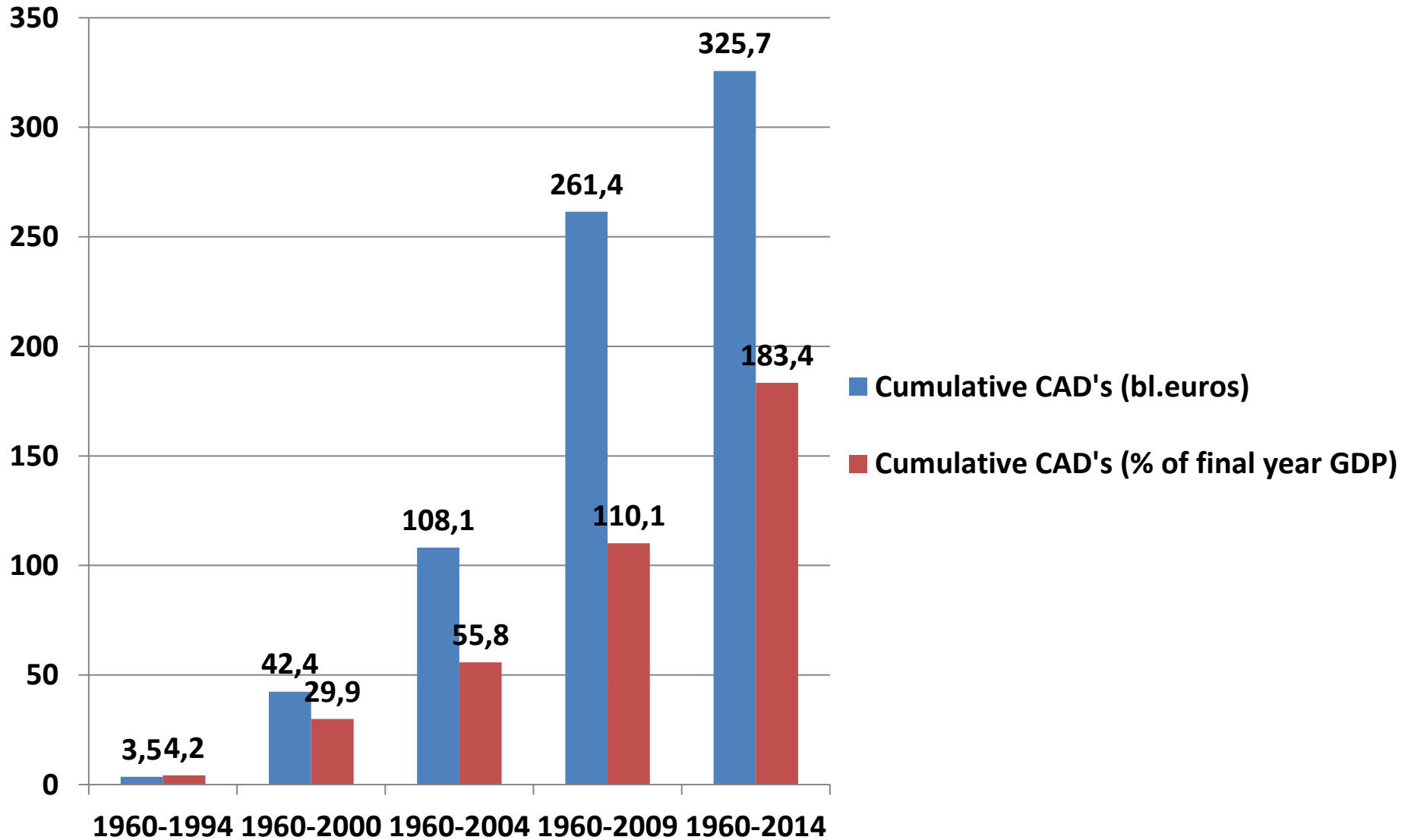
- Before EMU, the private sector in Greece was saving enough to cover part of the government's borrowing (i.e. the government's negative saving), and so CA deficits were smaller than budget deficits.
- After EMU, the CA deficits became larger than the budget deficits, which implies that not only the government, but the private sector, as well, was borrowing a lot from abroad.
- Domestic banks borrowed large sums from abroad to provide credit to the government and to domestic consumers ...

Budget and Current Account Balances in 2019 (% of GDP)

	FISCAL BALANCE	CURRENT ACCOUNT BALANCE
Greece	1.2	-1.5
Germany	1.5	7.6
Japan	-3.0	3.4
Spain	-3.1	2.1
USA	-6.4	-2.0

“Going for the Euro”

Greece: Cumulative Current Account Deficits



National (Net) Wealth

- A country's national wealth is equal to the value of the home capital stock and land (all **non** – financial assets in the home economy) plus its NFA. (Financial assets owed by one home entity to another cancel out in the aggregate.)

Thus, $W = K + NFA$, or, if we ignore valuation changes,

$$\Delta(W) = \Delta(K) + \Delta(NFA)$$

Ignoring capital's depreciation, $\Delta(K)=I$.

$\Delta(NFA)=-FAB$, and since

$$-FAB = CAB + KAB,$$

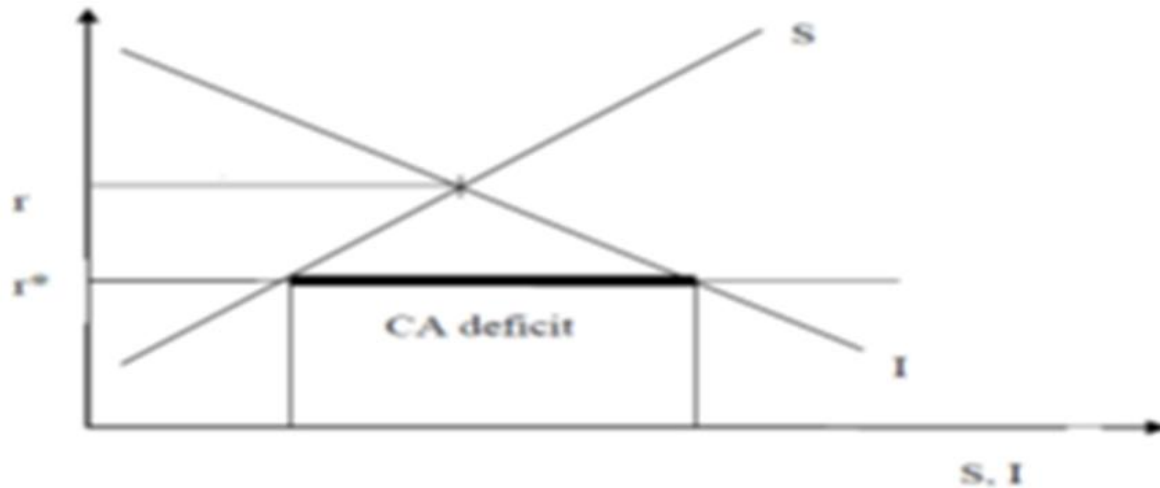
$\Delta(W) = I + CAB + KAB = \mathbf{GNS + KAB}$, which, as in the case of an individual, just says that your wealth increases if you save and you receive gifts.

IMPLICATION: A COUNTRY'S TOTAL WEALTH MAY INCREASE EVEN IF IT RUNS CA DEFICITS WHICH REDUCE ITS NFA.

Savings-Investment Approach to the Current Account

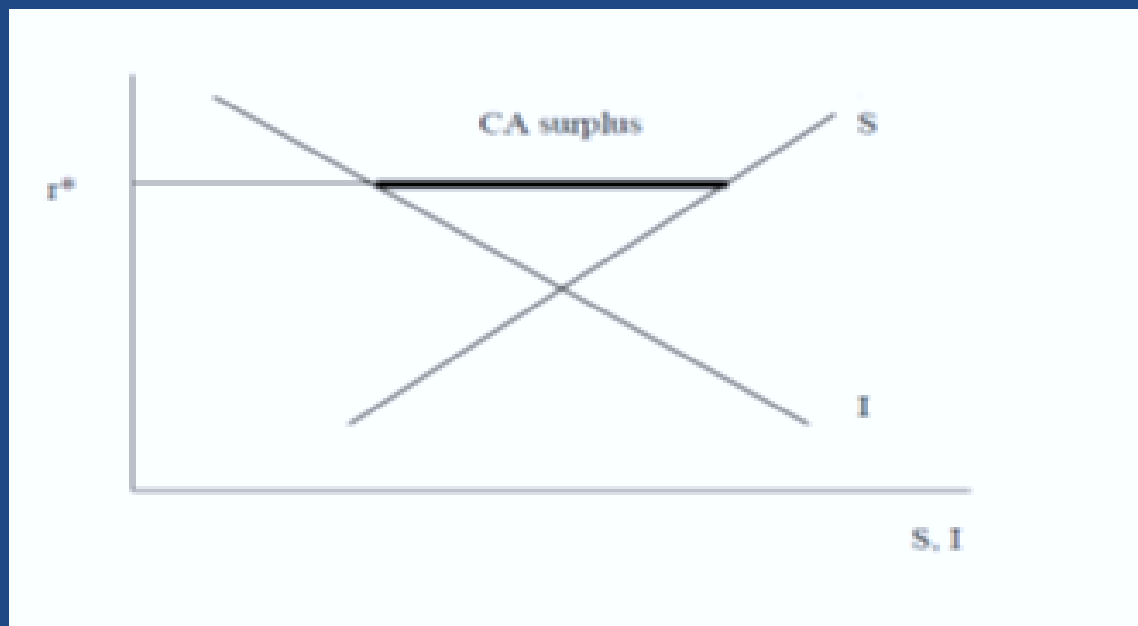
(and some implications of
economic interdependence)

Small Open Economy with $CAB < 0$



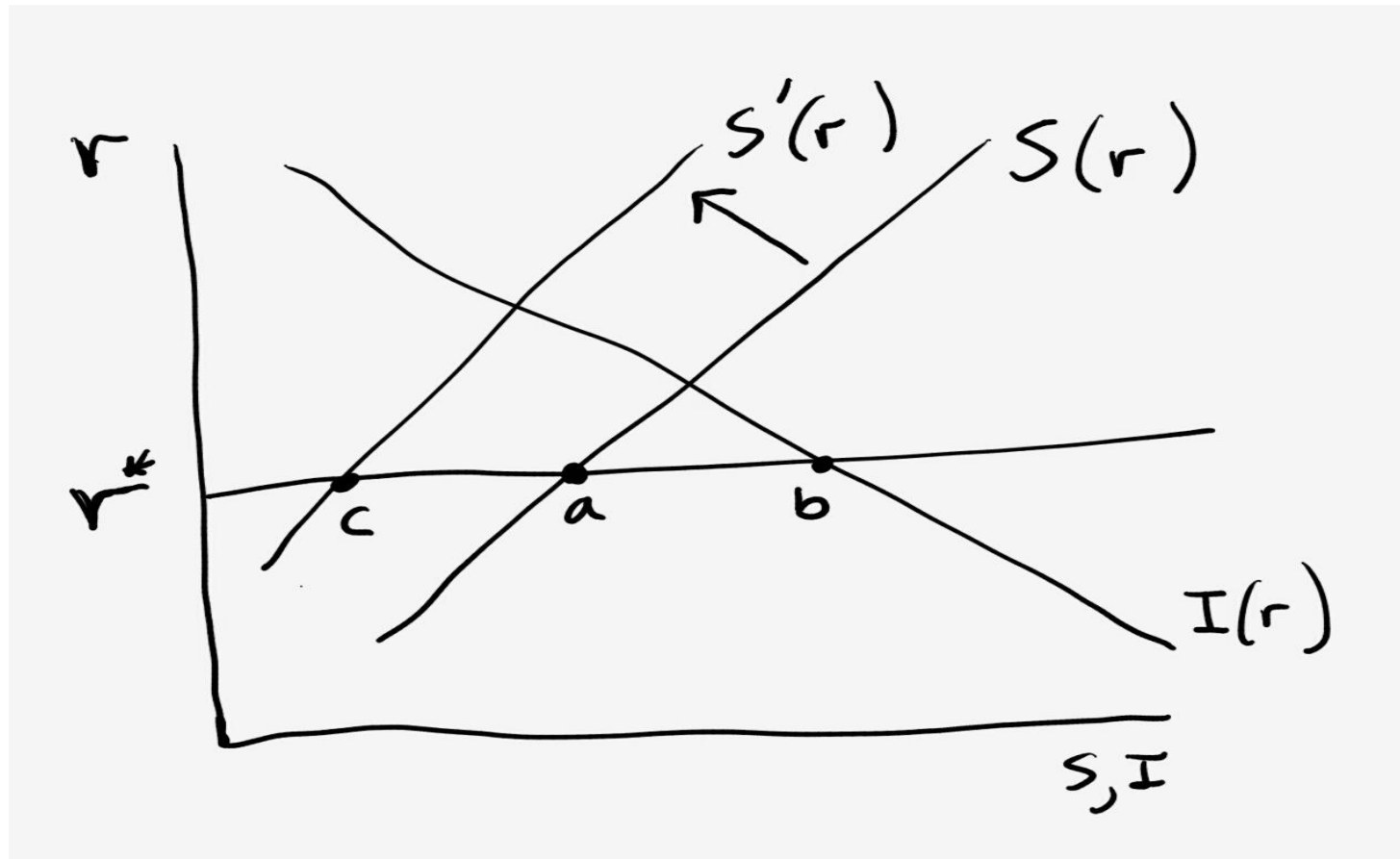
The diagram above shows the national saving (S) and investment schedules for the case of a small economy which can either borrow or lend at the fixed world interest rate (r^*). This country is running a current account deficit equal to the difference between I and S at r^* (the bold segment of the horizontal line at r^*).

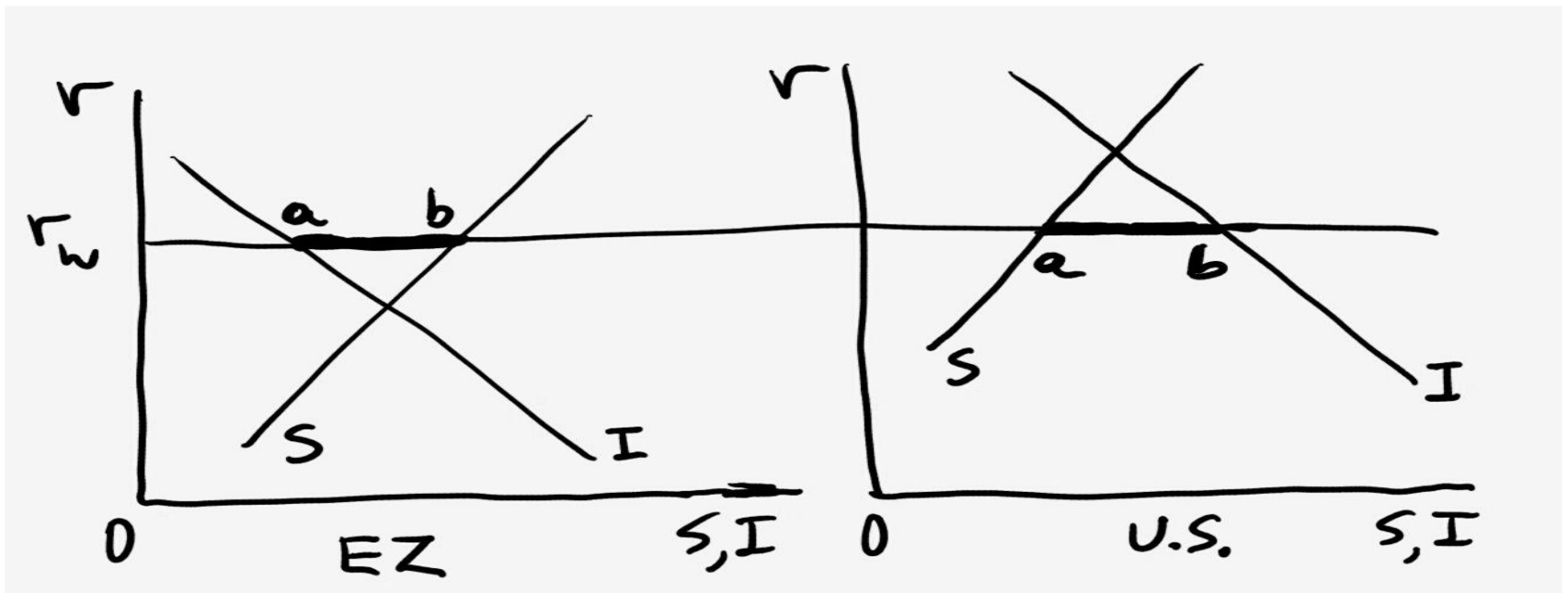
Small Open Economy with $CAB > 0$



The diagram above shows the case of a small economy with a current account (CA) surplus since $S > I$.

Small Open Economy: A decrease in the country's desire to save (e.g. because its residents think that their future incomes will be higher than they previously thought) shifts the S schedule to the left and increases the CA deficit, from ab to cb.





The diagram above shows the case of a world economy consisting of two large countries. (See Appendix for more details.) As drawn, one country (the EZ) is running a current account surplus, and the other country (U.S.) is running a current account deficit of equal magnitude. The common world interest rate is determined so that one country's lending (EZ's) is equal to the other country's borrowing (U.S.'s).

In the diagram below, starting from a situation of current account balance for both countries, an increase in the desire to save in the EZ, results in current account imbalances (equal to **ab**) in both countries. Note that the CA deficit in the U.S. appears due to changes taking place in the EZ: this is a manifestation of economic interdependence.

EZ

U.S.

