

Topic 12: the balance of payments

Introduction

We now begin working toward understanding how economies are linked together at the macroeconomic level. The first task is to understand the international accounting concepts that will be essential to understanding macroeconomic aggregate data.

The kinds of questions to pose:

- How are national expenditure and income related to international trade and financial flows?
- What is the current account? Why is it different from the trade deficit or surplus? Which one should we care more about? Does a trade deficit really mean something negative for welfare?
- What are the primary factors determining the current-account balance?
- How are an economy's choices regarding savings, investment, and government expenditure related to international deficits or surpluses?
- What is the "balance of payments"?
- And how does all of this relate to changes in an economy's net international wealth?

Motivation

When was the last time the United States had a surplus on the balance of trade in goods?

The following chart suggests that something (or somethings) happened in the late 1990s and early 2000s to make imports grow faster than exports (except in recessions). Candidates?

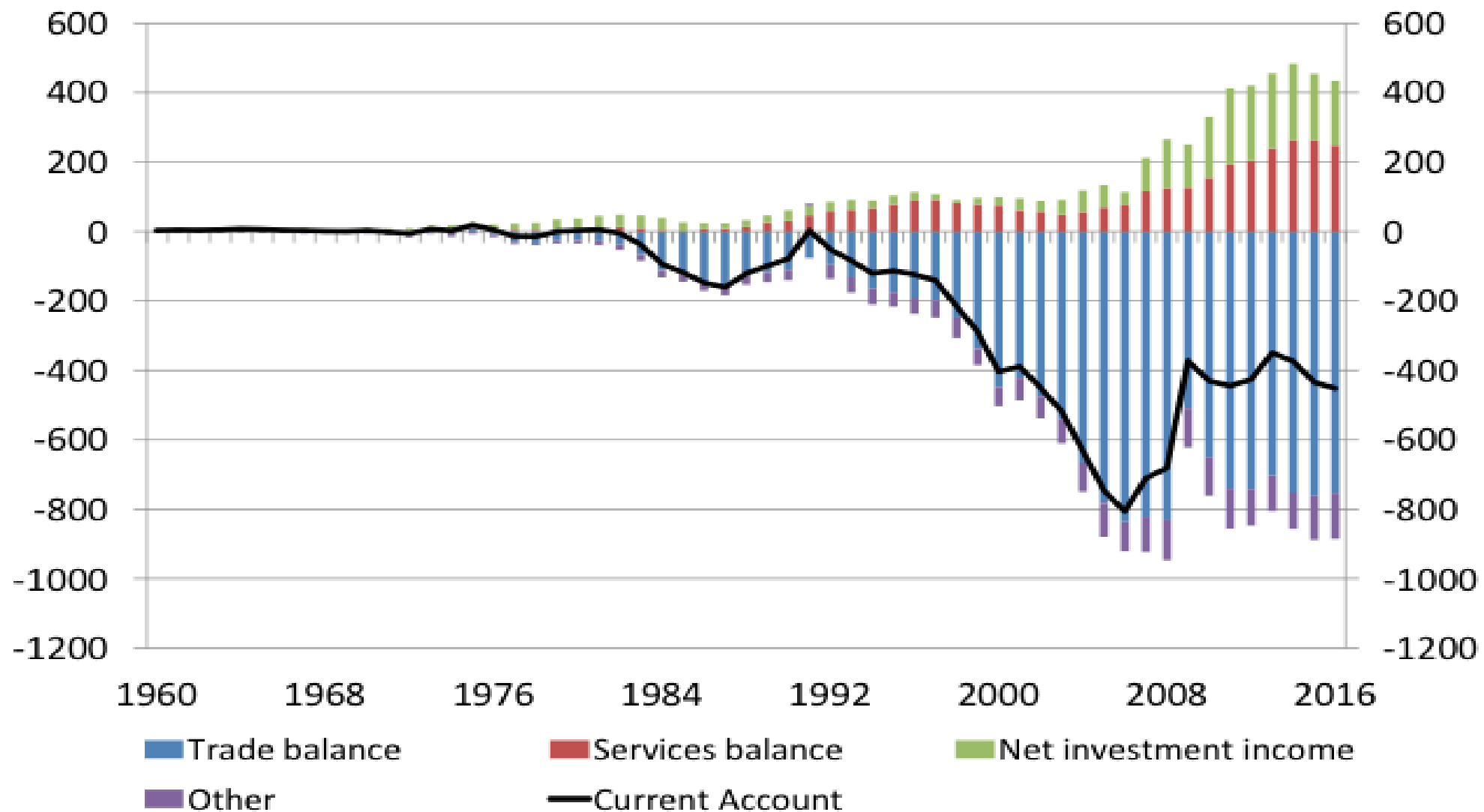
Trade-based stories:

- Big increase in offshoring of production.
- China entered WTO.
- Increases in foreign unfair trade practices?

Macro/savings-based stories:

- US consumption rose fast (and savings fell) relative to GDP.
- US began running larger government budget deficits.
- Massive net foreign purchases of US assets (net capital inflows).
- Maybe it's cyclical (note how US deficit falls during recessions – why?).

US trade balance in goods, 1960-2016 (\$ bllions). Note: 2017 = -\$796 b and 2018 projected = -\$877 b



Closed-economy macro basics

Before thinking about how a country fits into the world, recall the basic concepts in a country that does not trade goods or assets (so again it is in “autarky” but we call it a closed economy).

Three fundamental concepts: expenditure, output, and income.

Gross national expenditure (GNE) is the total spending made by all members of the economy.

- What can you spend it on? consumption, investment, and government expenditures.
- So $GNE = C + I + G$.

Gross domestic product (GDP) is the total value of all *final* goods and services produced in an economy.

(The concept is limited to “final” g & s because if we included all transactions in intermediate inputs we would vastly overstate actual production. Example: if a car (final good) sells for \$30,000 but includes glass steel, leather, etc. worth \$20,000 we can’t count all \$50,000 in GDP because that would count the intermediate inputs twice – once by themselves and once included in the costs of producing the car. So GDP is really our measure of all *value added* produced in the economy.)

Gross national income (GNI) is total income earned by residents of a country Wages, capital income, land payments.

In a closed economy these concepts all equal each other: $GNE = GDP = GNI$.

You may recall this idea as the “circular flow” of income: output generates income, which is what’s available for spending.

BOP accounts: definitions

Let's try to get these same concepts in an open economy. To do that requires understanding the BOP.

The balance of payments (BOP) account is a statistical record of the flow of payments between residents of one country and the rest of the world in a given time period.

Note carefully that is a statement about flows (new transactions), not stocks (cumulative past transactions).

What are these payments (and receipts) for? International trade in goods and services, along with various income flows across borders, plus trade in assets.

Let's define some important parts of the BOP.

- The *merchandise trade balance* is exports of goods minus imports of goods. (Data below) This is what is commonly referred to as “the trade balance” and it has a lot of influence in political terms.
- But the better concept of “the trade balance” is the *trade balance in merchandise and services*. This is exports of goods and services minus imports of goods and services. There is no obvious reason to distinguish between goods versus services in understanding international trade. We will come back to this.

Thus, the trade balance (TB) = $X - IM$ (where X and IM include both goods and services).

Question: what kinds of “services” are traded? How?

BOP accounts: definitions

The *current account* (CA) includes all transactions made in buying and selling goods and services, plus income payments and receipts. It is the trade balance in merchandise and services plus “net factor payments” plus “net unilateral transfers”.

Net factor payments (NFP) is income (receipts) earned by home residents working abroad or owning capital and land abroad, minus income paid out to foreigners working here or owning capital and land here. Top examples: profits earned on capital owned abroad and wages earned by workers abroad.

Net unilateral transfers refer to income received from gifts paid to home residents minus gifts sent to foreign residents. Top examples: labor remittances, foreign aid and other gifts.

Putting this together the current account is supposed to measure net international transactions in “current” items, which means income received from abroad minus payments made to foreigners (not assets and liabilities).

The CAB is the sum of these categories:

$$\text{CAB} = (X - \text{IM}) + \text{NFI} + \text{NUT}.$$

The current account: US data

The following table shows CA data for the United States. Consider 2016:

Exports of goods = \$1.456 b; imports of goods = \$2.208 => Trade balance = $1.456 - 2.208 = -\$752$ billion (trade deficit in goods).

Exports of services = \$752 b; imports of services = \$505 b => balance on services = +\$247 b.

Trade balance (g & s) = $-752 \text{ b} + 247 \text{ b} = -\505 billion. (The best measure of trade deficit.)

Receipts of factor income (primary receipts) from abroad = \$814 b. Mostly from capital.

Payments of factor income (primary) to foreigners = \$641 b.

$\text{NFP} = 814 - 641 = +\173 billion.

Receipts of transfers (secondary receipts) from abroad = \$135 b.

Payments of transfers (secondary) to foreigners = \$255 b.

$\text{NUT} = 135 - 255 = -\120 billion.

$\text{CAB} = -\$505 + \$173 - \$120 = -\452 billion. (line 30)

Table 1.1. U.S. International Transactions

[Millions of dollars]

Release Date: December 19, 2017 - Next Release Date: March 21, 2018

Line		2015	2016	Seasonally adjusted				
				2016		2017		
				III	IV	I	II	III
	Current account							
1	Exports of goods and services and income receipts (credits)	3,172,990	3,157,241	799,153	807,854	834,604	835,275	858,678
2	Exports of goods and services	2,263,907	2,208,072	560,837	559,954	576,226	575,972	583,092
3	Goods	1,510,757	1,455,704	371,043	370,493	383,601	382,902	388,129
4	Services	753,150	752,368	189,794	189,461	192,625	193,069	194,963
5	Primary income receipts	782,985	813,977	204,524	212,953	219,326	225,143	234,497
6	Investment income	776,424	807,430	202,885	211,316	217,679	223,489	232,837
7	Compensation of employees	6,562	6,547	1,638	1,637	1,646	1,654	1,660
8	Secondary income (current transfer) receipts /1/	126,098	135,192	33,792	34,947	39,052	34,160	41,089
9	Imports of goods and services and income payments (debits)	3,607,589	3,608,926	909,423	921,860	948,137	959,672	959,244
10	Imports of goods and services	2,764,352	2,712,866	681,726	694,002	714,320	717,687	717,450
11	Goods	2,272,612	2,208,211	554,438	565,551	584,160	584,351	583,387
12	Services	491,740	504,654	127,289	128,451	130,160	133,336	134,063
13	Primary income payments	602,023	640,751	163,400	161,656	169,264	174,626	177,464
14	Investment income	583,726	620,608	158,337	156,499	164,260	169,420	172,237
15	Compensation of employees	18,297	20,143	5,063	5,157	5,004	5,206	5,227
16	Secondary income (current transfer) payments /1/	241,214	255,309	64,296	66,202	64,554	67,358	64,329
30	Balance on current account (line 1 less line 9) /4/	-434,598	-451,685	-110,270	-114,006	-113,533	-124,397	-100,566
31	Balance on goods and services (line 2 less line 10)	-500,445	-504,793	-120,889	-134,048	-138,094	-141,716	-134,358
32	Balance on goods (line 3 less line 11)	-761,855	-752,507	-183,395	-195,058	-200,559	-201,449	-195,258
33	Balance on services (line 4 less line 12)	261,410	247,714	62,505	61,010	62,465	59,733	60,900
34	Balance on primary income (line 5 less line 13)	180,962	173,225	41,123	51,297	50,062	50,517	57,033
35	Balance on secondary income (line 8 less line 16)	-115,116	-120,117	-30,504	-31,255	-25,501	-33,198	-23,240

Relation to macroeconomic aggregates

Recall in the closed economy: $GNE = GDP = GNI$.

Things are different in the open economy.

GNE is the same concept: $GNE = C + I + G$

GDP measures output made in the domestic economy by everyone there, whether home residents or foreign labor and capital in the economy. To go from GNE to GDP:

- We would add exports X because that is output made domestically (but not in home expenditure).
- We would subtract imports IM because we need to take out of expenditures the amounts spent on imports.
- That is, C , I and G all have components spent on home g & s (part of GDP) and on imported goods (not part of GDP).
- So $GDP = GNE + (X - IM)$, or $GDP = C + I + G + (X - IM)$.
- ***THIS IS AN ACCOUNTING IDENTITY, TRUE BY DEFINITION. IT DOES NOT MEAN THAT IF YOU REDUCE IMPORTS YOU WILL RAISE GDP.***

Relation to macroeconomic aggregates

We still need to get to an income measure. But both NFP and NUT add to domestic income if they are positive (and reduce domestic income if they are negative).

So we have $GNI = GDP + NFP + NUT$. An economy's total income is its total output (GDP) plus net inward flows of factor income and transfers.

Note this means $GNI > GDP$ for countries with positive NFP and/or NUT.

Consider the following table (2015 data): why do you suppose Luxembourg and Ireland have GDP per capita that is so much higher than GNI per capita? Why the opposite for El Salvador and Philippines?

Country	Ireland	Luxembourg	Germany	US	El Salvador	Philippines
GDP pc	\$ 62,140	\$ 101,447	\$ 41,324	\$ 56,469	\$2,900	\$3,027
GNI pc	\$ 51,290	\$ 73,530	\$ 45,790	\$ 56,250	\$3,880	\$3,520

Back to macroeconomic aggregates

The textbook combines NFP + NUT into just NFP (assuming NUT is small). So rewriting:

$$\text{GNI} = \text{GDP} + \text{NFP}$$

$$\text{But } \text{GDP} = C + I + G + (X - \text{IM})$$

$$\text{Then } \text{GNI} = C + I + G + (X - \text{IM}) + \text{NFP}$$

The first 3 terms on the right are GNE (expenditures). Last 2 terms are the CAB.

So, and this is fundamental:

$$\text{****GNI} = \text{GNE} + \text{CAB****}$$

In words: if the economy earns more income (GNI) than it spends (GNE) then it has a current-account surplus ($\text{CAB} > 0$). If the economy earns less income than it spends then it has a current-account deficit ($\text{CAB} < 0$).

Again, this is an accounting identity. There is no argument about it.

Saving, Investment and the CA

To see this in another way, let $Y = \text{GNI}$ (the usual textbook notation). Then

$$Y = C + I + G + \text{CAB}$$

If $\text{CAB} > 0 \Rightarrow Y > C + I + G$. If $\text{CAB} < 0 \Rightarrow Y < C + I + G$.

Now let's relate all this to saving and investment in the economy. Define national saving as

$S = Y - C - G$. (Ignore taxes for now.) Then we have

$S - I = Y - C - G - I = \text{CAB}$. Again, this is fundamental:

$$\text{****} S - I = \text{CAB} \text{****}$$

In words, a country with more domestic saving than domestic investment has a CA surplus. A country with less domestic saving than domestic investment has a CA deficit.

Aside: what is investment? It is expenditures on new physical plant and equipment, inventories, structures, and land improvements within a year. Includes business expenditures but also household expenditures on new residential construction. It probably should include government investments (roads, etc.) but generally does not by convention.

How do taxes enter?

We think of disposable income as GNI minus taxes.

So private saving is disposable income that households do not spend on consumption:

$$S_p = Y - T - C$$

But taxes are just a transfer from households to government so we can think of T as income for the government. Then public saving is just government income minus spending:

$$S_G = T - G$$

- $S_G > 0$ Government **budget surplus** (government is a net saver)
- $S_G < 0$ Government **budget deficit** (government is a net borrower)

Now we have **Current Account**: $CA = S - I = S_p + S_G - I$. Or:

$$CA = (S_p - I) + (T - G).$$

In words, a larger government budget deficit pushes the economy toward a CA deficit.

Clicker question

If a country has a CA surplus it is the same as saying:

- A. Its total expenditure is less than its total income.
- B. Its domestic saving exceeds its domestic investment.
- C. It will be a net international lender.
- D. All of the above.

Going to assets: the financial account

The *financial account* (FA) includes all transactions made in buying and selling assets and liabilities. It is supposed to measure international transactions in “capital” items (flows of stocks, bonds, producing assets, etc.). The FAB adds them up.

What kinds of assets are there?

1. Certain “non-produced and non-financial assets” (basically intellectual property rights and transfers (gifts) of assets (e.g., forgiving a foreign country’s debt.) These go into the *capital account* (KA) but they are tiny and we will generally ignore the KA.
2. Financial portfolio (demand deposits, time deposits, bonds, stocks, mutual funds, derivatives)
3. Real producing assets (real estate, farms, factories, etc.)

If a country *sells* an asset it is a credit (enters positively) in the BOP. But that means a foreigner owns the asset.

If a county *buys* a foreign asset it is a debit (enters negatively) in the BOP. But that means home owns the asset.

The FA balance would be $FAB = KAB + (\text{sales of home-owned assets} - \text{purchases of foreign-owned assets})$. But we’ll assume $KAB = 0$.

Implication: a country that sells more domestic assets than it buys of foreign assets has a FA *surplus* (or “net foreign inflows of financial capital”).

But that is the same as saying that it is borrowing from abroad on net.

We can see there must be a relationship between FA and CA. To understand it we have to think about how the BOP accounts really work.

Accounting for the BOP

This material is somewhat tedious but it's important to understand the BOP because changes in its components can be important in forecasting exchange rates, changes in monetary policy, assessing what might happen to growth, employment, and so on.

BOP accounting uses *double-entry bookkeeping*; every transaction is both a debit and credit (see the rule below). But to keep it simple, a *credit* is something the country sells to foreigners (and enters as a positive item in the BOP); a *debit* is something the country buys from foreigners (and enters as a negative item in the BOP).

Since there is this double-entry approach, by definition the entire BOP must equal zero (credits (+) equal debits (-)).

But we also talk about BOP surpluses and deficits so we'll need to figure that difference out.

Putting this together, in principle, the $BOP = CAB + FAB = 0$ overall.

Examples of double-entry bookkeeping

Example 1:

Suppose Levi's sells \$2 million of jeans to French buyers, who pay with a \$ account in a New York bank.

US BOP entries	Debit	Credit	CA or FA?
Jeans export		\$2 million	CA (exports)
French payment	\$2million		FA

Why is the French payment a US debit? Because a US agent (Levi's) effectively purchases a French asset (the French buyer's deposit at a NY bank). To put it differently, the US has reduced the assets owned by French in the US by \$2 m; it transfers ownership of this asset from F to US. This is a short-term bank claim in the FA.

Examples

Example 2:

Suppose a US investor buys a Japanese \$1m corporate bond. It pays with dollars and the Japanese corporation deposits the check in a US bank. This is a payment to Japan in return for an asset.

US BOP entries	Debit	Credit	CA or FA?
Bond purchase	\$1m		FA
US payment		\$1m	FA

Again, why is the US payment a US credit? Because in effect the US investor has sold an asset (the bank deposit) to a Japanese agent.

Examples

Now when we figure out how to compute the BOP we assign a (+) to credits and a (–) to debits. (Do not confuse these with being better off or worse off; they are just ways of recording transactions.)

In the 2 cases above, credits = + \$3m; debits = - \$3m and the overall BOP = 0, as noted earlier. Put differently,

$$\text{CAB} = + \$2\text{m} \quad \text{FAB} = - \$2\text{m} - \$1\text{m} + \$1\text{m} = - \$2\text{m}.$$

This all gets pretty confusing without a basic rule for identifying debits and credits. Here's the rule:

1. Identify the *independently motivated (or “autonomous”) transaction* (here those are the jeans export and the bond purchase) and figure out if it is a US sale (credit) or purchase (debit). The payment is the offsetting transaction.
2. Place it into the CA if it's a transaction in current goods and services or an income transaction; in the FA if it's a transaction in assets. The payment generally goes into the FA since it's a financial payment (exchange of claims).

More examples

We can use these simple rules to identify the nature of BOP transactions.
More examples:

Example 3: US tourists buy \$10m in souvenirs in Thailand, paying cash.

US BOP entries	D	C	CA or FA
Souvenirs	\$10m		CA
Cash		\$10m	FA

Souvenirs are an import of current goods, so a debit in CA. The cash (e.g., withdrawals from ATMs in Thailand) payment is a transfer (sale) of a US-owned asset (currency) to Thai ownership, so a credit in FA.

Example 4: A US engineering company does consulting work in Saudi Arabia for 6 months, is paid \$20m.

US BOP entries	D	C	CA or FA
Engineering services		\$20m	CA
Saudi payment	\$20m		FA

More examples

Example 5: A US company buys a Mexican textile factory for \$10m, pays with some equity (stocks) in its own company.

US BOP entries	D	C	CA or FA
Factory purchase	\$10m		FA
Stocks transferred to Mexico		\$10m	FA

The text shows several similar examples in Table 11.2 and you should work through these. There also will be examples in problem set 4.

Now in these 5 examples note the following:

CA: Credits = +2 + 20 = +\$22m Debits = -\$10m \Rightarrow CAB = + \$12m (a “CA surplus”)

FA: Credits = +1 +10 +10 = +\$21m Debits = -2 -1 -20 – 10 = -\$33m \Rightarrow FAB = - \$12m (a “FA deficit”)

In this sense, BOP = 0. Think of this as the “accounting” BOP; it must add to zero.

The “economic” BOP

But what is the interesting economic concept here? It's that the autonomous transactions determine the supply and demand for dollars (and for foreign currencies).

Consider the supply and demand for dollars (\$) generated by the independently motivated transactions (ignoring the offsetting settlement payments). What are these autonomous transactions?

- Ex 1: jeans export (CA, +\$2m). But this is a *demand* for dollars (and a *supply* of foreign currency [euros]).
- Ex 2: bond purchase (FA, -\$1m). A supply of dollars (and demand for foreign currency [yen]).
- Ex 3: souvenirs purchase (CA, -\$10m). A supply of dollars (and demand for foreign currency [baht]).
- Ex 4: engineering export (CA, +\$20m). A demand for dollars (and supply of foreign currency [rials]).
- Ex 5: factory purchase (FA, -\$10m). A supply of dollars (and demand for foreign currency [pesos]).

Then the *autonomous CAB* = +\$12m and the *autonomous FAB* = -\$11m.

Then autonomous CAB + autonomous FAB = +\$1m. We can think of this as an “economic” BOP surplus.

It means that in terms of autonomous transactions there is an *excess demand* for dollars since the sum of these transactions is positive. (The demand for dollars adds to \$22m and the supply adds to \$21m.)

That is, the US sells \$1m more stuff (goods, services, and assets) than it buys.

Summary and the OSB

Now let's make a connection between the BOP and supply and demand for domestic and foreign currencies. For the United States:

- Autonomous credit transactions (CA or FA) are a *demand for dollars* (purchases by foreigners of US goods, services, and assets).
- Autonomous debit transactions are a *supply of dollars* (purchases by US residents of foreign goods, services, and assets).

In our examples, we found that the autonomous or economic BOP was a surplus of +\$1m.

To avoid confusion, let's call this "autonomous" FAB the "private" FAB (or pFAB).

It is supposed to capture all asset transactions that involve actors OTHER THAN the Central Bank. What does a central bank (CB) do regarding foreign currencies?

If the CB chooses to buy or sell foreign reserves (major foreign currencies, gold, and some other items), we place those transactions into the "Official Settlements Balance" or OSB.

What this means is the financial account has 2 types of transactions: private and official.

$$\text{FAB} = \text{pFAB} + \text{OSB}.$$

Clicker question

Which of the following statements is FALSE about accounting for the balance of payments?

- A. The economic BOP is the sum of all autonomous (“private”) transactions in the current account and financial account.
- B. The total financial account balance includes both private transactions in the FA and the central bank’s official settlements balance (OSB).
- C. A country with an economic BOP deficit has an excess demand for its currency.
- D. The accounting BOP must sum up to zero.

Simple statement of flexible vs fixed exchange rates

What would happen in foreign exchange markets if this economic BOP surplus of +\$1m exists?

It depends on the central bank's (Federal Reserve Bank's) response.

1. Fed could do nothing. Then the dollar would appreciate, making US goods and services more expensive. This would cause autonomous credits to fall (US sells less) and autonomous debits to rise (US buys more) until the “economic” or “autonomous” BOP = 0.

This is a “flexible” exchange rate system: the central bank does NOT intervene to influence the value of the home currency.

Relation to supply and demand for currencies

2. The Fed could intervene to take up the difference to prevent a change in the exchange rate. Then the Fed would have to buy \$1m in foreign currencies (FX), selling \$1m in the FX market. How would this work in the BOP?

US BOP entries	D	C	Account
FRB buys FX	\$1m		Official settlements balance (OSB)
FRB pays in \$		\$1m	FA

Note the Fed gains foreign exchange reserves (pounds, euros, yen, etc.).

But here, the FX transaction is a debit, so $OSB = -\$1m$. At this point we can say

$$CAB + pFAB + OSB = 0$$

The first 2 components are autonomous “private” (non-central bank) transactions. The 3d component is the activity of the central bank in buying or selling FX reserves.

This is a fixed (or managed) exchange-rate system.

On an S and D diagram

An exchange rate is a price so it can be determined like a price. Consider the “market” for dollars, assuming there are just 2 currencies (dollars and euros).

What are the basic determinants of the demand for, and supply of, dollars in the FX market?

As noted, the supply of \$ depends on the amount of US imports (since importers would buy € and pay in \$) and the demand for \$ depends on US exports (since European importers would buy \$).

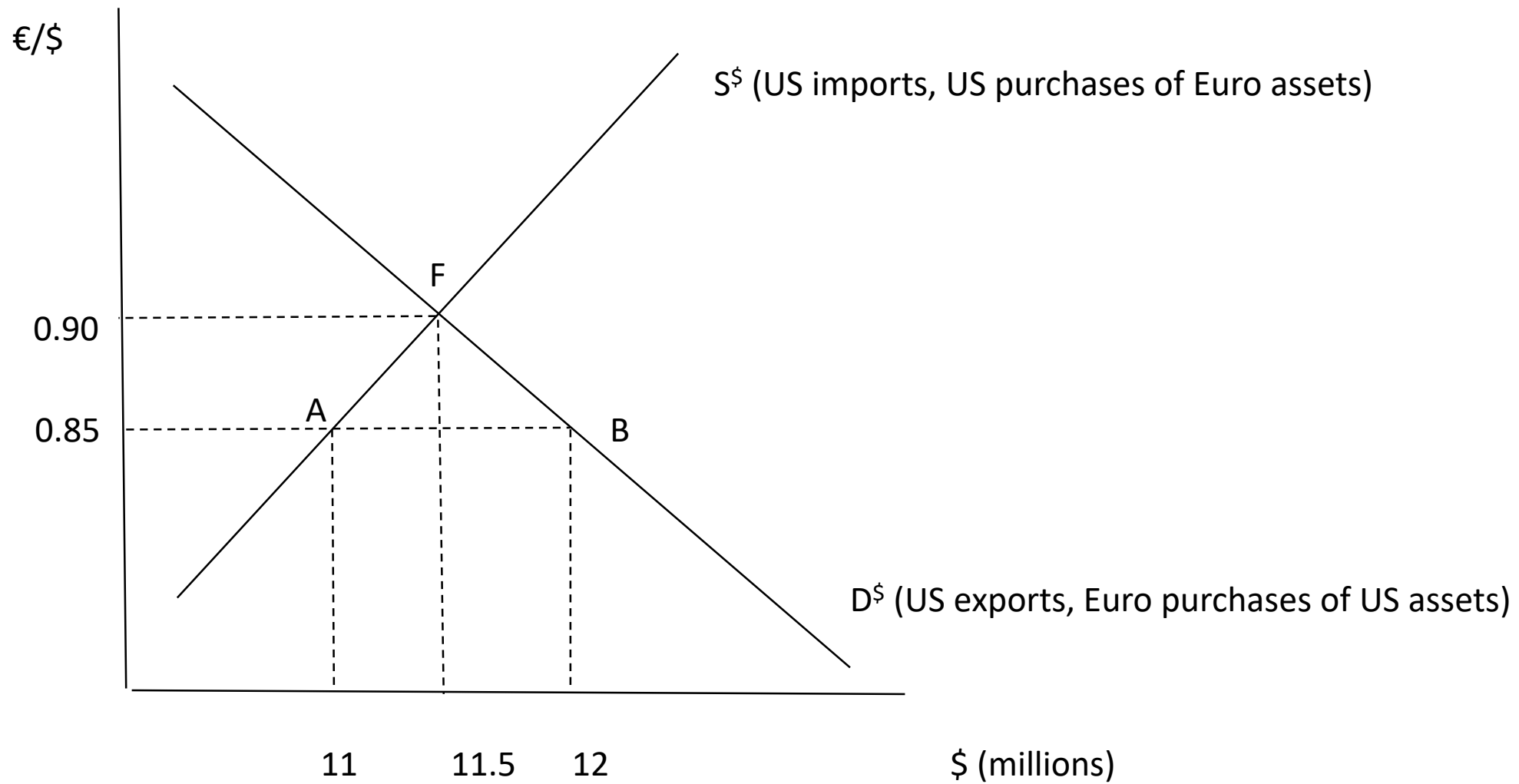
But there are also purchases and sales of assets, which enter into supply and demand. These decisions would depend on financial variables, such as (relative) interest rates, (relative) inflation rates, and (relative) expectations about investment returns.

We will consider determinants of exchange rates after the BOP.

For now relate to the OSB: in our example the net quantity demanded of \$ was \$12 m. The net quantity supplied was \$11 m, meaning there was an excess demand of \$1m at initial exchange rate (0.85 €/£). Distance AB measures the US economic BOP surplus (and the European economic BOP deficit).

Case 1: no Fed intervention => OSB = 0 and the dollar appreciates (to, say, 0.90). Equilibrium is at F.

Case 2: Fed intervenes to sell \$ and buy € => OSB = -\$1m and the dollar remains fixed at 0.85. Note that the Fed gains foreign reserves (euros) of $0.85 \text{ €/£} \times \$1\text{m} = \text{€}850,000$.



Actual US data for 2016

We already went through the current account data for the United States. To summarize:

- Trade balance (in g &s) = -\$505 billion.
- NFP = +\$173 billion.
- NUT = -\$120 billion.
- CAB = $-505 + 173 - 120 = -\$452$ billion.

Now consider the financial account (just the figures, not the data table itself).

- There was a tiny capital account (KA) of -\$59 million (net outflow); let's ignore it here.
- Net US acquisition of foreign assets = \$364 billion. But this is an OUTFLOW (net debit) so it enters FA negatively.
- Net foreign acquisition of US assets = \$741 billion. This is an INFLOW (net credit) so it enters positively.
- This means the “private” FAB = pFAB = $-364 + 741 = +\$377$ billion.
- The Fed bought \$2 billion more than it sold in FX reserves => OSB = -\$2 billion.

Actual US data for 2016

Where we are at this point:

CAB = -\$452 billion (a CA deficit; it is the US “borrowing requirement”).

pFAB = +\$377 billion (an autonomous FA surplus to meet the CA deficit).

OSB = -\$2 billion.

But we should have $CAB + pFAB + OSB = 0$. Instead we have $CAB + pFAB + OSB = -\$77$ billion.

This is a (big) error made by the difficulty in actually accounting for all international transactions.

So the BOP adds in a “statistical discrepancy” (SD) of +\$77 billion to make it all add up:

$-\$452b + \$377b - \$2b + \$77b = 0$.

Summarizing primary BOP concepts

$$\text{CAB} = \text{TB} + \text{NFP} + \text{NUT}$$

- CA measures net receipts minus payments in international income-based transactions.
- But we also showed that $\text{CAB} = \text{GNI} - \text{GNE}$. So CA is the difference between income and spending.
- And we also showed that $\text{CAB} = S - I = (S_p - I) + (T - G)$. CA is the difference between saving and investment.
- For these reasons the CAB measures the net international borrowing requirement (if $\text{CAB} < 0$) or lending opportunity (if $\text{CAB} > 0$). CAB must be financed through international trade in assets.

KAB is net receipts on small asset gifts; we ignore it, so just consider $\text{KAB} = 0$.

$$\text{FAB} = \text{pFAB} + \text{OSB}$$

- FA measures net sales of domestic assets to foreigners minus net purchases of foreign assets. An FA surplus ($\text{FAB} > 0$) means the country is a net borrower. $\text{FAB} < 0$ means it is a net lender.
- The pFAB measures such transactions by all domestic residents and organizations other than the central bank.
- OSB is net sales minus purchases by central bank of foreign reserve assets.

Summarizing

We think of the “economic” BOP as the autonomous income and asset transactions by agents other than the central bank:

- Economic BOP = CAB + pFAB.
- This concept captures what is meant by a “BOP surplus” or “BOP deficit”.
- If Economic BOP > 0 there is an excess demand for the home currency (and an excess supply of foreign currency) in the FX markets.
- If Economic BOP < 0 there is an excess supply of the home currency (and an excess demand for foreign currency) in the FX markets.

The overall or accounting BOP must add to zero:

- $BOP = CAB + FAB = CAB + pFAB + OSB = 0$.
- But errors are made so there is statistical discrepancy: $CAB + pFAB + OSB + SD = 0$.
- We will usually suppose there are no errors ($SD = 0$),

This means (in principle) that $CAB + pFAB = - OSB$. This expression summarizes FX policy:

- With a fixed exchange rate, if $CAB + pFAB > 0$ (BOP surplus) $\Rightarrow OSB < 0$ (central bank purchases FX reserves).
- With a fixed exchange rate, if $CAB + pFAB < 0$ (BOP deficit) $\Rightarrow OSB > 0$ (central bank sells FX reserves).
- With a flexible exchange rate, $OSB = 0$ and exchange rate adjusts to set $CAB + pFAB = 0$.

Clicker question

Ignore the KA and assume no errors are made ($SD = 0$). Let $CAB = -\$200$ billion and $pFAB = +\$150$ billion. Then we can conclude

- A. This country has an economic BOP deficit.
- B. This country's central bank has sold a net \$50 billion in foreign reserves.
- C. The central bank is managing the exchange rate in order to prevent a depreciation of the home currency.
- D. All of the above.