Lecture 1: National Income Accounts
Chapter 12

1) National income accounting

a) Recall variables from closed economy macro classes:

\[ Y = \text{Gross National Product (GNP)}, \text{ total value of all final goods and services produced by a country’s factors of production.} \]

“final goods and services”: because the price you pay for the dominos pizza includes the cost dominos paid for the flour, to count the four separately would be double counting

“produced by a country’s factors”: so if a Ford factory in Mexico is owned by the US company, the profits go back to the US, reflecting the role that the US-owned capital played in producing the final output. (If count what produced within US borders regardless of ownership, is called GDP).

\[ C = \text{consumption: Purchases by private sector for current wants. (includes durables, nondurables, and services)} \]

\[ I = \text{investment: part of current output used to increase in the capital stock and produce more output in future} \]

Note the economic definition of investment is a little different from the common usage. If buy stocks and bonds, is saving not investment. When company you bought stock from uses the money you gave them to buy capital, machinery to make more output, this is called investment.

\[ G = \text{government purchases: goods and services purchased by the public sector} \]

example: government buys tanks for a war. But government spending on welfare payments does not get counted here, because money is given to people who use it for consumption, and it will be counted there.

b) In a closed economy, what is relationship between these variables?

\[ Y = C + I + G \]

We defined the variables on the right here so this is true, we created subcategories of output because these parts of output tend to behave in different ways. Since this equation is true by definition, we call it an identity.

The idea here is that in a closed economy each item produced is going to be utilized for something within the country. It will be consumed by private households or government, or it will be classified as investment, to produce future output or be inventory used for consumption next period.
Rearrange this as: \[ Y - C - G = I \]
Or: \[ S = I \]
where \( S \) is total national saving.

So the accounting identity tells us that in a closed economy, total saving must equal investment.

c) In an open economy

How does this change in an open economy? Now goods can flow across national borders, so the goods produced within the US do not need to be utilized within the US.

First, exports: \[ Y = C + I + G + \text{EX} \]
Why: If Chrysler (a U.S. company) makes a car in the U.S. bought by a European -- it is in our GNP, but not in domestic consumption, investment or government expenditure. We need to list it separately.

Similarly for Imports: A Toyota made in Japan and bought by your cousin in San Francisco will appear in the US consumption, but it is not part of our national product, so it needs to be subtracted out. \[ Y = C + I + G + \text{EX} - \text{IM} \]

Exports less imports can be referred to as the current account: \[ \text{CA} = \text{EX} - \text{IM} \]
where exports and imports are defined broadly, including merchandise, services and investment income/factor services like the profits on the Ford plant in Mexico discussed above. (A very detailed definition of the current account will follow in a few pages). So the open economy identity is:

\[ Y = C + I + G + \text{CA} \]
Or \[ Y - C - G = I + \text{CA} \]

\[ S = I + \text{CA} \]

It no longer is true that saving must equal investment in an open economy. In fact this gives us a way to compute the current account, as the difference between national saving and investment.

\[ \text{CA} = S - I \]
2) US current account deficit:

a) Data:

In figure of national income accounts, see that consumption was about 2/3 of total GNP in the U.S., investment and government purchases were about 20% each, and the current account was negative and a smaller fraction of GNP.

In the figure below, one can see that the U.S. current account reached low levels in the mid 1980s, and after a rebound in the early 1990s, it has reached new lows level in recent years.

![Figure 1: U.S. current account](source)

Why is this a worry? Because it means there is a drain on U.S. net foreign wealth.

b) What this means:

If the current account is in deficit, how is the U.S. paying for its imports in excess of exports? It is selling off its assets, the wealth created by past production.

Example: Suppose consumers in the U.S. purchase a million Toyotas from Japan and give Toyota in Japan dollars in exchange. Japanese will use some of these dollars to buy Fords from the U.S., but suppose they only want half a million Fords. What will they do with the remaining dollars? They may use them to purchase real estate in the U.S. or U.S. government bonds which are government IOUS. In a sense, the U.S. is borrowing from rest of world.
This will be represented as a fall in the U.S. net foreign asset position, the value of foreign assets owned by U.S. citizens minus the value of U.S. assets owned by foreign citizens.

The loss of net wealth may mean that there are future sacrifices to pay back the debt.

c) Evaluation:

So is the fall in the U.S. CA and the resulting rise in U.S. indebtedness to the rest of the world a bad thing? Hard to say - depends on what is causing it.

Reconsider the accounting identity:

\[
CA = S - I = Y - C - G - I
\]

Possible explanations for large U.S. CA deficit:

1) **Current account could be negative because consumption is high this year relative to output.** This may be unwise if U.S. consumers don’t realize this comes at the cost of lower than usual consumption in the future when they pay back the debt.

2) **Or it could be because of investment spending is high.** This could be sensible, since investment implies higher output in the future, which could be used to pay off the debt then. Some say this is the story of Mexico when oil was discovered. Needed to import machinery to exploit the oil. Could have lowered consumption a lot, but why? Borrow the money, and then pay it back later once receiving income from oil production. This was the idea in any case.

3) **The CA deficit could also be because of increased government expenditure.** Can debate whether this is a good reason to run a deficit.

Some economists have noted that the U.S. federal government has run significant budget deficits during this time, and they claim that the U.S. current account deficit has been caused by the government budget deficit. This theory is often called the “Twin Deficits Hypothesis.”
d) Understanding the “Twin Deficits Hypothesis”:

We can rearrange accounting identity to get better insight into twin deficits claim:
\[ Y - C - I - G = CA \]
introduce taxes in a way that does not alter the validity of the equation:
\[ (Y-T) - C - I - (G-T) = CA \]
or define \( Yd = Y - T \): disposable income is what private sector has left after taxes
then rearrange:
\[ (Yd - C) + (T-G) - I = CA \]
or
\[ Sp + Sg - I = CA \quad \text{where we define private saving: } Sp = Yd - C \]
and we define government saving: \( Sg = T - G \)

or
\[ Sp - def - I = CA \quad \text{where we define the government budget deficit: } def = G - T \]

Conclude: “All else constant,” a worsening budget deficit (def) will lead to a fall in the current account balance (CA). But note that the other variables in the equation, like private saving and investment, can also change and potentially cause current account deficits as well.

e) Data on twin deficits:

**Figure 2**  
U.S. current account and components

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<tr>
<th>Year</th>
<th>GNP Share</th>
<th>Investment</th>
<th>Private Saving</th>
<th>Government Saving</th>
<th>Current Account</th>
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Source: IMF

Question for class discussion: To what degree is the Twin Deficits Hypothesis supported in the data. Consider first the deficit in the 1980s. How about for the current account deficit in recent years?
3) BOP (Balance of Payments) Accounting

a) Accounting rules

Definition of Balance of Payments: record of transactions with the rest of the world: buy and sell: goods, services, assets of various types. Keeps track both of payments to foreigners and receipts from foreigners.

Rule 1: A transaction resulting in a payment to foreigners is recorded as a debit and is given a negative sign. Example: an American buys a Rolls Royce from UK, then is a debit for U.S, negative sign.

Any transaction resulting in a receipt from foreigners is entered as a credit and is given a positive sign. Example: British person buys a Chevy: is a credit for U.S., positive sign.

Rule 2: Transactions are divided into two types:
If the transaction involves the export or import of goods or services, it enters directly into the current account (CA). Example: British person buys a Chevrolet truck, then is a credit in U.S. current account.

If the transaction involves the purchase or sale of assets, it instead enters the financial account (FA). An asset is any form in which wealth can be held, such as money, stocks, factories, government bonds, land, etc.

If British person buys stock in Chevrolet motor company, then is a credit in U.S. financial account (asset, not the product)

Rule 3: Every international transaction automatically enters the BOP accounts twice: once as a credit and once as a debit.
Example: If U.S. person buys a Rolls Royce, paying dollars to seller in U.K. This is a debit in U.S. current account.

The British person then must do something with the dollars
a) buy a Chevy with them: is a credit in current account
b) buys stock in U.S. company: is a credit in financial account
c) holds on to U.S. cash - is a U.S. asset, so is a credit in financial account

Since every transaction gives rise to two offsetting entries in the balance of payments, a current account debit will necessarily be offset by a credit, either in current account or in financial account.

So we know that if we add up the CA and FA, we will get zero:

\[ \text{Current Account} + \text{Financial Account} = 0 \]

Note: in some accounting schemes an additional category, the “capital account”, is also included in this identity. This category is extremely small for the U.S. and just is used to cover some technical transactions relating to changes in ownership of assets.
So we will abstract from this accounting category in this course. Sometimes I may lump just these two asset accounts together as the “capital and financial account.”

Recall that the current account is how much more are spending than producing, or saving minus investment.
If you are spending more than producing, say have a current account deficit, which must finance this somehow.
We could sell assets in our country to pay for the goods we want. This would generate a financial account credit to balance the current account deficit.
Or we could issue debt which sell to foreigners, another way of borrowing, and also would be a financial account credit. Can refer to this as a “financial inflow” (also sometimes called a “capital inflow”) to finance the current account deficit.

b) Current account

Now we give more detail about how to compute each account.

Three categories:
1. Exports - credit
2. Imports - debit
3. Transfers

Exports and imports each divided into three categories:

1. merchandise: export and import of goods, like Chevys and Rolls Royces
2. services: legal assistance, shipping fees, tourism
3. investment income: interest and dividend payments and earnings of domestically owned firms operating abroad.

The “transfers” category above refers to net unilateral transfers, defined as international gifts. An accounting category is needed to account for the corresponding entry in BOP. Suppose the U.S. gives aid to Sudan, which Sudan uses to purchase food imports from the U.S. The sale of food is a credit in the U.S. current account; a corresponding and offsetting entry is put in the unilateral transfer category.
c) Financial account

Recall that this account measures the change in net holdings of foreign assets. Break down into:

1) change in U.S. ownership of assets located abroad (increase is a debit, a capital outflow), and
2) change in foreign ownership of assets located in U.S. (increase is a credit, a capital inflow)

Each category includes assets that are official reserve assets.

Central banks hold foreign assets. They buy and sell them as a way of influencing the financial markets.

The “official settlements balance” is defined as the sum of the Current account, the statistical discrepancy, and the part of the financial account excluding the official reserve transactions. It thus indicates how much of a gap was left in the balance of payments after private transactions were made, and how much the central banks had to intervene to fill in this gap.

In 2003 financial account was in surplus $545.8 billion.

Means U.S. net wealth fell by 545.8. This helped finance current account deficit- is a financial inflow.

But notice there is a statistical discrepancy. The two accounts do not exactly cancel. This is due to error in collecting statistics. Much of problem lies with the financial account – it is harder to keep track of the many, complicated financial transactions.

Figure 3
U.S.net foreign asset position and current account

Because the current account equals the change in net foreign assets in a year, each year the current account is in deficit, the net foreign assets position of the U.S. falls.

Because of the years of current account deficits, the U.S. has gone from the world’s largest net foreign creditor to the largest foreign debtor.

But while the number is large, it remains small relative to our GDP.

d) Case study: U.S. as worlds biggest debtor