Gross National Expenditure

- **Gross national expenditure (GNE):** total national spending (purchases) on final goods and services.
  
  \[ \text{GNE} = C_P + I_P + G = C_P + I_P + (C_G + I_G) \]
  
  = \((C_P + C_G) + (I_P + I_G) = C + I\)

- **Investment** = additions to national capital stock.
- Investment purchases include unsold inventories, so purchases = production.

Flow of Payments in a Closed Economy

- In a closed economy, total spending (GNE) is total payments for final goods and services produced.

  - **Gross Domestic Product (GDP)**
    
    = total sales by firms of goods excluding sales to other firms = value-added, by sector.
  
  - **Gross National Income (GNI)**
    
    = payments by firms to individuals (wages, salaries, dividends, profits, rents, et cetera).
The Circular Flow in a Closed Economy:

\[
\text{GNE} = \text{GDP} = \text{GNI}
\]

Flow of Payments in an Open Economy

- The balance of payments account records international transactions in the open economy.
- In the flow of payments for an open economy, the transactions in the balance of payments affects the flow of spending, income, and production.
  - GNE, GDP, and GNI need not be equal.

Flow of Payments in an Open Economy

1. Some home spending is on foreign goods; some foreign spending is on home goods.
   - International payments result.
   - We deduct imports (IM) and add exports (EX) to GNE, to get payments received by home firms.
   - Total spending on final goods and services is the sum of GNE and the trade balance (TB = EX − IM), so GNE + TB = GDP.
Flow of Payments in an Open Economy

2: Some home GDP might be produced using “imported” foreign factors and some foreign GDP might be produced using “exported” home factors.
   - International payments result (e.g., wages, rents).
   - We subtract factor service imports (IMFS) and add factor service exports (EXFS) to GDP to calculate the income received by home.
   - Difference is net factor income from abroad (NFIA = EXFS – IMFS), so GDP + NFIA = GNI.

Flow of Payments in an Open Economy

3: Country’s disposable income may differ from income earned due to unilateral transfers paid to (UTOUT) and received from (UTIN) abroad, e.g., aid.
   - Net unilateral transfers (NUT = UTIN – UTOUT) is the net amount the country receives from the rest of the world.
   - Gross national disposable income: GNDI = GNI + NUT

Flow of Payments in an Open Economy

4: Income is not the only resource by which an open economy can finance expenditure.
   - The economy can increase/decrease its spending power by exporting/importing ownership of assets internationally (not the physical asset).
   - These transactions are recorded in the financial account (FA), equal to asset exports (EXA) less asset imports (IMA), so FA = EXA – IMA.
Flow of Payments in an Open Economy

5: A country may transfer/receive assets as gifts.
- Like income transfers, these must be recorded properly.
  - Asset imports which are gifts (KA_in) do not reduce resources, so we must add those.
  - Asset exports which are gifts (KA_out) do not increase resources, so we must subtract those.
- These transfers of assets are recorded in the capital account (KA), so \( KA = KA_{in} - KA_{out} \).

The Big Picture

GNE = C + I + G
GDP = GNE + TB (a.k.a. NX)
GNI = GDP + NFIA
GNDI = GNI + NUT
So GNDI = (C + I + G) + (TB + NFIA + NUT)
   = GNE + CA = Y
Also, GNE = GNDI + FA + KA
So CA + FA + KA = 0
Flow of Payments: Quick Summary

- International transactions appear in two places
  - In the National Income & Product Accounts
    - Because they account for the differences between measures of expenditure, product, and income.
  - In the Balance of Payments Accounts
    - Where they are broken down by concept and presented in much more detail.
      - Transactions in goods & services TB, factor services NFIA, and income transfers NUT go in the current account CA.
      - Transactions in assets are recorded elsewhere. The financial account FA records all asset movements. The capital account KA records transfers of assets.

Flow of Payments: Quick Summary

- International transactions complete the circular flow and add up to zero
  - As we saw the transactions from the balance of payments are added to GNE at each step.
  - But the end result is still GNE.
  - So the balance of payments adds up to zero.
  - A positive entry in the balance of payments must be offset by a negative entry elsewhere in the account.

Three Approaches to Measuring Economic Activity

- Expenditure approach: $\text{GNE} = \text{C}_0 + \text{I}_0 + \text{G}$
  - Demand for goods and services
  - GNE = total expenditure on all final goods and services.

- Product approach: $\text{GDP} = \text{GNE} + \text{TB}$
  - Supply of goods and services
  - GDP = value of all goods and services produced by firms, less intermediate goods purchased.

- Income approach: $\text{GNI} = \text{GDP} + \text{NFIA}$
  - Payments to factors of production
  - GNI = value of all payments earned by factor residents in the economy.
For Example: Who Makes the iPod?

- Background
  - Much of the iPod is manufactured abroad, by numerous Asian enterprises.
  - There are 451 parts that go into the iPod.
- The retail value of the iPod is $299 (2007).
  - Where does it go?

Who Makes the iPod?

- In 2007, retail value of the iPod was $299 (for a 30Gb iPod)
  - Most expensive component: $73 - hard disk from Toshiba, a Japanese-owned company, which manufactures the hard disk in the Philippines and China.
  - Profit margins at each production step are very low; produced in intensely competitive markets.
  - Researchers estimated $163 of the $299 retail is paid to American companies and workers.
    - $80 paid to Apple (e.g., design, IP, support)
    - $75 distribution (e.g., transport/wholesale/retail)
    - $8 for various domestic components (U.S.-made parts)

Who Makes the iPod?

- For many products, there’s no easy answer to the question of who makes it and where is it made.
- The value in the iPod is in combining inexpensive parts to produce an expensive product.
- Balance of Payments data may not accurately account for all of payments within and between firms at all stages of the highly fragmented production process.
- Important to understand and account for the growing role of intermediate products in the export and import flows worldwide.
Example: Celtic Tiger or Tortoise?

- Trade in factor services explains differences between a country’s GNI and GDP.
- Consider Ireland’s rapid economic growth.
  - In the early 1970s, Ireland was one of the poorer countries in Europe.
  - Between 1975 and 2005, real GDP per person grew at 4.4% per year, an exceptional growth rate compared with other rich countries in the European Union.
  - Who reaped the benefits?

Celtic Tiger or Tortoise?

- A sizable portion of this increase in real GDP can be attributed to net factor income from abroad.
- While GDP measures Ireland’s production, GNI is the income earned by Ireland.
- Countries can rely on factor services from abroad to achieve growth in GDP without growth in GNI.
  - During this period, Irish GNI per person grew by 3.7%, quite a bit less than the 4.4% growth in GDP per person.
  - By 2004, Ireland ranked 4th in the OECD by GDP per person, only 17th by GNI per person.
In some countries NUT can be a significant fraction of GNDI—Sometimes this is largely due to foreign aid. - In other cases due to migrant remittances.

**U.S. Donations**

<table>
<thead>
<tr>
<th>Category</th>
<th>2006, U.S. $ billions (in real terms)</th>
<th>Share of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. official development assistance</td>
<td>9.0</td>
<td>18</td>
</tr>
<tr>
<td>All other U.S. government assistance</td>
<td>12.7</td>
<td>22</td>
</tr>
<tr>
<td>U.S. private assistance</td>
<td>33.6</td>
<td>62</td>
</tr>
<tr>
<td>Of which: Foundations</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Corporations</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Private voluntary organizations*</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>Universities and colleges</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Religious congregations</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Technical assistance</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Total U.S. bilateral assistance</td>
<td>56.2</td>
<td>100</td>
</tr>
</tbody>
</table>

**Is the U.S. “Stingy”?**

- U.S. donations through ODA were double the second largest donor, Japan, in dollar terms.
- Relative to income, U.S. is at the bottom of the list, officially granting 0.15% of GNI as ODA.
- Private giving in the U.S. is relatively high (accounts for 60% of giving from the U.S.), but not enough to put the U.S. at the top of the list of donors.
- Debt forgiveness. UN peacekeeping activities.
- Global security? Military aid?? Remittances???
U.S. NIPA Data: 2006

<table>
<thead>
<tr>
<th>Line</th>
<th>Category</th>
<th>Symbol</th>
<th>$ Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Consumption (personal consumption expenditures)</td>
<td>C</td>
<td>9,209</td>
</tr>
<tr>
<td>2</td>
<td>Investment (gross private domestic investment)</td>
<td>I</td>
<td>2,273</td>
</tr>
<tr>
<td>3</td>
<td>Government consumption (government expenditure)</td>
<td>G</td>
<td>2,528</td>
</tr>
<tr>
<td>4</td>
<td>Gross national expenditure</td>
<td>GNX</td>
<td>14,902</td>
</tr>
<tr>
<td>5</td>
<td>Trade balance</td>
<td>MF</td>
<td>-783</td>
</tr>
<tr>
<td>6</td>
<td>Gross domestic product</td>
<td>GDP</td>
<td>13,615</td>
</tr>
<tr>
<td>7</td>
<td>Net factor income from abroad</td>
<td>NYI4</td>
<td>+30</td>
</tr>
<tr>
<td>8</td>
<td>Gross national income</td>
<td>GNJ</td>
<td>13,227</td>
</tr>
<tr>
<td>9</td>
<td>Net unrequited transfers</td>
<td>AUT</td>
<td>-80</td>
</tr>
<tr>
<td>10</td>
<td>Gross national disposable income</td>
<td>GNAD</td>
<td>13,109</td>
</tr>
</tbody>
</table>
What the Current Account Tells Us

- National income identity:
  \[ Y = C + I + G + CA \]
- If GNDI > GNE, then CA > 0
- If GNDI < GNE, then CA < 0

GNDI = Y = CP + IP + G + CA

Subtracting C and G from both sides, we obtain an expression for national saving:
- \[ S = Y - CP - G = IP + CA \]
- This current account identity ignores government investment. Otherwise:
  \[ S' = Y - CP - CG = (IP + IG) + CA \]
  - S > I if and only if CA > 0
  - S < I if and only if CA < 0

More on Savings, Investment

- \( S_G = T - (F + G) \) – combined budget surplus of federal, state, local governments.
- \( S_P = Y - CP - T + F \) - personal savings plus corporate retained earnings.
- \( S_F = FA + KA \)
- So \( S_P + S_G + S_F = [(CP + IP + G + CA) - CP - T + F] + [T - (F + G)] + [FA + KA] \)
  \[ = IP + [CA + FA + KA] = IP \]
What the Current Account Tells Us

- The current account measures the difference between spending and income: are we “living beyond our means” in any period?
- If income exceeds spending, the nation is saving more than is needed to finance investment spending. It can lend.
- If spending exceeds income, the nation is saving less than is needed to finance investment spending. It must borrow.

Global Imbalances

- The Current Account Identity:
  - $CA = (SP - I_D) + S_D$
  - Note that $I_D$ is already being subtracted from $S_D$. 
Government saving is less stable than private saving.
- Private savings in the U.S. are relatively low.

Balance of Payments Accounts: Overview
- Balance of payments accounts
  - Record international transactions involving goods and services (current account) and financial assets (financial account and capital account).
  - Three accounts
    - Current account (goods and services)
    - Financial account (assets)
    - Capital account (assets)
Financial Account (FA)

- Records all transactions in assets.
  - Export of assets = total value of financial assets received by ROW, from the home country.
  - Import of assets = total value of financial assets received from ROW, by the home country.
- Financial Account records all “movements” of assets — i.e., changes of national ownership.
  \[
  FA = EX_A - IM_A
  \]
  - \( FA < 0 \) Country accumulates assets.
  - \( FA > 0 \) Country decumulates assets.

Capital Account (KA)

- Capital account is relatively small, accounting for mostly capital transfers (debt forgiveness, gifts).
- plus some minor items: acquisition/disposal of non-financial, non-produced assets (patents, copyrights, franchises).
- The capital account is \( KA = K_{A_{\text{IN}}} - K_{A_{\text{OUT}}} \)
  - \( KA < 0 \) Country gave more transfers than it received.
  - \( KA > 0 \) Country received more transfers than it gave.

Home and Foreign Assets

- External asset
  - Is a foreign asset owned by a home entity.
  - Assets owed to the home country, by ROW.
- External liability
  - Is a home asset owned by a foreign entity.
  - Assets owed by the home country to ROW.
Breaking FA down

\[
FA = \left( EX^{HA} - IM^{FA} \right) + \left( EX^{HA} - IM^{FA} \right)
\]

Each transaction in the balance of payments must involve a BOP credit and a BOP debit.

**Why?** Every market transaction involves two parts:
- If party A engages in a transaction with party B, then A receives from B an item of given value.
- In return, B receives from A an item of equal value.

Balance of Payments

\[
\left( EX^{BM} + (EX^{BM} - IM^{FA}) + (UT^{BM} - UT^{BM}) \right)
\]

\[
+ (KA^{BM} - KA^{BM}) + (EX^{BM} - IM^{FA}) + (EX^{BM} - IM^{FA}) = 0.
\]

- Current account (CA)
  - Exports of goods and services (\(+EX\))
    - Exports of factor services (\(+EX_{FS}\))
  - Unilateral transfers received (\(+UT_{M}\))
- Capital account (KA)
  - Capital transfers received (\(+KA_{M}\))
- Financial account (FA)
  - Exports of home and foreign assets (\(+EX^{H} + EX^{F}\))
BOP debit items

- Current account (CA)
  - Imports of goods and services (–IM)
  - Imports of factor services (–IM FS)
  - Unilateral transfers given (–UT OUT)
- Capital account (KA)
  - Capital transfers given (–KA OUT)
- Financial account (FA)
  - Imports of home and foreign assets (–IM H A, –IMF A)

How the Balance of Payments Accounts Work

Example #1: George spends $140 (€100) on French wine. George pays with an American Express card.

- An American tourist drinking in a foreign wine bar is engaging in the U.S. import of a foreign service.
- The bar is owed a total of $140 (or the euro equivalent) by American Express (and Amex is owed by George).
- The U.S. has exported an asset to France: the bar now has a claim against American Express.

CA: Drinks in Paris bar –IM -$140
FA: Bar’s claim on AMEX +EX H A +$140

How the Balance of Payments Accounts Work

Example #2: George exchanges wine with his Danish cousin, Georg. George gives Georg a $36 case of Arkansas chardonnay, in exchange for a Jutland rose worth the same.

- Arkansas wine exported from U.S. to Denmark is a good.
- Jutland wine imported into U.S. from Denmark is a good.
- No assets exchanged in this case (barter).

CA: Arkansas wine exported to Denmark +EX +$36
CA: Jutland wine imported from Denmark –IM –$36
Example #3: George purchases $10,000 in stock from a French company.
- Pays for stock by writing a check drawn on his Citibank checking account, payable to a French bank, BNP.
- French stock imported into the U.S.
- BNP claim on Citibank account is an export of a home asset to France

| FA: George buys French stock | IM | $10,000 |
| FA: BNP claim against Citibank | EX | $10,000 |

Example #4: Using some of the gains on his stock, George donates $5,000 to a charity providing supplies to Haiti.
- George’s gift is a unilateral transfer from the U.S. to Iran.
- Relief supplies are exported from the U.S. to Iran.

| CA: George’s charitable gift | UT | $5,000 |
| CA: Relief supplies exported to Haiti | EX | $5,000 |

Example #5: George reads about how the U.S. Secretary of State announces it will forgive $1 billion in debt owed by the government of Pakistan.
- Debt forgiveness recorded on capital account as charitable gift (asset).
- Elimination of debt owed by Pakistan to U.S. decreases U.S. external assets.

| KA: U.S. grant debt relief | KA | $1,000,000,000 |
| FA: Decline in U.S. external assets | EX | $1,000,000,000 |
Financial account records flows of financial resources to and from home country

- **Financial outflow** (or capital outflow)
  - Home purchases of foreign assets.
  - Home lending funds to foreigners.
  - Debits (-) on home FA account.
- **Financial inflow** (or capital inflow)
  - Foreign purchases of home assets.
  - Foreign lending funds to home country.
  - Credits (+) on home FA account.
- U.S. in 2006 had net financial inflow (FA>0).
  - Financial outflow = $1,005 billion (-)
  - Financial inflow = $1,860 billion (+)

Central bank interventions

Divide the FA account into reserve and non-reserve components.

- **Official settlements balance**: Records changes in reserves associated with central bank transactions.
- **Nonreserve financial account**: Records all other (non-central bank) FA transactions.
- U.S. in 2006:
  - Federal reserves net sales of reserves = $2 billion
  - Foreign central banks' net purchases = $440 billion
  - Official settlements balance = $442 billion.

Statistical Discrepancy to balance the accounts

- Due to data errors, the current account may not be exactly equal to the sum of the capital and financial accounts, so \( CA = - (KA + FA) \).
- In the U.S. in 2006 the error was \( SD = +$11 \) billion.
- This is added to the FA, so that \( CA + KA + FA = 0 \).
Changes in External Wealth

- External wealth $W$ is equal to foreign assets owned by the home country minus home assets owned by the rest of the world.
- External wealth changes for two reasons:
  - Financial flows:
    - FA credits decrease external wealth.
    - FA debits increase external wealth.
  - Valuation effects:
    - Changes associated with the value of financial assets owned in home country and ROW.
    - Capital gains/losses: Increase/decrease in value of asset.

Therefore, the change in external wealth is:

$$\Delta W = \text{Valuation effects} - FA$$

From BOP identity: $FA = -CA - KA$, so:

$$\Delta W = \text{Valuation effects} + CA + KA$$

Country can increase external wealth through “luck,” thrift, or charity:
- Capital gains on external assets (valuation effects).
- Having expenditure below income (CA > 0).
- Receiving asset transfers from ROW (KA > 0).
Understanding Data on External Wealth

- National external wealth measured by the net international investment position:
  - From the U.S. (2006), we observe
    - Net financial inflow \( (EXA - IMA) = +804 \) billion
    - Valuation effects = +502 billion
    - Change in external wealth = +502 - 804 = -302 billion
  - Why the large valuation effects? Two reasons:
    - Portfolio composition effects: U.S. external assets had more equities than external liabilities, equities that boomed more.
    - Currency effects as dollar depreciated:
      - 99% of U.S. external liabilities denominated in U.S. dollars
      - 65% of U.S. external assets denominated in U.S. dollars
    - Zero sum: equal and opposite valuation losses for ROW.


The table shows changes in the U.S. net international investment position in billions of dollars.

<table>
<thead>
<tr>
<th>Category</th>
<th>Positions, 2005 (B billions)</th>
<th>Financial Flow (a)</th>
<th>Price Changes (d)</th>
<th>Base Changes (e)</th>
<th>Other Changes (f)</th>
<th>Total Changes (g = a + d + e + f)</th>
<th>Positions, 2006 (B billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. External Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.083</td>
<td>10.317</td>
</tr>
<tr>
<td>U.S. official assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,996</td>
<td>1,878</td>
</tr>
<tr>
<td>U.S. private assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13,111</td>
<td>12,317</td>
</tr>
<tr>
<td>2. External Liabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,083</td>
<td>10.317</td>
</tr>
<tr>
<td>Foreign official assets in the</td>
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<td></td>
<td></td>
<td></td>
<td>1,895</td>
<td>1,718</td>
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<tr>
<td>United States</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>440</td>
<td>213</td>
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<tr>
<td>Other foreign assets</td>
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<td></td>
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<td></td>
<td></td>
<td>-296</td>
<td>-231</td>
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<tr>
<td>3. External Wealth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-2,296</td>
<td>-2,049</td>
</tr>
</tbody>
</table>

Some recent trends

- The persistent U.S. financial account surpluses, corresponding to current account deficits, have tended to reduce U.S. external wealth.
- However, the U.S. has benefited from large and persistent valuation effects, generating capital gains for the U.S., but capital losses for the rest of the world.
- How and why does the U.S. manage to continue to reap the benefits of these capital gains? See next chapter.
What External Wealth Tells Us

- External wealth reveals a country’s status as a net creditor or debtor with the rest of the world.
  - It includes data on exchange of financial assets and liabilities from the balance of payments
- Changes in external wealth are explained by:
  - Balance of payments (imbalances in CA and FA)
  - Valuation effects
  - These changes are summarized in the country’s net international investment position.

Lies, Damned Lies…

- …and statistics
  - 2004: U.K. government announced it had overestimated growth in GDP by 25%.
  - 1987: Italian government announced its economy was 15% larger than previously estimated.
  - 2004: Greek government announced it had underestimated growth in GDP by 25% (due to unmeasured black market activity).
  - And we know what happened in Greece in 2010.

Lies, Damned Lies…

- Lessons
  - EU requires budget deficit be less than 3% of GDP, so revisions affect ratio, even if the government doesn’t change taxes and spending.
  - Changing the definitions has a dramatic effect on the government’s measure of the economy, and other key macroeconomic indicators.
  - Be aware of how official statistics are manipulated and the pitfalls.