

# Balance of Payments

Based on Chap 15 of Pugel and  
Lindert

(The sun is setting since we coming  
to the end of end of our course)

## Topics

### 1. What's in the Balance-of-Payments Accounts? (BOP)

- It is a systematic account of all the exchanges of value between residents of that country and the rest of the world during a given period of time. Two flows occur in any exchange or transaction according to double entry bookkeeping
- A credit (+) is a flow for which the country is paid. E.g., exports
- A debit (-) is a flow for which the country must pay, E.g. imports.

## An Example

- Suppose US government sells \$150 million worth of beef to Russia and Russia paid with \$150 million in gold. The beef for gold transaction creates these two bookkeeping entries (in million of dollars)

|                             | Credit (+)<br>\$ Million | Debit (-)<br>\$ Million |
|-----------------------------|--------------------------|-------------------------|
| Merchandise exports (beef)  | 150                      |                         |
| Increase in official assets |                          | 150                     |

## Rules regarding capital inflows

- Capital inflows are credits (+) They take the form of either an increase in a nation's liabilities to foreign residents or a decrease in assets previously obtained from other countries. Each of these is a flow for which the nation must be given payment right now, so each is a credit entry.
- Capital outflows are debits (-). They take the form of either an increase in a nation's assets obtained from other countries or a decrease in its liabilities to other countries. Each of these is a flow for which the nation must give up payments right now, so each is a debit entry.

## An Example of Capital outflow accounting

- Suppose US treasury pays \$25 million in interest on its past borrowing from Japanese investors, paying with checks on a New York Bank. Two accounting entries are:

|  | Credit (+)<br>\$ Million | Debit (-)<br>\$ Million |
|--|--------------------------|-------------------------|
| Income payment (interest paid)   |                          | \$25                    |
| Private capital inflow (increase in Bank's obligations to foreign residents) | \$25                     |                         |

## Buying goods, services etc abroad

- What do we as a nation buy from abroad?
- M: Good and services (consists of two sub accounts- Merchandise trade flows and service flows):
  - Imports of goods and services totaling M in local currency.
- C<sub>B</sub>: Capital Assets Bought
  - assets that we are buying from the rest of the world: direct foreign investment (DFI), portfolio foreign investment in securities, foreign real estate, foreign money, and government bonds, and so on.
- E<sub>p</sub>: Income flows--Investment earning paid to the foreigners for their investment in our country
- U<sub>p</sub>: Unilateral Payments abroad (consists of two sub accounts mentioned in the text book – Unilateral transfers and official asset flows)
  - Govt. paying for foreign aid, our gifts to foreigners, or remittances to relatives abroad.

## Paying with ...(converted in local currency)

- How do we pay for all that we buy from abroad?
- $X$ : Selling good and services abroad (consist of two sub accounts - Merchandise trade flows and service flows)
  - Exports of goods and services totaling  $X$  in local currency.
- $C_S$ : Capital assets sold to foreigners
  - assets that we are selling the rest of the world: stocks, bonds, foreign real estate, foreign money, and so on.
- $E_R$ : Income flows --Investment earning received from foreigners for our investment in in other countries
- $U_R$ : Unilateral receipts from abroad (consists of two sub accounts mentioned in the text book – Unilateral transfers and official asset flows):
  - Foreign govt. paying us foreign aid, the gifts from foreigners to our residents, or remittances to relatives from abroad.

## Net transactions

- In domestic currency all our purchases and transfers received abroad
  - $M + E_P + U_P + C_B$
- In domestic currency all our sales abroad and transfers received from abroad
  - $X + E_R + U_R + C_S$
- Total sales = total receipts
  - $X + E_R + U_R + C_S = M + E_P + U_P + C_B$
- $T+E+U+C = 0$ , I.e.,
  - $T = (X - M)$  : balance-of-trade surplus
  - $E = (E_R - E_P)$  : net investment earnings
  - $U = (U_R - U_P)$  : net transfers from abroad
  - $C = (C_S - C_B)$  : net sale of assets

## Components of BOP

- The purpose of BOP account is to reveal the structure of a country's international transactions. To that end, all transactions are put into two main sub accounts:
  1. Current account:  $(T + E + U)$
  2. Capital account:  $C$

## Current Account (in words)

What goes into the current account?

1. Merchandise exports and imports;
  2. Imports and exports of military services, travel, and transportation;
  3. Current income received and paid on international investments; and
  4. Unilateral transfers, including worker remittances and pension payments
- Each category of current-account transactions includes both exports by the U.S. (entered as *credits* [+]) and imports by the U.S. (entered as *debits* [-]).
  - *Current-account balance*: equals the sum of all the other entries and represents the difference between total exports by U.S. residents and total imports by U.S. residents

## BOP with US example

- **Balance of Payment:** a systematic account of all the exchanges of value between residents of a country and the rest of the world during a given period of time. A **credit** (+) is a flow for which the country is paid. Exports are an example.
- A **debit** (-) is a flow for which the country must pay. Imports are an example.
- Double entry book-keeping. Any exchange enters into two categories of transactions. The main categories are:
  - Merchandise trade flows (flows of goods)
  - Service flows
  - Income flows
  - Unilateral transfers (gifts)
  - Private capital (asset) flows
  - Official asset flows

## US Balance of payments (numbers)

|   | Credit (+) | Debit (-) |
|---|------------|-----------|
| 1. Exports of goods and services and income received  | \$1,179    |           |
| 2. Merchandise exports  | 679        |           |
| 3. Service exports (travel, business services, etc.)  | 258        |           |
| 4. Income receipts from foreigners  | 242        |           |
| 5. Imports of goods and services and income paid  |            | -1,295    |
| 6. Merchandise imports  |            | -877      |
| 7. Services imports (travel, business services, etc.)   |            | -171      |
| 8. Income payments to foreigners  |            | -247      |
| 9. Unilateral transfers, net  |            | -39       |
| 10. U.S. government transfers to foreigners   |            | -16       |
| 11. Private remittances and other transfers   |            | -23       |
| 12. Changes in U.S. holdings of foreign assets (excluding official international reserves), net |            | -478      |
| 13. U.S. direct investments abroad  |            | -122      |
| 14. Other U.S. investments abroad   |            | -356      |
| 15. Changes in foreign holdings of U.S. assets (excluding official international reserves), net | 718        |           |
| 16. Foreign direct investments in the U.S.  | 93         |           |
| 17. Other foreign investments in the U.S.   | 625        |           |
| 18. Changes in holdings of official international reserves, net                                 | 15         |           |
| 19. Foreign official holdings of U.S. assets  | 16         |           |
| 20. U.S. holdings of official reserve assets  |            | -1        |
| 21. Statistical discrepancy   |            | -100      |
| 22. Net balance of credits minus debits   | 0          |           |
| <b>Six Key Balances</b>   |            |           |
| 23. Merchandise trade balance (lines 2 and 6)   |            | -198      |
| 24. Goods and services balance (lines 2, 3, 6, and 7)   |            | -110      |
| 25. Goods, services, and income balance (lines 1 and 5)   |            | -116      |
| 26. Current account balance (lines 1, 5, and 9)   |            | -155      |
| 27. Net private capital flows and statistical discrepancy*                                      | 140        |           |
| 28. Overall balance (lines 26 and 27, or the negative of line 18)                               |            | -15       |

In the source, lines 12 and 20 are included in the category "U.S. assets abroad, net," and lines 15 and 19 are included in the category "Foreign assets in the United States, net."

\*Lines 12, 15, and 21.

Source: U.S. Bureau of Economic Analysis, *Survey of Current Business*, July 1998, p. 69.

## Capital Account Balance

- Net flows of financial assets and similar claims (excluding official asset flows) (only the principal amount of the asset, dividend and interests payments are included in the current account)
  - Direct foreign investment
  - Portfolio investment
- Also read the summary on pages 338-340.

## Foreign Exchange

Based on Chapter 16

## Concepts

- **Foreign Exchange** is the act of trading different nation's currencies. Generally, how much of local currency for one unit of the foreign currency. Yen exchange rate .01, means to get one yen, you have to pay \$0.01, I.e., for 100 Yen, you have to pay \$1.
- **Exchange rate:** the price at which two national currencies are traded.
- **Two-basic types of exchange rates are:**
- **Spot Exchange rate:** the price for "immediate" exchange
- **Forward Exchange rate:** the price for an exchange that will take place sometime in the future, e.g. 30, 90 and 180 days from now. (use of it illustrated later)
- **floating exchange rate system:** a system in which the exchange rate of a currency is determined in the marketplace and not by government or central bank intervention.
- **Fixed Exchange Rate:** a system in which officials try to keep the exchange rate of a currency pegged even if the rate they choose differs from the equilibrium rate.

## Contd.

- **Depreciation:** a fall in the market price of a floating currency
- **Appreciation:** a rise in the market price of a floating currency
- **Devaluation:** a discrete official reduction in the otherwise fixed par value of a currency
- **Revaluation:** a discrete official increase in the otherwise fixed par value of a currency



## Arbitrage in Foreign Exchange Markets

- **Arbitrage:** the process of buying and selling to make a (nearly) riskless pure profit
- **Example:** Rule is, buy the asset which is priced low and sell it in the market where it is priced high.
- Specifically consider two locations, US and Japan, and in country the exchange rates are as follows:
  - US Market: for Yen,  $0.008 \text{ \$/Yen}$ , that means  $125 \text{ Yen/\$}$
  - Japanese Market: for dollar,  $126.1 \text{ Yen/\$}$ , that means  $.00793 \text{ \$/Yen}$
  - You have \$1. Can you buy low sell high to take advantage of the above foreign exchange markets and make riskless profit?
  - Follow the strategy: Take the asset Yen, in which market it is cheaper?
  - Japan. So buy Yen in the Japanese market, get 126.1 Yen for your dollar and then sell it in the US market where it is priced high, you will get  $126.1/125=1.0088$  dollars.
  - What should be the exchange rate of dollar in Japan so that there is no scope for arbitrage?
  - Its one over the exchange rate of Yen in the US.
  - In reality the exchange rates do differ from the no arbitrage rates? Why?

## Triangular Arbitrage

- **Triangular arbitrage:** the process of making a riskless profit by arbitraging through three exchange rates.
- **Example:** Its same as ex 8, p.358: Suppose you have access to the following three spot exchange rates ( you can think of two locations, US for the first two and the third rate is in Japan)
  - $0.01 \text{ \$/Yen}$
  - $0.20 \text{ \$/Krone}$  (Krone is the currency of Norway)
  - $25 \text{ Yen/Krone}$
- Can you do triangular arbitrage to make riskless profit?
- What is the equivalent price of Krone in terms of Yen in the US Market?  $.20/.01=20 \text{ yen/Krone}$ .
- Krone is underpriced in the US market. So buy Krone in the US for a dollar, you have  $1/.20 = 5$  kronas. Sell it in Japan, for Yen, you get  $5 \times 25 = 125$  yens, change it to dollar in the US,  $125 \times 0.01$  dollars or 1.25 dollars. \$1 investment gave you a riskless profit of 25 cents with triangular arbitrage.

## Forward Exchange Rate

- Recall the concepts of exchange rates:
- Spot Exchange rate: the price for "immediate" exchange
- Forward Exchange rate: the price for an exchange that will take place sometime in the future, e.g. 30, 90 and 180 days from now.
- An Example: Suppose In the US we have the following
- The current spot exchange rate is 0.010\$/Yen, The current 60 day forward exchange rate is 0.009\$/Yen. How would each US firm or person use the forward exchange control to hedge their risk exposure under various situations (state under what situation, the firm or individual will buy the 60 day forward exchange):
  1. A small US firm sold experimental computer components, and it will receive payment of 1 million yen in 60 days.
  2. An American college student receives as a birthday gift Japanese government bonds worth 10 million yen, and the bond matures in 60 days.
  3. A US firm must repay a yen loan, principal plus interest totaling 100 million yens, coming due in 60 days.