ECON4033 Money and Finance in China

Week 11: China's Balance of Payment[1]

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[1] These lecture notes are largely based on the materials prepared by Prof. Siu Kee Wong for the same topic.

Table of Contents

I. Balance of Payment Revisit 2

II. Current Account 5

III. Financial Account 6

IV. Capital Account 6

V. Stylized Facts of China's BOP and Related Policy Implications 7

A. Stylized Facts of China's BOP 7

B. Trade Balance and Exchange Rate 8

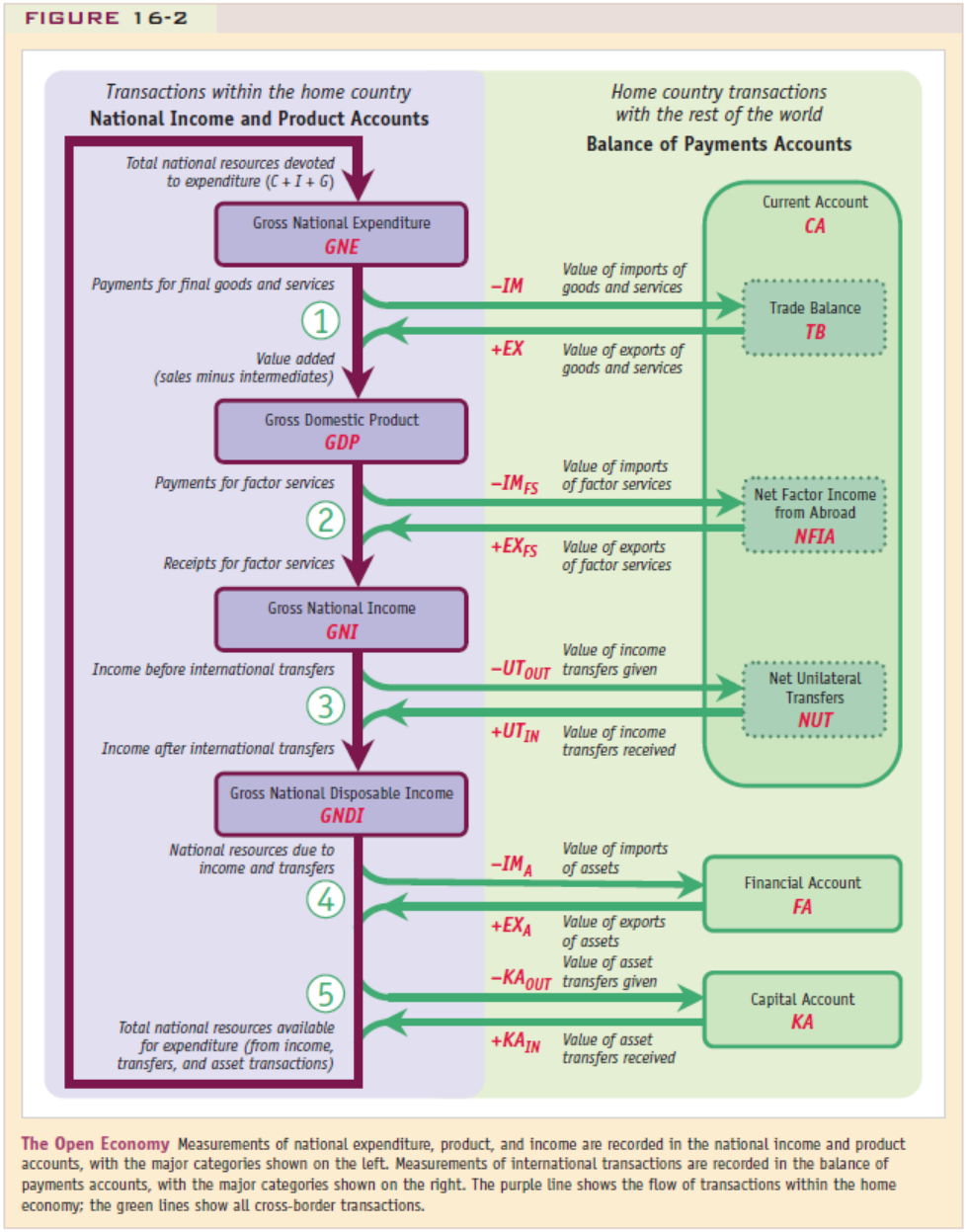
C. The Sign of Trade Balance Revisit 12

D. Saving Glut 13

I. Balance of Payment Revisit

- The balance of payment (BOP) is a record of one country's transactions with the rest of the world during a period of time (say one year):
  - It keeps track of both changes in a country's: a) indebtedness to foreigners and b) the fortunes of its export and import-competing industries.
  - The balance of payments accounts also show the connection between foreign transactions and national money supplies. It helps to answer the following question: "Is a country getting or losing foreign exchange?"
- By foreign exchange we mean the main tradable currencies in the world: the U.S. dollar, Euro, British pound, yen, Swiss franc, etc. The accumulation of foreign exchange over time yields foreign exchange reserve.
- The BOP can be determined by measuring the total foreign exchange assets gained or lost by the central during a specific period of time.
- In China, the measure includes not just China's central bank, the PBC, but the banking system as a whole. This is because for most Chinese banks, the Chinese government is still the principal shareholder.
- China's Balance of Payments (under the heading "National Account" 3-21 "Balance of Payments"): http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm.

- Recall the following items from Week 4 lecture notes:



The Open Economy Measurements of national expenditure, product, and income are recorded in the national income and product accounts, with the major categories shown on the left. Measurements of international transactions are recorded in the balance of payments accounts, with the major categories shown on the right. The purple line shows the flow of transactions within the home economy; the green lines show all cross-border transactions.

Source: Feenstra and Taylor (2011), p557.

$$\underbrace{GDP}_{\text{Gross domestic product}} = \underbrace{C+I+G}_{\text{Gross National Expenditure (GNE)}} + \underbrace{\underbrace{EX}_{\text{Export}} - \underbrace{IM}_{\text{Import}}}_{\text{Trade balance (TB)}}$$

$$\underbrace{GNI}_{\text{Gross national income}} = \underbrace{GNE+TB}_{\text{GDP}} + \underbrace{\left(EX_{FS} - IM_{FS}\right)}_{\text{Net factor income from abroad (NFIA)}}$$

$$\underbrace{Y}_{\text{Gross national disposable income (GNDI)}} = \underbrace{\underbrace{GNE+TB}_{\text{GDP}} + NFIA}_{\text{GNI}} + \underbrace{\left(UT_{IN} - UT_{OUT}\right)}_{\text{Net unilateral transfers (NUT)}}$$

$$= GNE + \underbrace{TB + NFIA + NUT}_{\text{Current Account (CA)}}$$

$$= C + I + G + CA$$

$$\underbrace{S}_{\text{National saving} = Y-C-G} = I + CA$$

$$CA = \underbrace{(Y-T-C)}_{\text{Private saving } (S^p)} + \underbrace{(T-G)}_{\text{Government Saving } (S^g)} - I$$

$$= S^p + S^g - I$$

- As illustrated on the previous page, we have

  Changes in foreign exchange reserves of the central bank (in China's case, banking system)

  = Balance of Payments (BOP)

  = Current Account (CA) + Financial Account (FA) + Capital Account (KA)

- If a country has a BOP surplus, it becomes a part of the banking system's holdings of foreign exchange; the BOP is a flow, and foreign exchange reserves are the stock into which they accumulate:

  For example, China had about US$470 billion BOP surplus in 2010. Given end of 2009 foreign exchange reserves of US$2.45 trillion, we can estimate China's end-of-2010 foreign exchange reserves as US$2.45 +0.47 = US$2.92 trillion.

- If a country has a BOP deficit, it will lose foreign exchange. The U.S., however, has the luxury of simply issuing more of its currency to settle its imbalance.

- A country with a BOP deficit but insufficient foreign exchange reserves to support that deficit may need emergency financing (e.g. IMF loan with "conditionality") to fill the gap.

- In rare cases of Sovereign Debt Default (i.e., a unilateral decision not to pay national debts), debt restructuring will be implemented which involves rescheduling commitments on external debts. Penalties such as higher borrowing cost or equity exchange may be imposed.

II. Current Account

- The current account represents trade in goods and services, such as the shipment of steel or the consulting services of an attorney:

$$\underbrace{Y}_{GNDI} = \underbrace{C + I + G}_{GNE} + \underbrace{\{\underbrace{(EX - IM)}_{\substack{\text{Trade balance} \\ TB}} + \underbrace{(EX_{FS} - IM_{FS})}_{\substack{\text{Net factor income} \\ \text{from abroad} \\ NFIA}} + \underbrace{(UT_{IN} - UT_{OUT})}_{\substack{\text{Net unilateral} \\ \text{transfers} \\ NUT}}\}}_{\substack{\text{Current account} \\ CA}}$$

a) Specifically, the trade balance represents trade in goods while the non-factor services are those that are currently consumed or used (e.g. the provision of education or a tourist visit to another country).

b) Meanwhile, factor services represent income generated related to a loan or investment, or for a foreign resident in a country who has some type of legal visa-granted status in that country and is paid for services rendered.

III. Financial Account

- The financial account (FA) represents financial flows between borders that imply a gain or loss in foreign exchange. It includes loans, sale and purchase of bills and bonds, portfolio investment in equity and foreign direct investment.
- Error and statistical discrepancies are a measure of the difference between the above accounts and how much the country actually gained or lost in foreign exchange.

IV. Capital Account

- The capital account (KA) covers two remaining areas of asset movement of minor quantitative significance:

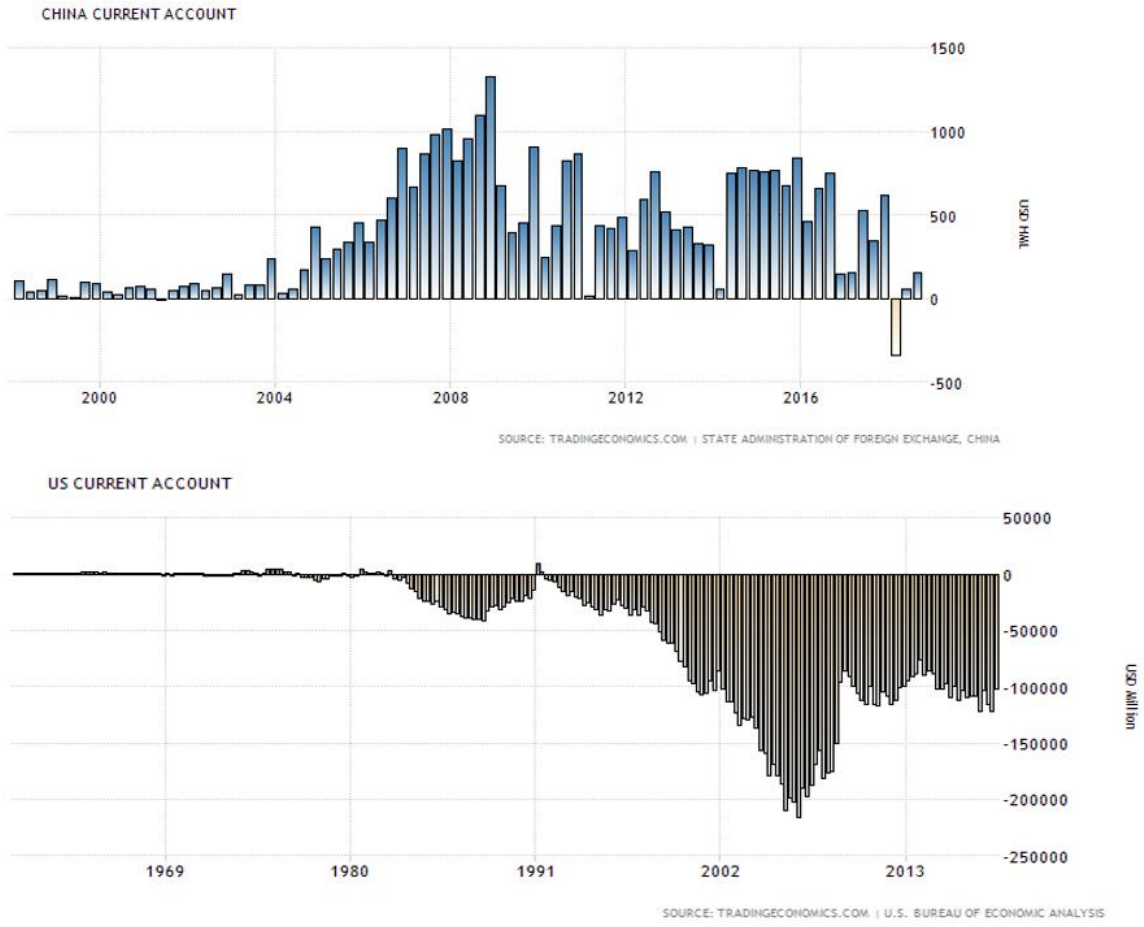
a) The acquisition and disposal of nonfinancial, nonproduced assets (e.g., patents, copyrights, trademarks, franchises, etc.). They have to be included here because such nonfinancial assets do not appear in the financial account, although like financial assets, they can be bought and sold with resulting payments flows.

b) Other important item in the capital account is capital transfers (i.e., gifts of assets), an example of which is the forgiveness of debts.

V. Stylized Facts of China's BOP and Related Policy Implications

A. Stylized Facts of China's BOP

- China's overall BOP has been greatly influenced by the current account surplus in recent years. The financial account was mainly about FDI as other form of capital mobility was limited. In fact, substantial Chinese exports went to the U.S., which catches a lot of attention from both economists and policymakers.



B. Trade Balance and Exchange Rate

- One could link trade balance to exchange rate through the following formula:

$$\text{Trade Balance } (TB) = \text{Export } (EX) - e \times \text{Import } (IM)$$

  where EX is export of goods and services, IM is the import in foreign currency and e is the exchange rate (the price of foreign currency in terms of domestic currency).

- Some (e.g., U.S. policymakers) believe that trade policy can counteract a current account imbalance. For example:

  a) Tariffs and quotas on imports might be used to reduce a current account deficit; or

  b) Policymakers might seek to adjust exchange rates if felt that misalignment of their currency causes a current account surplus or deficit.

- The exchange rate e is the price of foreign currency in terms of domestic currency (i.e., how much domestic currency for 1 unit of foreign currency). A depreciation of the domestic currency is signified by a rise in e.

- A rise in e tends to increase TB: Depreciation makes domestic goods less expensive abroad and raises export EX. It also makes foreign goods more expensive in the domestic economy and reduces import IM (in foreign currency). Both tends to improve the trade balance TB.

- Can adjusting e alone be able to reduce trade deficit? It depends:

  a) For trade balance to improve, the adjustment in EX and IM must be larger than that of e. This is formally illustrated as Marshall-Lerner condition.

  b) Marshall-Lerner condition: To improve trade balance, the sum of the elasticity of import and the elasticity of export must be larger than 1. If this condition holds, depreciation of the domestic currency would improve the trade balance.

- If goods exported are elastic with respect to price, their quantity demanded will increase proportionately more than the decrease in price, and total export revenue will increase. Similarly, if goods imported are price elastic, total import expenditure will decrease. Both will improve the trade balance.

- Empirically, it has been found that goods in trade tends to be inelastic in the short term, as it takes time to change consuming patterns and trade contracts. Thus, the Marshall–Lerner condition is not met, and a devaluation of currency is likely to worsen the trade balance in the short run. In the long term, consumers will adjust to the new prices, and the trade balance will improve. This effect is called the *J*-curve effect.

- For example, assume a country is a net importer of oil and a net producer of ships. Initially, the devaluation immediately increases the price of oil, and as consumption patterns remain the same in the short term, an increased sum is spent on imported oil, worsening the deficit on the import side. Meanwhile, it takes some time for the shipbuilder's sales department to exploit the lower price and secure new contracts. Only the funds acquired from previously agreed contracts, now devalued by the currency devaluation, are immediately available, again worsening the deficit on the export side.

- Proof of Marshall-Lerner Condition:

  We have $TB = EX - eIM$. Differentiating with respect to e gives:

$$\frac{\partial TB}{\partial e} = \frac{\partial EX}{\partial e} - IM - e\frac{\partial IM}{\partial e}$$

$$\therefore \frac{\partial TB}{\partial e}\frac{1}{EX} = \frac{\partial EX}{\partial e}\frac{1}{EX} - \frac{IM}{EX} - \frac{e}{EX}\frac{\partial IM}{\partial e}$$

  At equilibrium, we have $TB = 0 \Longrightarrow EX = eIM$. Consequently,

$$\frac{\partial TB}{\partial e}\frac{1}{EX} = \frac{\partial EX}{\partial e}\frac{1}{EX} - \frac{1}{e} - \frac{1}{IM}\frac{\partial IM}{\partial e}$$

$$\therefore \frac{\partial TB}{\partial e}\frac{e}{EX} = \frac{\partial EX}{\partial e}\frac{e}{EX} - 1 - \frac{e}{IM}\frac{\partial IM}{\partial e}$$

- Proof of Marshall-Lerner Condition (cont.):

  We now have

$$\frac{\partial TB}{\partial e}\frac{e}{EX} = \frac{\partial EX}{\partial e}\frac{e}{EX} - 1 - \frac{e}{IM}\frac{\partial IM}{\partial e}$$

  Denote $\eta_{EX,e}$ and $\eta_{IM,e}$ respectively the elasticity of exports and imports with respect to the exchange rate. Note that $\eta_{EX,e} > 0$ and $\eta_{IM,e} < 0$. Consequently,

$$\frac{\partial TB}{\partial e}\frac{e}{EX} = \eta_{EX,e} - \eta_{IM,e} - 1$$

  In order for a fall in the relative value of a country's currency (i.e. a rise in e) to have a positive effect on a country's trade balance, the left-hand side of the equation must be positive (i.e. for a rise in e to cause a rise in TB). Hence,

$$\eta_{EX,e} - \eta_{IM,e} > 1$$

  which can be written as:

$$\eta_{EX,e} + \left|\eta_{IM,e}\right| > 1.$$

C. The Sign of Trade Balance Revisit

- The current account balance can be expressed as the difference between saving and investment:

$$\underbrace{S}_{\text{National saving} = Y - C - G} = I + CA$$

$$CA = \underbrace{(Y - T - C)}_{\text{Private saving } (S^p)} + \underbrace{(T - G)}_{\text{Government Saving } (S^g)} - I$$

$$= S^p + S^g - I$$

- If a nation does not save enough, or invest too much, it will run a current account deficit and vice-versa.
- For example, if the U.S. wishes to reduces its current account deficit, it must either increase national saving (raise private saving or reduce dissaving of the government) or reduce investment. Since investment in the U.S. is not high by international standard, raising saving rate would appear to be a more reasonable path.

D. Saving Glut

- In his "saving glut" hypothesis, Federal Reserve Chairman Bernanke (2005) emphasizes that the changes in desired savings and investment in a region, like the high saving rates in China, affect the external balances of countries around the world.

- Governor Zhou (2009) of the People's Bank of China highlights the role of high savings rate in affecting the current account surplus of China:

  Consumption smoothing yields the result that, if income increases in the current period for a consumer, then current consumption increases but to a less extent compared to the increase in income, future consumption increases, and current saving increases. If future income increases, then consumption increases in both periods and current saving decreases. A permanent increase in income (when current and future income increase) has a larger impact on current consumption than does a temporary increase in income (only current income increases). Because of the consumption-smoothing motive, a country that experiences an increase in current income such as China saves more by lending abroad, and this is reflected in an increase in the current account surplus.

- When a country runs a current account deficit, some type of financial obligation should be needed. The financial obligation might take the form of currency, a debt instrument, or an equity instrument. Thus, we can think of the current account balance as a change in the net external debt position:

$$\text{Current Account Balance} = \text{Change in Net External Debt } (- \text{ for Surplus; } + \text{ for Deficit}).$$

- China has a CA surplus and is simultaneously lending to the outside world.

Reference:

Ronald M. Schramm (2015), *The Chinese Macroeconomy and Financial System: A U.S. Perspective*, Taylor and Francis, London.