国际经济学

国际收支理论：货币分析法

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提纲

title

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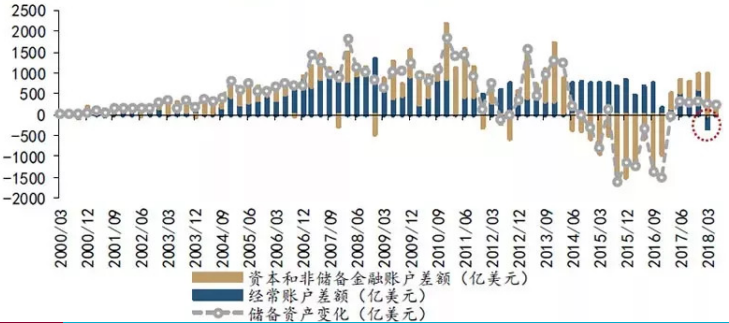

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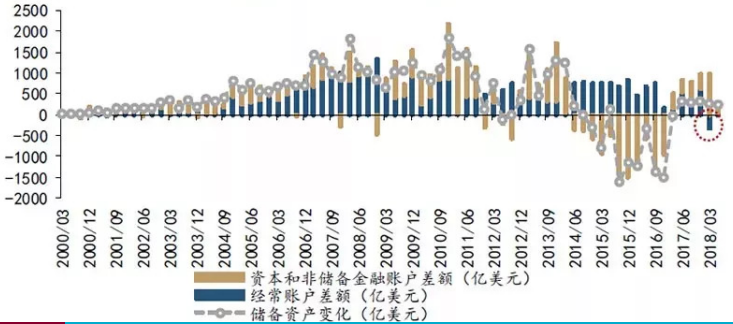

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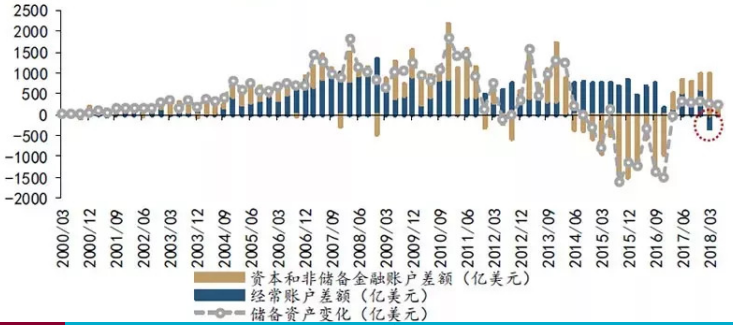

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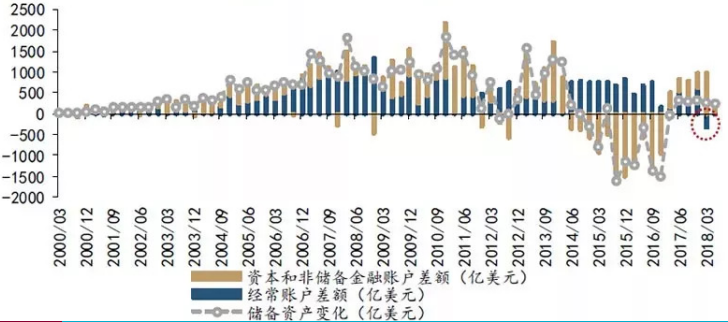

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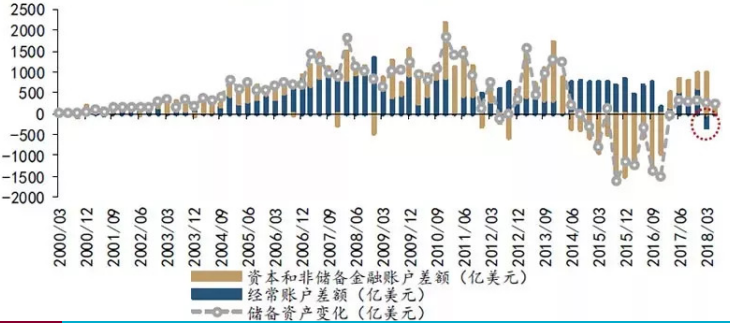


OPEN ECONOMY MULTIPLIERS

- *John Maynard Keynes* in his classic work *The General Theory of Employment, Interest and Money* published in 1936 pioneered the use of multiplier analysis to examine the effects of changes in government expenditure and investment on output and employment.
- It was not long, however, before the ideas of Keynes' work were applied to an analysis of open economies, most notably by *Fritz Machlup (1943)*.

The assumptions underlying basic multiplier analysis

1. Both domestic prices and the exchange rate are fixed;
2. The economy is operating at less than full employment so that increases in demand result in an expansion of output;
3. The authorities adjust the money supply to changes in money demand by pegging the domestic interest rate.
    1. There is **no inflation resulting from the money supply** expansion because it is merely a response to the increase in money demand.

Benchmark Derivation I

- The starting point
$$Y = C + I + G + X - M$$
- taxes are proportional to income: $T = tY$
- Domestic consumption is partly autonomous and partly determined by the level of disposable national income: $C = C_a + c(1-t)Y$
  - C_a is autonomous consumption and c is the marginal propensity to consume
- Import expenditure is assumed to be partly autonomous and partly a positive function of the level of domestic income: $M = M_a + mY$
  - Ma is autonomous import expenditure and m is the marginal propensity to import
- Rearrange, we abtain:

$$Y = C_a + c(1-t)Y + I + G + X - M_a - mY$$

Benchmark Derivation II

$$Y[1-c(1-t)+m] = C_a + I + G + X - M_a$$

$$Y = \frac{1}{1-c(1-t)+m}(C_a + I + G + X - M_a)$$

Various Multiplers I

- Above equation can be transformed into difference form to yield:

$$dY = \frac{1}{1-c(1-t)+m}\left(dC_a + dI + dG + dX - dM_a\right)$$

- The government expenditure multiplier

$$\frac{dY}{dG} = \frac{1}{1-c(1-t)+m} > 0$$

- Since $[1-c(1-t)+m]$ is less than unity, an increase in government expenditure will result in an even greater increase in national income.

Numerical Example

Assume that the marginal propensity to consume is 0.8, the tax rate is 25% of income, i.e. t = 0.25, and the marginal propensity to import is 0.3. The effect of an increase in government expenditure of £100 million on national income is given by:

$$dY = \frac{1}{1 - c(1-t) + m} dG = \frac{1}{1 - 0.8\,(1 - 0.25) + 0.30} 100m$$

$$= 1.4286 \times 100m = 142.86m$$

Various Multiplers II

- The foreign trade or export multiplier
  - the multiplier effect of an increase in exports on national income is identical to that of an increase in government expenditure.

$$dY/dX = 1/[1-c(1-t)+m]$$

- The current account multipliers
  - the effects of an increase in government expenditure and of exports on the current account (CA) balance

$$CA = X - M = X - M_a - \frac{m}{1-c(1-t)+m}(C_a - M_a + I + G + X)$$

- we can derive that:

$$dCA/dG = -m/[1-c(1-t)+m] < 0$$

定理

an increase in government spending leads to a deterioration of the current account balance

Various Multiplers III

- the effect of an increase in exports on the current balance

$$\frac{dCA}{dX} = 1 - \frac{m}{1-c(1-t)+m} = \frac{1-c(1-t)+m}{1-c(1-t)+m} - \frac{m}{1-c(1-t)+m}$$

Since$(1 - c(1 - t))/[1 - c(1 - t) + m)]$ is less than unity, an increase in exports leads to an improvement in the current balance that is less than the original increase in exports.

Main Conclusions

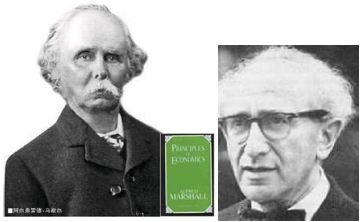
- Keynesian income effects are an essential part of balance of payments analysis
- Downsides
  - Analysis of macroeconomic fluctuations for an open economy requires consideration of what is happening in foreign economies
  - The foreign trade multiplier analysis deals with **what happens to the balance of payments when income changes, assuming that prices are held constant**.

Introduction

- We will investigate the relationship between the exchange rate and the balance of payments
- More Specifically, Whether will the fluctuation in exchange rate impact the balance of payments
- There are two traditional Models were designed to tackle one of the most important questions in international economics
  - Elasticity approach——局部均衡模型
  - Absorption approach——一般均衡模型

Intellegence History of Elasticity Approach to the BOP

- The analysis was pioneered by **Alfred Marshall (1923)** and **Abba Lerner (1944)**, and later extended by **Joan Robinson (1937)** and **Fritz Machlup (1939)**
- Basic Assumptions:
  - The supply elasticities for the domestic export good and foreign import good are **perfectly elastic**
  - These assumptions mean that domestic and foreign prices are fixed
  - Changes in relative prices are caused by changes in the nominal exchange rate



Elasticity Approach to the BOP

- The central message of the elasticity approach is that there are two direct effects of a devaluation on the current balance
  - reduce a deficit
  - make the deficit worse than before
- The current account balance is given by:

$$CA = PX_v - SP^* M_v$$

- where P is the domestic price level, X_v is the volume of domestic exports, S is the exchange rate (domestic currency units per unit of foreign currency), P^* is the foreign price level and M_v is the volume of imports

Elasticities

- In difference form equation

$$dCA = dX - SdM - MdS$$

$$\frac{dCA}{dS} = \frac{dX}{dS} - S\frac{dM}{dS} - M\frac{dS}{dS}$$

- Define
  - **the price elasticity of demand for exports** $\eta_x = -\frac{dX/X}{dS/S}$, so that $dX = -\frac{X\eta_x dS}{S}$
  - **the price elasticity of demand for imports** $\eta_m = \frac{dM/M}{dS/S}$, so that $dM = \frac{M\eta_m dS}{S}$

Marshall–Lerner condition

- Assuming that we initially have balanced trade, $X/SM = 1$

$$\frac{dCA}{dS} = M(\eta_x + \eta_m - 1)$$

- If $\eta_x + \eta_m > 1$, a devaluation will improve the current account
- If $\eta_x + \eta_m < 1$,a devaluation will lead to a deterioration of the current account

Effects of devaluation

- The price effect
  - exports become cheaper measured in foreign currency
  - Imports become more expensive measured in the home currency
- The volume effect
  - exports become cheaper should encourage an increased volume of exports, and the fact that imports become more expensive should lead to a decreased volume of imports.
- **The net effect depends upon whether the price or volume effect dominates.**

Extension of Marshall-lerner Condition

- If we assume that supply elasticities of exports and imports of less than infinity(标准条件假定供给弹性无穷大).
- **Stern (1973)** has shown that a more complicated condition needs to be satisfied

$$\frac{\varepsilon_x(\eta_x - 1)}{\varepsilon_x + \eta_x} + \frac{\eta_m(\varepsilon_m - 1)}{\varepsilon_m + \eta_m} > 0$$

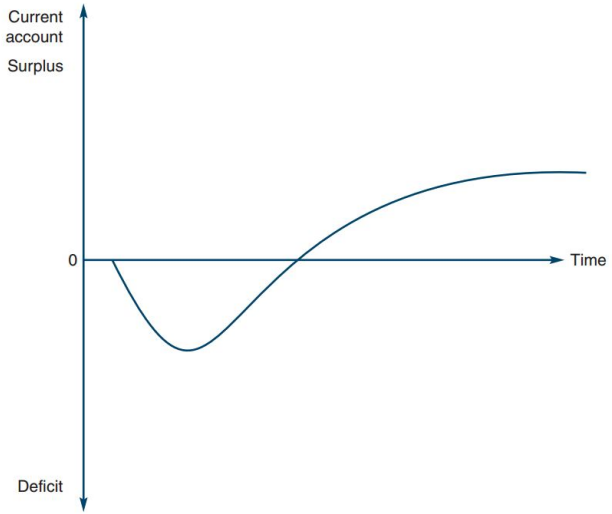
- where ε_x is the domestic supply elasticity of the export good and ε_m is the foreign supply elasticity for its export good
- The effect of less-than-infinite supply price elasticities is to make the required demand elasticities less stringent(使得原来的条件被放松，没有之前那么严格)

Empirical Evidence For Developed Countries

	Elasticity of export demand	Elasticity of import demand	Sum
Industrial countries			
Austria	1.02	1.23	2.25
Belgium	1.12	1.27	2.39
Canada	0.68	1.28	1.96
Denmark	1.04	0.91	1.95
France	1.28	0.93	2.21
Germany	1.02	0.79	1.81
Iceland	0.83	0.87	1.70
Italy	1.26	0.78	2.04
Japan	1.40	0.95	2.35
Netherlands	1.46	0.74	2.20
Norway	0.92	1.19	2.11
Sweden	1.58	0.88	2.46
Switzerland	1.03	1.13	2.16
United Kingdom	0.86	0.65	1.51
United States	1.19	1.24	2.43
Average	1.11	0.99	2.10

J Curve

- Elasticities are lower in the short run than in the long run, in which case the Marshall–Lerner conditions may not hold in the short run but may hold in the medium to long run.
- This lead to the phenomenon of what is popularly known as the **J-curve effect**



Explanation on J curve effect

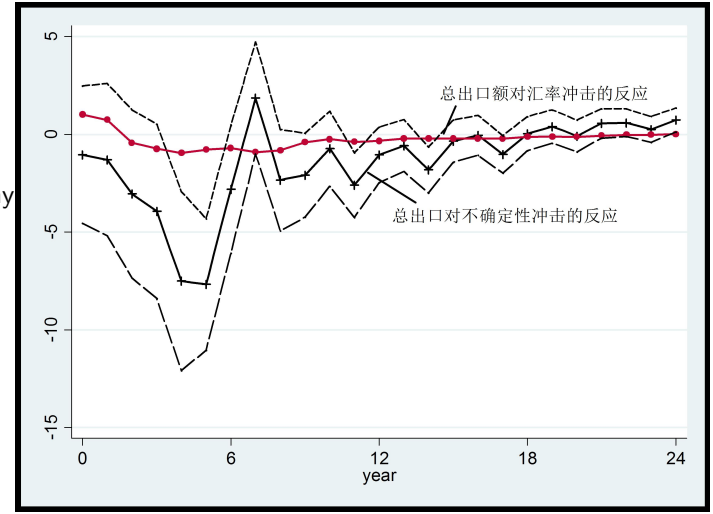
- A time lag in consumer responses.
- A time lag in producer responses.
- Imperfect competition.

PASS-THROUGH EFFECT OF A DEPRECIATION OR APPRECIATION

- The preceding analysis assumed that a 10% depreciation/devaluation will lead to a rise in price of imports by 10%.
- Pass Through
  - the extent to which a 1% depreciation (appreciation) leads to a rise (fall) in import prices.
  - the elasticity of exchange rate pass-through
- Causes
  - Imperfect competition
- Empirically, there is only a partial pass-through effect on the price of imports in the short run
- This effect will be to dampen the size and complicate the dynamics and timing of the J-curve effect.

Insensitivity of export to exchange Rate: My Estimation

- One of the central puzzles in international macroeconomics is why large movements in exchange rates have small effects on the prices of internationally traded goods.
- Large exporters are simultaneously large importers



Intellegence History

- Caveat of Elasticity approach
  - Assuming that all other things are equal
  - However, changes in export and import volumes will by definition have implications for national income
- **Alexander (1952)** is one of the most important papers to evaluate this effect
  - a current account imbalance can be viewed as the difference between domestic output and domestic spending (absorption)

The Absorption Approach I

- Taking the equation for national income:

$$Y = C + I + G + X - M$$

- Domestic absorption: $A = C + I + G$

$$CA = X - M = Y - A$$

$$dCA = dY - dA$$

- The above equation implies is that the effects of a devaluation on the current balance will depend upon how it affects national income relative to how it affects domestic absorption.
- Absorption can be divided up into two parts

The Absorption Approach II

- a rise in income will lead to an increase in absorption which is determined by the marginal propensity to absorb, denoted by a
- there will also be a 'direct effect' on absorption, which is all the other effects on absorption resulting from devaluation, denoted by A_d. 可以理解为贬值对商品价格的影响
- the change in total absorption dA, is given by:

$$dA = adY + dA_d$$

$$dCA = (1-a)dY - dA_d$$

结论

贬值对于经常账户的影响取决于三个方面：改变边际吸收倾向 a，改变国民收入水平 $4dY$, 影响直接吸收。

Effects of devaluation on national income

- Employment effect.
  - Depends on whether it is full employment and MLC
  - if the economy is at a position of full employment, an increase in income is not possible.
- Terms of trade effect
  - A deterioration in the terms of trade represents a loss of real national income.

$$\frac{Priceofexport}{Priceofimport} = \frac{P}{SP^*}$$

Effects of devaluation on marginal propensity to absorb

- Even if income rises overall, it is still not clear what the implications of a rise in income are for the current account, as this will depend upon the value of the marginal propensity to absorb
- Is it always less than Unity?
- Although one may think that the marginal propensity to absorb will be less than unity this need not be the case
- If $a > 1$, How to make it reasonable?

Effects of devaluation on direct absorption

- let us assume that the net effect of a devaluation on income is zero
- This being the case, we must consider the effect of the devaluation on direct absorption.
- possible ways in which a devaluation can be expected to impact upon direct absorption.
  - Real balance effect 实际余额效应
  - Income redistribution effect 收入再分配效应
  - Money illusion effect 货币幻觉效应
  - Expectational effects 预期效应
  - Laursen–Metzler effect

Real balance effect

- the relationship between prices and the demand to hold ream money balances
- Algebraically a money demand function can be expressed as:

$$M/P_I = k$$

- where k is some constant and P_I is an aggregate price index defined as:

$$P_I = \alpha P + (1-\alpha)SP*$$

- where α is the percentage of expenditure on domestic goods, P is the price of the domestic good, $P*$ is the price of the foreign import good, and S is the exchange rate defined as domestic currency units per unit of foreign currency.

A devaluation (rise in S) will reduce direct absorption.

Income redistribution effect

- redistributes income between those with a low marginal propensity to absorb and those with a high marginal propensity to absorb
  - The rise in the general price index will tend to change the real income of those with fixed incomes and those with variable incomes in different ways
  - A devaluation often leads to an improvement of company profits through increased sales in export and import-competing industries
  - There may be considerable income adjustments within groups of companies and workers.

Money illusion effect

- Price changed, but consumers suffer 'money illusion' and buy exactly the same bundle of goods as before
- they are actually spending more on direct absorption than before
- However, the money illusion effect may work in reverse

Expectational effects

- Economic agents regard the price rises induced by devaluation as likely to spark further price rises. This would lead to an increase in direct absorption which would worsen the balance of payments.
- However, against this it can be argued that inflationary expectations may reduce investment which lowers direct absorption.

Laursen–Metzler effect

- Laursen and Metzler (1950) noted that the deterioration in the terms of trade following a devaluation will have two effects on absorption:
  - an income effect
  - a substitution effect.
- Hence, the effects of a devaluation on direct absorption are **ambiguous**.
- Policy Implication
  - raising domestic income relative to domestic absorption will improve the current balance.
  - a devaluation is more likely to succeed if it is accompanied by economic policy measures that concentrate on raising income while constraining absorption.

Synthesis of Elasticity Approach and Absorption Approach

- Distinctions
  - the elasticity approach concentrating on price effects
  - the absorption approach concentrated on income effects
- Complementarity
  - The initial improvement in the current account has to be more pronounced than in the absence of such income effects

Intellectual History

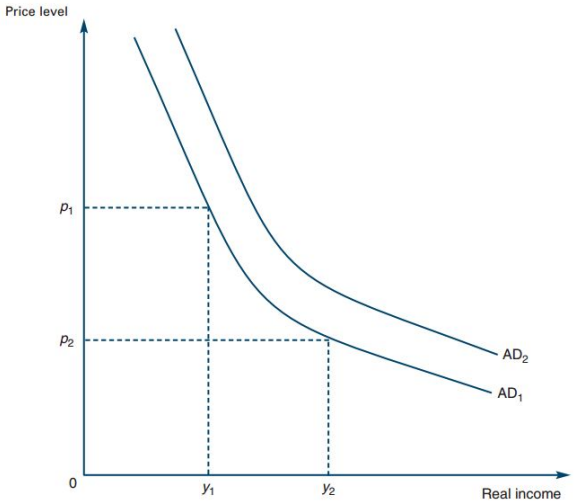
- The monetary approach
  - One of the most influential policy analyses of the balance of payments
  - was pioneered by Marina **Whitman (1975)** and **Jacob Frenkel and Harry Johnson (1976)**
- fundamental basis of the monetary approach
  - **BOP can only be explained by a disequilibrium in the stock demand for and supply of money.**
- Assumptions
  - stable money demand function
  - vertical aggregate supply schedule
  - purchasing power parity (PPP)

Stable money demand function

- the money demand function

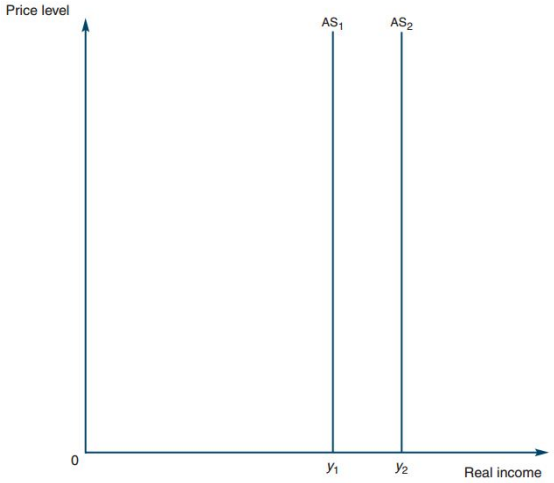
$$M_d = kPy \ , \ where \ , \ k > 0$$

- **if we hold the money supply/money demand fi xed and assume that k is a fixed parameter, the aggregate demand schedule is a rectangular hyperbola given by AD1**
- **at any given price level there is a rise in real money balances which leads to increased aggregate demand.**



Vertical aggregate supply schedule

- Wages are sufficiently flexible that they are constantly at the level that equates the supply and demand for labour.
- Rise in the domestic price level does not lead to an increase in domestic output
- Increase in y depends on technological advance.

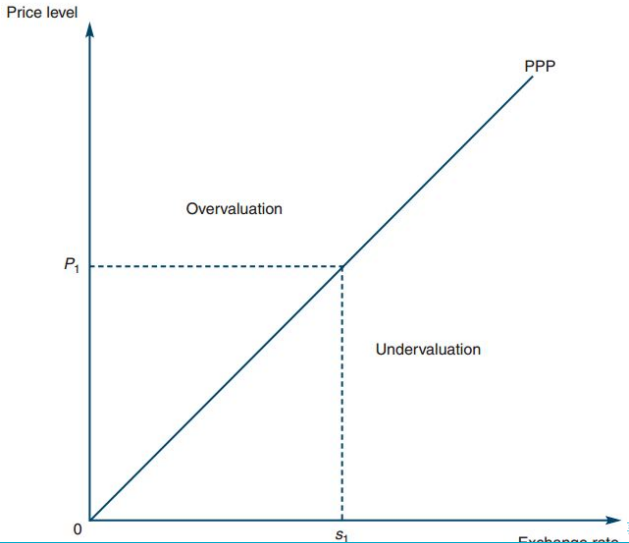


PPP

- purchasing power parity (PPP)

$$S = \frac{P}{P^*} that\ \ is\ \ , P = SP^* > 0$$

- PPP schedule shows combinations of the domestic price level and exchange rate which are compatible with PPP, given the foreign price level P*.

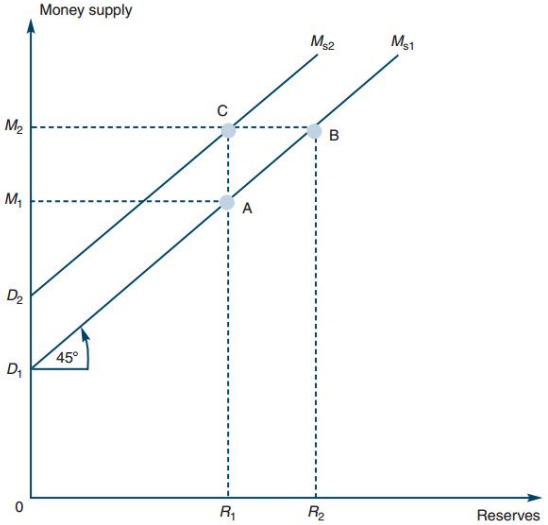


Domestic Monetary Supply

- The domestic monetary supply in the economy is made up of two components:

$$M_s = D + R$$

- The monetary base can come into circulation in one of two ways.
  - open-market operation (OMO)
  - foreign exchange operation (FXO)



Montetarist concept of BOP disequilibrium

- The monetarists view balance of payments surpluses and deficits as monetary flow due to stock disequilibrium in the money market.

$$M_s > M_d or M_s < M_d$$

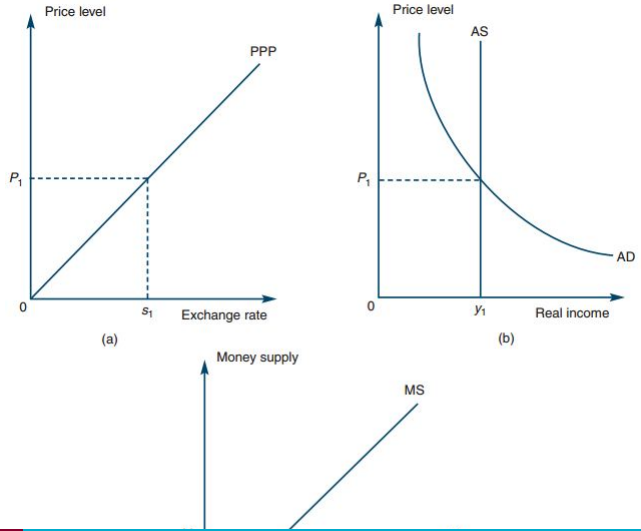
- Keynesians: top $\Rightarrow$ down
  - Monetarists: bottom $\Rightarrow$ up
- the overall balance of payments (BP) can be thought of as consisting of the current account balance, the capital account balance and the changes in the authorities' reserves.

$$BP = CA + K + dR = 0$$

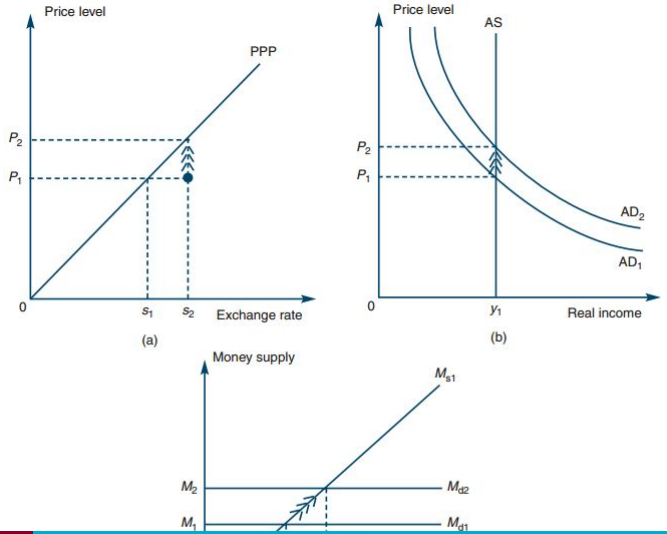
- so that

$$CA + K = -dR$$

Analytical Framework



Shocks I: Devaluation



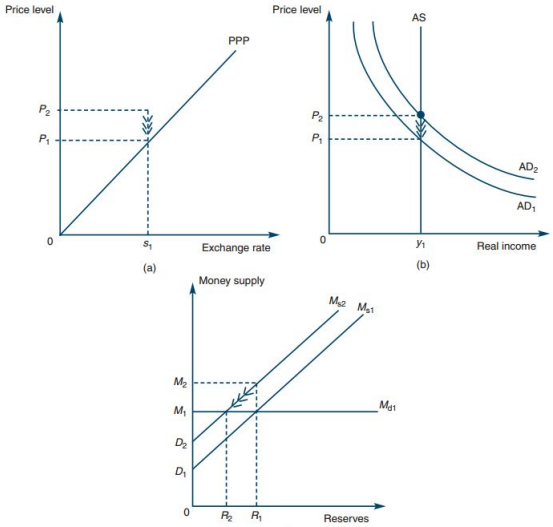
A Monetary Exchange Rate Equation

- the exchange rate

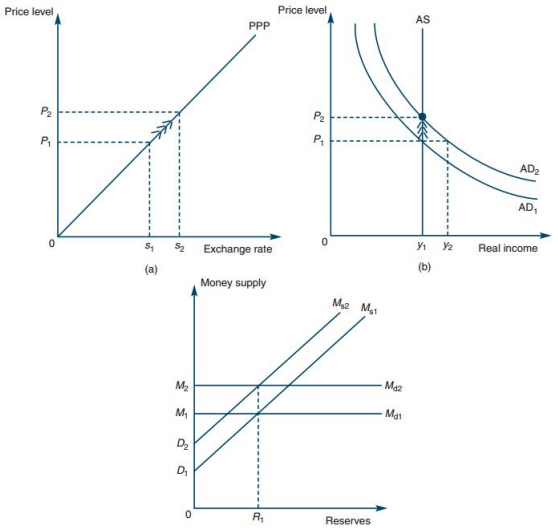
$$S = \frac{M_s / M_{s^*}}{ky / k^* y^*}$$

- states that the exchange rate is determined by the relative supply and demand for the different national money stocks.

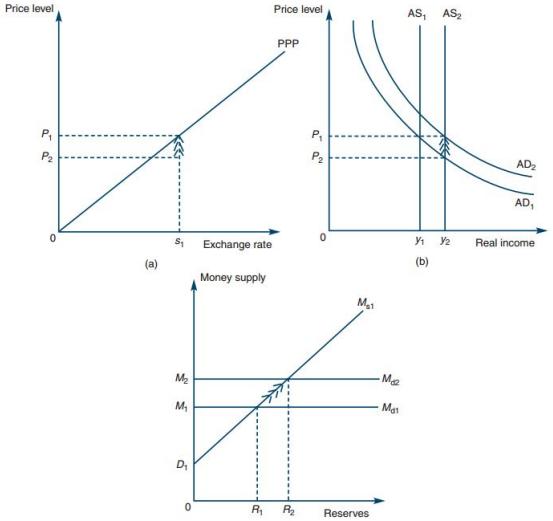
Shock II: Money Supply Expansion under fixed exchange rate



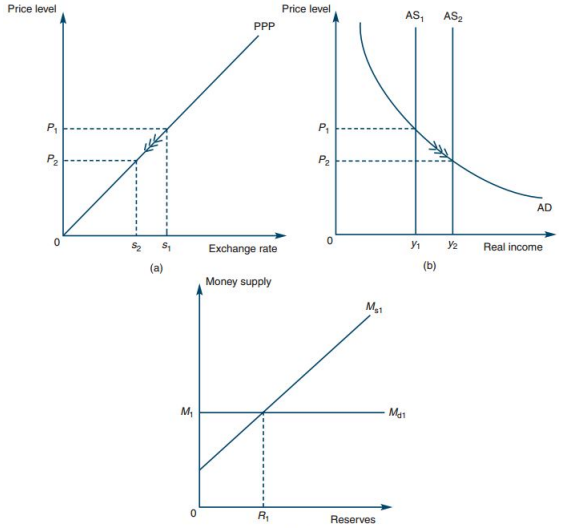
Shock II: Money Supply Expansion under floating exchange rate



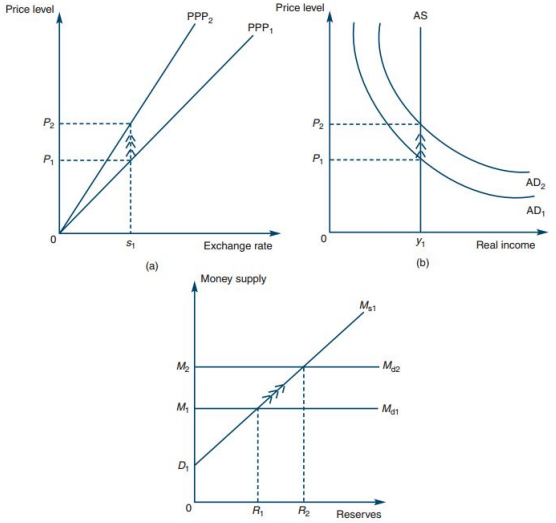
Shock III: Increase in income under fixied exchange rate



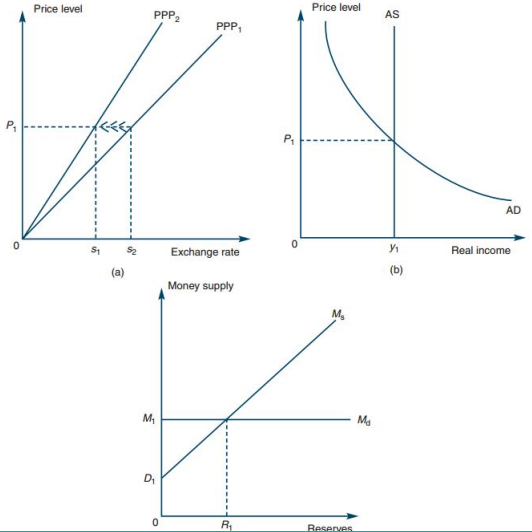
Shock III: Increase in income under floating exchange rate



Shock IV: Increase in foreign Price under Fixed Exchange Rate



Shock IV: Increase in foreign Price under Floating Exchange Rate



Implications of the Monetary Approach

- The distinctive feature of the monetary approach
  - money market disequilibrium is seen as a crucial factor in provoking balance of payments disequilibrium.
- The core of the monetary approach
  - The demand for money function is a stable and predictable function of relatively few variables.
- Major implications
  - In a fixed exchange-rate regime the authorities have to accept a loss of control over their domestic monetary policy as the price of fixing the exchange rate.
  - It is irrelevant whether the change in the money supply results from an OMO or an FXO.

Empirical Evidence

- Offset coefficient
  - Measures the extent to which an increase in the domestic component of the money base leads to a fall in reserves of a like amount in a fixed exchange rate regime

Study	Country	Estimation Period	Offset Coefficient
Bean (1976)	Japan	1959–70	−0.67
			(−8.32)
Genberg (1976)	Sweden	1959–70	−1.11*
			(−3.00)
Kouri and Porter (1974)	Australia	1961–72	−0.47
			(−5.29)
	Germany	1960–70	−0.77
			(−18.40)
	Italy	1964–70	−0.43
			(−4.36)
	Netherlands	1960–70	−0.59
			(−7.58)
Obstfeld (1982)	Germany	1961–67	0.003
			(0.001)
Taylor (1990)	UK	1965–71	−0.49
			(−5.44)

Criticisms of the Monetary Appoach

- Some monetarists argue that an increase in the domestic money supply might not be reflected exclusively in an equivalent **fall in the reserves** under fixed exchange rates. (供给曲线不再是无弹性的)
- Some critics have argued that to regard the balance of payments as a monetary phenomenon is only true in the sense that the balance of payments measures **monetary flows between domestic and foreign residents**.
- Another criticism of the monetary approach is that no attention is paid to the **composition of a deficit and surplus**.