

Problem Set 2 · Real side and financial side

1. Identify which of the following cases are possible and which are not.

Case	<i>nominal GDP</i>	<i>real GDP</i>	<i>GDP deflator</i>
1	<i>increase</i>	<i>increase</i>	<i>increase</i>
2	<i>increase</i>	<i>decrease</i>	<i>decrease</i>
3	<i>decrease</i>	<i>decrease</i>	<i>increase</i>
4	<i>decrease</i>	<i>increase</i>	<i>decrease</i>
5	<i>decrease</i>	<i>increase</i>	<i>constant</i>
6	<i>constant</i>	<i>increase</i>	<i>decrease</i>

2. Can the CPI inflation rate be positive and, simultaneously, the GDP deflator inflation rate be negative?

3. What is the effect of a change in the price of imported goods on: (i) CPI; (ii) GDP deflator?

4. (i) Define net private saving as $S - I$ and the government budget as $G + TR - T$. If both magnitudes double, what happens to the trade balance NX ? (ii) If net private saving is positive and the trade balance negative, is there a budget deficit or a budget surplus?

5. Identify which of the following cases are possible and which are not.

Case	<i>net private saving</i>	<i>government budget</i>	<i>trade balance</i>
1	<i>rises</i>	<i>rises</i>	<i>rises</i>
2	<i>rises</i>	<i>falls</i>	<i>unchanged</i>
3	<i>falls</i>	<i>unchanged</i>	<i>rises</i>
4	<i>falls</i>	<i>rises</i>	<i>falls</i>
5	<i>falls</i>	<i>rises</i>	<i>unchanged</i>
6	<i>unchanged</i>	<i>rises</i>	<i>falls</i>

6. Fill out the following table.

Case	<i>net private saving</i>	<i>government budget</i>	<i>trade balance</i>
1	<i>positive</i>	<i>positive</i>	
2		<i>negative</i>	<i>positive</i>
3	<i>negative</i>		<i>positive</i>
4			<i>zero</i>
5	<i>zero</i>	<i>negative</i>	
6		<i>zero</i>	

7. Explain which of the following situations can occur and which cannot occur: (i) M_0 rises and, at the same time, M_1 drops; (ii) M_0 falls and, at the same time, M_2 rises.

8. (i) Let $M_0 = 1000$, $M_1 = 4000$, and $r = 0.1$. What change in the liquidity ratio l would neutralize the effect on M_1 of a 10% fall in M_0 ? Let $M_0 = 1000$, $M_1 = 4000$, and $l = 0.1$. What change in the reserve ratio r would neutralize the effect on M_1 of a 10% increase in M_0 ?

9. Using derivatives, find the effect on the money multiplier of: (i) a rise in r . (ii) a fall in l .

10. The money multiplier is 2. Bank reserves are $R = 100$. Sight deposit are $D = 1000$. Ascertain the currency held by people E .

11. [Nerve-racking exercise]. There are only two goods, both are produced in the economy, and the CPI basket is given by two units of good 1 and 4 units of good 2. Fill out the following table, providing a justification for each answer.

period	1	2	3
price p_1 of good 1		10	
amount q_1 produced of good 1	10		30
price p_2 of good 1			20
amount q_2 produced of good 2	20	40	
nominal GDP		2000	2000
real GDP (base period $t = 1$)	1000	2000	
GDP deflator (base level = 100)			
GDP deflator inflation rate			
value of the CPI basket	200		160
CPI (base period $t = 1$ & base level = 100)			

12. (i) Explain the differences between M_0 and M_1 . (ii) Can M_0 be greater than M_1 ? And smaller than M_1 ? And equal to M_1 ?

13. Let $M_1 = 4000$, $mm = 2$, and $r = 0.3$. (i) Find M_0 and l . (ii) Find M_1 if, given the results in (i), r dropped to zero. Explain the mechanism that produces the change in M_1 (reason what happens to loans, expenditure, revenues, deposits, and M_1 when r becomes 0).

14. An individual accidentally finds 1 million € and deposits them on a bank. Explain how this decision is likely to affect M_1 .

15. (i) Compute the rate of return of a loan of 120 € when only 80 are repaid. (ii) What if 80 are loaned and 120 repaid? (iii) Find in each case the corresponding discount factor.

16. (i) Calculate the present discounted value at period 1 of 100 €: (i) from period 2 when the interest rate is 5%?; (ii) from period 3 when the interest rate is 5% at period 1 and at period 2; (iii) from period 3 when the interest rate is 5% at period 1 and 10% at period 2; (iv) from period 3 when the interest rate is 10% at period 1 and 5% at period 2; (v) from period 3 when the interest rate is 10% at both period 1 and 2.

17. 50 € from period 1 are worth 60 € in period 2. Find the corresponding interest rate and the discount factor.

18. Is it possible for the discount factor to rise while the interest rate is also rising?

19. (i) May the interest rate of an economy be negative? What would that mean? (ii) And zero? Can people be considered more patient when $i = 0$ than when $i > 0$?

20. (i) Compute the rate of return of a T-bill will face value $V = 210$ and price $P = 200$? (iii) Find the interest rate i under which the rate of return of the T-bill agrees with i ? (iii) Find the face value of T-bills priced 200 if the interest rate is $i = 5\%$.

21. Explain why the fall in the price of T-bills is accompanied by an increase of the rate of return of T-bills.

22. Show how to get the identity $I \equiv S + (T - TR - G) + (IM - EX)$ from the identity $Y \equiv C + I + G + NX$.

Multiple-choice questions

- If private saving remains constant and public saving is defined as spending minus receipts, what cannot happen?
 - That public saving increases and the trade balance remains unchanged
 - That public saving and the trade balance both decrease
 - That public saving and the trade balance both increase
 - That public saving and the trade balance both remain unaltered
- At the issue date, the price of a T-bill to mature in one year and with face value 1000 € is 400 €. By arbitrage, which must be interest rate for loans maturing in one year?
 - There is no relationship between the price of the T-bill and the interest rate
 - Exactly 40%
 - Smaller than 40%
 - Greater than 40%
- Using the discount factor, if the one year interest rate is 10%, the price at the issue date of T-bill with face value 1000 € is
 - $1000 \cdot (1 + 0.1)$
 - $(1 + 10)/1000$
 - $1000/(1 + 10)$
 - $1000/(1 + 0.1)$
- The discount factor associated with interest rate $i = 50\%$
 - cannot be computed.
 - is also 50%.
 - is smaller than 1.
 - is greater than 1.
- What is not a monetary aggregate?
 - M1
 - The monetary base
 - M2
 - The money multiplier
- In which case an economy has for sure no financing capacity?
 - Net private saving is positive and the government budget is in deficit
 - Net private saving is negative and the government budget is in surplus
 - Net private saving is positive and the government budget is in surplus
 - None of the above
- What cannot be considered a financial asset?
 - A bank deposit
 - A government bond
 - A loan
 - None of the above
- If there has been a 4% growth in real GDP and a 3% growth in the GDP deflator, then nominal GDP has approximately grown a
 - 1%
 - 1%
 - 7%
 - impossible to ascertain
- In which case the economy has financial capacity for sure?
 - $S - I > 0$ and $T - G - TR > 0$
 - $S - I > 0$ and $T - G - TR < 0$
 - $S - I < 0$ and $T - G - TR > 0$
 - $S - I < 0$ and $T - G - TR < 0$
- The base period CPI is 100, it is 110 in period 2, and it is 100 in period 3. From period 2 to 3, the CPI inflation rate
 - cannot be calculated
 - is 0%
 - is 10%
 - is negative
- Which sentence is false?
 - GDP at constant prices may fall and, at the same time, GDP at current prices may rise
 - Real GDP is always smaller than nominal GDP
 - If nominal GDP rises and the GDP deflator diminishes, then real GDP increases
 - Real GDP and nominal GDP may be equal
- If the monetary base is 100, M1 is 1000 and the liquidity ratio is 0.1,
 - the money multiplier cannot be computed.
 - the reserve ratio must be zero.
 - the money multiplier is 10
 - none of the above
- Which sentence is high unlikely?
 - A highly liquid financial asset with a high rate of return will be very risky
 - An almost riskless financial asset with a high rate of return will be highly illiquid
 - A highly liquid financial asset with a high rate of return will be almost riskless
 - None of the above
- Which event does not reduce the money multiplier?
 - An increase in the liquidity ratio
 - An increase in the reserve ratio
 - An increase in the liquidity ratio combined with a decrease in the reserve ratio
 - None of the above

15. M0 is defined as
- Currency held by the people minus bank reserves
 - Currency held by the people plus sight bank deposits
 - Sight bank deposits minus bank reserves
 - Currency held by the people plus bank reserves

16. Which sequence represents the money stock creation process?

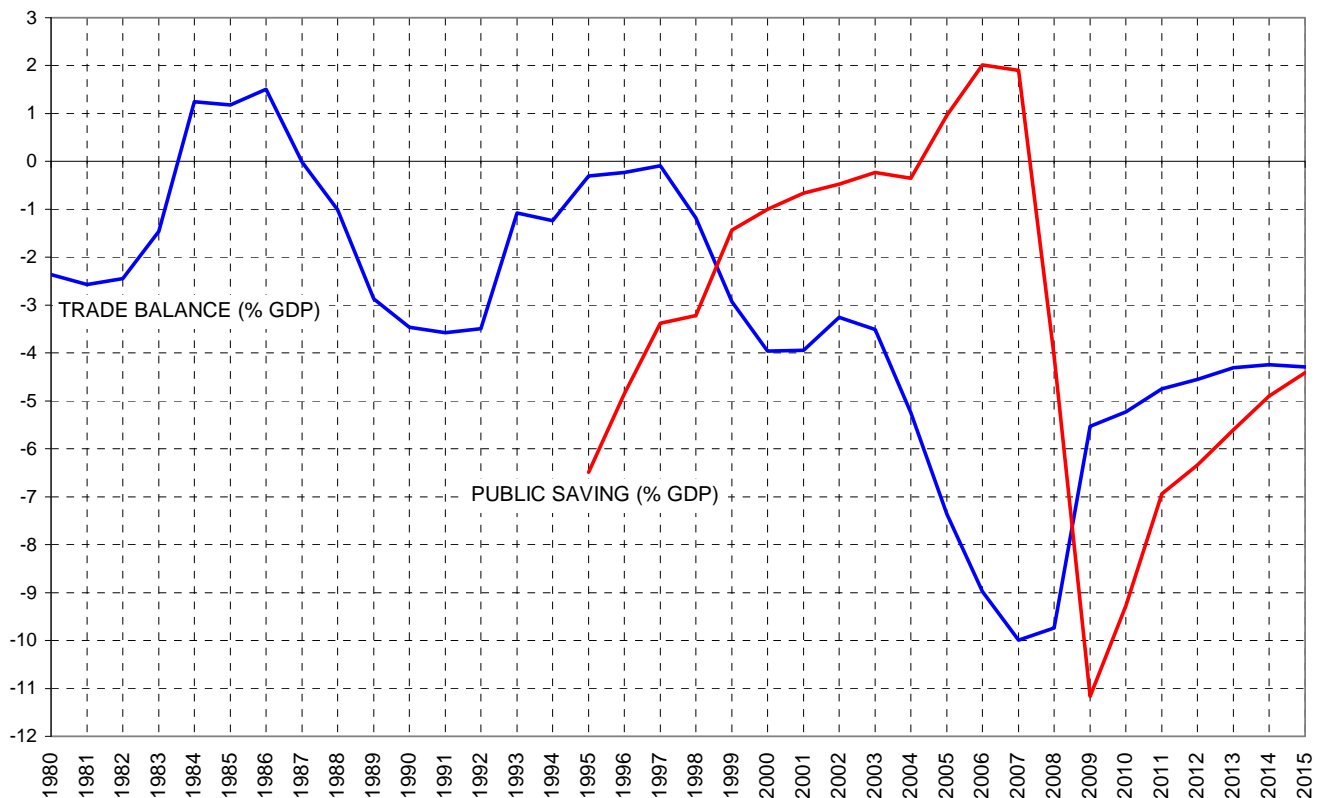
- \uparrow deposits \Rightarrow \downarrow loans \Rightarrow \uparrow reserves \Rightarrow \uparrow deposits
- \uparrow deposits \Rightarrow \uparrow loans \Rightarrow \downarrow expenditures \Rightarrow \downarrow revenues \Rightarrow \uparrow deposits
- \uparrow deposits \Rightarrow \uparrow liquidity ratio \Rightarrow \uparrow money multiplier \Rightarrow \uparrow deposits
- None of the above

17. Identify the sentence that is not false.

- The money multiplier may be negative
- M2 is always smaller than M1
- M0 is always greater than M1
- None of the above

18. Consider the graph below, which plots data for Spain.

- It shows evidence of the existence of twin deficits in Spain
- Suggests that the rate of growth of GDP has been traditionally negative in Spain
- It is impossible that the data plotted refer to Spain or any other country in the world
- It indicates that Spain is a country with a strong lending capacity
- none of the above



Source: <http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/weoselser.aspx?c=184&t=1>