MOT1421
Economic Foundations
Week Eight

MACROECONOMICS: MONEY CREATION
SELF-TEST: ANSWERS

The self-assessment consists of 10 Questions.
Each Question has a weight of 1. Your maximum score therefore is 10.
A score of 6 means that you have successfully passed the test.
This self-assessment is self-scoring.

Question 1

The money multiplier model is: $\Delta M^S == \left(\frac{\rho+1}{\rho}\right) \times \Delta R = \frac{1.07}{0.7} \times 20 = 15.3 \times 20 = 305.71$ billion euros. Money supply increases by € 305.71 billion.

Question 2

The expression 'banks are always fully loaned-up' means that commercial banks will never have surplus (unused) cash reserves; commercial banks are able to lower the interest rate by enough as is necessary to mobilise the additional demand for loans. Banks are therefore always operating at maximum lending capacity.

Question 3

The assumption that banks are always fully loaned-up is problematic, because:

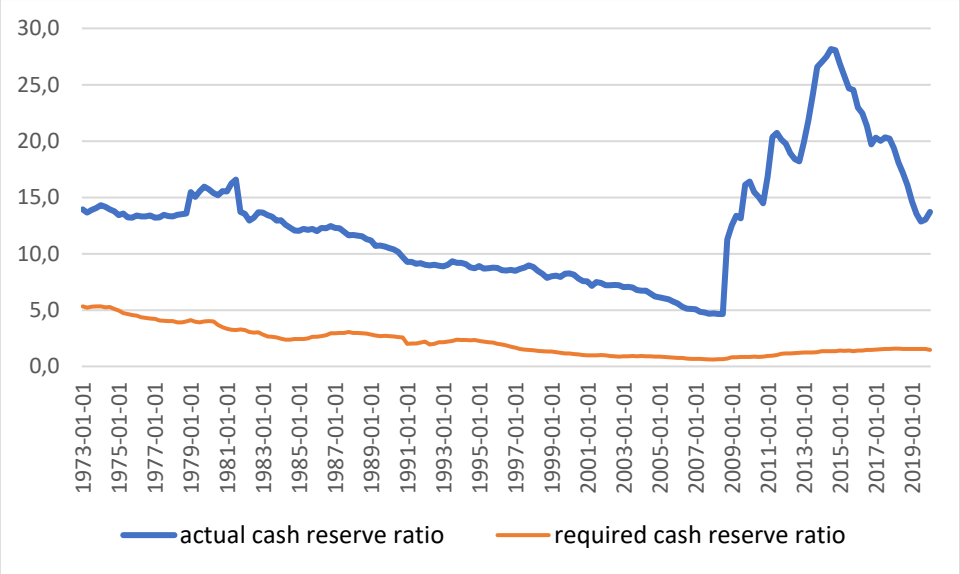
- If the economy is not in a good shape, firms and households will not borrow, even if the interest rate is low; banks cannot force firms and households to borrow: you can take a horse to the water, but you cannot make it drink …… banks can lower the interest rate to persuade firms and households to borrow money, but banks cannot make them borrow.

- Banks cannot reduce the interest rate below zero. There is a zero-lower bound to what banks can do, and this may well not be enough.

Question 4

Consider the following graph:

U.S. commercial banks:
Actual versus requires cash reserve ratio: 1973-2020



Source: Federal Reserve Bank of St Louis FRED Database
data-series CASACBW027SBOG, DPSACBW027SBOG & REQRESNS
https://fred.stlouisfed.org/

It is clear from the graph that U.S. commercial banks have held surplus (unused) cash reserves for all years during 1973-2019. These banks have never been fully-loaned-up, in other words.

Question 5

Consider the following balance sheet:

Balance sheet ABC-OMRA – June 2, 2020

assets = 'active'		liabilities = 'passive'	
cash reserves	= €100 m + € 2m	deposits	= €1000 m + €20 m
loans	= €1200 m + €20 m	inter – bank loans	= €200 m
govt. bonds	= €200 m – € 2m	equity	= €300 m
total	= €1500 m + €20 m	total	= €1500 m

Bank ABC-OMRA will first write a loan contract of 20 million euros. Loans (on the asset side) increase by €20 million. Consulting company Fix-a-Fact will next open a deposit account: deposits (on the liability side) increase by €20 million. Total bank deposits are now €1020 million, which means bank ABC-OMRA has to have €102 million in cash reserves. It is €2 million short. The bank decides to sell government bonds worth €2 million and the extra cash is put into the cash reserve. This is the step-by-step account.

Question 6

Give two limitations on endogenous money creation by commercial banks.

1. Regulation by the central bank: the central bank monitors banks' decisions and will try to avoid a situation in which banks take on too much risk in their loan portfolios. This central-bank regulation aims at stability of the financial sector.
2. Shareholder pressure: if in order to boost profits, a bank decides to take on too much risk (by lending to high-risk borrowers), credit-rating agencies will downgrade the bank (in terms of its credit-worthiness). This will alert shareholders who will either put pressure on bank managers to change strategy or sell their shares in this bank. The latter is a signal to other shareholders, other banks, deposit-holders and the central bank that there is something wrong with this bank.

Question 7

Consider the following balance sheet:

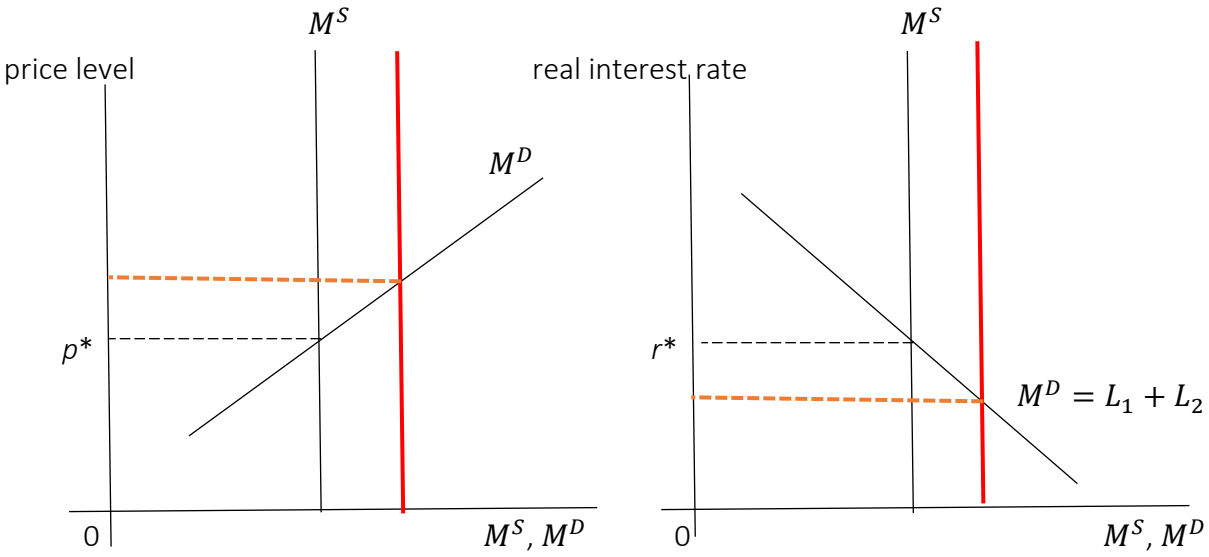
Balance sheet ABC-OMRA – June 2, 2020

assets = 'active'	liabilities = 'passive'
cash res. = €110 m − €10 m + € 9 m	deposits = €1100 m − €10 m
loans = €1300 m	inter − bank loans = €210 m
govt. bonds = €200 m − €9 m	equity = €300 m
total = €1610 m − €10 m	total = €1610 m − €10 m

Ms. Marple withdraws €10 million to set up a private-detective agency. Deposits go down with €10 million and total liabilities decline by €10 million. Ms. Marple takes out cash, so cash reserves (on the asset side) go down by €10 million as well. Cash reserves become €100 million. However, deposits are €1090 million, which means that the cash-reserve requirement is €109 million. Bank ABC-OMRA is €9 million short in cash reserves. It sells government bonds worth €9 million and uses the cash to bring the cash reserves in line with official requirements.

Question 8

Consider the following Figure and explain what will happen to money demand and the price level (or the interest rate) if the central bank increases money supply.



In the left panel, the vertical money-supply curve will shift to the right. This is the neoclassical money market. Higher money supply will generate inflation: the general price level increases. Real GDP is at its full employment level and coefficient *v* is constant. More money relative to unchanged real GDP must raise *p*. This shows that central banks can influence inflation by adequately controlling money supply (in this model).

In the right panel, the vertical money-supply curve will shift to the right. This is the IS-LM model. In the IS-LM model, the LM-curve (not shown) will shift to the right as money supply increases. The economy will grow, because banks reduce the interest rate (in response to the excess supply of money). Money demand will adjust to money supply.

Question 9

A commercial bank becomes insolvent, when the value of its assets (mostly loans to firms and households) is smaller than the value of its deposits + the value of its inter-bank loans. Such a situation could result if a bank is forced to write off a

sizeable proportion of its loans; this is what happened with the so-called sub-prime mortgages during the financial crisis of 2008. This means that equity (= shareholder value) is negative (see the balance sheet in Question 7). This is a problem, because shareholders will not appreciate it; if the bank would go out of business and all assets are sold and deposit-holders and other banks are given back their money, nothing is left for the shareholders. In case of a threat of insolvency, shareholders will sell their shares; the share price of the bank drops down; deposit-holders and other banks become worried and begin to withdraw money from this bank; this could develop into a full-blown bank run.

Question 10

Why is there a risk that a (short-run) liquidity problem of a commercial bank turns into a solvency crisis? If a commercial bank has a liquidity problem, it is short of cash reserves. Suppose deposit-holders begin to withdraw money from their bank accounts, because they hear 'bad news' concerning their bank. This bank has no surplus cash at hand and will sell off bonds (to obtain the required cash) or take an inter-bank loan (borrowing cash from other banks). Let us suppose that other banks refuse to lend to this bank, because they consider this high risk (because of the same 'bad news'). Then our bank is left with only one option to obtain extra cash: selling bonds (and other assets). Bond buyers will know this and will offer a low price for these bonds. This means that our bank is exchanging (say) € 100 million in bonds for €70 million in cash – it is losing value to shareholders. Deposit-holders will become more worried and withdraw more cash. Our bank will have to sell more bonds at worse, fire-sale, prices – and lose more money. The liquidity shortage turns into a solvency crisis – and this process becomes self-reinforcing. The only way out is that the central bank steps in and supplies the needed liquidity (= cash), as a lender-of-last-resort.

End of self-test Week 8