

EPA 143A – Week Two

Questions

NEOCLASSICAL MACROECONOMICS

Required readings:

- **S. Storm.** 2017. A critique of the loanable funds approach. (Posted on Brightspace)
- **EPA143A LECTURE NOTE W-2.**

Supplementary video:

- The market for loanable funds: <https://www.youtube.com/watch?v=ztGksVnQahQ>
- The market for loanable funds: <https://www.youtube.com/watch?v=iaGjqkRIUSk>

The EXERCISES **W-2.1**, **W-2.2**, **W-2.3** and **W-2.4** concerning the reading materials of Week 2 are given overleaf.

EXERCISE W-2.1

This exercise concerns the neoclassical labour market in Figure 1. On the horizontal axis of Figure 1, we measure labour supply (millions of workers) and labour demand (millions of workers). On the vertical axis, we measure the real wage (W/p), which is the nominal wage W divided by the index of general price level p .

We assume that aggregate labour supply by workers L^S is exogenous, or $L^S = \bar{L}^S$. In Figure 1, L^S is a vertical line; labour supply (which equals the labour force) is given and does not change in response to changes in the real wage (W/p).

Labour demand (for the whole economy) is a function of output (x) and the real wage (W/p), or $L^D = \alpha x \left(\frac{W}{p}\right)^{-1}$, where L^D = labour demand by firms and α is a constant. The labour demand function is based on profit-maximising decision-making by firms.

The aggregate labour market is in equilibrium when $L^S = \bar{L}^S = L^D$; this occurs at the equilibrium real wage $\left(\frac{W}{p}\right)^*$. We assume (following neoclassical theory) that the labour market is a perfectly competitive market which ‘clears’ by means of adjustments in the real wage (done by the “invisible hand”). The equilibrium real wage $\left(\frac{W}{p}\right)^*$ is the market-clearing price.

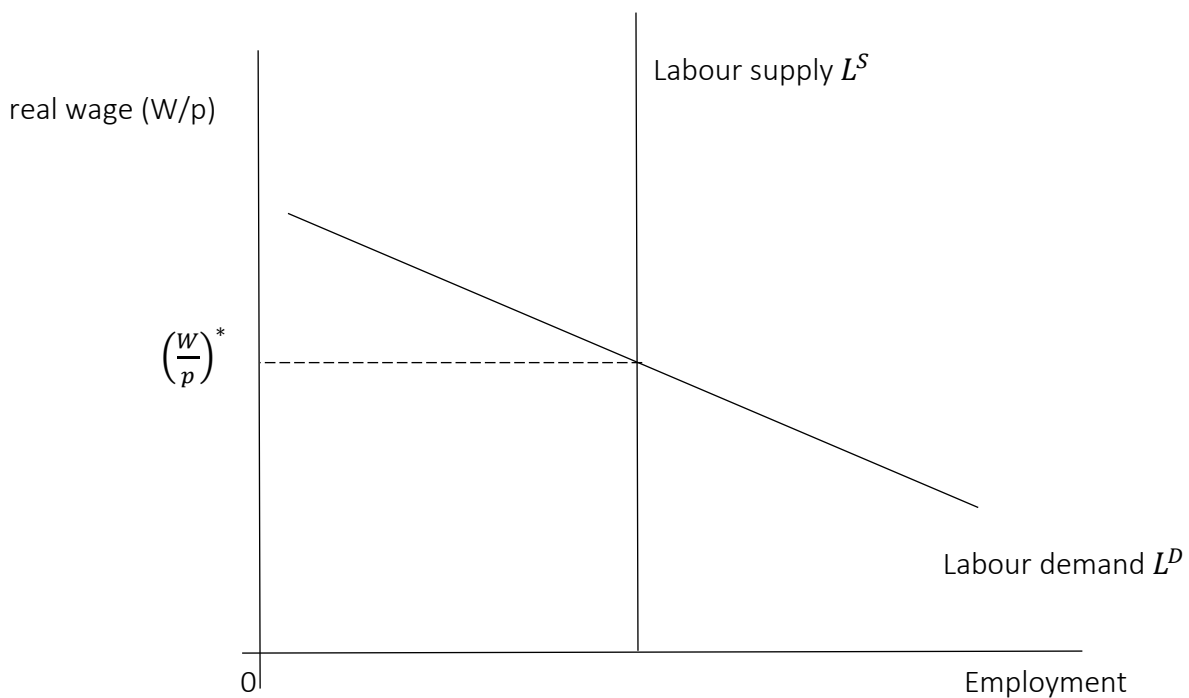


Figure 1: The Neoclassical Labour Market

1. Suppose that (exogenous) labour supply increases, for instance due to immigration. What are the consequences of this in the neoclassical labour market of Figure 1? Draw Figure 1 and show and explain what will happen to labour supply, labour demand and the equilibrium real wage $\left(\frac{W}{p}\right)^*$.
2. Consider Figure 2. In this economy, (real) wages are not determined by the invisible hand (the market mechanism), but by (centralized) bargaining between labour unions and firms. The wage bargaining process leads to a real wage $\left(\frac{W}{p}\right)^B$, acceptable to unions and firms – indicated by the red dashed line in Figure 2. What are the consequences of the bargained real wage in the neoclassical labour market of Figure 2? Draw Figure 2 and show and explain what will happen to labour supply, labour demand and the equilibrium real wage $\left(\frac{W}{p}\right)^*$. Will there be unemployment? If so, indicate the number of unemployed workers in Figure 2. How can ‘full employment’ be restored in this economy?

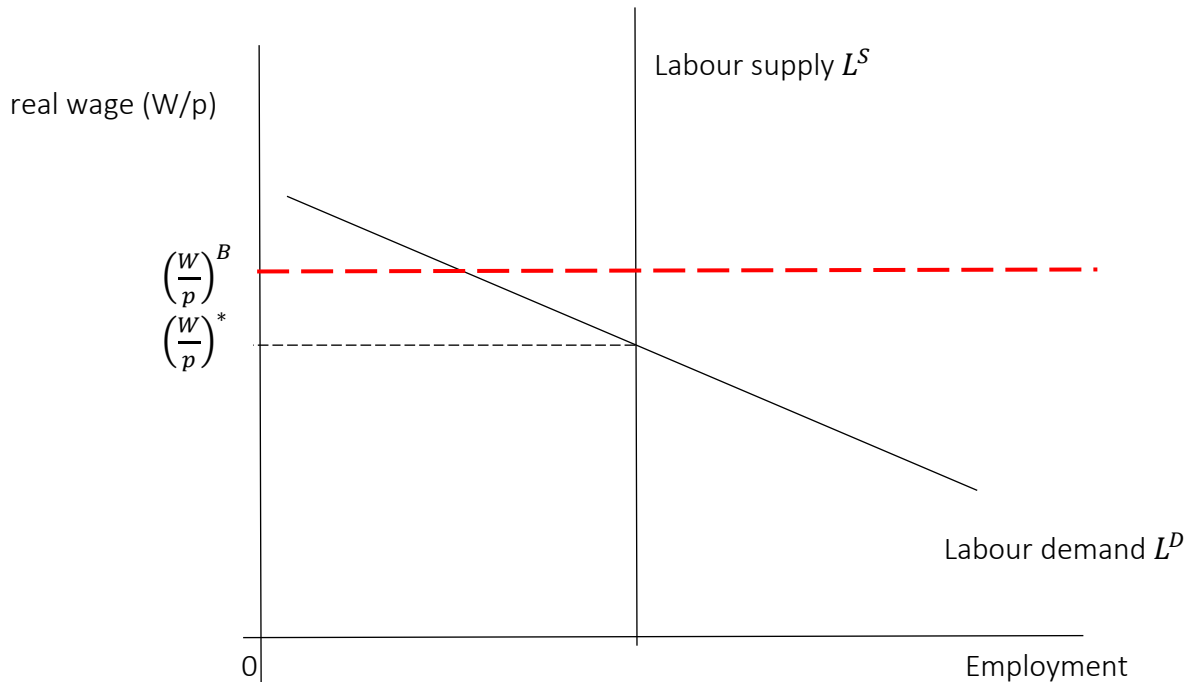


Figure 2: The Neoclassical Labour Market with Collective Wage Bargaining

EXERCISE W-2.2

Consider the following (neoclassical) market for loanable funds:

$$(1) \quad LF^S = 2.5 + 0.50 r$$

$$(2) \quad LF^D = 10 - 0.75 r$$

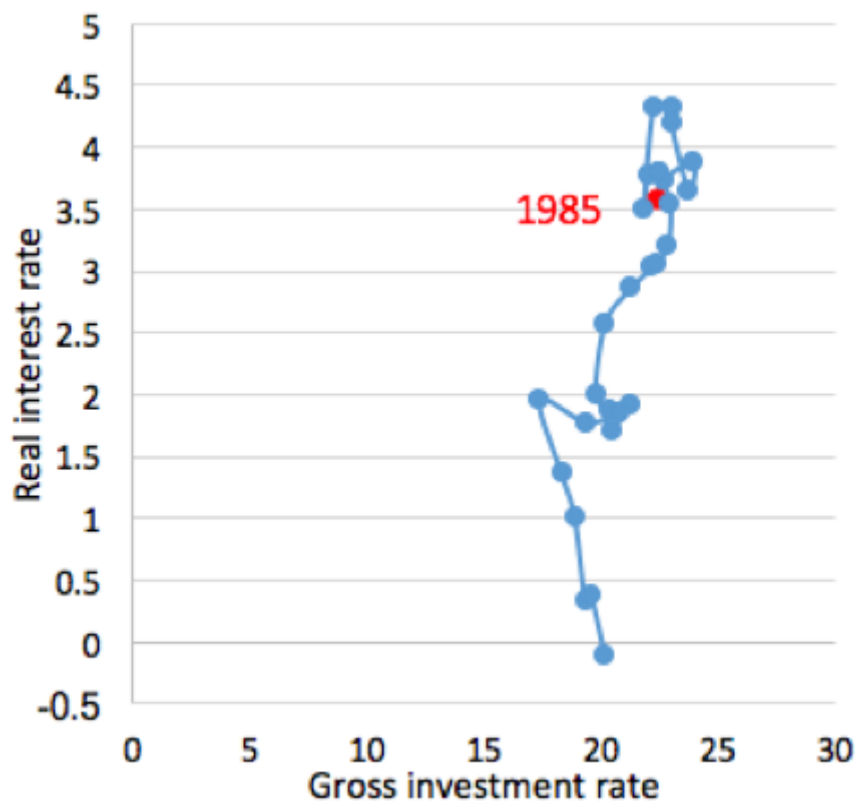
where LF^S = the supply of loanable funds (in billions of euros); LF^D = the demand for loanable funds (in billions of euros); and r = the real rate of interest (per cent).

1. Draw the curves for LF^S and LF^D in a graph with LF^S and LF^D on the horizontal axis and r on the vertical axis. Calculate the equilibrium real interest rate r^* .
2. Explain why the LF^S -curve is upward-sloping in the graph. How is loanable funds supply related to savings?
3. Explain why the LF^D -curve is downward-sloping in the graph. How is loanable funds demand related to investment by firms?
4. Assume that the government increases public investment (= fiscal stimulus). The increase in public investment is financed by extra government borrowing. As a result, the demand for loanable funds changes to: $LF^D = 12.5 - 0.75 r$. Explain the change in the equation for LF^D .
5. Calculate the new equilibrium real interest rate r^* . Why is it higher than before?
6. The fiscal stimulus has led to crowding out – of private investment by public investment. Explain how this crowding out happened. Can you estimate by how much private investment declined due to the crowding out, triggered by the fiscal stimulus?
7. Now go back to the original equations (1) and (2). Suppose there is a large inflow of foreign savings (foreign capital); as a result of this “global savings glut”, the LF^S -curve becomes: $LF^S = 10 + 0.50 r$. Calculate the new equilibrium real interest rate r^* . Why is it lower than before?
8. Suppose the inflow of global savings increases further and the new LF^S -curve becomes: $LF^S = 11 + 0.50 r$. What happens to the equilibrium interest rate? What is the problem of the zero-lower bound? If the loanable funds market cannot reach equilibrium because of the zero-lower bound, how will this affect output, employment and incomes in the neoclassical macro-economic model? NOTE: the real interest rate is defined as the difference between the nominal interest rate and the inflation rate; we here assume that the inflation rate is zero; hence, the real interest rate and the nominal interest rate are the same.

EXERCISE W-2.3

This exercise concerns the paper on the loanable funds market by Storm (2017).

1. Keynes argued that the LF^S -curve and the LF^D -curve are not independent: if one curve shifts, the other curve must shift as well. Explain Keynes' argument.
2. It is argued that savings do not fund or finance investment. Investment instead is financed by bank credit. Explain this argument.
3. What is meant by the Global Savings Glut Hypothesis?
4. Consider the following figure and explain why the evidence presented here is in conflict with the Global Savings Glut Hypothesis.



Saving/Investment Equilibria and World Real Interest Rate, 1985-2014

Source: Bofinger and Reis (2017), Figure 1(a).

EXERCISE W-2.4

This exercise concerns the neoclassical money market. The neoclassical approach to the money market follows the Monetarist approach – the “Quantity Theory of Money”.

Equilibrium in the money market requires that money supply M^S is equal to the demand for money M^D . In the neoclassical model, money supply $M^S = \overline{M^S}$ is exogenous (= determined outside the model). This assumption is justified by the argument that M^S can be (directly) controlled by the central bank. (This is the so-called “exogenous money” approach; we will look more closely into this approach in Week 7). For now, we assume (in line with the neoclassical approach) that the central bank can – indeed – “determine” M^S .¹

Money demand $M^D = \left(\frac{1}{v}\right)p \times y$, where v = a constant, p = the index of the general price level ($p = 1$ in the base year), and y = real GDP. The demand for money is the transactions demand for money: M^D increases when economic activity (y) and/or the general price level (p) increases; in both cases, more money is needed for economic transactions.

Equilibrium in the money market requires that $M^S = \overline{M^S} = M^D = \left(\frac{1}{v}\right)p \times y$, or:
 $\overline{M^S} = \left(\frac{1}{v}\right)p \times y$. How is money-market equilibrium achieved? The answer is: through adjustment of the general price level p . The reason is that $\overline{M^S}$ is exogenous, v is a constant, and the level of economic activity y is at its full employment level y^{FE} . All variables in the equation $\overline{M^S} = \left(\frac{1}{v}\right)p \times y^{FE}$ have been determined, except p . Hence, we can write:

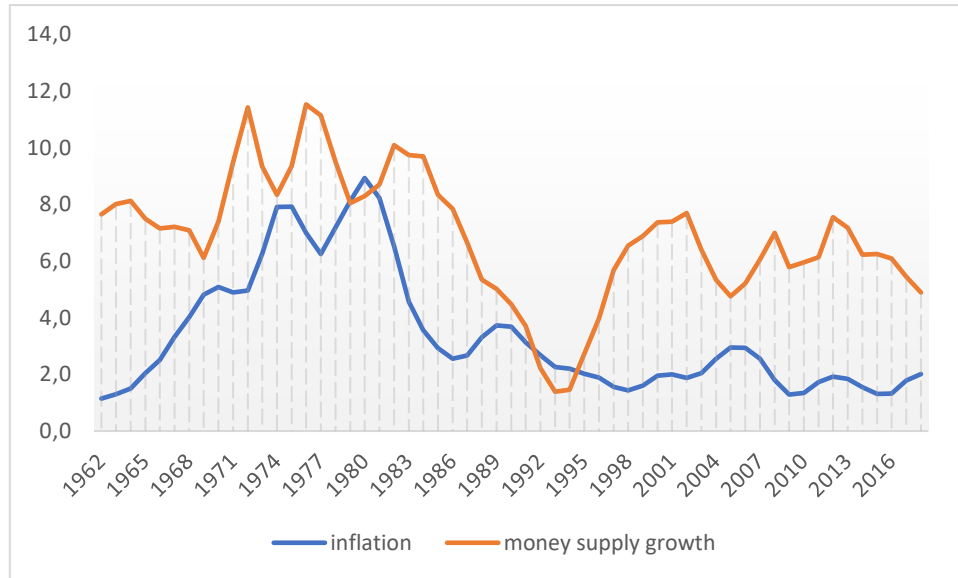
$p = \frac{v \times \overline{M^S}}{y}$, or in terms of (instantaneous) growth rates: $\hat{p} = \widehat{M^S} - \hat{y}$. That is, inflation is determined (in the neoclassical approach) as the difference between (exogenous) money supply growth and real GDP growth. This expression can be rewritten as a monetary policy rule, as follows: $\widehat{M^S} = \hat{p} + \hat{y}$. This rule specifies by how much $\widehat{M^S}$ can grow given estimates of inflation and real GDP growth.

1. The official policy aim of the European Central Bank (ECB) is to maintain inflation close to but below 2%. Let us further suppose that ECB economists think that real GDP in the Eurozone economy will grow at either 2.5% next year (scenario A) or at 1.75% (scenario B). By how much can the ECB let M^S grow in scenario A and scenario B.
2. The ECB can (try to) influence M^S by “open-market operations”. Explain what those open-market operations are and how these can influence M^S .
3. In the neoclassical model, the classical dichotomy between the real and monetary spheres is assumed to hold. What is this classical dichotomy?

¹ We will see in Week 7 that the “exogenous money” approach is not empirically true; in reality, central banks do not have direct control over M^S . Many macro-economists do continue to adhere to the falsified “exogenous money” approach, unfortunately.

4. Consider Figure A (below). Based on equation $\hat{p} = \hat{M}^S - \hat{y}$, one would expect that there exists a (long-run) relationship between \hat{p} and \hat{M}^S . Do the two curves in Figure A show any such (long-run) relationship – particularly for the period 1980-2019?

FIGURE A
Inflation and money supply growth: U.S. economy (1961-2019)
(%; three-year moving averages)



Source: AMECO database and OECD Main Economic Indicators database.