

## Syllabus

**Advanced Macroeconomics**

Graduate programmes

[Strategic Corporate Finance](#), [Stochastic Modeling in Economics and Finance](#),  
[Statistical Analysis in Economics](#), [Economics and Economic Policy](#)

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## Course description

Advanced Macroeconomics along with Econometrics and Advanced Microeconomics forms the core trinity of compulsory disciplines that provide a theoretical background for the master's program in economics at the HSE Faculty of Economic Sciences. The one-semester course is taught in English in the 1st and 2nd modules to the first-year graduate students.

The course focuses on selected topics that are central to modern macroeconomics, like the short-run economic fluctuations, stabilization policies in the medium-run, long-run economic growth, as well as political economy issues of macroeconomic policies. Both basic and more advanced theoretical models and analytical techniques are widely used in the course but are treated as tools for granting insights into important issues, not as ends in themselves.

## Pre-requisites

The course requires from students a working knowledge of linear algebra and basic game theory. It also assumes students' familiarity with introductory macroeconomics topics.

## Course objectives

The course design aims at dealing with extensive students' diversity in terms of both their initial backgrounds and future career tracks. In particular, highly interactive teaching methods and constructively aligned assessment criteria enable students to choose individual educational trajectories and guarantee accommodative jump to a certain established level of competencies of professional economist irrespective their prior familiarity with macroeconomics.

With the aim to introduce students to modern (and very often complicated) macroeconomic theories and their applications as well as develop their abilities to critically assess academic and journal articles the course is based on a number of 'work horse' models that require the use of both graphical and algebraic techniques. Thus mastering problem solving skills has become an immanent learning activity on the course at this level. However, the main idea of the course is to provide students with various backgrounds and interests with the chance to become interested in macroeconomics.

The purpose of the course is to develop the model-based way of 'aggregate thinking' and make students ready to apply relevant macroeconomic tools in their further studies and professional career. Specifically, the course aims to:

- ❑ introduce students to widely used macroeconomic theories and their applications,
- ❑ ensure students can apply macroeconomic analysis using both graphical and algebraic techniques to the study of contemporary and historical economic cases,
- ❑ develop students' ability to put their research and professional interests into a broader political and macroeconomic context,
- ❑ encourage students to question and critically assess existing academic and non-academic literature in their research area from the macroeconomic perspective,
- ❑ enable students to communicate their ideas using modern internationally recognised professional language of economists.

The course also develops students' soft skills, namely the ability to work in teams that requires certain competencies to organize their activities in small groups and benefit from the project-based learning. By the end of the course students are expected to be able to:

- find, evaluate and use information from various sources in order to systematically solve macroeconomic problems;
- analyze and interpret the data of domestic and foreign statistics on socio-economic processes and phenomena, to identify trends in changing of socio-economic indicators;
- critically evaluate modern economic trends, provide competent reasoning to lead well-grounded discussions;
- present the results of analytical and research activities both orally and in writing.



## Intended learning outcomes

On completion of the course student will be able to:

- ILO 1. Identify and formulate basic macroeconomics work horse models and explain their limits of applicability
- ILO 2. Evaluate work horse models to solve given problems using both graphical and algebraic analysis
- ILO 3. Differentiate between modelling devices and main implications of the work horse models
- ILO 4. Justify empirical relevance of these models and political feasibility of recommendations derived from them
- ILO 5. Explain and justify positive and normative macroeconomic policy propositions with integration of the appropriate literature, both in written and oral communications
- ILO 6. Deliver solutions to macroeconomic policy problems through applying good group working practices


## Reading List

### Essential reading

-  Blanchard, O. and Johnson D.R. *Macroeconomics*. 7<sup>th</sup> edition. (Pearson, 2017) [ISBN 9780133780581]
-  Romer, D. *Advanced Macroeconomics*. 5th edition (McGraw-Hill Education, 2018) [ISBN-13 : 978-1526847393]

### Supplementary reading

Those students who find it difficult to start the study of macroeconomics with Blanchard's textbook may wish to read first:

-  Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics*. 12<sup>th</sup> edition (New York: McGraw Hill, 2020) [ISBN 9780077129521]

Given the one-semester length of the course it's next to impossible to cover all the chapters from the textbook, so the course is bound to be selective. Yet the structure of the course to a large extent constitutes the core of modern macroeconomics. An introduction precedes the theory of **short run** fluctuations which is essentially based on the modifications of the 'old-fashioned' IS-LM-BP model that incorporate interest rate monetary policy rules. The modified BPIS-MP model goes beyond the main textbook chapters and equips students with some theoretical tools for the analysis of redistribution policies in a heterogeneous society as well as macroeconomic aspects of trade restrictions, economic sanctions, devaluation wars, etc.

Topics 9 through 14 focus on the **medium run** covering labour market issues and introducing AD-AS framework for the analysis of inflation, unemployment and their trade-off. The role of expectations in the consumption and investment decisions as well as for the consistent macroeconomic policy is explored as a major extension of the IS-MP-AS model.

The **long run** issues of economic development are covered in the final part of the course which introduced the neoclassical growth theory of capital accumulation. The role of exogenous and endogenous technological progress in explaining the evolution of output per worker across countries and over long periods of time completes the course.

The course is deemed to be 'constructively aligned'. In particular, it has outcome based student oriented design and educational technology with criterion-reference assessment. Yet, it allows for sufficient flexibility in the curriculum to create such a learning environment that helps student make an above mentioned 'accommodative jump'.

The length of the course, distribution of workload between lectures (60 hours) and classes (30 hours), structure of the exam (to be based primarily on real-life macroeconomic problems) shapes the content of the course.

## Course content

### 1. Modern macroeconomic problems and concepts

Macroeconomics and its central issues: inflation, unemployment, economic growth, stabilisation policy. The problem of aggregation. Money value of goods as a common denominator.

National accounts. Aggregate output, gross domestic product, or GDP, final good, intermediate good, value added. Double counting. Nominal GDP, real GDP, GDP growth, expansions, recessions. Labour force, employment, unemployment and unemployment rate, discouraged workers, participation rate.

Underground economy. Price level, inflation, inflation rate, deflation, GDP deflator, index number, consumer price index (CPI), cost of living.

Real vs. nominal variables. Some important national accounting identities.

#### Essential Reading

📖 Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.1, Ch.14-16

#### Further Reading

📖 Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics*. Ch.15

📖 Blanchard, O. (2009). The State of Macro. *Annual Review of Economics*, 1, 209–228.

### 2. Consumption and investment. Ricardian equivalence.

Keynesian and neo-classical behavioural relations and macroeconomic functions. Planning horizon and intertemporal choice.

Private and public consumption and saving. Personal disposable income. Keynesian consumption function and Kuznets puzzle. Intertemporal choice model. Life Cycle and Permanent Income theories. PIH under rational expectations. Barro-Ricardo equivalence. Reasons for the failure of Barro-Ricardian equivalence.

Private and public investment and saving. Private saving and the marginal propensity to save. Relationship between consumption and saving in a closed economy. Yield to maturity and term structure of interest rates. Stock market and the price of stock. Keynesian theory on aggregate investment. The components of investment spending. Neoclassical model of investment. Accelerator models of investment. Tobin's q-theory.

The government sector. Public consumption and the marginal propensity to spend of the government. Government revenues and forms of taxation: lump-sum and proportional (marginal) taxes, progressive and regressive taxes, income and expenditure taxes, corporate tax. Budget surplus and government savings. Tax incentives to save. Fiscal policy rules and the government budget constraint. The Ricardian equivalence proposition for the conduct of fiscal policy. Theoretical underpinning of fiscal policy and the debate between the active or passive use of fiscal policy. Discretionary use of fiscal policy over time.

#### Essential Reading

📖 Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.2








#### Further Reading

📖 Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics*. Ch.16

📖 Barro, Robert 'Are government bonds net wealth?', *Journal of Political Economy* 82(6) 1974, pp.1095–17.

📖 Friedman, Milton A theory of the consumption function. (Princeton, NJ: Princeton University Press, 1957).

📖 Hall, Robert, E. 'Stochastic implications of the life cycle-permanent income hypothesis: theory and evidence', *Journal of Political Economy* 86(6) 1978, pp.971–87.

-  Modigliani, Franco 'Life cycle, individual thrift, and the wealth of nations', American Economic Review 76(3)1986, pp.297–313.
-  Pentecost E. Macroeconomics: an open economy approach. (Basingstoke: Palgrave Macmillan, 2000) Chapters 6-7.
-  Hall, Robert, E. and Dale W. Jorgenson 'Tax policy and investment behaviour', American Economic Review 57(3)1967, pp.391–414.
-  Keynes, John, M. 1936 'The state of long term expectations', Chapter 12 of The general theory of employment, interest and money. Also in Estrin, S. and A. Marin, Chapter 15.
-  Baumol W., The transaction demand for cash: an inventory theoretic approach, Quarterly Journal of Economics, 66, pp.545-556, 1952.
-  Friedman M. (1968) "The Role of Monetary Policy". American Economic Review, 58, pp. 1-17.
-  Tobin J., Liquidity preference as a behaviour towards risk, Review of Economic Studies, 25, pp.65-86, 1958

### 3. Goods market equilibrium in the short run.


The complete goods market and Keynesian Cross in the closed economy. Characterisation of the equilibrium and the mechanism of adjustment. Autonomous aggregate expenditures, the economy wide marginal propensity to spend and the multiplier. Goods market equilibrium and the multiplier in the open economy.

Government spending and crowding out. The effects of government spending and taxation on output. Government spending multiplier and tax multiplier. Balanced budget multiplier for the different mechanisms of adjustment. Fiscal rules and countercyclical government spending.

#### *Essential Reading*

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.3

#### *Further Reading*

-  Mankiw, N. Gregory. "Imperfect competition and the Keynesian cross." *Economics Letters* 26.1 (1988): 7-13.

### 4. IS schedule. Fiscal and redistribution policies

The IS representation of the goods' market equilibrium in the closed economy. Derivation of the IS schedule. Shifts in the IS schedule. The interest rate elasticity of investment expenditure function: extreme Keynesian and Classical views. The effects of change in the marginal propensity to expend.


Transfer payments, taxation and redistribution vs. fiscal policies. Income dependent marginal propensity to expend and income distribution. Heterogeneous agents and the total consumption function. Inequality, poverty, and transfer effect. Redistribution policy and poverty-driven inequality. Redistribution and poverty alleviation. Income redistribution, changes in population composition and the consumption function. Means and ends of the redistribution policy. Voluntary redistribution of income via donations.


Corporate profits, corporate taxation and the firms' investment function. Retained and distributed profits, investment decision and dividend policy. The problem of double taxation. Out-sourcing (out-tendering) and privatisation. Labour and capital income vs. profits.

#### *Essential Reading*

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.3

#### *Further Reading*


-  Hoshi T., A.K.Kashyap, Japan's Financial Crisis and Economic Stagnation, *Journal of Economic Perspectives*, 18 (1), 2004, pp. 3-26.

-  Ludvigson S.C., Consumer Confidence and Consumer Spending, *Journal of Economic Perspectives*, 18 (2), 2004, pp.29-50.



## 5. MP schedule. Money market equilibrium

Money and Banking: the Central Bank and Commercial Banks. Broad money, monetary aggregates, 'fountain pen money' and Money Creation process. QE. Demand for money and financial portfolio and liquidity preference approach. Liquid Assets Market Equilibrium. Money supply targeting and the LM curve. Monetary policy, interest rate targeting and the MP schedule. Liquidity trap and zero lower bound.

### Essential Reading

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.4

### Further Reading

-  Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics*. Ch.18-19
-  McLeay, Michael & Radia, Amar & Thomas, Ryland, 2014. "[Money creation in the modern economy](https://www.bankofengland.co.uk/quarterly-bulletin/2014/q1/money-creation-in-the-modern-economy)," *Bank of England Quarterly Bulletin*, Bank of England, vol. 54(1), pages 14-27. <https://www.bankofengland.co.uk/quarterly-bulletin/2014/q1/money-creation-in-the-modern-economy>





## 6. The IS-MP model

Notion of general equilibrium in a macroeconomics context. Algebra and geometry of general equilibrium, the IS-MP framework. Macroeconomic policies of output stabilisation. Expansionary and contractionary fiscal policy: tax financing, internal debt financing, borrowing from the central bank. Expansionary and contractionary monetary policy, policy mix.

### Essential Reading

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.5

### Further Reading

-  Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics*. Ch.20
-  Romer, David 'Keynesian macroeconomics without the LM curve', *Journal of Economic Perspectives* 14(2) 2000, pp.149–69.
-  Hoshi, Takeo and A. K. Kashyap 'Japan's financial crisis and economic Stagnation', *Journal of Economic Perspectives* 18(1) 2004, pp.3–26.
-  Hutchison, Michael 'Japan's recession: Is the liquidity trap back?' Federal Reserve Bank of San Francisco. FRBSF Economic Letter/Pacific Basin Notes. 2000–19, 16 June 2000 (available at [www.frbsf.org/econsrch/wklyltr/2000/el2000-19.html](http://www.frbsf.org/econsrch/wklyltr/2000/el2000-19.html)).

## 7. The AD – AS model

Aggregate supply (AS) relation. The medium run AS curve and the long run AS curve. Explanations of the upward sloping medium run aggregate supply curve. Sticky wages (Keynesian) model. Expectations and the medium run AS.


The aggregate demand curve and flexible inflation targeting. Explanations of the slope. Taylor rule.

Equilibrium in aggregate supply- aggregate demand model. Monetary and fiscal policy in the long run and in the medium run. Supply shocks, neutrality of money, stagflation, output fluctuations, business cycles, propagation mechanism.

### Essential Reading


-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.7

### Further Reading

-  Lucas, Robert 'Understanding business cycles', in K. Brunner and A. Meltzer (eds) *Stabilization of the domestic international economy*. 5, pp.7–29. Also in Estrin, S. and A. Marin *Essential*



reading in economics. (Basingstoke: Macmillan Press, 1995) first edition [ISBN 9780312125110] Chapter 16.

-  Zarnowitz, Victor 'Theory and history behind business cycles: Are the 1990s the onset of a golden age?' *Journal of Economic Perspectives* 13(2) 1999, pp.69–90.

## 8. Open economy macroeconomics

Determinants of the trade balance, the J-curve, the Marshall–Lerner condition, the national income identity in an open economy. Uncovered and covered interest parity condition in the financial market, the law of one price.

General equilibrium in an open economy and macroeconomic policies. Capital mobility vs. capital controls. Mundell-Fleming model. Determinants of the BP line, the BP slope under alternative assumptions about international capital mobility.







Monetary and fiscal policies under fixed and flexible exchange rates with perfect, imperfect capital movements and no capital mobility. Macroeconomics of sanctions. Permanent vs temporary macroeconomic policies: the role of exchange rate expectations.

Relaxing assumption of a “small” open economy. Two-country setting and simultaneous determination of income and exchange rate when countries are main trading partners. International macroeconomics and policy transmission. Repercussion effects, economic sanctions, trade embargo and capital movement restrictions.

### *Essential Reading*

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch. 18, 19 and 20.1–20.2; Ch.21

### *Further Reading*

-  Kaempfer, William H., and Anton D. Lowenberg. "The theory of international economic sanctions: A public choice approach." *The American Economic Review* (1988): 786-793.
-  Pape, Robert A. "Why economic sanctions do not work." *International Security* 22.2 (1997): 90-136.
-  Dornbusch, R., S. Fischer and R. Startz *Macroeconomics*. (New York: McGraw-Hill, 2011) Chapters 12.1–12.3, 18.3 and 20.2, 21
-  Mankiw, N. G. *Macroeconomics*. (Worth, 2012) Chapter 6, 13.
-  Calvo, Guillermo A., and F.S. Mishkin. 'The mirage of exchange rate regimes for emerging market countries', *Journal of Economic Perspectives* 17(4) 2003, pp.99–118.
-  Mann, Catherine L. 'Perspectives on the US current account deficit and sustainability', *Journal of Economic Perspectives* 16(3) 2002, pp.131–52.

## 9. Unemployment

Noninstitutionalized civilian population, labor force; out of the labor force, participation rate, unemployment rate, separations, hires, quits, layoffs, duration of unemployment, discouraged workers, nonemployment rate, collective bargaining, reservation wage, bargaining power.




Efficiency wage theories, unemployment insurance, production function, labor productivity, markup, wage-setting relation, price-setting relation. WS-PS model.

Natural rate of unemployment, structural rate of unemployment, natural level of employment, natural level of output. The types and causes of unemployment: frictional, structural and classical (or real wage) unemployment. Hysteresis.

### *Essential Reading*

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.6

### *Further Reading*

-  Ball, Laurence and N.G. Mankiw 'The NAIRU in theory and practice', *Journal of Economic Perspectives* 16(4) 2002, pp.115–36.
-  Blanchard, O. 'European unemployment: the evolution of facts and ideas', NBER working paper, No. 11750, 2005.
-  Davis, Steven J., R.J. Faberman and J. Haltiwanger 'The flow approach to labor markets: new data sources and micro-macro links', *Journal of Economic Perspectives* 20(3) 2006, pp.3–26.

## 10. Inflation and policy rules

Functions of money. The transactions demand (Baumol-Tobin model). The speculative theory of money demand: demand for money as a safe asset. The modern quantity theory of money. The monetary base and the money supply. The money multiplier model. Control of the central bank over the money supply.

Phillips curve, wage-price spiral, nominal rigidities, staggering of wage decisions. Modified, or expectations-augmented, or accelerationist Phillips curve. Nonaccelerating inflation rate of unemployment (NAIRU), wage indexation.

Okun's law, normal growth rate, labour hoarding, adjusted nominal money growth, disinflation, sacrifice ratio, seigniorage. Rational, myopic, adaptive expectations, perfect foresight. Lucas critique and credibility.

The sources of business-cycle fluctuations and benefits of macroeconomic stability. Uncertain outcomes of monetary policy actions. Monetary policy instruments and price stability.

Theoretical foundation of inflation targeting policies, the time-inconsistency problem and the debate between precommitment and discretion in the context of monetary policy.











The implications of the main rules designed by macroeconomists for the conduct of monetary policy. Time inconsistency problem and its solutions: constitutional rules, reputation, delegation to an independent authority with different preferences/incentives (independent central banker).

Determinants of seigniorage, and the links between the budget deficit and inflation.

### *Essential Reading*

-  Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.4, 8-9, Ch.17, 23-26.

### *Further Reading*

-  Barsky R.B., L.Kilian, Oil and macroeconomy since the 1970s, *Journal of Economic Perspectives*, 18 (4), pp.115-134, 2004.
-  Svensson L.E., Escaping from a liquidity trap and deflation: The foolproof way and others, *Journal of Economic Perspectives*, 17 (4), pp.145-166, 2003.
-  Tobin J., Inflation and unemployment, *American Economic Review*, 62 (1), pp.1-18, 1972.
-  Baumol W., The transaction demand for cash: an inventory theoretic approach, *Quarterly Journal of Economics*, 66, pp.545-556, 1952.
-  Friedman M. (1968) "The Role of Monetary Policy". *American Economic Review*, 58, pp. 1-17.
-  Tobin J., Liquidity preference as a behaviour towards risk, *Review of Economic Studies*, 25, pp.65-86, 1958.
-  Alesina A., The political economy of the budget surplus in the United States, *Journal of Economic Perspectives*, 14(3), pp.3-19, 2000.
-  Bernanke B.S., F.S.Mishkin, Inflation targeting: a new framework for monetary policy? policy, *Journal of Economic Perspectives*, 11(2), pp.97-116, 1997.
-  Chari V., J.K.Patrick, Modern macroeconomics in practice: how theory is shaping policy, *Journal of Economic Perspectives*, 20(4), pp.3-28, 2006.
-  Fisher S., R.Sahay, C.A.Vegh, Modern hyper- and high inflations, *Journal of Economic Literature*, 40(3), pp.837-880, 2002.



- 📖 Modigliani F., The monetarist controversy, or, should we forsake stabilization policies? *American Economic Review*, 67(2), pp. 1-17, 1997.
- 📖 Sargent T.J., N. Wallace, Rational Expectations and the Theory of Economic Policy, *Journal of Monetary Economics*, July 1976, pp.199-214.
- 📖 Taylor J.B. An historical analysis of monetary policy rules, NBER working paper, w6768, 1998
- 📖 Taylor J.B. Reassessing discretionary fiscal policy, *Journal of Economic Perspectives*, 14(3), pp.21-36, 2000.

11. Economic growth

Kaldor’s (1963) stylized facts and recent findings about economic growth. Growth miracles and growth disasters. Factor accumulation, stability of the worldwide economic growth and cross-country income differences.

Exogenous technological progress and saving rate in the Solow model. Neoclassical production function, constant return to scale and Inada conditions. Dynamics of the model and the concept of the balanced growth path. Policy shocks and transition dynamics. Golden rule of capital accumulation and dynamic efficiency. The AK model and the absence of diminishing returns to capital.

Endogenous saving rate in the OLG model without technical progress. Steady state and capital overaccumulation. Fully-funded and PAYG pension systems.

Endogenous growth with transitional dynamics and CES production functions. Growth models with poverty traps. Accumulation of knowledge and exogenous allocation of resources to R&D sector. Dynamics of knowledge accumulation in the model without capital and in the generalised model. The importance of returns to scale to produced factors and the role of population growth.

*Essential Reading*

- 📖 Romer D. (2018) *Advanced Macroeconomics*. Ch.3.1-3.5.
- 📖 Blanchard, O. and D.R. Johnson. *Macroeconomics*. Ch.10-13, Ch. 11.4, 12 and 13.4.

*Further Reading*

- 📖 Romer, D. (2012). *Advanced Macroeconomics*. 4<sup>th</sup> edition, McGraw-Hill, Ch.1 pp. 6-27.
- 📖 Barro, R., Sala-i-Martin, X. (2003). *Economic Growth*. 2nd edition, MIT Press., ch.1, pp.14-26.
- 📖 Temple, J. (1999). The New Growth Evidence. *Journal of Economic Literature*, 37(1), 112-156.
- 📖 Baumol, W. J. (1986). Productivity Growth, Convergence, and Welfare: What the Long-Run Data Show. *American Economic Review*, 76(5), 1072-1085.
- 📖 DeLong, J. (1988). Productivity Growth, Convergence, and Welfare: Comment. . *American Economic Review*, 78(5), 1138-1154.
- 📖 Baumol, W. J., Wolff, E.N. (1988). Productivity Growth, Convergence, and Welfare: Reply. *American Economic Review*, 78(5), 1155-1159.
- 📖 Barro R., Sala-i-Martin X. (2003) *Economic Growth*. 2<sup>nd</sup> edition, MIT Press., ch.1.3, pp. 38-56.
- 📖 Besley, Timothy, and R. Burgess ‘Halving global poverty’, *Journal of Economic Perspectives* 17(3) 2003, pp.3–22.
- 📖 Bosworth, Barry, and S. M. Collins ‘Accounting for growth: comparing China and India’, *Journal of Economic Perspectives* 22(1) 2008, pp.45–66.
- 📖 Jones, Charles I. *Introduction to economic growth*. (Norton, 2002) second edition [ISBN 9780393977455]. Chapters 3 and 4.
- 📖 Romer, Paul M. ‘The origins of endogenous growth’, *Journal of Economic Perspectives* 8(1) 1994, pp.3–22.

**Course outline**

Week	Topic	Total	Classroom activities		Self-study
			Lectures	Classes	
1.	Modern macroeconomic problems and concepts	14	4	0	10
2.	Consumption and investment. Ricardian equivalence.	22	4	2	16

3.	Goods market equilibrium in the short run	16	4	2	10
4.	IS schedule. Fiscal and redistribution policies	16	4	2	10
5.	MP schedule. Money market equilibrium	16	4	2	10
6.	The IS-MP model	16	4	2	10
7.	The AD-AS model	16	4	2	10
8.	Open economy macroeconomics	32	8	4	20
9.	Unemployment	16	4	2	10
10.	Inflation and policy rules	32	8	4	20
11.	Economic growth	32	8	4	20
	<b>Total:</b>	<b>228</b>	<b>56</b>	<b>26</b>	<b>146</b>

## Assessment

### Formative assessments

The following forms for the current assessment are employed in order to correspond to the aims of the course and intended learning outcomes in particular

- Quiz
- Q&A - Questions and Answers (questions based on essential reading and lecture material) during contact sessions
- Non-graded Home Assignments

### Summative assessments

Summative assessment criteria and grade determination are announced at the beginning of the course [% weight in the final grade]

- Quizzes based on Home assignments [10%]
- Mid-term closed-book written test (2 hours individual in class) [20%]
- Team project [20%]
- Essay [20%]
- Final closed-book exam (2 hours individual in class) [30%]

### Team project assessment

Each academic study group is divided into teams of 5-8 students. Each team selects an interesting and up to date macroeconomic issue as a case study and attempts to analyse it by applying the formal models (the Solow model, Fisher model, (BP)IS-MP and/or AD-AS). A topic for a team project can be taken from reliable NON-ACADEMIC general interest newspapers and magazines, such as The Economist, Wall Street Journal, Financial Times, Moscow Times, Ведомости, Коммерсантъ, and other reliable sources. The final output of the team project should take the form of a concise **Analytical Draft** co-authored by the team-mates as well as a **Short Video** demonstrating the main findings. All the team members should than answer teacher's questions off hand in class and comment on the draft.

There are several different activities that contribute to success of the team work and are directly assessed:

- Analytical Draft (graphs, formulae, calculations, concise explanations etc.)
- Group discussion (interaction with peers, Q&A session)
- Final project presentation (in class presentation or pre-recorded video)
- Individual answers (off hand answers to teacher's questions)

**Analytical skills** are assessed collectively on the basis of the Analytical Draft in docx or pdf format that should be submitted by each team via SmartLMS. Analytical Draft (*Draft*) contributes **40%** to the Team Grade (*Team*). It should have the following structure:

- The original article (preceding the Analytical Draft)
- Analytical draft, including"
  - Introduction (a brief description of a macroeconomic problem)

- Formalisation of the problem (justification of assumptions)
- Model setup (detailed description of a modelling framework)
- Solution (derivations of all proofs, properly labeled graphs, etc.)
- Discussion (evaluating alternative explanations, limitations, reservations)
- Conclusion (with a clear claim why your expert position is well grounded)

The quality of formal analysis (analytical skills) is assessed on the basis of the following equally important criteria:

1. **The story.** Relevance of the article, i.e. the ability to find an interesting and up to date case on macroeconomic issues (maximum points for a very recent article published in the current year, 1 percentage point deduction for the previous year, 2 percentage points deduction for the two-year old publication and so on.) This should be a NON-ACADEMIC article published in a newspaper/journal. You need to briefly summarize the basic facts and conceptualize the main point/idea/argument/problem/issue using the GEM approach:
  - G-general language (use by ordinary people in everyday conversations)
  - E-economics (definitions, concepts, laws and regularities)
  - M-mathematics (graphs, algebra, econometric regressions)
2. **The model.**
  - Selection of an appropriate theoretical approach,
  - identification of crucial assumptions that make this theory applicable for the case analysis
  - Evaluation of the trade-off between unnecessary complication and oversimplification of the story
3. **The solution.**
  - Application of a standard graphical and/or algebraic analysis where appropriate
  - Extension of the model using more advanced concepts mentioned in lecture slides
  - Modification of the model using additional modeling approaches or empirical analysis
4. **The reflexion.**
  - Formulation of propositions and/or conclusions in the professional language of macroeconomics
  - Discussion of the model limitations
  - Ability to confront the author's statements with the theoretical predictions of the designed model

**Group discussion** (QA) contributes **30%** to the Team Grade (*Team*). It assesses the ability to pose thought-provoking questions and answer them in a smart way.

- Three questions (**15%**) are to be submitted and publicized (in a shared document) three days in advance. Each team has to prepare ONE 'collective' question to THREE other teams (3 questions in total). **Questions** are expected to be thought-provoking and supportive. The assessment rubric for each questions is:
  1. **0 mark** – is given for a totally irrelevant question
  2. **1 mark** – is given for a superficial question that can be answered simply by referring to a submitted text
  3. **2 marks** – are given for a clarifying question that helps the author avoid vague formulations and improve clarity of exposition
  4. **3 marks** – are given for an accurate and well-focused question that helps the author better articulate their ideas
  5. **4 marks** – are given for a statement indicating weak parts of the *DRAFT* (lack of reasoning, miscalculation, drawbacks in the analysis, etc.) without suggesting how to fix the problem
  6. **5 marks** – are given for a supportive statement that suggests how to improve peer's presentation
- Three answers (**15%**) should be given in the final version of the paper and be included in the Discussion section.

Taking into account questions and answers, each team can amend and update their analysis in the Final paper and present the main results in class.

**Final project presentation** (PR) contributes **30%** to the Team Grade (*Team*) and may take the form of an oral in-class presentation or pre-recorded video. In the former case presentation skills (PR) can be demonstrated by a **randomly assigned** presenter (or presenters). In the latter case visual support relies on video recording skills. The following universal assessment criteria are then applied:

- Ability to attract attention, i.e. connectedness to the audience;
- Clarity and suggestiveness, i.e. logic and explicitness of the presentation;
- Proper time management (about 10 slides, exactly 10 min).

The Team Grade (*Team*) is determined according to the following rule:

$$Team = [Draft \cdot 0.4 + QA \cdot 0.3 + PR \cdot 0.3]$$

**Individual grade for the team work** ( $Team_i$ ) takes into account individual student's contribution to the group performance. Each student will get an Individual Grade ( $Team_i$ ) depending on the ex-ante determined relative contributions (weights  $\alpha_i$ ) to the group result. The individual weights  $\alpha_i$  are self- and peer assessed by the sub-group members. This information is collected via anonymous median voting in Socrative™ before the presentation. The maximum individual grade can not exceed 120% of the Team Grade:

$$Team_i = \max\{1.2 \cdot Team ; \alpha_i \cdot Team \cdot N\}$$

where  $N$  is the number of the team-mates attended the class on the presentation day.

**The final individual grade** ( $InTeam_i$ ) comprises the individual grade for the team work and the grade for an off-hand individual answers ( $IA_i$ ) to questions posed by your class teacher:

$$InTeam_i = [IA_i \cdot 0.3 + Team_i \cdot 0.7]$$

### Essay assessment

The essay topic has to tackle an interesting and up to date macroeconomic issue discussed in respected general interest newspapers and magazines, such as The Economist, Wall Street Journal, Financial Times, Moscow Times, RBCDaily, etc. Do not take the case description from the academic journals or books!

The essay should provide evidence that student has critical thinking and is able to apply relevant theories to the analysis of real-life issues. It can be an extension of the Team project with the clear description of the individual value added. Essays should be uploaded to SmartLMS. Each file in docx format should be titled with student's name but contain NO traces of authorship in the text!

Individual essays resemble much of analytical components of the team project but double-blind peer-reviewed. Each student is expected to serve as a referee for two essays and be graded by two peers. The instructor randomly grades about 30% of all essays to ensure compliance to the following set of formal criteria:

1. **Formatting** – 5 marks (typos, accuracy, citations, references, data sources, .docx format only!)
  - 5 marks for the correct reference to all the sources;
  - 2 marks for typos and bad formatting;
  - 0 marks for the lack of references
2. **Logic** – 5 marks (story telling with logically connected sections), structure (suggested sections are listed below) and proper size (3-5 pages in MS Word only! 12 pt. single interval)
  - Introduction (brief idea of the essay)
  - The story (short summary of the discussed article in everyday language)
  - Conceptualisation (framing the essence of the article using macroeconomics terminology = model recognition, see below)
  - Assumptions
  - The model
  - Solution
  - Results
  - Discussion
  - Conclusion
3. **English language** (5 marks)

- 5 marks if the text does not need proof reading
  - 0 marks if the language is hardly understood and the meaning is not clear
4. Relevance of the article (5 marks)
- **find** an interesting (non-trivial) and
  - up to date (no deductions for the year 2022) case on macroeconomic issues in the newspaper / journal,
  - briefly **summarize** the basic facts and
  - **conceptualize** the main point/idea/argument/problem/issue using the GEM approach:
    - G-general language (use by ordinary people in everyday conversations)
    - E-economics (definitions, concepts, laws and regularities)
    - M-see below
5. Model recognition M-mathematics (10 marks)
- 10 marks for the proper adaptation of the relevant model that perfectly fits the case
  - 5 marks for the 'too general model' that is not specific to the case described
  - 0 marks for the wrong model
6. **Justification** (10 marks) of assumptions (parameter evaluation) and evaluation of the trade-off between unnecessary complication and oversimplification of the story
7. **Application** (10 marks) of the correct graphical and/or algebraic analysis where appropriate
- 10 marks for the identification and proper evaluation of the policy or other shock
  - 0 marks for the complete misunderstanding of the initial shock
8. **Extension** (20 marks) of the text-book version of the model (ability to 'problem a model')
9. **Modification** (20 marks) of the model by introducing a **research element** (ability to 'model a problem')
10. **Formulation** (10 marks) of your propositions and/or conclusions in the professional language of macroeconomics and **evaluation** of the author's statements through the lens of theoretical predictions of your model
- 10 marks for the critical evaluation of the author's result, comparison of the crucial assumptions, identification of the driving forces of the model
  - 5 marks for the statement 'the author is just right'
  - 0 marks for the pointless criticism

**Intermediate control.** Students take a mid-term test which covers the material of the first module.

**Final control.** Students take a 80 min closed book unseen written test in the end of the course.

### Grade determination

There are NO blocking elements in the grading system. All types of assessment (quizzes, mid-term test, team project, essay and final test) are graded on the 100-point scale.

The final grade is determined as a weighted average of the above mentioned assessment results according to the following formula:

$$G_{final} = 0.1 \cdot Quiz + 0.20 \cdot Mid + 0.20 \cdot InTeam_i + 0.20 \cdot Essay + 0.30 \cdot Exam$$

where

- *Quiz* is the average grade for quizzes AND in class group work,
- *Mid* is the grade for the mid-term test,
- *InTeam<sub>i</sub>* is the individual grade for the team work,
- *Essay* is the average grade of the two reviewers or the teacher's grade,
- *Exam* is the grade for final exam



## Grade conversion into 10-point and 5-point scales

The following grading scale is used to convert the grades from the 100-point scale to the 10-point scale and then to the 5-point scale:

100-point scale	10-point scale	5-point scale
0	0	fail
0.01-20.00	1	
20.01-30.00	2	
30.01-40.00	3	
40.01-47.00	4	satisfactory
47.01-55.00	5	
55.01-63.00	6	good
63.01-70.00	7	
70.01-77.00	8	excellent
77.01-85.00	9	
85.01-100	10	

## Teaching methods and education technologies

### Learning aids

Implementation of a 'conversational framework' for the course requires tailored educational technologies and corresponding learning aids. The course textbook has a set of problems after each chapter, but normally students fail when attempting to solve these problems without guidance. Such a 'gap in understanding' is typical for 'problem based' courses and requires adaptation of facilitated learning technologies. The following resources support students' learning.

**Lecture slides** are distributed before lecture, so students don't need to copy them. However, in the printed form some spaces in formulae, graphs and propositions are intentionally left blank to facilitate students' lecture participation and attention.

**Lecture notes** correspond to selected topics in the course curriculum and indicate the minimum requirements in terms of scope and depth of the course. Clear and short presentation of the technically complicated and mathematically intensive part of the course with all necessary proofs and derivations serves as a reliable reference point for self-study.

**Marking-schemes** to non-graded home assignments and past exams familiarise students with the particular type of problems they may face in the mid-term test and final exam. I encourage students to work together on the problems and not just to find closed form analytical solutions but also to identify hidden assumptions, interpret results and provide for economic intuitions. Sample solutions are discussed in class to construct mutual understanding of what the assessment criteria would be. Detailed marking schemes to home assignments with clear description of relative weights are distributed to students at the week that follows corresponding class.

### Sample quiz MCQs

- 
- Economy A with proportional taxes is closed and the government adjusts its spending to the level of taxes raised. Economy B is open and has lump-sum tax system. Comparing the balanced budget multipliers of the two economies one can conclude that:
    - Mult A < Mult B;
    - Mult A = Mult B;
    - Mult A > Mult B;
    - The multipliers can not be compared due to insufficient information.
- 
- A project yields £1500 every year for 2 years. What is the maximum disbursement you will agree to invest in the project had the interest rate been 5%:
    - 2929;
    - 2927;
    - 2788;
    - 2790.



- 
3. In a closed economy with fully flexible prices and wages, a balanced budget fiscal expansion will lead to:
- A crowding out of investment by exactly the amount of additional government expenditure;
  - No changes in output and savings due to complete crowding out effect;
  - An increase in output and a decline in investment due to partial crowding out effect;
  - None of the above.
- 
4. An increase in the preferences for income redistribution in favour of the poor:
- Will make the IS flatter and therefore, the AD will be steeper;
  - Will make the IS flatter and therefore, the AD will be flatter;
  - Will make the IS steeper and therefore, the AD will be flatter;
  - Will make the IS steeper and therefore, the AD will be steeper.
- 
5. In an open economy with perfect capital mobility and a fixed but adjustable exchange rate, an expected devaluation will:
- Have no short-run effect on the economy;
  - Have an ambiguous effect on output in the short-run;
  - Lead to an increase in output in the short-run;
  - Lead to a fall in output in the short-run.
- 
6. In an open economy with perfect capital mobility and a flexible exchange rate an increase in international interest rates will lead to:
- No changes in trade deficit;
  - An increase in net exports;
  - A decrease in net exports;
  - An increase in domestic interest rates by monetary contraction.
- 
7. In an open economy with no capital mobility and flexible exchange rate an increase in government spending will:
- Have no real effect;
  - Lead to an increase in output;
  - Lead to a recession;
  - Lead to monetary contraction.
- 

### Sample open-ended questions for in-class discussion

- B1. Income redistribution changes the economy's multiplier.  
B2. Higher key rate implies tight monetary policy.  
B3. Weaker local currency brings about higher net exports.  
B4. A minimum wage law causes higher unemployment.
- 

### Sample mid-term test

This test is a closed-book OFFLINE time-pressured individual assessment with synchronous proctoring. **Time allowed: 80 min.** You need to answer ALL questions. Each question requires a concise explanation and graphical solution (questions c, d, e)

- [15 marks] Read and compare the two policy statements below. Why the Fed used different words and what did they mean in terms of the phase of business cycle in the end of 2018 and 2019? Find the FIVE word combinations **marked in bold** and explain briefly the difference in dynamics of the respective indicators in 2018 and 2019.
- [15 marks] What should have been **the directions** of the Fed's actual policy decisions regarding **the change** of the target range for the federal funds rate announced on December 19, 2018 and December 11, 2019? Choose (underline) the proper policy measure (raise/decrease/maintain) for each date and justify your answer using the indicative words from the two statements.

- c. [20 marks] Provide theoretical rationale for the monetary policy in December 2018. Identify economic shocks (if any) that the Fed might wish to respond to. Use the  $AD - AS$  model to illustrate these shocks (if any) and the Fed's reaction (if any). Be concise when commenting your graph and ensure that all the curves and axes are properly labeled.
- d. [40 marks] Extend your graphical analysis by applying the 4-quadrant  $IS - rr - 45^\circ - AD - LRAS$  diagram. Indicate in the separate diagram the initial and the long-run equilibria. Illustrate the immediate and secondary policy-driven effects on the positions of the  $IS$  and  $AD$  schedules (if any). Assume throughout your analysis that the position of the  $AS$  schedule remains intact? Justify this assumption using the release below.
- e. [20 marks] Provide theoretical rationale for the monetary policy in December 2019. Identify economic shocks (if any) that the Fed might wish to respond to. Use the  $AD - AS$  model to illustrate these shocks (if any) and the Fed's reaction (if any) in a separate graph. Be concise when commenting your graph and ensure that all the curves and axes are properly labeled.

Bonus points will be given to students who correctly 'guesstimate' their mark. Two bonus points will be given if the gap between the teacher's grade and expected one is less or equal to 1 mark. One bonus point will be given if the gap is from 1 to 2 mark

Release Date: December 19, 2018	Release Date: December 11, 2019
Information received since the Federal Open Market Committee met [last time] indicates that	
the labor market <b>has continued to strengthen</b>	the labor market <b>remains strong</b>
and that economic activity has been rising at a <b>strong</b> rate.	and that economic activity has been rising at a <b>moderate</b> rate.
Job gains have been <b>strong</b> ,	Job gains have been <b>solid</b> ,
on average, in recent months, and the unemployment rate has remained low.	
Household spending has continued to grow strongly, while growth of business fixed investment has moderated from its rapid pace earlier in the year	Although household spending has been rising at a strong pace, business fixed investment and exports remain weak.
On a 12-month basis, both overall inflation and inflation for items other than food and energy remain <b>near 2 percent</b> . Indicators of longer-term inflation expectations <b>are little changed</b> , on balance.	On a 12-month basis, overall inflation and inflation for items other than food and energy are running <b>below 2 percent</b> . Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are <b>little changed</b> .
Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability.	
The Committee judges that some further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term	The Committee judges that the current stance of monetary policy is appropriate to support sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective.
The Committee judges that risks to the economic outlook are roughly balanced, but will continue to monitor global economic and financial developments and assess their implications for the economic outlook. In view of realized and expected labor market conditions and inflation,	The Committee will continue to monitor the implications of incoming information for the economic outlook, including global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate.
The Committee decided to	
<b>raise/decrease (maintain)</b>	<b>raise/decrease (maintain)</b>
the target range for the federal funds rate to (at) 2-1/4 to 2-1/2 percent	<b>the target range for the federal funds rate to (at) 1-1/2 to 1-3/4 percent.</b>
In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective.	
This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.	

Sample final exam

This test is a closed-book OFFLINE time-pressured individual assessment with synchronous proctoring. **Time allowed: 80 min.**

**1. Fiscal expansion in a small open economy in the SR**

Consider a small open economy with fixed prices and wages, imperfect capital mobility and flexible exchange rate. Goods-market equilibrium is where output  $Y$  is equal to the sum of consumption  $C$ , investment  $I$ , government purchases  $G$ , and net exports  $NX$ .

The consumption and investment functions are:  $C = C_0 + c_1(Y - NT)$ ,  $I = I_0 - b(i - \pi^e)$ , where  $i$  is the domestic nominal interest rate and  $\pi^e$  stands for inflationary expectations.

Net exports are given by:  $NX = NX_0 - mY - d\varepsilon$ , where  $\varepsilon$  is the real exchange rate.

The central bank uses nominal interest rate as an intermediate target and sets it at the level  $i^*$  by adjusting the money supply to money demand shocks.

The foreign exchange market equilibrium is determined by the balance-of-payments condition when the sum of the current account  $CA$  (assumed to be equal to net exports,  $NX$ ) and the capital account  $KA$  is zero. Capital mobility is imperfect, and capital flows are given by the equation:  $CF = cf \cdot (i - i^f)$ , where  $i^f$  is the foreign interest rate, and  $cf \in [0, \infty)$  is the capital mobility parameter.

- (a) **[5 marks]** Define the real exchange rate  $\varepsilon$  and explain the meaning of parameter  $d$  in the  $NX$  function.
- (b) **[5 marks]** Explain intuitively how the internal and external equilibria of the economy are determined (that is, equilibrium in goods, money, and foreign exchange markets simultaneously). Distinguish between endogenous and exogenous variables.
- (c) **[5 marks]** Derive analytically the expressions for the IS, MP and BP schedules. How are the two interest rates,  $i^f$  and  $i^*$ , related?
- (d) **[5 marks]** Consider a short-run effect of a **permanent** fiscal expansion. Derive algebraically the SR effect on output  $\Delta Y$  of and increase in government purchases by  $\Delta G$ .
- (e) **[10 marks]** What are the signs of the SR effects on current account, nominal exchange rate,  $E$  and national saving,  $\Delta S^N \equiv \Delta S^{Private} + \Delta S^{Public}$ ?
- (f) **[10 marks]** Illustrate the effect of  $\Delta G > 0$  graphically using the IS-MP-BP or BPIS-MP diagram.
- (g) **[20 marks]** Suppose now, that the central bank intervenes in the foreign exchange market by purchasing foreign currency for rubles, but then **sterilizes this intervention** by selling bonds for rubles to keep the money stock unchanged. With this intervention,  $NX + CF = A > 0$ . What are the effects of this intervention on output, interest rate and exchange rate? Illustrate you answer in the IS-MP-BP or BPIS-MP diagrams?

**2. Fiscal expansion in a closed economy in the long-run**

Consider the Solow growth model with government spending but without technological progress.

Output  $Y$  is produced according to the production function:  $Y = F(K, L) = \sqrt[3]{K} \cdot \sqrt[3]{L^2}$ , where  $K$  is the capital stock and  $L$  is the labour force. Labour force is equal to employment and total population and grows at the rate  $n$ . Capital depreciates at the rate  $\delta$ .

The government spends ('consumes') resources without contributing to production or capital accumulation. Government purchases,  $G$ , are financed with proportional income taxation.

The government budget in per capita terms is balanced,  $g = \tau y$ , where  $y \equiv Y/L$  and  $g \equiv G/L$  are output and government purchases per capita, and  $\tau \in [0, 1)$  denotes the proportional tax rate.

Investment  $I$  and consumption  $C$  absorb, correspondingly, constant fractions  $s$  and  $(1 - s)$  of disposable income.

- (a) **[5 marks]** Show that the function  $F(K, L)$  has constant returns to scale and diminishing marginal returns to capital.
- (b) **[5 marks]** Derive analytically the balanced growth paths for capital,  $K$ , and output per capita,  $y$ .
- (c) **[10 marks]** Find the expression for the non-trivial steady-state level of capital per worker,  $k^*$ .
- (d) **[10 marks]** Illustrate the solution for the non-trivial steady-state graphically using the Solow diagram.
- (e) **[10 marks]** What should be the tax rate that would maximise per capita consumption in the long run if the saving rate is equal to  $s = 0.4$ ?
- (f) **[20 marks]** Suppose that the economy is in the 'golden rule' steady state found in (e). The government pursues fiscal expansion and permanently decreases the tax rate,  $\tau$ . Illustrate the transition paths of the following variables over time:
  - i.  $\dot{K}/K$ , growth rate of capital
  - ii.  $y$ , output per capita
  - iii.  $c \equiv C/L$ , private consumption per capita
  - iv.  $\ln(Y/L)$ , logarithm of GDP per capita

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