Faculty of Economic Sciences

Advanced Macroeconomics

Master's programmes 38.04.01, 38.04.08

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Moscow, 2019

Course description

This introductory course to 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 which 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 some basic game theory. The course also assumes students' familiarity with introductory macroeconomics topics but this is not compulsory.

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:

- o find, evaluate and use information from various sources in order to systematically solve macroeconomic problems;

- o 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;

- o critically evaluate modern economic trends, provide competent reasoning to lead well-grounded discussions;

- o 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,

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

The course is anchored by the material covered in the two textbooks:

  Blanchard, O. and Johnson D.R.. *Macroeconomics.* 7th edition. (Pearson, 2017) [ISBN 9780133780581]

  Romer, D. Advanced Macroeconomics. McGraw-Hill Education; 5th edition (McGraw-Hill Education, 2018) [ISBN 978-1260185218]

which is an essential reading. However, most of the data and case studies in Blanchard's *Macroeconomics* come from the US. Still this book provides a good example of internationally recognised standard one-year *Intermediate Macroeconomics* course and serves as a natural benchmark for the syllabus.

Those student who find it difficult to start the study of macroeconomics with Blanchard's textbook may find useful more elementary text by

  Begg, D., G.Vernasca, S. Fischer and R. Dornbusch *Economics.* (New York:McGraw Hill, 2008) Tenth edition [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 IS-LM-BP model. Topics 4 and 8 go slightly beyond the main textbook chapters by introducing to students some theoretical tools for the analysis of redistribution policies in a heterogeneous society as well as macroeconomic aspects of trade restrictions, economics 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-LM-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 problems) shapes the content of the course.

Course content

1. Basic macroeconomic problems and concepts. Macroeconomic variables and problems with aggregation

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

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
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. National accounts, total output and national income. Aggregate demand components

Gross national product and national income. Determinants of consumption (consumption function) and marginal propensity to consume. Consumption function with income dependent MPC. Personal disposable income.

Savings and investment. Savings and marginal propensity to save. Relationship between consumption and savings in a closed economy. Changes in MPC and the effect on savings.

Investment. Savings and transmission mechanism. Interest rate and the present value concept. Marginal propensity to invest. Bonds of the console type (perpetuities). Internal rate of return.

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.

The foreign sector. National accounts for the open economy. Demand for export and import, marginal propensity to import. Net exports function with a fixed exchange rate.

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

3. Goods market equilibrium. Keynesian Cross diagram and the multiplier. Fiscal policy rules and balanced budget multipliers

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 curve. Fiscal and redistribution policies in an economy with heterogeneous agents

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

Transfer payments, taxation and redistribution vs. fiscal policies. Income dependent MPC 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. Financial market equilibrium in the closed economy. Money supply and money demand. LM schedule. Banking system and the role of CB

Money and Banking. Functions of Money: a Numeraire, Means of Exchange and Store of Value. Demand for Liquid Assets. Liquidity Preference Approach.

Central Bank, Commercial Banks and Supply of Liquid Assets. Money Base, Public Cash, Reserves, Deposits. Money Creation process. Money multiplier, deposit multiplier and loans multiplier. Upward sloping money supply.

Liquid Assets Market Equilibrium. Derivation of the LM curve. Slope of the LM schedule. Excess demand and Excess supply. Monetary Policy and Shifting in the LM 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

6. General equilibrium and macroeconomic policies in the closed economy. Fiscal and monetary policies in the IS-LM model

Notion of general equilibrium in a macroeconomics context. Algebra and geometry of general equilibrium, IS-LM framework. Macroeconomic policies and output determination. Classical and Keynesian views.

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/econrsrch/wklyltr/2000/el2000-19.html).

7. Open economy macroeconomics: BOP, exchange rate determination, CIP, UIP, LOOP. IS-LM-BP model

Balance of payments: current account, capital account and foreign reserves. Real and nominal exchange rate. Exchange rate determination and the money sector. Foreign exchange market, foreign currency reserves. Appreciation and depreciation of the exchange rate. Exchange rate regimes: fixed and flexible.

Determinants of the trade balance and 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.

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

Further Reading

- 📖 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.

8. International macroeconomics and policy transmission. Repercussion effects, economic sanctions, trade embargo and capital movement restrictions

Relaxing assumption of a "small" open economy. Two-country setting and simultaneous determination of income and exchange rate when countries are main trading partners. Repercussion effects.

Monetary policy abroad: the case of perfect and no capital mobility under alternative exchange rate regimes. Policy transmission and repercussion effects in the case of simultaneous changes in current account and capital account.

Social vs. fiscal policy abroad: sensitivity of macroeconomic outcomes to distribution policy. A shift in demand and transfer problem.

Essential Reading
- 📖 Blanchard, O. and D.R. Johnson. *Macroeconomics.* 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.

9. Labour market, wage and price determination. 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.

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. AD – AS model. Sticky prices, wages and information

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. Classical workers' misperception model, new Keynesian sticky price model, new classical imperfect information model of medium run AS. Expectations and the medium run AS.

The aggregate demand curve. Explanations of the slope.

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.

11. Inflation, expectations and Phillips curve

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, labor hoarding, adjusted nominal money growth, disinflation, sacrifice ratio, seignorage. Rational, myopic, adaptive expectations, perfect foresight. Lucas critique and credibility.

Essential Reading

    📖   Blanchard, O. and D.R. Johnson. *Macroeconomics.* Ch.4, 8-9
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.

12. Expectations and microeconomic foundations of aggregate consumption and investment

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. Fiscal policy. Implications of Barro-Ricardo equivalence.

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

Essential Reading
    📖   Blanchard, O. and D.R. Johnson. *Macroeconomics.* Ch.14-16
Further Reading

📖   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

13. Political economy in macroeconomics. Policy rules vs. discretion. Credibility, accountability, transparency and time inconsistency. Policy goals, targets and instruments

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).

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.

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

Essential Reading
  Blanchard, O. and D.R. Johnson. *Macroeconomics.* Ch.17, 23-26.
Further Reading

- 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.

14. Economic crisis and global imbalances; financial, banking and currency crises. Government debt and monetary union

Gold standard, optimal currency area. Euro and Maastricht Treaty, European Central Bank (ECB), hard peg, dollarization, currency board.

Global financial crisis in 2008. Subprime borrowing and global imbalances. 'Unconventional' monetary (quantitative easing) and fiscal policies, savings glut.

Essential Reading
  Blanchard, O. and D.R. Johnson. *Macroeconomics.* Ch.1, 21, 22, 25.5
Further Reading

- Berkmen, Pelin, et al. The global financial crisis: Explaining cross-country differences in the output impact. No. 9-280. International Monetary Fund, 2009.
- Borio, Claudio, and Piti Disyatat. Global imbalances and the financial crisis: Link or no link?. No. 346. Bank for International Settlements, 2011.
- Claessens, Stijn, et al. "Cross-country experiences and policy implications from the global financial crisis." Economic Policy 25.62 (2010): 267-293.
- Fratzscher, Marcel. "Capital flows, push versus pull factors and the global financial crisis."Journal of International Economics 88.2 (2012): 341-356.

15. 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.

Basic assumption of 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.

Growth accounting. Absolute and conditional convergence. Quantitative measure of the speed of convergence. Convergence clubs and the identification problems with cross-country regressions: selection bias and measurement error. Saving and investment in growth regressions. Convergence and the dispersion of per capita income: β- and σ-convergence.

The AK model and the absence of diminishing returns to capital. 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.

Nature of knowledge (non-rivalry and non-excludability) and determinants of its accumulation. Incentives for R&D and innovations. Opportunities for talented individuals and learning-by-doing. The Romer model of endogenous technological change.

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*. 4th 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. 2nd 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 EconomicPerspectives 8(1) 1994, pp.3–22.

Course plan

We ek	Topic	Total	Classroom activities		Self-study
			Lectures	Classes	
1.	Basic macroeconomic problems and concepts. Macroeconomic variables and problems with aggregation	10	4	2	4
2.	National accounts, total output and national income. Aggregate demand components	12	4	2	6
The short run					
3.	Goods market equilibrium. Keynesian Cross diagram and the multiplier. Fiscal policy rules and balanced budget multipliers	12	4	2	6
4.	IS curve. Fiscal and redistribution policies in an economy with heterogeneous agents	12	4	2	6
5.	Financial market equilibrium in the closed economy. Money supply and money demand. LM schedule. Banking system and the role of CB	12	4	2	6
6.	General equilibrium and macroeconomic policies in the closed economy. Fiscal and monetary policies in the IS-LM model	12	4	2	6
7.	Open economy macroeconomics: BOP, exchange rate determination, CIP, UIP, LOOP. IS-LM-BP model	16	4	2	8
8.	International macroeconomics and policy transmission. Repercussion effects, economic sanctions, trade embargo and capital movement restrictions	16	4	2	8
The medium run					
9.	Labour market, wage and price determination. Unemployment	10	2	2	6
10.	AD – AS model. Sticky prices, wages and information	12	4	2	6
11.	Inflation, expectations and Phillips curve	12	4	2	6
12.	Expectations and microeconomic foundations of aggregate consumption and investment	16	4	2	8
13.	Political economy in macroeconomics. Policy rules vs. discretion. Credibility, accountability, transparency and time inconsistency. Policy goals, targets and instruments.	18	6	4	8
14.	Economic crisis and global imbalances; financial, banking and currency crises. Government debt and monetary union	12	4	0	6
The long run					
15.	Economic growth	16	4	2	10
	Total:	**190**	**60**	**30**	**100**

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
- Mock Group Presentation

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   [5%]
- Mid-term closed-book written test (2 hours individual in class)   [15%]
- Team project (presentation 15 min, 10 slides)   [25%]
- Essay (3-4 pages, individual, peer-graded)   [25%]
- Final closed-book exam (2 hours individual in class)   [30%]

Team project assessment

Each academic study group is divided into teams of 5-7 students. These teams are normally assigned and moderated by the lecturer who employs a *stratified randomization* principle that uses students' ranks.

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, IS-LM-BP 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, etc.

The final output of the team project should take the form of a concise Analytical Essay co-authored by the team-mates and be presented in class. There will be a single Presenter that is assigned by the instructor at their discretion so each team member should be ready to take charge. The time limit for in class presentation is 10 minutes.

There are three types of activity that contribute to the success of the team work and are directly assessed:

- Presentation (oral communication)
- Analytical Essay (graphs, formulas, calculations, etc.)
- Discussion (interaction with peers, Q&A session)

Presentation skills (*PS*) can be demonstrated by a randomly assigned Presenter who is required to show the following individual competences:

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

Analytical skills are assessed collectively on the basis of the Analytical Essay should be submitted one week in advance and have the following structure:

- The original article
- Analytical description of the problem containing:
    - Justification of assumptions
    - Detailed modelling framework
    - Derivations of proofs
    - Properly labeled graphs
    - Conclusive comments

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

4. 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 2020 year, 1 percentage point deduction for year 2019, 2 percentage points deduction for year 2018 etc.) 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:
   o G-general language (use by ordinary people in everyday conversations)
   o E-economics (definitions, concepts, laws and regularities
   o M-mathematics (graphs, algebra, econometric regressions)
5. Selection of an appropriate theoretical approach
6. Identification of crucial assumptions that make this theory applicable for the case analysis
7. Evaluation of the trade-off between unnecessary complication and oversimplification of the story
8. Application of graphical and/or algebraic analysis where appropriate; extend and modify the text-book version of the model
9. Formulation of propositions and/or conclusions in the professional language of macroeconomics
10. Ability to confront the author's statements with the theoretical predictions of the designed model

Analytical Essay ($Essay$) contributes 70% to the Team Grade ($Team$). The remaining 30% are awarded for the discussion skills (QA) – the ability to pose thought-provoking questions and answer them in a smart way. Questions are to be submitted and publicized in advance, while answers should be given during 5 min of Q&A session after the presentation in class. Each team is obliged to prepare 1 'collective' question to five other teams (5 questions in total) and be ready to answer all the questions from peers.

Individual grade for the team work ($InTeam$) takes into account individual student's contribution to the group performance. The Team Grade ($Team$) is determined according to the following rule:

$$Team = [QA \cdot 0.3 + Essay \cdot 0.7]$$

where

o QA is the grade for discussion skills
o $Essay$ is the grade for Analytical Essay (criteria 4 to 10)

Each student will get an Individual Grade ($InTeam$) depending on the ex-ante determined relative contributions (weights α_i) to the group result. The individual weights α_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 110% of the Team Grade:

$$InTeam = min\{1.1 \times Team\,; \alpha_i \times Team \cdot N\}$$

where N in the number of the sub-group team-mates attended the class at the presentation day.

Each presenter is assessed individually by the class teacher using the following criteria:

$$InTeam_P = [PS \cdot 0.3 + \alpha_P \times Team \cdot 0.7]$$

where

o α_P is the peer assessed weight of the Presenter's contribution to the team result, and

o PS is the presenter's grade for their Presentation Skills.

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. In effect, this type of learning activity replicates the essence of the group work project but assess students individually.

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** (typos, accuracy, citations, references, data sources, .docx format only!)
   - 10 marks for the correct reference to all the sources;
   - 5 marks for typos and bad formatting;
   - 0 marks for the lack of references
2. **Logic** (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
   - 10 marks if the text does not need proof reading
   - 0 marks if the language is hardly undestood and the meaning is not clear
4. Relevance of the article
   - **find** an interesting (non-trivial) and
   - up to date (no deductions for the year 2018) 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 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** of assumptions (parameter evaluation) and evaluation of the trade-off between unnecessary complication and oversimplification of the story
7. **Application** 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** of the text-book version of the model (ability to 'problem a model')

9. **Modification** of the model by introducing a **research element** (ability to 'model a problem')

10. Formulation 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 crtical 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 the mid-term test in which covers the material of the first module.

Final control. Students take a 120 min closed book unseen written test at 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:

$$G_{final} = 0.05 \times Quiz + 0.15 \times Mid + 0.25 \times InTeam + 0.25 \times Essay + 0.30 \times FInal$$

where

o $Quiz$ is the average grade for quizzes AND in class group work,
o Mid is the grade for the mid-term test,
o $InTeam$ is the individual grade for the team work,
o $Essay$ is the average grade of the two reviewers,
o $Exam$ is the grade for final exam (UL or internal)

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	fail
20.01-30.00	2	fail
30.01-40.00	3	fail
40.01-45.00	4	satisfactory
45.01-50.00	5	satisfactory
50.01-60.00	6	good
60.01-70.00	7	good
70.01-80.00	8	excellent
80.01-90.00	9	excellent
90.01-100 .	10	excellent

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.

Useful web links

🌐 https://piazza.com/hse.ru/fall2019/macro/home

Sample mid-term test and final exam

Section A (answer ALL the questions)

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1. 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:
a.   Mult A < Mult B;
b.   Mult A = Mult B;
c.   Mult A > Mult B;
d.   The multipliers can not be compared due to insufficient information.

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2. 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%:
a.   2929;
b.   2927;
c.   2788;
d.   2790.

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3. An unplanned decrease in stocks means:
a.   The economy is in equilibrium in the goods market;
b.   There is excess supply in the goods market;
c.   There is excess demand in the goods market;
d.   We cannot infer anything from this information.

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4. Easy monetary policy brings about:
a.   An excess supply of bonds and their price will fall;

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b. An excess supply of bonds and the interest rate will fall;
c. An excess demand for bonds and their price will increase;
d. An excess demand for bonds and the interest rate will rise.

5. In a closed economy with fully flexible prices and wages, a balanced budget fiscal expansion will lead to:
a. A crowding out of investment by exactly the amount of additional government expenditure;
b. No changes in output and savings due to complete crowding out effect;
c. An increase in output and a decline in investment due to partial crowding out effect;
d. None of the above.

6. An increase in the economy wide marginal propensity to spend:
a. Will make the IS flatter and therefore, the AD will be steeper;
b. Will make the IS flatter and therefore, the AD will be flatter;
c. Will make the IS steeper and therefore, the AD will be flatter;
d. Will make the IS steeper and therefore, the AD will be steeper.

7. In an open economy with perfect capital mobility and a fixed but adjustable exchange rate, devaluation policy will:
a. Have no effect on the economy;
b. Lead to an increase in output and an increase in the supply of liquid assets;
c. Lead to an increase in output and a fall in the supply of liquid assets;
d. Lead to a fall in output and a decrease in the supply of liquid assets.

8. In an open economy with perfect capital mobility and a flexible exchange rate an increase in international interest rates will lead to:
a. No changes in trade deficit;
b. An increase in net exports;
c. A decrease in net exports;
d. An increase in domestic interest rates by monetary contraction.

9. In an open economy with no capital mobility and flexible exchange rate an increase in government spending will:
a. Have no real effect;
b. Lead to an increase in output;
c. Lead to a recession;
d. Lead to monetary contraction.

10. An increase labour supply would cause:
a. a decrease in nominal wages;
b. no change in nominal wages;
c. an increase in nominal wages;
d. uncertain effect on nominal wages.

Section B (answer only TWO questions)

B1. 'If all prices and wages are fully flexible in the short run then the aggregate supply (AS) curve is vertical.

B2. 'An increase in a central bank's discount rate will reduce the monetary base.'

B3. 'An increase in the level of money wages implies the aggregate supply (AS) curve shifts to the right.'

B4. 'According to uncovered interest parity (UIP), a higher domestic nominal interest rate is associated with an expected depreciation of the domestic currency.'

B5. 'A minimum wage law can be a cause of classical unemployment.'

Section C (answer both questions C.1 and C.2)

Problem C.1. Consider a closed economy with fixed prices and wages.

(a) Suppose the demand for money is given by $M^d/P = m_0 + kY - hr$, where M^d is nominal money demand, P is the price level, Y is real income, and r is the interest rate. Assume the price level is fixed at $P = 1$. Suppose that the central bank fixes the money supply $M^s = M$.

Show that the slope of the LM curve (representing money-market equilibrium) is $dr/dY = k/h$

Which values of the parameters k and h represent the case of money demand that is inelastic with respect to income? Using the equation above, deduce that the LM curve is horizontal in this case. (**7 marks**)

(b) Goods market equilibrium is where output is equal to the sum of consumption, investment, and government spending: $Y = C + I + G$. The consumption function is $C = C_0 + c_1(Y - T)$ and the investment function is: $I = I_0 - br$. Government spending $G = G_0$ and taxes $T = T_0$ are exogenous.

Consider an economy where the LM curve is horizontal, as in part (a). Suppose that households increase their desire to save, which can be interpreted as a fall in autonomous consumption C_0. What are the effects on output Y and national saving S_N? (Recall that national saving is defined as $S_N = (Y - T - C) + (T - G)$.) Explain your answer intuitively. (**7 marks**)

(c) Repeat the analysis of part (b) when investment depends positively on output, as implied by the equation $I = I_0 + aY - br$. Explain the intuition for the differences you find compared with your answers to part (b). (**6 marks**)

Problem C.2. Consider the Solow model of economic growth. Assume the production function is $Y = \sqrt{KL}$

where Y is output, K is the capital stock, and L is the labour force. The labour force (assumed equal to the population) grows at a constant rate n. The capital stock depreciates at a constant rate δ. There is no exogenous technological progress ($g = 0$). The saving rate is s.

(a) Let $y = Y/L$ and $k = K/L$ denote output per person and capital per person. Show that the production function implies: $\qquad y = f(k) = \sqrt{k}$

The dynamics of the capital stock per person are described by the equation: $\Delta k = sf(k) - (\delta + n)k$. (you are not required to derive this equation). Show how the steady-state stock of capital per person is found using a diagram and explain why the economy will converge to this point in the long run.

Using the diagram, find the effects of a rise in the saving rate s on steady-state capital and output per person. Sketch a graph showing the path of capital and output per person over time during convergence to the new steady state. (**7 marks**)

(b) Let $c = C/L$ denote consumption per person. Given the saving rate s, consumption per person is determined by the equation: $\qquad c = (1-s)f(k)$

The Golden-rule level of the capital stock k^* is the level that maximizes steady-state consumption per person. Using your diagram or using algebra, explain why the Golden-rule capital stock is the solution of the equation:

$$f'(k^*) = \delta + n$$

Assume that the capital stock is initially below the Golden-rule level. The saving rate is now increased to allow the economy to reach the Golden rule. Sketch a graph showing the path of consumption over time following this change in the saving rate. (**7 marks**)

(c) Suppose the saving rate is $s = 0.2$, population growth is $n = 0.01$, and the depreciation rate is $\delta = 0.09$. Calculate whether the economy described by these parameters requires a higher or a lower saving rate to reach the Golden-rule level of capital. (**6 marks**)

Section D

The December 14, 2010 issue of the Wall Street Journal ran an article entitled *Official Relieves Pressure on BOJ*. The article states:

> "The chief spokesman for Japan's government said additional monetary easing, including setting an inflation target, won't help Japan conquer deflation. He also suggests Tokyo won't press the Bank of Japan for more steps to prop up the economy anytime soon.
>
> Yoshito Sengoku said in an interview Japan has experienced continued price declines despite years of aggressive easing policies from both the monetary and fiscal sides, a phenomenon that convinces him that deflation is caused by the nation's proximity to lower-cost economies like China and the nations in South East Asia.
>
> 'Some people seem to believe the BOJ can generate an adequate level of inflation by just printing money. But I don't think that's the case,' said Mr. Sengoku, who serves as chief of staff to Prime Minister Naoto Kan."

a) Suppose one takes Mr. Sengoku's conjecture that lower-cost economies like China are causing deflation in Japan as operating through a reduction in P* in our model. In this case, does Mr. Sengoku's conjecture match with the long-run predictions of the small open economy flexible exchange rate model developed in class? (**10 marks**)

b) Use the relevant model to evaluate Mr. Sengoku's claim that additional monetary easing won't help Japan conquer deflation. In particular, compare the long-run effect on the price of domestically produced goods of a permanent increase in the money supply in a closed economy and a small open economy with flexible exchange rates. (**10 marks**)

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