

Macroeconomics 1

General conclusion

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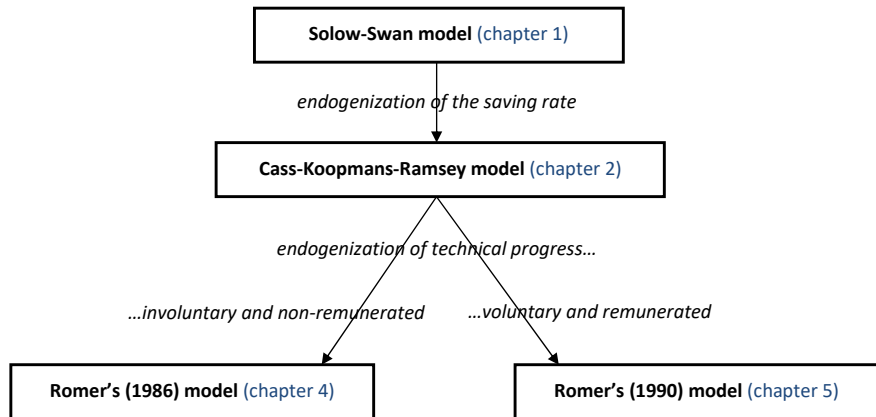
ENSAE

September – December 2025

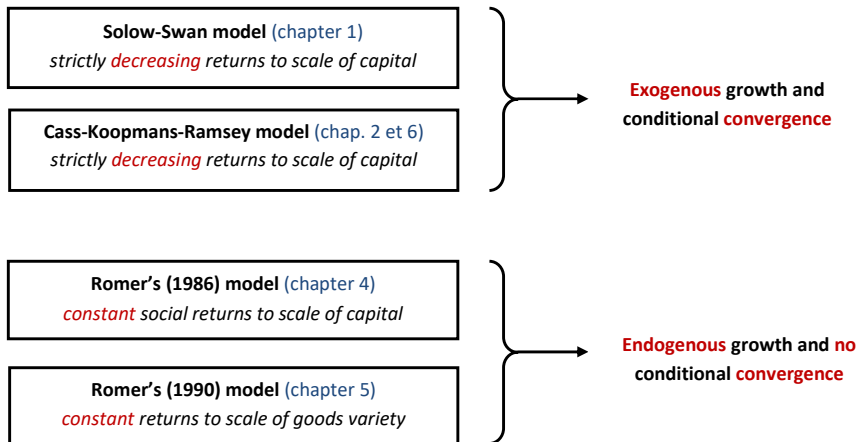
Outline of the general conclusion

- 1 Summary of the course in graphs
- 2 Links with the next courses
- 3 Assessment of knowledge and skills

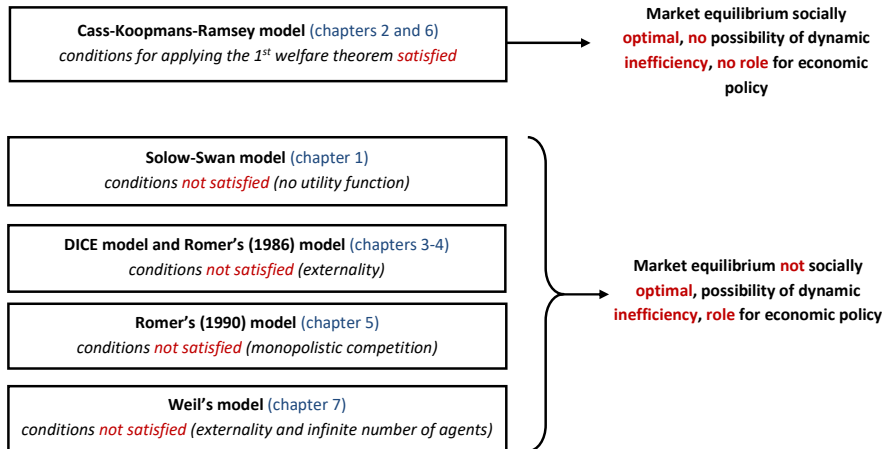
Development of growth models



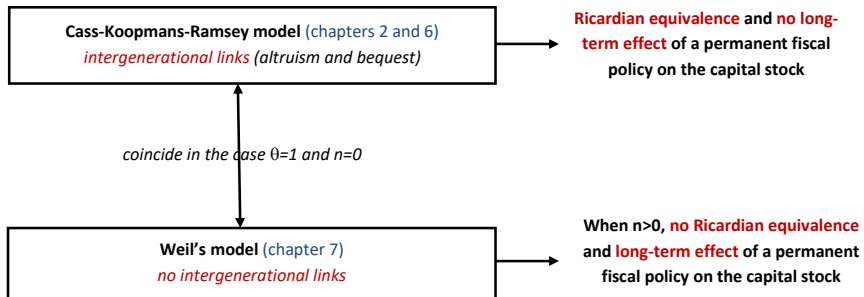
Returns, growth and convergence



Normative properties of the models



Intergenerational links and fiscal policy



Main maths-based macroeconomics courses at ENSAE

Y-S	Track	Title	Prof.	S/L	C/O	M/M	C/D/S
Y1-S2	CCS**	Intro à la macro	Bellue	S,L	C,O	M,M	S,D
Y2-S1	CCS**	Macro 1	Loisel	S,L	C	M	C
Y2-S2	CCS	Macro 2: fluct.	Malherbet, Winant	S	C,O	M	D
Y3-S1	EPD*	Environm. econ.	Bourgeon	L	C	M	C
Y3-S1	EPD	Int'l trade	Corcos	C,L	O	M	D,S
Y3-S1	EPD*	Labor econ.	Malherbet, Rathelot	S	C	M	C
Y3-S1	EPD*	Monetary econ.	Loisel	S	C	M	D
Y3-S2	EPD*	Applied macro...	Girard, Vermandel	S	C	M	D
Y3-S2	EPD	Int'l econ.	Mengus	C,L	O	M	D,S

Y: year. S: semester. CCS: common-core syllabus. EPD: Economic Policies and Dynamics. **: mandatory course.

*: semi-mandatory course. S/L: short/long-term analysis. C/O: closed/open-economy models. M/M: micro-founded/non-micro-founded models. C/D/S: dynamic continuous-time/dynamic discrete-time/essentially static models.

Micro-founded general-equilibrium models I

- Except the Solow-Swan model, all the models studied in this course are micro-founded general-equilibrium models with
 - continuous time,
 - an exogenous labor supply,
 - a subjectively certain environment.

- The next macroeconomics courses will present micro-founded general-equilibrium models with
 - discrete time,
 - endogenous labor supply,
 - a subjectively uncertain environment.

Micro-founded general-equilibrium models II

- These models are solved in the same way as those studied in the course:
 - ① determination of the equilibrium conditions (first-order conditions of agents' optimization problems and market-clearing conditions),
 - ② determination of the steady state,
 - ③ det. of the equilibrium path (in the neighborhood of the steady state).
- In particular, the Cass-Koopmans-Ramsey model (Chapters 2 and 6), in a version with
 - discrete time,
 - endogenous labor supply,
 - exogenous productivity shocks,
 - a subjectively uncertain environment,

corresponds to the basic Real-Business-Cycles model presented in the course "Macroéconomie 2 : fluctuations" (Y2-S2).

A model with monopolistic competition

- The course presents a model with monopolistic competition: Romer's (1990) model, in Chapter 5.
- The monopolistic-competition assumption will be made in the New Keynesian models studied in the courses
 - "Macroéconomie 2 : fluctuations" (Y2-S2),
 - "Monetary economics" (Y3-S1),
 - "Applied macroeconomic modeling: Policies, the business cycle, and the green transition " (Y3-S2).
- In New Keynesian models, this assumption enables one to consider a certain type of price stickiness that makes
 - firms' optimization problem dynamic,
 - the market equilibrium sub-optimal,
 - monetary policy effective.

An integrated-assessment model

- The course presents an “integrated-assessment model” (modeling the interactions between the economy and the climate): the DICE model, in Chapter 3.
- The DICE model and other integrated-assessment models will be studied and/or commented upon in greater detail in the courses
 - “Introduction to environmental economics” (Y2-S2),
 - “Environmental economics: Analysis and modeling” (Y3-S1),
 - “Applied macroeconomic modeling: Policies, the business cycle, and the green transition” (Y3-S2).
- The course “Environmental economics: Analysis and modeling” will also present a model of the interactions between the economy and the environment, with endogenous growth.

Main knowledge and skills acquired with the course I

At the end of the course, you are notably expected to be able to:

- 1 **state and explain** the main predictions of the models studied in the course,
- 2 in models that are identical or similar to the models studied in the course, **state and solve** the optimization problem of each agent and **interpret** its first-order conditions,
- 3 in particular, in the case of households, **apply** the dynamic-optimization theorems in continuous time and under constraints, using Hamiltonians, and **interpret** the Euler equation,

Main knowledge and skills acquired with the course II

- 4 in models that are identical or similar to the models studied in the course, **determine** the market equilibrium, either analytically, or graphically using a phase diagram,
- 5 in representative-agent models that are identical or similar to the models studied in the course, **state and solve** the optimization problem of the benevolent, omniscient and omnipotent planner, and **determine** a tax or subsidy policy implementing the allocation chosen by the planner,
- 6 in models that are identical or similar to the models studied in the course, **determine** graphically, using a phase diagram, the dynamic response of the economy to fiscal policies or to shocks on structural parameters.

Reminders about grading and the final exam

- Macroeconomics 1: one of the two courses in the UE “Economic Fundamentals” (with Microeconomics 1).
- Final grade = $\frac{2}{3} * (\text{final-exam grade}) + \frac{1}{3} * (\text{continuous-assessment grade})$.
- Final exam:
 - written, 2 hours, no documents allowed,
 - course questions and problem(s) “inspired” by course and tutorials,
 - the questions and answers of the final exams of the last three years are available on Pamplermousse.

Whom to ask questions

- Your tutorial teacher.
- Chloé Saurel, coordinator of macroeconomics courses and of the EPD track:
 - office 3107 (with or without appointment),
 - macroeconomie@ensae.fr.
- Olivier Loisel, professor of macroeconomics, in charge of the EPD track:
 - during or just after lectures,
 - office 4039 (by appointment),
 - olivier.loisel@ensae.fr.