

Applied Macroeconomic Modelling 3rd year Evaluation Methods and Thesis Topics ENSAE 2024-2025

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12 février 2025

1 Assessment Method

The examination consists of preparing a short dissertation (maximum 10 pages, excluding annexes) by applying one or more of the methods covered in the course to address a macroeconomic question.

The dissertation will be carried out in groups of 2 or 3 students.

The dissertation should begin with an abstract summarizing the main results obtained. It should briefly present the economic problem and the data ; the focus will be on the method, the presentation, and the interpretation of the results. Figures must contain all necessary information (title, legend, scale, source, etc.), and the main figures should be included in the main text and not relegated to an annex. MATLAB is the software to be used. Students will compile the data and models using DBnomics ; the responsible instructor may provide assistance in case of difficulties. Estimation programs and models must be attached to the report. The programs must be executable with a single click and replicate all the report's results. Any assumptions for simplification, aggregation, etc., must be properly justified.

The evaluation will be based both on adherence to instructions (length, code, etc.) and the implementation of methods.

Each group must choose its topic and communicate it to the teachers before April 15th. The dissertation is due by May 15th (6 weeks).

2 Guidelines

1. **Research Question :** Consider a pertinent macroeconomic question. Examples include the Chilean central bank's conduct of monetary policy following recent energy price shocks, the role of expansionary fiscal policy in driving US inflation, and the impact of carbon ETS on UK inflation.

2. **Model Selection :** Choose a theoretical model seen in class that aligns with your research question. Justify this choice in your introduction. The models include :
 - Corporate lending frictions : [\[PDF\]](#) [\[MOD\]](#)
 - Mortgage lending frictions : [\[PDF\]](#) [\[MOD\]](#)
 - External constraint : [\[PDF\]](#) [\[MOD\]](#)
 - Unemployment model : [\[PDF\]](#) [\[MOD\]](#)
3. **Data Acquisition and Analysis :** Utilize DBnomics and MATLAB to extract real-time data, ensuring the dataset is stationary and in appropriate formats (volumes, etc.). Limit the number of observables and justify your sample choice in relation to the research question and chosen model.
4. **Model Customization and Estimation :** Modify the ‘.mod’ file to :
 - (a) Calibrate the model according to the country being analyzed.
 - (b) Include estimation routine, forecasting routines, and business cycle decomposition routines (such as historical decomposition and variance decomposition).
 - (c) Estimate your model based on your sample.
5. **Interpretation of Results :** Utilize your quantitative findings to directly address your research question. The analysis will focus on describing the underlying macroeconomic dynamics through the main economic variables (consumption, investment, etc.).
6. **Policy Scenario Analysis :** Provide at least one policy scenario analysis, examining the potential impacts of a shock to government, monetary, or environmental policy. Choose the scenario most relevant to your study.
7. **Comparison with a macroeconometric model :** Choose a macroeconometric model from the bibliography below¹. Then compare the results you obtain for the policy scenario with the relevant chosen macroeconometric model simulations. Focus the analysis on the differences (or similarities) in terms of dynamics, magnitude of responses and timing, linking it with each model specificities (modelling choices, elasticities, etc.).

3 Non exhaustive bibliography

Mésange > Dufernez A., Elezaar C., Leblanc P., Masson E., Partouche H., Bardaji J., Campagne B., Khder M., Lafféter Q. and Simon O. (2017),

1. Or from any macroeconomic model, preferably macroeconometric and not DSGE, you can find. In this case, please **first** validate the choice with the instructor by email)

« Le modèle macroéconométrique Mésange : réestimation et nouveautés », Working Paper n° 2017/04, [link](#)

Opale > Daubaire A., Lefebvre G. and Meslin O. (2017), « La maquette de prévision Opale 2017 », Working Paper n°2017/06, [link](#)

FR-BDF > Aldama P. and Ouvrard J. F. (2020), « Variantes analytiques du modèle de prévision et simulation de la Banque de France pour la France (FR-BDF) », Document de travail n° 750 [link](#), based on Lemoine M., Turunen H., Chahad M., Lepetit A., Zhutova A., Aldama P., Clerc P., Laffargue J. (2019), « The FR-BDF Model and an Assessment of Monetary Policy Transmission in France », Working Paper n°736, [link](#)

ECB-BASE > Angelini E., Bokan N., Christoffel K., Ciccarelli M. and Zimic S. (2019), « Introducing ECB-BASE : The blueprint of the new ECB semi-structural model for the euro area », Working Paper n°2315, [link](#)

Bbkm-DE > Haertel T., Hamburg B., Kusin V. (2022), « The macroeconomic model of the Bundesbank revisited », Technical Paper 01/2022, [link](#)

Interlink > Hervé K., Pain N., Richardson P., Sédillot F. and Beffy P. O. (2010), « The OECD's New Global Model », OECD Economics Department Working Papers, No. 768, OECD Publishing » [link](#)

MFMod > Jooste C., McIsaac F. and Haider A. (2024), « Electricity Transition in MFMod - A Methodological Note with Applications », Policy Research Working Paper n°10854, [link](#), based on Burns A., Campagne B., Jooste C., Stephan D. and Thanh Bui T. (2019), « The World Bank Macro-Fiscal Model Technical Description », Policy Research Working Paper n°8965, [link](#)

ThreeME > Reynès F., Callonnec G., Saussay A., Landa G., Malliet P., Gueret A., Hu J., Hamdi-Cherif M. et Gouédard H ; (2021), « ThreeME Version 3 - Multi-sector Macroeconomic Model for the Evaluation of Environmental and Energy policy - A full description », OFCE, [link](#)