Short Macroeconomics Course Using Julia

Outline, Methodology, and Software Setup

October 22, 2025

1 Objective

The objective is to introduce participants to macroeconomic modelling in Julia. The course leverages the language's performance and ecosystem to familiarize participants with the main features and advantages of Julia for solving, simulating, and estimating macroeconomic models, with emphasis on DSGE and heterogeneous-agent frameworks.

2 Methodology

The course combines:

- **Foundational lectures** that develop core programming concepts in Julia and the numerical methods commonly used in macroeconomic analysis.
- **Application-oriented sessions** focused on the solution, simulation, and estimation of DSGE models in Julia.
- **Computational optimization modules** that address performance improvements in Julia (types, multiple dispatch, just-in-time compilation, parallel computing) to enable efficient large-scale simulation and estimation.

A tentative syllabus is presented below.

3 Preliminary Syllabus

#	Topic	Lecture	Practice
1	Introducing Julia — basics	2 h	1 h
2	Numerical Methods in Julia	2 h	1 h
3	Solving and simulating DSGE models in Julia	2 h	1 h
4	Heterogeneous models in Julia	2 h	1 h
5	Estimation of DSGE models in Julia	2 h	1 h
6	Dynare Julia: introduction and examples	2 h	1 h

Total guided hours: **12 h** (lecture) + **6 h** (practice).

4 Software Requirements and Installation

Install Julia

1. Download the installer for your platform from: julialang.org/downloads.
2. Follow the platform-specific instructions. On Windows, prefer a path without spaces (e.g., `C:`
   `Julia`
   `Julia-1.x.x`).

Install Visual Studio Code

1. Download VS Code for your platform: code.visualstudio.com/download.
2. Launch VS Code after installation.

Install the Julia Extension for VS Code

You have two options:

1. **Marketplace (recommended).** In VS Code open the Extensions view (*View* → *Extensions* or *View* → *Command Palette...* then type *Extensions*). Search for *"Julia"* and install the extension named *Julia* by the Julia Language team. You may need to restart VS Code.
2. **Direct link.** Open the following URI in your browser or paste into the VS Code command palette: `vscode:extension/julialang.language-julia`.

Configure the Julia Extension (if needed)

In most standard installs on macOS and Windows, or if the `julia` binary is on your `PATH`, the extension will automatically detect Julia. If not, or if you want to point the extension to a different Julia version, set the `julia.executablePath` user setting to the full path of your Julia executable.

Steps

1. In VS Code, open *File* → *Preferences* → *Settings* (or run *Preferences: Open User Settings*).
2. Search for ***julia.executablePath*** and set it to the path of your Julia executable.

Notes

- Use platform-specific paths. On Windows, remember that backslash is an escape character in JSON: write a single backslash as
  .
- Example (Windows):

```
{
"julia.executablePath": "C:\\Julia\\Julia-1.11.0\\bin\\julia.exe"
}
```

- Example (macOS):

```
{
"julia.executablePath": "/Applications/Julia-1.11.app/Contents/Resources/julia/bin/juli
}
```

- If Julia is on `PATH`, you can often leave this setting empty.

5 Deliverables

Participants receive concise notes and example Julia scripts for each session (basics, numerical methods, DSGE solution/simulation, estimation, heterogeneous models, and Dynare Julia examples), plus guidance on environment setup.

6 Contact

For questions about content or setup issues, please use this email address: petre.caraiani@gmail.com.