## Introduction to Mathematical Economics: Current Homework Assignment

Alan G. Isaac

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**Collected Assignments** Assignments will be listed below as they are assigned. Each assignment is due before the start of the subsequent class, unless otherwise announced. Each assignment should include a header that lists the homework number, your name, and an acknowledgment of your group members (or anyone else who provided useful help).

Homework submissions must be typed in a Mathematica notebook and submitted in PDF format. (PDF Creation Hint: disable "Dynamic Updating" (Menu/Evaluation/Dynamic Updating Enabled) before printing to PDF.) Make sure you do a Mathematica tutorial before attempting to write up your homework! A single file should contain your answers to all the exercises for a homework. Computational problems should include helpful comments on your Mathematica code.

Homework is individual work, not group work. You may verbally discuss problems with other students, but for the graded problems you **must not** look at their work, and you **must not** show your work to them. Looking at or sharing work on graded problems is an Academic Integrity Violation that can lead to program dismissal. Additionally, submitting the output of an AI as your own work is an academic integrity violation. In contrast, full collaboration on the optional (ungraded) problems is unrestricted and is encouraged.

**Hints in Discussion Sections:** Be sure to read the discussion sections that I provide for the computational problems. In addition to providing hints, they sometimes include details about the problem *requirements*.

**Computational Exercises:** Some *computational* exercises below could easily be done with a calculator or even by hand. In such cases you need to provide the code, however trivial.

WL Programming: The online WL documentation is excellent. E.g., http://www.wolfram. com/broadcast/video.php?channel=89&video=409.

**Submission:** Assignments are due <u>before</u> the next class starts. Turn in a PDF file created from Mathematica. Use the sectioning facilities of Mathematica notebooks. In particular, use a separate section (Alt+4) or subsection (Alt+5) for each problem. Please pay attention to both the general and the language-specific discussion that I append to many problems. Your filename should combine the homework number and *your* last name: e.g., hw01-Lastname.pdf. (Never use spaces or any additional punctuation in your file names.) Submit this PDF via Blackboard.

**Reminder:** A crash upon PDF creation is rare but not unknown. So *first* save your work. Then, after saving your work, try saving it as PDF. You may have better success saving as PDF if you first go to the Evaluation menu and disable Dynamic Updating.

**Reminder:** The syllabus readings are required. Do the readings *before* attempting the homework. Additionally, be sure to read the hints for each problem.

You must type your homework in Mathematica, but use of Mathematica commands is typically *not* needed for the analytical exercises. (As opposed to the computational exercises.) Be sure that you are working with my Introductory Mathematica Resources (on Canvas). (If you skip the tutorials, you will *of course* work very slowly.) Use the Canvas Discussions to raise questions about the homework or about Mathematica.

**Reminder: Homework must be typed in a Mathematica notebook.** Before submission, *first* save the notebook and *then* save it anew as a PDF. You will submit the PDF. Remember that you *must* turn on Mathematica's automatic backup and also back up to the cloud. To guard against computer failure or theft, course policy requires you to use an external back up or your homework files. Common choices are Google Drive for Desktop, OneDrive, or iCloud Drive.

**Reminder:** Use the sectioning facilities of Mathematica notebooks: use a separate section (Alt+4) or subsection (Alt+5) for each problem. Number each problem in the section (or subsection) heading, distinguishing between exercises and computational exercises. Use text cells (not input cells) for your verbal explanations and mathematical proofs. Be sure that you have mastered entering text and mathematics in text cells (e.g., via the Hands on Start to Mathematica.)

**Academic Integrity Statement:** As described in class, I encourage discussion of the homework. However, submitted homework must be written up on your own, without looking at solutions produced by others or by an AI. So near the top of your submitted homework, please include the following signed statement:

"I completed this assignment without looking at the work on these problems of other students, and I did not show my work on these problems to other students. I have queried an AI only as permitted."

## Assignments

## **Bibliography**

- Boughton, J. M. and E. R. Wicker (1979). The behavior of the currency-deposit ratio during the great depression. *Journal of Money, Credit and Banking* 11(4), 405–418.
- Cohen, J. E. (1995). Population growth and earth's human carrying capacity. *Science* 269(5222), 341–346.
- Meyer, A. and S. Frederick (2023). The formation and revision of intuitions. Cognition 240, 105380.
- Simon, C. P. and L. Blume (1994). *Mathematics for Economists*. New York: W.W. Norton & Company, Inc.
- Trabandt, M. and H. Uhlig (2011). The Laffer curve revisited. *Journal of Monetary Economics* 58(4), 305–327.

Answer Outlines This section provides short answer outlines for selected questions from the previous assignment. *Please request additional elaboration whenever you need it.*