

Economia, Finanza e Analisi dei Dati

Laurea Magistrale

Data Analysis for Economics

AI Prompts

Marco Nieddu

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So Far

- In the last classes we studied the 2022 excise cut with a standard approach:
  - we think of a research idea;
  - we look for the data;
  - we organize and clean them in one or more datasets;
  - we run a preliminary analysis, and think about how to make it better;
  - we collect the results into a report, alongside some interpretation and context.

Today

- A similar experiment happened in 2026, when the excise changed several times. Did pump prices follow?
- Today we answer this question again, but **using only AI prompts**: we write the prompts, the AI does everything else.
- The hard part is not the code: it is **deciding what to do**. If the prompt does not say it, the AI decides for us, often without telling us.

Chat and Agent

Chat (ChatGPT, Claude, Gemini in the browser)

- *What it is*: a conversation. It sees only what you paste or upload, and answers with text and code.
- *The flow*: many short turns. You ask, it answers, **you** run the code and paste back the output or the error.
- *Your prompts*: one small step at a time; you steer at every turn.

Agent (Claude Code, Codex, Copilot in VS Code)

- *What it is*: a program working in a folder on your computer. It reads the files, writes and runs the code, and fixes its own errors.
- *The flow*: few, long turns. You give the task, it plans, then runs many steps alone; you review the result.
- *Your prompts*: goal, data and limits up front; ask for a plan before it starts.

Prompting: a Few Rules

- **Context**: who you are, what the answer is for, what the final goal is.
- **The question**, not only the task.
- **The data**: show a sample of the data (agent: give it access to the folder).
- **The design**, or ask for options and a plan before the code.
- **The output**: length, structure, charts, code with comments.
- **Checks**: numbers you know; “list your assumptions”; “if you do not know a fact, say so”.

The 2026 Data

- Weekly prices by component, Ministry of the Environment and Energy Security (SISEN), 2005–2026.
- Daily prices of every station, and the station information (MIMIT), 2025–2026.
- Both are in Fuel2.zip (about 1.1 GB).
- Next, four prompts. Before we run them: what do you expect from each?
- Then we talk to the AI about its answers.

Prompt 1: Data, No Question

Prompt

I need to write a short report for a course on Data Analysis for Economics. Here is a file with weekly fuel prices in Italy. I also found daily data at the gas station level, with prices and station information. Both are attached (for the daily data, one day as an example). I don't know what to get out of them. Any ideas?

- What to look for: which research question does it pick?

Prompt 2: A Question, No Data

Prompt

I want to write a short report for my course on Data Analysis for Economics. I know that in 2026 the Italian government changed the excise on petrol and diesel several times, so maybe we can study the effect of these changes on prices. Can you search for the data (and download them, if you can) and draft a research outline?

- What to look for: which data does it find, and where?
- A chat without web access can only tell you where the data are; an agent can also download them.

Prompt 3: Question and Data

Prompt

In 2026 the Italian government changed the excise on petrol and diesel several times. I want to write a short report on this for my course on Data Analysis for Economics. An example of the data available is attached: a) weekly prices by component, Ministry of the Environment and Energy Security (SISEN), 2005–2026; b) daily prices of every station, and the station information (MIMIT), 2025–2026. My main research questions are how much of the excise changes was passed through to pump prices (and how to identify this cleanly), and whether this varies with competition among stations. I'd like you to sketch a research outline, discussing also the theoretical predictions, the identification challenges, and references in the economics literature. First, list the excise changes you find in the weekly data (date and size). Keep the outline to one page, in sections: question, data, method, predictions, challenges, references. Only cite papers you are sure exist, with authors and year, and tell me when you are not sure.

Asking the AI for Simple Code

Prompt

I need to write a Python script (using pandas) that cleans and puts together all the files inside a folder. These are daily data on prices and station information for 2025 and 2026. For both years, the data are organized as `/Users/marco/Dropbox/Fuel2/YYYY/anagrafica` and `.../YYYY/prezzi`. One price file and one station file per year are attached as examples. I need to put them together into a single CSV file, saved in my project's `processed/` folder: one row per price, with the station information of that day. Because of the size of the data, let's first test this by building the final dataset for a single region (e.g., Sardinia), dropping the others; list the province codes you use for it. Please use a plain syntax and avoid overly complicated functions, unless strictly needed for efficiency. I should be able to understand what the code does. Also, please add comments to the script, so that I know what is happening. At the end, print the number of files read and the rows per day, and list any missing day.

Then: Talk to It

After the plan or the output, in the same chat:

1. Which choices did you make that I did not ask for? Which of them would change the result?
2. Interpretation: how would you interpret your findings?
3. Are there confounders that may be affecting the results? How robust is this result?
4. Can you add more descriptive statistics at the beginning, to understand the context before the tax changes?

Your Turn

- Alone or in groups: write a short report on the 2026 excise changes. Did pump prices follow? Write your own prompts.
- Put everything in one project folder, with the subfolders `source/`, `processed/`, `output/` and `scripts/`.
- Save every script the AI writes in `scripts/`.
- **Chat**: work iteratively. Run each script, then tell the AI whether it worked and what came out.
- **Agent**: it is simpler. Give it access to the folder: if a script does not run, it sees the error and fixes it itself.

Rules

- Start from a **new chat** (agent: a new folder).
- **AI only**: you do not write or fix code, and you do not edit the report. If something goes wrong, tell the AI.
- Keep **every prompt**, in order.
- At the end, hand in: the report, the code, your prompts, and the tool you used.