

Week 3 Exercise: GPT Research Question

ECO225, Professor Khazra

You should spend between 2 to 3 hours on this exercise. Your effort on this exercise determines your future project's path and success! Start early.

Please read below carefully. There is a **(20 points)** penalty if you miss any of the following.

- Your answers should be **typed**.
- Your answers to all questions should follow the line limit. Answers should be provided in bullet points or numbered lists.
- Use font size 12.
- Please do not write more than requested, there will be a 20 points penalty for long submissions.
- Upload one PDF file (or the screenshot of your PDF file) for each question containing only that question.
- Your answers to each sub-question should be numbered corresponding to the numbers here.
- Please invest enough time in your answers; this exercise is going to be graded in detail. Submission does not in any way guarantee a full mark.
- ** Please start early and let us know if you have **any issues well in advance of the deadline**.

Generating Research Questions

Now that you have your assigned data, the next step is to craft meaningful research questions that will guide your exploration. This assignment is structured to lead you through the process, stimulating creativity and critical thinking.

Good research questions in applied work have several important qualities. They should be interesting and relevant, addressing current issues or problems. A good question builds on previous studies but also explores a new angle, making the research both valuable and original. The question should be narrow and specific. Broad questions can be too complicated and lead to unclear results. A focused question allows for a deeper, more precise analysis. The question should also be feasible, meaning it can be answered within the available time, resources, and data. Ensuring these qualities will guide a successful study in applied microeconomics.

Q1: Unleashing GPT's Creativity (10 points)

Before the exercise

Before you start, have some research questions in mind. List your own potential questions before consulting ChatGPT, this helps prevent being misled and keeps your focus on your interests.

Make a list of your research questions (your own, not AI-generated), attend collaboration hours, and discuss them with TAs and peers to brainstorm ideas.

Decide on a field first, then use ChatGPT exercises so you stay focused and avoid distractions.

Task GPT with the challenge of generating 10 research ideas based on your dataset. Use well-crafted prompts detailing the variables within your data, helping it to produce diverse and insightful research questions.

- Share your summary statistics table with ChatGPT (or alternatively upload a sample data)
- You can let ChatGPT give you 10 ideas before you share your opinion.
- Repeat the exercise, but this time, share your interests and any personal thoughts or research ideas you might have with ChatGPT. Get another set of research questions.

List 10 of the generated ideas here (you can choose and select 10 if you generated more than 10 ideas in this question), adhering to a 10-line limit. Number your list.

Examples of research questions:

- Explore the correlation between income levels and educational attainment in urban settings for siblings of different gender.
- Investigate the impact of climate change on agricultural productivity using historical weather data.
- Analyze the relationship between social media usage and mental health indicators among adolescents.

Note that the above research questions are for different datasets for the purpose of providing examples. All the 10 questions you write should be based on your own dataset and in the same research field.

Q2: Personally, select 5 ideas that interest you the most. (20 points)

List the 5 ideas that you liked the most. Feel free to modify them in any way you see fit. Limit: 5 numbered lines.

- Think about each idea; is it interesting? Do you see yourself working on this idea for an entire semester? Is it something that you care about? Is it possible?
- Please give me the best possible 5 research ideas that **you and ChatGPT** can come up with.

Q3: Write about the data and potential challenges for these selected 5 ideas. (30 points)

For each idea, give me the biggest challenge that you may face working on these questions. One challenge per research question. Limit: 5 numbered lines total.

- You can think about: Do I need to have any complementary data? Is it possible to acquire this data if necessary? If any measurements or calculations are needed, are they possible given the time limit and your skills? What are the challenges you may face?

*For this part, I want to see **thoughtful** writing and **careful** reasoning. You should spend at least an hour on this part of the exercise for full points. Last minute writing does not receive marks.*

Q4: Seek the opinion of ChatGPT on your reasoning behind the challenges. Finally, choose one research idea for further exploration. (40 points)

Choose one according to your reasoning above and explain why you chose that research question. You can write two paragraphs here.

- Feel free to polish the question a bit more. Talk to us if you need help. This step is crucial since the direction you take can predict the success of your project. You want to make sure your idea is interesting and doable, giving you enough room to show your skills in your project and get a higher mark.
- Can you talk about why you think the question is interesting?
- One of the two paragraphs should talk about “**WHY SHOULD I CARE ABOUT YOUR RESEARCH?**” Don’t we know the answer to your question already? Can’t I just guess the answer? These are tough questions, and sometimes, answering them may feel discouraging. But if you have a clear answer to this question, you

will have a bulletproof idea and you will have more fun working on your project! Which is positively correlated with your mark and future success (data backs this;)).

[-] Bad example: “The effect of number of bedrooms on house prices,” does not satisfy any of the points mentioned above!

[-] For students working on house prices, these research questions are **not accepted** for your project: “the effect of number of bedrooms etc on house prices.”, “what determines house prices.”, “are bigger houses in high income neighborhoods more expensive?”, “to what extent does the size affect house prices.” If you were thinking about any of the above (or similar questions), please come talk to me to refine your question.

[-] Similarly for other projects, “The effect of *all of my Xs* on my Y” is not a research question! Come talk to me, I will teach you how to think about it! Developing the skill to ask the right research question is a key learning outcome of this course. This intentional design helps you distinguish between effective and ineffective research questions.

The bottom line is that we want an exciting question that gives us a solid answer to the “why do we care” question.

Good luck!