

Why We Need Economists

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ChatGPT, according to the team that developed it, "sometimes writes plausible-sounding but incorrect or nonsensical answers". So do the students in my sophomore-level economics class. But I warn them on the first day that they'll never succeed in this class just by sounding plausible. Nor will they succeed by memorizing formulas, or by parroting arguments they've already seen in class. Their task is to master a few basic principles and learn to apply them creatively. The real world has a habit of confronting us with novel problems, so if you want to improve the world, you need to be good at finding novel solutions.

Fortunately, most of my students end up doing very well, though some struggle more than others along the way. Many of the best of them have gone on to be top-notch scholars and influential policymakers. Many more have gone on to become thoughtful and well-informed citizens and voters.

All this led me to wonder how the artificial intelligence bots stack up against those students. So I submitted some of my past exam questions to GPT-4, the state-of-the-art version of ChatGPT. It got every single question wrong, usually by offering exactly the same answers I tend to get from my weakest students. (By contrast, my median student gets about 80% of the questions right.)

I take this as a stark reminder that we really need economists, and we really need people who have studied some economics. Economists know things that are true, important, and completely counterintuitive to almost everyone who hasn't had the right sort of training --- and at least as of now, that includes the bots.

Here are some of the questions that GPT-4 got wrong:

A politician claims that the oil companies are colluding to keep the price of gasoline high, and says that they have been getting away with this because gasoline buyers are very insensitive to price. Does this make sense?

The bot agreed with the politician. But the politician spoke nonsense. When colluders face price-insensitive buyers, they raise prices --- and they don't stop until price sensitivity sets in. But in this case, the price has failed to rise to that point. What's keeping it down? Answer: The only force that ever keeps prices down, namely competition.

The politician and the bot agree the price insensitivity is evidence of collusion. My students know that it's evidence of exactly the opposite.

It should go without saying (but I will say it anyway) that people (or bots) who don't understand this are prone to supporting badly misguided policies in areas like antitrust.

Here is another:

Apples are provided by a competitive industry. Pears are provided by a monopolist. Coincidentally, they sell at the same price. You are hungry, and would be equally happy with an apple or a pear. If you care about conserving societal resources, which should you buy?

The bot went with the apple, arguing that competitive industries are more efficient than monopolists, and that to conserve resources we ought to support the more efficient industry. It even did an excellent job of explaining what efficiency means, and the reasons *why* competitive industries are more efficient than monopolists. It had obviously memorized a lot of economics, and wrote in the tone of a scholar.

But the conclusion it drew was nonsense. Competitors don't earn a lot of profit, so when a competitor sells an apple for two dollars, you can bet that the cost of producing that apple (that is, the value of the resources used up in its production) is pretty close to two dollars. When a monopolist sells a pear for two dollars, it's more likely that the cost of production is, say, one dollar and the rest is markup. If you care about conserving societal resources --- that is, if you care about minimizing production costs --- you'll choose the pear.

The bot knew what efficiency meant, but couldn't figure out how to apply that knowledge to draw a relevant conclusion. I'll say it again: We need economists.

Another question:

In the land of Nod, everyone is identical. Each day, 100 people wait in line each day to buy peanuts at a controlled price. One day the government announces that henceforth it will provide a free cup of coffee to each person in line. It costs the government \$1 per cup to produce that coffee. The people in line value the coffee at 75 cents per cup. What is the social cost of providing that free coffee?

The bot demonstrated that a good knowledge of basic arithmetic by reasoning that the social cost of producing one cup of coffee is \$1 minus 75 cents, or 25 cents, and that 25 cents per cup times 100 cups is \$25.

But unlike most of my students, the bot failed to recognize that people respond to incentives. Given the controlled price, there's no reason to expect sellers to provide additional peanuts, so when you make the line more attractive, the competition for a spot in that line must intensify. Snagging a spot in that line now means getting up earlier in the morning, or being more aggressive in some other way. Those are costly activities, which offset at least some of the benefits of free coffee.

In fact, under the extreme assumption that everyone is identical, it's not hard to show (with some standard textbook arguments) that the competition must intensify until it offsets those benefits entirely, so that the social cost of the coffee is simply equal to the cost of producing it, namely \$100. With less extreme assumptions, the benefits might be offset only partially, but the key insight is that must still be an offset.

If you're a policymaker deciding whether your town should spring for, say, improvements to a public playground, I hope you know enough about economics to consider the prospect that better playgrounds draw bigger crowds, which might leave the playground a lot less attractive than you expected it to be. Or to put this another way: If you're a policymaker, I hope you had a good college economics class, as opposed to taking advice from ChatGPT.

And one last question:

The town of Mayberry is thinking of expanding its airport. One problem with the expansion is that it would result in more airplane noise. For people who live near the airport, hearing that noise would cause as much unpleasantness as the collective loss of \$100,000 every year. True or False: When Mayberry weighs the costs and benefits of its airport expansion, that \$100,000 should count as a cost.

The bot says "true" and, like a typical weak student, supports its position by parroting a few paragraphs of textbook-style boilerplate about externalities. ("Externalities" is economics-speak for costs imposed on others). A student who has mastered the key ideas will recognize that the relevant cost might or might not be \$100,000, because the additional noise might or might not drive people to move away from the airport vicinity, selling their houses to a developer who plans to build a Go-Kart track and really doesn't mind the noise. Moving away is unpleasant, but it might (or might not!) be considerably less unpleasant than tolerating the noise. So the cost of the airport noise might be \$100,000, or it might be much less. In fact, if the noise causes everyone to vacate the neighborhood, the airport can expand even further without causing any additional distress at all. We'd need a lot more information before we know whether the relevant cost is \$100,000 or something far less.

Policymakers who reason like ChatGPT (or like most people who have never studied economics) they will get this wrong, and they will make bad decisions about where to locate things like airports. It is important to get things like that right. Unless or until the bots get much smarter, we have only economists --- and physicists, historians, carpenters and Uber drivers who have studied some economics --- to rely on.