EconoFact Chats: Generative AI's Disruption: Is this Time Really Different?
Michael Strain, American Enterprise Institute
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Michael Klein
I'm Michael Klein, executive editor of EconoFact, a nonpartisan, web-based publication of the Fletcher School at Tufts University. At EconoFact, we bring key facts and incisive analysis to the national debate on economic and social policies, publishing work from leading economists across the country. You can learn more about us and see our work at www.econofact.org.

Michael Klein
As mentioned in the introduction, this is Michael Klein, not an AI version of me. But it's getting increasingly difficult to tell the difference between people and machines. There are many possible implications of the advance of generative artificial intelligence. In particular, what about its effects on workers and jobs? We've seen this movie before with technological change from the weaving machines of the 19th century, to the mechanization of agriculture, to the use of robotics in manufacturing. Or is this time with generative AI really different? To discuss these issues, I'm happy to welcome back to EconoFact chats, Michael Strain of American Enterprise Institute. Mike is the Director of Economic Policy Studies and the Arthur F. Burns Scholar in Political Economy at AEI. He oversees the institute's work in economic policy, financial markets, international trade and finance, tax and budget policy, welfare economics, health policy, and related areas. I'm also pleased to say that Mike is on the board of advisors of EconoFact. He recently published an essay in National Affairs entitled "The Case for AI Optimism." Mike, welcome back to EconoFact chats.

Michael Strain
Thanks for having me back. It's wonderful to be back.

Michael Klein
Well, it's good to have you back. So, we've already seen, before generative AI, computers do an astonishing range of tasks and through this the elimination or alteration of certain jobs. But generative AI is different. And one way to consider this is what is known as the Turing test. Can you explain what this is and whether the newest advances in computing pass this test?

Michael Strain
Yes. So, the Turing test is a test introduced by Alan Turing, who was a mathematician and computer scientist, introduced in 1950. It is often referred to as the 'imitation game,' as well as the Turing test. And you know, the basic idea is to test whether a computer can sound like a human in a way that humans do. The way Turing formulated the test, you know, pick a person, that person is kind of the contestant in the imitation game. And the person needs to witness a conversation between a computer and a human. And if the person is able to tell which of the two contestants is the computer, which of the two contestants is the human, then the computer failed the Turing test. And if the judge is not able to tell, then the computer passed the Turing test.

Michael Klein

So, my understanding is that up until recently, computers did not pass the Turing test, but with AI, they're able to do that. What makes AI different and able to pass the Turing test?

Michael Strain

Yeah, that's right. I mean, there's a sense in which the kind of big jump forward in natural language processing and generative artificial intelligence in 2023 is not as big of a leap as people think it is. If you have an Alexa in your home, that's an application of generative artificial intelligence. If you use the Gmail app on your phone, the app is suggesting words to end the sentences that you're typing in your email message, that's an application of generative AI as well. But with Chat GPT and other advances last year, I think we really did have a leap forward. And you know, what changed? I mean, it's a complicated question, but I think a way to understand it is that the scientists who program these large language models, they kind of changed the way that they did it. One way to train a model like this is to try and build a rule. And so, I think it's helpful, I think to think about this with a concrete example. So, imagine that you wanted your generative AI application to be able to accurately identify a chair. So, you show this AI application, 100 pictures and 50 of them are chairs and 50 of them are not chairs. And you want it to correctly identify which pictures have a chair and which pictures don't have a chair. One way to do that would be to try to create an algorithm, kind of a decision tree that says, okay, well, first check, doesn't have four legs. And then if it does check, is there a place for a person to sit? And if there is, then check, okay, is there somewhere to put your arms or your back or whatever. And that was the way that this science was advancing. And that wasn't succeeding. And so the scientists who were developing these applications took advantage of the kind of explosion in computing power that's occurred in recent years and took a different approach and said, okay, we're just going to show you billions and billions of images. And we're going to tell you, you know, which are chairs, and which aren't. And through that kind of inductive process, it's statistical learning, you're going to be much better at identifying which pictures are chairs and which pictures are not chairs. And similarly, with large language models, the models are optimized to predict the next word in a sentence with the goal of sounding like a human. With the goal of using language naturally, you know, not necessarily with the goal of being correct. And the way that the scientists who developed these tools figured out how to do that was just by kind of feeding, you know, massive amounts of training data into these models to train the models so that they were able to predict the next word in a sentence and sound like a human.

Michael Klein

So it's through induction rather than deduction, I guess. What's the implication of this?

Michael Strain

Well, the implication of this is that, you know, these tools have substantially improved in a short period of time. And so if you want an AI tool that can take a 300-page report and summarize it in a few pages, you didn't have that in 2022. And now in 2023, you do have it. If you wanted an AI application to write the first draft of a newspaper article about, you know, a local sports game, you didn't have that in 2022. Now you do have that. And so, this has been just much more successful at creating generative AI technologies.

Michael Klein
So, a common argument is that with generative AI, tasks that people had been doing can now be done by computers, and people are going to find themselves out of work. But you argue in your article in National Affairs that this isn't the case. Why not?

Michael Strain
I do. And Yogi Berra famously said it's difficult to make predictions, especially about the future. And I think that's true. And we should be, you know, somewhat humble in forecasting these sorts of things. But, you know, I think if you look at the last 200 years or so, you know, the period of time when we've really seen lots of advances in technology, you know, this worry that the technological advances are going to make it a lot harder for people to find jobs or, you know, substantially reduce the need for human workers has kind of always been present. And I think the reason for that is because it's just a lot easier to, you know, look around the world, look around the economy and say, okay, here are the things that human beings are doing that this new technology will be able to do better or at less cost to businesses. It's a lot easier to identify the tasks that workers do that can be replaced than it is to imagine the tasks and even the occupations that do not currently exist, but that will exist in the future. And, you know, those new tasks and new occupations will be created in part because of the new technology. Computers are invented and, you know, that creates all sorts of jobs for coders and for, you know, software developers and that sort of thing. Those new tasks and occupations also exist because technology makes workers more productive and increases wages and incomes. And a society that is richer, you know, has a greater demand for goods and services and businesses come along and meet that demand. So, you know, I think this kind of general historical pattern that we've seen where new technology is invented, it's very disruptive, but you see society's wealth increase and you see new occupations and certainly new job tasks created is what we should expect. I see no reason not to expect that when it comes to generative artificial intelligence.

Michael Klein
So, you quoted Elon Musk as saying, 'there will come a point when no job is needed because AI will be able to do everything.' But you also point out, which I really found interesting, that 60% of the jobs in 2018 had not been invented in 1940. And you use the example of Bruce Springsteen's records and tours as jobs that come up that would not have existed in 1940, not just because Bruce Springsteen wasn't born by then, but it didn't exist for Bing Crosby or Frank Sinatra, any of the famous singers at that time.

Michael Strain
Yeah, that's right. And I think that that statistic on just kind of how recent a lot of the occupations of the economy are comes from a paper by David Autor and co-authors. And I think it's just very insightful. A lot of the jobs that, you know, people get up and do today are new by historic standards. And, you know, that's, I think, reflected in our daily lives. If I think about, you know, a lot of the kind of specific things I do during the day, this morning I had to go to a building I don't normally go to. And so, I, you know, typed in the address into my car's mapping software. And, you know, that wasn't around when I started driving a few decades ago. And when I went to park the car, you know, I put the car in reverse and the kind of, you know, bird's eye camera came on and helped me to park. And, you know, that wasn't around when I started driving. And, you know, I got to the lobby of the building and pulled out my cell phone and sent a text to

somebody. And, you know, there were no texts or cell phones when I entered adulthood. And behind all these things, there are human beings who are doing work to create these, these new products and to create these new services and to keep them going. And, you know that stuff exists because technology's advanced, also because we're a lot richer as a society. And so that, you know, that's likely to be the pattern we see again.

Michael Klein
Well, I'm glad you mentioned David Autor because he's done both podcasts and memos for us. And David has pointed out what he calls the 'barbell effect,' the hollowing out of middle-class jobs. And this doesn't show up much in aggregate numbers, but it does show up in the decline of some sectors, advances in other sectors, and changes in the wage structure. What do you see as a role of technology in general, and AI in particular for distributional changes, Mike?

Michael Strain
Yeah, so this is, this is a really important point. You know, if you look at the digital revolution, the revolution in computers and personal computers and communications technology and information technology, you know, kind of think 1980s, 1990s, you know, were really big, important decades in this, in this wave of technology. That wave of technology hit the economy. As you say, you know, it didn't produce an upward trend in the unemployment rate. It didn't make it systematically harder for workers to find jobs. But it did have big effects. And David's work on this has really been pioneering. It's had big effects on the distribution of employment across occupations. And it's had a systematic effect with those technologies, which were new at the time, were really good at doing, was essentially following a series of steps. That's what an Excel spreadsheet does, if you wanted to add up a column of numbers it's what an ATM does if you want to do a cash withdrawal from your account or if you want to deposit a check into your account. It's what a manufacturing worker on an assembly line does, you know, the cars come down and you, you screw the hubcap on the car. And those types of jobs that involved executing a series of steps with great precision over and over and over again were the jobs that were most susceptible to the new technology at the time, because that's what the new technology was good at. And those jobs were also, you know, never the lowest paid jobs or the highest paid jobs in the economy. They were jobs that commanded wages in the middle of the wage distribution. You know, they, they did not require creativity, judgment, managerial acumen. They didn't require advanced education. You know, these are all jobs that are paid really well, but they, but they were never the lowest paid jobs precisely because they required, you know, real precision and execution. And so you had, as you say, the middle of the labor market hollowed out, and with, with employment growing among low wage occupations and among higher wage occupations, much faster than it grew among middle wage occupations. And, you know, big question is, even if generative AI tools don't reduce, you know, the number of jobs in the economy, or don't lead to a structural increase in the unemployment rate, will they have kind of similar distributional effects? That's an open and important question.

Michael Klein
So, one of the things that you pointed out in your article, which I also found very interesting, you mentioned ATMs and they replaced bank tellers. But in fact, there are more bank tellers now than there were before. Some very large number more because the job of the bank teller changed very much from just counting out money to having sort of a relationship with the clients and helping

the clients in other ways. So, I guess it could be the case that with generative AI, similarly, jobs could change in nature, but there would still be jobs.

Michael Strain
Yeah, I think that's right. I mean, the important lesson from bank tellers and, one of the most important lessons, I think, from the general study of how technological change affects employment is that what we should expect is that new technology will change the nature of jobs and will change what people do when they get up and go to work. There's much less reason to be concerned that it will eliminate the need for human workers or really drive up the unemployment rate. But it will change the tasks that people engage in and the skills that are valued by the labor market. And bank tellers, I think, are illuminating here. It just became really inexpensive for machines, in this case for ATM machines, to do a lot of what used to be done inside a bank branch, to do cash withdrawals, to do [inaudible] on balance and accounts, to process deposits and so on. And so banks started relying on ATMs for all that because they could do it at much less expense than humans. But that created an opportunity to kind of refocus human workers on the tasks that ATMs were not good at, like customer service, or like handling difficult problems, making the experience of going into a bank branch a pleasant experience for customers as a way to capture market share. And so that's kind of what the role of a bank teller evolved into, general lessons there. Think about what skills will be in greater demand because of the new technology. Think about what skills the new technology can't do. And that's where you're likely to see a lot of the task distribution will shift to those skills.

Michael Klein
So, you use the example of lawyers and paralegals or physicians where generative AI can write briefs or can do diagnoses of certain things. But then the tasks that the paralegals or the lawyers or the physicians have will be somewhat distinct from what they've been doing in the past.

Michael Strain
Yeah, I think that's right. I mean, if these generative AI tools like large language models like, like Chat GPT are really able to, to kind of nail the process of writing research briefs for legal cases and processing all the paperwork and all that sort of stuff that, that frees up time for lawyers to focus even more on crafting a legal strategy, even more on working with witnesses to make sure their testimony is as compelling as it could be to a judge or to a jury. Honing and refining their oral presentation skills and public speaking skills and all that sort of stuff. And so, the things, you know, again, the parts of being a lawyer that generative AI can't do are likely to become more valuable. And, you know, my guess is that lawyers will probably be doing some things two decades from now that they don't do today that are hard for us to imagine, if these LLMs prove to be as successful as a lot of people think they will be.

Michael Klein
And in fact, you know, at this point, things like chat GPT still make a lot of mistakes. I guess there's some high-profile examples of briefs that seem to have been written by chat GPT that cited cases that didn't exist.

Michael Strain

Sure. Yeah. I asked chat GPT to tell me five articles that Michael Strain had written, and it came back with, you know, five headlines that sound like articles I could have written, and they were published in places where I might publish articles, but none of them I had actually written. And these models are designed to answer a prompt with, with a block of text that sounds right, that sounds like it was written by a human, that passes the Turing test, that uses natural language. They're not optimized around accuracy. They're convincing, but they're not optimized around accuracy. Now human beings make lots of mistakes too. And so I think if you're a business trying to figure out whether there's a commercial application here, you know, you're comparing it to a 0% error rate is probably the wrong comparison if you're looking to replace some workers with it. But, but yes, accuracy is a major obstacle for these technologies.

Michael Klein

Well, congratulations on publishing those articles that you didn't have to spend any time writing.

Michael Strain

Thank you. Every, every, every scholar's dream.

Michael Klein

Or nightmare. So just to conclude, Mike, what do you see as a role for government to help with this transition? What do you see as government, things that government should not do in this transition?

Michael Strain

Well, you know, with respect to the kind of technology itself I think the right thing for the government to do is get out of the way. And this is the approach that the Clinton administration took to the internet and e-commerce in the 1990s. I think that was the right approach. Trying to micromanage the algorithms or trying to, you know, really interfere with the development of the technology, I think is the wrong approach. I think instead what policymakers should be doing is, trying to see around the corner and think about what the disruptive effects of this might be and how can they best smooth those out in order to maximize the number of people who are able to participate in economic life, and in order to create ladders to economic opportunity for people who need it. And then, even more big picture than that, I think policymakers should be, you know, doing in the face of generative AI advice that they should be doing kind of what they should always be doing, which is fostering an economy that accepts dynamism and that encourages investment, and that encourages research and development, and that encourages new technologies, again, while making sure that we have, you know, policies in place that allow people to benefit from those advances, and that we have a safety net that's strong enough to make sure that nobody falls too far.

Michael Klein

Well, this is all really interesting. As you say, it's very hard to forecast what's going to happen, but stuff's going to happen. And the insights that you provided in today's talk and in your article, I think will help people think about what's going to come about, how it could affect the economy, and as these things unfold, they'll have a better sense of what, in fact, is going on with this. So, Mike, thanks very much for joining me today. Thanks, again, for being part of EconoFact.

Michael Strain

Well, thanks so much for having me back, and it's a joy to be involved with such a great organization.

Michael Klein

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