



EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2
Unemployment & Artificial Intelligence

OVERVIEW

This episode examines a growing concern that artificial intelligence (AI), particularly generative AI, will lead to widespread unemployment. Drawing on recent empirical evidence, there is little indication that AI has increased overall unemployment rates. Instead, economists argue that AI is primarily reshaping how work is done rather than eliminating jobs outright. The episode distinguishes between frictional, cyclical, and structural unemployment, emphasizing that AI's main labor-market risk lies in its potential to contribute to structural unemployment by automating specific tasks, rather than replacing entire occupations. It highlights how AI can either complement workers by increasing productivity or substitute for them by replacing certain tasks, with the risks and benefits varying across occupations, skill levels, and countries. Advanced economies stand to gain more from productivity increases, while also facing greater risks of rising inequality.

Key Macroeconomics Links

- **Frictional unemployment:** temporary unemployment that occurs when workers are being matched with jobs
- **Cyclical unemployment:** unemployment that rises during economic downturns and falls during expansions
- **Structural unemployment:** unemployment caused by long-term changes in the economy, such as technology or trade that make workers' skills no longer match available jobs
- **Complementary inputs:** inputs that are used together to produce outputs
- **Substitutable inputs:** inputs that are used in place of one another to produce outputs

Preview Question

Do you think that generative artificial intelligence (AI) will lead to widespread unemployment, or will it mainly change how people work?

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

Discussion Questions

1. What are the different types of unemployment and how do they differ? What type of unemployment should policymakers be the most concerned about?
2. Why does the episode argue that not all unemployment is the same? Why is this distinction important when thinking about AI?
3. What evidence is provided in the episode about the relationship between generative AI and unemployment so far? Does this mean AI will not affect employment in the future?
4. How are jobs that focus on task-based work more vulnerable to unemployment due to AI than other job types? Provide examples of these job types.
5. What are some examples of jobs that likely have many tasks that can be substituted by AI? What are some examples of jobs that likely have many tasks that can be complemented by AI? Does this make you think differently about your future career path?
6. Why might AI increase productivity without increasing unemployment in the short run? How might this change in the long run?
7. Can you think of any historical examples of changes in structural unemployment? How do these examples differ from the introduction of AI?
8. How might AI increase inequality within countries, even if overall employment remains stable? Which groups are more likely to experience structural unemployment?
9. What role should education and training policy play in responding to AI-driven labor market changes? How can policies help shape the future of employment in a country?
10. How does this episode challenge common headline narratives about “jobs disappearing” in the future? What are some possible implications for entry-level jobs that college graduates typically occupy?

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

Multiple Choice Questions

1. Which type of unemployment is most closely associated with technological change that permanently alters skill requirements?
A) Frictional unemployment
B) Cyclical unemployment
C) Structural unemployment
D) Seasonal unemployment

Answer: C

2. Which type of unemployment is most closely associated with temporary unemployment when workers are being matched with jobs?
A) Frictional unemployment
B) Cyclical unemployment
C) Structural unemployment
D) Seasonal unemployment

Answer: A

3. Which type of unemployment is most closely associated with unemployment that rises during economic downturns and falls during expansions?
A) Frictional unemployment
B) Cyclical unemployment
C) Structural unemployment
D) Seasonal unemployment

Answer: B

4. According to the episode, recent evidence suggests that generative AI has so far:
A) Caused large increases in unemployment
B) Had no measurable effect on unemployment
C) Eliminated entire industries
D) Reduced labor force participation dramatically

Answer: B

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

5. AI is considered a complementary input to labor when it:

- A) Fully replaces labor tasks
- B) Performs tasks without human input
- C) Helps workers perform tasks more efficiently
- D) Eliminates the need for training

Answer: C

6. AI is considered a substitute input to labor when it:

- A) Performs tasks that would otherwise be performed by workers
- B) Helps workers perform their existing tasks more efficiently
- C) Eliminates the need for training
- D) Creates structural inequality

Answer: A

7. Which occupation is described in the episode as having high AI exposure but is highly complementary to the tasks in that occupation?

- A) Truck driver
- B) Paralegal
- C) Judge
- D) Assembly-line worker

Answer: C

8. Which type of job may be at more risk of replacement by AI because of high exposure and high substitution of tasks in that occupation?

- A) Truck driver
- B) Paralegal
- C) Judge
- D) Assembly-line worker

Answer: B

9. In the long run, AI may impact:

- A) The overall productivity of workers.
- B) The types of tasks workers do in their jobs.
- C) The type of education that workers get to prepare for employment.
- D) All of the above.

Answer: D

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

10. Policies that help employees obtain new skills and education will most likely reduce which type of unemployment?

- A) Frictional unemployment
- B) Cyclical unemployment
- C) Structural unemployment
- D) Seasonal unemployment

Answer: C

True / False Questions

1. Frictional unemployment is typically short-term and reflects job search time rather than job loss from technology.

Answer: True

2. Structural unemployment occurs only during economic recessions.

Answer: False

3. There is more cyclical unemployment during an economic boom period.

Answer: False

4. Overall unemployment in an economy is unaffected by cyclical unemployment.

Answer: False

5. The episode finds strong evidence that AI has already caused mass unemployment.

Answer: False

6. AI can increase inequality in an economy even if total employment does not fall.

Answer: True

7. Advanced economies have a smaller share of jobs exposed to AI than low-income countries.

Answer: False

8. Complementarity means AI replaces workers rather than helping them perform tasks more efficiently.

Answer: False

9. Structural unemployment depends in part on whether workers can retrain and adapt their skills.

Answer: True

10. Productivity gains from AI can lower prices and increase demand for other goods and services.

Answer: True

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

Application Questions

Question #1: AI Comparisons

Questions

1. Consider two occupations: a software developer and a truck driver.
 - a. Identify which tasks in each occupation are more likely to be automated by AI and which are likely to continue to be performed by humans.
 - b. Explain why AI might increase productivity in both occupations but lead to different unemployment outcomes.
 - c. Suppose AI adoption increases returns to capital more than the returns to labor. How would this affect income distribution even if employment levels remain unchanged?

Answers

1.
 - a. The tasks for a truck driver that may more easily be replaced by AI include assisted driving for longer highway trips, logging and paperwork that requires detailed tracking, and route planning that takes into account real-time weather and traffic conditions. The tasks that may not be easily replaced for a truck driver include safety and vehicle inspections, navigating urban areas and loading docks, and communicating with others about the job.

The tasks for a software developer that may more easily be replaced by AI include creating basic code, doing error checks for completed programs, and other routine tasks. The tasks that may not be easily replaced for a software developer include designing the overall system, solving complex issues that AI would have few examples for, and communicating with others about the job.
 - b. In both jobs, AI can improve the accuracy and productivity of the employee. In the case of truck drivers, improvements in infrastructure and other technologies may lead to fewer employees in this job over time if long-haul trips are more automated (structural unemployment). In the case of the software developer, productivity gains may lead to more innovation in this area, but not lead to fewer jobs over time, because fewer tasks in the job are substitutable.
 - c. If the returns of AI are distributed to capital, the owners of the AI companies will accumulate more wealth, while employees impacted by AI will see their wages grow at a slower rate. In this case, inequality of income will grow larger, but not necessarily change employment outcomes.

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

Question #2: Unemployment Calculations

2. Suppose the BLS announces the following information. In 2026, the total number of employed workers is 123 million and the total number of unemployed workers is 10 million. They estimate that approximately 4 million individuals are likely in transition and temporarily unemployed and 5 million individuals are unemployed due to economic downturns.
 - a. Calculate the total unemployment rate in the economy.
 - b. Calculate the number of frictionally, cyclically, and structurally unemployed workers based on this information.
 - c. What type of economic policies should the government focus on to improve this economy? How would your answer change if another type of unemployment was more prevalent?

Answers

- a. $\text{unemployment rate} = (\text{total unemployed} / \text{total labor force}) \times 100$

Total labor force = total employed + total unemployed = $123 + 10 = 133$ million

Unemployment rate = $(10/133) \times 100 = 7.52\%$

- b. Total unemployment = frictional unemployment + cyclical unemployment + structural unemployment

10 million = 4 million + 5 million + structural unemployment

Structural unemployment = 1 million

- c. Structural unemployment, although lower than the other categories, involves the retraining and possibly relocation of workers, which is a difficult transition. Efforts should focus on education, retraining, and re-employing those in the impacted industry and regional area where it occurs. In this case, cyclical unemployment is also contributing to a higher unemployment rate, so solutions like monetary policy interventions could also help reduce unemployment in economic downturns. The balance of interventions and their costs may shift as unemployment shifts across these three types of unemployment.

EPISODE OVERVIEW, QUESTIONS, & EXTENSIONS

Season 2 Episode 2 | Unemployment

Innovative Ways to Extend the Lessons

1. Listen to our podcast!

- Student Assignment: Listen to the generated podcast summary and reflect: *What is lost or gained when research is translated into casual language? What do you note here that you did not when watching the video? What does the video do a better job of explaining? What do you understand better from both listening to the podcast and watching the video?*

2. Occupation Task Mapping Activity

- Student Assignment: Ask students to use the BLS Occupational Outlook Handbook to choose a current or future occupation and break it into tasks. Students classify each task as likely complementary or substitutable by AI and discuss implications for wages and job security. What types of college majors will best prepare you for the most secure jobs?

3. Comparative Economics Extension

- Student Assignment: Using data on labor markets in developed and developing economies, have students analyze why AI exposure differs across countries and what this means for global inequality.