

# Card and Krueger Summary



Fill in the blanks. The results of Card and Krueger (1994) show that an increase in the minimum wage \_\_\_ employment, suggesting that fast food restaurants have \_\_\_ power in their job market.

Option for blank 1:

- A. increases
- B. reduces
- C. has no effect on

Option for blank 2:

- A. monopoly
- B. monopsony
- C. no



The correct answer is:

The results of Card and Krueger (1994) show that an increase in the minimum wage **increases** employment, suggesting that fast food restaurants have **monopsony** power in their job market.

## Explanation:

1. **Blank 1:** Card and Krueger (1994) found evidence that contradicts the standard competitive labor market model. Their study indicated that increasing the minimum wage did not reduce employment but instead **increased** it in certain cases.
2. **Blank 2:** The finding is consistent with the presence of **monopsony** power, where employers have market power in setting wages due to a lack of competition for workers. In such cases, increasing the minimum wage can lead to higher employment because it prevents employers from exploiting their power to keep wages artificially low.



What concerns might be raised about the findings of Card and Krueger (1994)?

- A. It is a relatively small-scale study by contemporary standards.
- B. There might be interference between the two neighboring states.
- C. The parallel trend assumption might not hold.
- D. Only fast food restaurants are included in the study.
- E. All of the above.



The correct answer is:

**E. All of the above.**

## Explanation:

Each option highlights a valid concern about the study:

- **A. It is a relatively small-scale study by contemporary standards.**
  - The study focused on a limited number of fast food restaurants in New Jersey and Pennsylvania, which might not generalize to larger or more diverse labor markets.
- **B. There might be interference between the two neighboring states.**
  - The proximity of New Jersey (which increased the minimum wage) and Pennsylvania (which did not) could lead to cross-border spillover effects that complicate the analysis.
- **C. The parallel trend assumption might not hold.**
  - The Difference-in-Differences (DiD) methodology used in the study relies on the assumption that employment trends in the two states would have been the same in the absence of the policy change. If this assumption is violated, the results could be biased.
- **D. Only fast food restaurants are included in the study.**
  - Limiting the analysis to fast food restaurants might not represent other industries or sectors affected by minimum wage changes.

These concerns underline the need for careful interpretation of the findings and consideration of additional research to validate the results.



Why did Card and Krueger (1994) choose to examine fast food restaurants? Select all that apply.

- A. Because most of the employees are paid minimum wage.
- B. Because fast food restaurants had the largest job market at that time.
- C. Because employees could be very responsive to a small difference in wages.
- D. Because the job market for fast food restaurants is very competitive.



The correct answers are:

- A. Because most of the employees are paid minimum wage.**
- C. Because employees could be very responsive to a small difference in wages.**

## Explanation:

- **A. Because most of the employees are paid minimum wage.**
  - Fast food restaurants typically employ a large proportion of minimum wage workers, making them an ideal setting to study the effects of minimum wage changes.
- **C. Because employees could be very responsive to a small difference in wages.**
  - Minimum wage workers in the fast food industry often have limited alternatives, so small changes in wages might significantly affect their decisions to work or not.

## Incorrect Options:

- **B. Because fast food restaurants had the largest job market at that time.**
  - While fast food restaurants are significant employers, they do not represent the largest job market. The focus was on the prevalence of minimum wage workers, not the size of the industry.
- **D. Because the job market for fast food restaurants is very competitive.**
  - The opposite is true; one of the study's insights is that fast food labor markets may exhibit **monopsony power**, meaning they are less competitive and employers have more control over wages.



My professor revealed the correct answer: A, C, D.

Below is his explanation:

They chose fast food restaurants because the jobs are very competitive and one of the lowest paying jobs where a large fraction of workers are paid minimum wage. If we are looking for the impact of the minimum wage on employment in a monopsony market, this is the place where we would be most likely to see it happen. In addition, since employees could be very responsive to a small difference in wages, we expect a fast response to changes in employment, which therefore facilitates data collection.



Thank you for sharing your professor's explanation! Here's a refined understanding based on their reasoning:

The correct answers are:

- A. Because most of the employees are paid minimum wage.**
- C. Because employees could be very responsive to a small difference in wages.**
- D. Because the job market for fast food restaurants is very competitive.**

## Key Points:

1. **A. Because most of the employees are paid minimum wage.**
  - Fast food restaurants are heavily staffed by minimum wage workers, making them ideal for studying minimum wage effects.
2. **C. Because employees could be very responsive to a small difference in wages.**
  - Employees in this sector have fewer alternatives, so changes in wages are likely to have immediate and observable effects on employment levels.
3. **D. Because the job market for fast food restaurants is very competitive.**
  - While the market might exhibit **monopsony characteristics**, the hiring process within fast food restaurants is competitive, and turnover rates are high. This competitiveness can lead to rapid responses to wage changes, aiding in observable data collection.

## Insight:

Your professor highlights that the fast food industry provides a microcosm where minimum wage dynamics are most likely to manifest clearly, especially in terms of employment changes. It combines characteristics of competitive hiring with broader labor market inefficiencies like monopsony power.



Based on all of the problems above, please construct an engaging explanation that explains all the fancy concepts from scratch behind them.

In the explanation, please include the following:

- all necessary fancy math, formulas, notations, and symbols (if any),
- some tangible or quantitative examples,
- some humor.



Here's an engaging explanation of the concepts behind **Card and Krueger (1994)** and the economic principles at play, presented in a digestible and fun way, while incorporating necessary math, examples, and a dash of humor:

## Let's Start with the Basics: Why Study Wages?

Imagine you run a fast food restaurant (let's call it **Burger Galaxy**). You pay your workers \$10/hour, but suddenly the government says, "Hey! The minimum wage is now \$12/hour!" The big question is: will you fire some workers to save money, or will you keep everyone, raise wages, and maybe even hire more people?

Economists like David Card and Alan Krueger wanted to find out what actually happens, so they turned to a natural experiment involving fast food restaurants in New Jersey (which raised its minimum wage) and Pennsylvania (which didn't). Here's the fancy stuff behind what they did.

## Key Concept #1: Difference-in-Differences (DiD) Analysis

Think of DiD as comparing two runners in a marathon. Runner A (New Jersey) gets a fancy new pair of shoes (minimum wage increase), while Runner B (Pennsylvania) sticks with their old sneakers. If Runner A starts catching up to Runner B, you might conclude the new shoes helped.

In economics, this idea translates to:

$$\text{Impact} = (\text{Post-treatment NJ Employment} - \text{Pre-treatment NJ Employment}) - (\text{Post-treatment PA Employment} - \text{Pre-treatment PA Employment})$$

This equation isolates the effect of the minimum wage hike, assuming both states would have followed **parallel trends** (fancy speak for "similar trajectories") if New Jersey hadn't raised its wage.

## Key Concept #2: Monopsony Power

In competitive markets, employers have to pay fair wages because employees can easily switch jobs (think of a battle royale among employers). But what if there's only one major employer (or a few colluding ones), like **Burger Galaxy**, in a small town? That's a **monopsony**—the labor market version of a monopoly. Employers have the upper hand and can underpay workers.

Here's the trick: When a monopsony employer hires more workers, they have to raise wages for everyone. But if the government imposes a higher minimum wage, this can actually force the employer to hire more people, leading to increased employment! (Cue the gasp: higher wages = more jobs?!)

Fancy math time! In monopsony land:

- Marginal Cost of Labor (MCL) > Wage, because hiring 1 more worker raises wages for others.
- At equilibrium:  $\text{Hire workers where } MCL = \text{Marginal Revenue Product of Labor (MRP}_L\text{)}$ .

A minimum wage caps the employer's exploitation and realigns MCL closer to the wage.

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### Key Concept #3: Concerns About the Study

Sure, Card and Krueger's findings were groundbreaking, but not everyone bought it. Here's why:

#### 1. Small sample size:

It's like testing a new burger recipe on only 10 people and saying the whole world will love it. Scaling up might reveal different results.

#### 2. Cross-border interference:

Workers might commute from Pennsylvania to New Jersey for higher pay, messing up the results. It's like kids hopping from one candy store to another for cheaper chocolates.

#### 3. Parallel trends assumption:

What if New Jersey was always going to have higher employment, even without the wage hike? Then the results wouldn't be due to the policy change.

#### 4. Industry-specific focus:

Fast food workers are great for studying minimum wage effects, but it's like testing a new exercise routine only on pizza lovers. It might not apply to other sectors.

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### A Tangible Example

Let's say **Burger Galaxy** in New Jersey has 10 employees, each earning \$10/hour. The total wage bill is:

$$\text{Total Cost} = 10 \times 10 = \$100 \text{ per hour.}$$

After the minimum wage rises to \$12/hour, the bill becomes:

$$\text{New Total Cost} = 10 \times 12 = \$120 \text{ per hour.}$$

The manager freaks out. "We can't afford this!" they yell. But here's the twist: more people now apply for jobs because \$12/hour is more attractive. **Burger Galaxy** hires 2 more people, and business grows because happier employees = better service.

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### Key Concept #4: Fast Food's Appeal for Studies

Why did Card and Krueger pick fast food restaurants? Because:

- **A:** Most workers are paid minimum wage (you won't see McDonald's hiring a rocket scientist for \$10/hour).
  - **C:** Workers respond quickly to wage changes. Offer them \$12 instead of \$10, and they're in!
  - **D:** The fast food industry is competitive in hiring (but not in pay), so employment effects are easy to observe.
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## Some Humor to Wrap It Up

Picture this: If **Burger Galaxy's** manager has monopsony power, they're like Darth Vader of the labor market, controlling wages with an iron fist. But when the minimum wage rises, the government swoops in like Luke Skywalker, wielding the lightsaber of fairness. Suddenly, the Force (of labor economics) is balanced, and workers get their fair share.

## Conclusion

Card and Krueger showed us that economics is rarely as simple as "higher wages = fewer jobs." Sometimes, a higher minimum wage can create a win-win: better pay and more employment. Of course, this depends on market conditions, and the debate continues. But hey, if nothing else, we've learned that studying economics can be as deliciously complicated as a burger with too many toppings.



To reinforce the understanding, please generate some similar problems and show the solutions.



## Practice Problems with Solutions

Here are some similar problems that reinforce the key concepts from Card and Krueger (1994). Each problem is designed to apply the concepts of **Difference-in-Differences**, **monopsony**, and **minimum wage effects**.

### Problem 1: Parallel Trends in Difference-in-Differences

Two neighboring states, Alpha and Beta, have similar labor markets. State Alpha raises its minimum wage from \$10/hour to \$12/hour, while State Beta keeps it at \$10/hour. Before the wage increase, employment levels in fast food restaurants were:

- State Alpha: 1,000 workers
- State Beta: 1,200 workers

After the wage increase:

- State Alpha: 1,050 workers
- State Beta: 1,190 workers

Using **Difference-in-Differences**, calculate the impact of the minimum wage increase on employment in State Alpha.

### Solution:

Using the DiD formula:

$$\text{Impact} = (\text{Post-treatment Alpha} - \text{Pre-treatment Alpha}) - (\text{Post-treatment Beta} - \text{Pre-treatment Beta})$$

Substituting the values:

$$\text{Impact} = (1,050 - 1,000) - (1,190 - 1,200)$$

$$\text{Impact} = 50 - (-10) = 50 + 10 = 60$$

**Answer:** The minimum wage increase led to an increase of **60 jobs** in State Alpha.

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## Problem 2: Monopsony and Wage Changes

A factory in a small town employs 50 workers at \$8/hour in a monopsony labor market. Each additional worker hired increases the marginal cost of labor by \$2/hour. The factory's marginal revenue product of labor ( $MRP_L$ ) is \$14/hour for all workers. The government imposes a minimum wage of \$10/hour. Will the factory hire more workers under the new minimum wage?

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**Solution:**

- Without the minimum wage, the factory hires workers where  $MCL$  (Marginal Cost of Labor) =  $MRP_L$ .
  - For 1 worker:  $MCL = \$8 + \$2 = \$10$
  - For 2 workers:  $MCL = \$10 + \$2 = \$12$
  - For 3 workers:  $MCL = \$12 + \$2 = \$14$

At \$14/hour  $MCL$ , the factory hires **3 workers** (since  $MCL = MRP_L$ ).

- With the minimum wage of \$10/hour:
  - $MCL$  is capped at \$10/hour until the minimum wage binds.
  - At \$10/hour, the factory can hire more workers without exceeding the  $MRP_L$ .

**Answer:** The factory will hire more than **3 workers** under the new minimum wage because the wage floor forces the employer to pay fairer wages.

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## Problem 3: Industry-Specific Effects

In a study of minimum wage increases, researchers examine three industries:

1. **Fast food:** Minimum wage workers make up 80% of the workforce.
2. **Retail:** Minimum wage workers make up 50% of the workforce.
3. **Tech startups:** Minimum wage workers make up 10% of the workforce.

Which industry is likely to show the largest employment effects of a minimum wage increase, and why?

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**Solution:**

The industry with the highest proportion of minimum wage workers (**fast food**) will exhibit the largest employment effects. This is because the wage increase directly impacts most workers in that industry, whereas industries with fewer minimum wage workers (e.g., tech startups) will see minimal effects.

**Answer:** The fast food industry will show the largest employment effects.

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## Problem 4: Cross-Border Interference

A town lies on the border between States Gamma and Delta. State Gamma raises its minimum wage to \$15/hour, while State Delta keeps it at \$12/hour. Gamma's fast food restaurants report a 5% increase in employment. Could this result be due to cross-border interference? Why or why not?

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### Solution:

Yes, cross-border interference could explain the increase. Workers from State Delta may choose to commute to State Gamma to earn higher wages, inflating Gamma's employment numbers. This would misattribute the employment increase to the minimum wage policy when, in fact, it's due to worker migration.

**Answer:** Yes, cross-border interference is a plausible explanation for the observed increase in employment.

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## Problem 5: Testing Parallel Trends

Suppose in a Difference-in-Differences study, you observe the following pre-policy employment trends in two states:

- State Zeta (Treatment): Employment increases by 3% annually.
- State Theta (Control): Employment increases by 5% annually.

After the policy change:

- State Zeta's employment increases by 7%.
- State Theta's employment increases by 6%.

Does the parallel trends assumption hold? Why or why not?

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### Solution:

The parallel trends assumption requires that, absent the policy change, the treatment and control groups would have experienced similar trends. Here, State Zeta had a pre-policy trend of 3%, while State Theta had a trend of 5%, indicating non-parallel trends. This violates the assumption.

**Answer:** No, the parallel trends assumption does not hold because the pre-policy trends differ.

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These problems reinforce the core concepts with practical calculations and clear explanations, ensuring a deeper understanding of the underlying principles of the Card and Krueger study and its implications.