

Card Krueger Study Debate



True or False? The Card and Krueger (1994) study has been one of the most important papers in labor economics since its publication. No similar studies have been conducted since then, as there is no need to question their findings.



False.

While the Card and Krueger (1994) study is indeed one of the most influential papers in labor economics, it is not true that no similar studies have been conducted since then. Their research, which challenged the conventional wisdom that increasing the minimum wage reduces employment, sparked significant debate and prompted numerous subsequent studies.

Researchers worldwide have replicated, extended, and scrutinized their findings using various methodologies and datasets. Studies have been conducted in different regions and industries to assess the impact of minimum wage changes on employment and other economic outcomes. This ongoing research is essential for validating results, accounting for new data, and understanding the effects in different economic contexts.

Therefore, while the importance of the Card and Krueger study is undeniable, the assertion that no similar studies have been conducted since then is false.



True or False? Prior to Card and Krueger (1994), a large number of economists had already tried to test their theories in the real world.



True.

Prior to Card and Krueger (1994), many economists had indeed tested their theories in the real world using empirical methods. Labor economics, like other fields of economics, has a long tradition of combining theoretical models with empirical data to analyze and predict real-world outcomes. Economists had been studying the effects of minimum wage policies, labor supply and demand, and employment dynamics for decades before Card and Krueger's seminal paper.

However, what set Card and Krueger (1994) apart was their innovative use of natural experiments and Difference-in-Differences (DiD) methodology, which allowed them to compare changes in employment across regions with different minimum wage policies in a more credible way. This methodological advance highlighted the importance of careful empirical analysis in evaluating economic policies, influencing how similar studies were conducted in subsequent years.



My professor has revealed the answer. The correct answer is False.

Below is his explanation:

Prior to Card and Krueger (1994), economists tended to base beliefs and policy recommendations mainly on economic theory. Introducing reliable empirical evidence to test theory made the Card and Krueger (1994) study so compelling when it was published. It marked the beginning of the so-called "credibility revolution" in economics.



Thank you for sharing your professor's explanation! It provides a valuable perspective on the historical context of **Card and Krueger (1994)** and its impact on economics.

The clarification highlights that while some empirical work existed prior to their study, much of the earlier work heavily relied on theoretical assumptions, often without rigorous empirical testing or modern methodologies. The "**credibility revolution**" in economics, sparked by studies like Card and Krueger's, emphasized the use of **reliable empirical methods** (such as natural experiments and Difference-in-Differences analysis) to test economic theories, rather than simply relying on theoretical predictions.

This shift toward evidence-based economics transformed the field, making studies like Card and Krueger's a pivotal moment in labor economics and beyond. It's a reminder of how methodology and empirical rigor can reshape academic and policy debates.



True or False? The Card and Krueger (1994) study had no impact on politics at the time because the study was too complicated for policymakers to understand it.



False.

The **Card and Krueger (1994)** study did have an impact on politics, even though its findings were debated and not universally accepted by all policymakers. While the study introduced complex methodologies like the Difference-in-Differences approach, its central conclusion—that minimum wage increases do not necessarily lead to job losses—was clear and highly relevant to ongoing policy debates about the minimum wage.

Policymakers, labor advocates, and economists referenced the study to argue for or against minimum wage legislation. Although some critics disputed the findings or found the methods challenging to interpret, the study significantly influenced the political discourse by challenging the conventional wisdom of the time. Its implications were widely discussed in both academic and public policy circles, demonstrating that policymakers were indeed able to engage with its key findings, even if not every technical detail was universally understood.



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

In the explanation, please include the following:

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



Let's dive into the fascinating world of economics and labor studies, where fancy math meets real-world drama. Grab your thinking hats—and maybe a cup of coffee—because we're unpacking some “fancy” concepts while making them relatable, sprinkled with a bit of humor for good measure.

1. The Conventional Wisdom: Minimum Wage and Jobs

Before Card and Krueger (1994), economists often relied on a simple supply-and-demand model of the labor market. Imagine a job as a loaf of bread at the market. Employers are the buyers, and workers are the bakers. According to the model, raising the “price” (minimum wage) would mean buyers (employers) would purchase fewer loaves (hire fewer workers).

The “Fancy Math” Version

In the classical competitive model:

$$w^* = \text{Equilibrium Wage where } L_s = L_d$$

Where:

- w^* : The equilibrium wage
- L_s : Labor supply (workers who want jobs)
- L_d : Labor demand (jobs employers want to offer)

If the government sets a minimum wage $w_{\min} > w^*$, the prediction is a **surplus of labor** (unemployment), because $L_s > L_d$.

But here's the catch—real life isn't always that tidy. Markets aren't just equations; they have quirks, complexities, and sometimes outright drama (kind of like reality TV but with spreadsheets).

2. Enter Card and Krueger: Plot Twist!

Card and Krueger's groundbreaking study flipped the script. They used a **natural experiment** to analyze how minimum wage changes impacted fast-food restaurants in New Jersey and Pennsylvania.

Difference-in-Differences (DiD) Explained

Think of DiD as a before-and-after photo comparison with a twist. You're not just comparing one person's weight before and after a diet (minimum wage increase). You're comparing them to their twin, who ate pizza the whole time (a control group).

The basic formula:

$$\Delta Y = (\overline{Y}_{t2} - \overline{Y}_{t1})_{\text{treated}} - (\overline{Y}_{t2} - \overline{Y}_{t1})_{\text{control}}$$

Where:

- Y_{t1}, Y_{t2} : Outcomes (e.g., employment levels) before and after the policy change.
- **Treated**: The group experiencing the policy (New Jersey).
- **Control**: The unaffected group (Pennsylvania).

Their finding? **No significant job losses!** Some restaurants even hired more workers. Cue gasps.

3. Why Was This a Big Deal?

It wasn't just the results but the method that made waves. Card and Krueger didn't just theorize; they measured. They brought **empirical evidence** to the table, giving economists a fancy new toy to play with—natural experiments.

It was like switching from guessing your car's fuel efficiency to actually measuring it. Suddenly, economists had data-driven tools to question long-held beliefs.

4. "Credibility Revolution": The New Wave

Economics had a glow-up, embracing credible, empirical methods. Tools like **randomized controlled trials (RCTs)** and **instrumental variables (IVs)** became household names (at least in economist households).

Example: Why It's Credible

Imagine testing a new fertilizer. You randomly sprinkle it on half the crops and compare their growth to the untreated half. Card and Krueger did something similar, except instead of crops, they used minimum wage laws, and instead of sprinkling fertilizer, they observed legislation (much easier on the back).

5. Tangible Example: The Ice Cream Stand

Picture two neighboring states, Sundaeland and Sprinkletopia. Sundaeland raises its ice cream scooper wage to \$15/hour, while Sprinkletopia stays at \$10/hour. Card and Krueger would:

1. Measure scooper employment in both states **before** the change.
2. Measure it **after** the change.
3. Compare the differences between the two states.

If Sundaeland still has the same or more scoopers, voila! Minimum wage might not melt the job market after all.

6. The Real Impact: A Policymaker's Dilemma

Here's the punchline: Card and Krueger showed that economics isn't just about abstract math; it's about **real people and policies**. Policymakers couldn't ignore their findings, even if they found the math a bit... intimidating. After all, their central message was simple: the labor market is more nuanced than we thought.

A Bit of Humor to Wrap It Up

Economists before 1994: "Raise wages, lose jobs. Simple as that." Card and Krueger: "Hold our calculators."

And as the debate continues, remember this: Economics is like baking cookies. The recipe might work in theory, but sometimes you forget the sugar—and that's when things get interesting.

Key Takeaway: Card and Krueger (1994) revolutionized economics by proving that real-world policies need real-world tests, not just theoretical recipes. So next time someone says, "The math is too complicated," tell them, "It's just a fancy way to say we're testing cookies in two ovens. And yes, one of them has raisins."



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



Here are some problems inspired by the **Card and Krueger (1994)** study and the **Difference-in-Differences (DiD)** methodology. Each problem focuses on interpreting and applying these concepts, along with step-by-step solutions.

Problem 1: Minimum Wage and Employment in Two Cities

Suppose two neighboring cities, **City A** and **City B**, both have a fast-food industry employing workers at the same initial minimum wage of \$10/hour. City A increases its minimum wage to \$15/hour, while City B keeps it at \$10/hour. The employment numbers (in thousands of workers) are as follows:

City	Before (t_1)	After (t_2)
City A (treated)	50	52
City B (control)	48	47

Using the Difference-in-Differences (DiD) method, calculate the impact of the minimum wage increase on employment in City A.

Solution

The DiD formula is:

$$\Delta Y = (\overline{Y}_{t_2} - \overline{Y}_{t_1})_{\text{treated}} - (\overline{Y}_{t_2} - \overline{Y}_{t_1})_{\text{control}}$$

1. Calculate the change in employment for City A (treated group):

$$\Delta Y_{\text{treated}} = 52 - 50 = 2$$

2. Calculate the change in employment for City B (control group):

$$\Delta Y_{\text{control}} = 47 - 48 = -1$$

3. Apply the DiD formula:

$$\Delta Y = (2) - (-1) = 2 + 1 = 3$$

Conclusion: The minimum wage increase is associated with a net increase of 3,000 jobs in City A compared to the control group.

Problem 2: Evaluating Policy Impact with a Tangible Example

Imagine a school district introduces free school lunches in **District X**, but not in the neighboring **District Y**. The goal is to increase student attendance. Attendance rates (as percentages) are as follows:

District	Before (t_1)	After (t_2)
District X (treated)	85%	90%
District Y (control)	80%	81%

What is the impact of the free lunch program on attendance in District X?

Solution

Use the same DiD formula:

$$\Delta Y = (\overline{Y}_{t_2} - \overline{Y}_{t_1})_{\text{treated}} - (\overline{Y}_{t_2} - \overline{Y}_{t_1})_{\text{control}}$$

1. Calculate the change in attendance for District X (treated group):

$$\Delta Y_{\text{treated}} = 90 - 85 = 5$$

2. Calculate the change in attendance for District Y (control group):

$$\Delta Y_{\text{control}} = 81 - 80 = 1$$

3. Apply the DiD formula:

$$\Delta Y = (5) - (1) = 4$$

Conclusion: The free lunch program increased attendance in District X by 4 percentage points relative to the control group.

Problem 3: Analyzing Employment with Negative Impacts

Suppose a new regulation increases costs for small businesses in **State X**, but not in **State Y**. Employment numbers (in thousands) are recorded as follows:

State	Before (t_1)	After (t_2)
State X (treated)	200	190
State Y (control)	180	178

What is the impact of the regulation on employment in State X?

Solution

1. Calculate the change in employment for State X (treated group):

$$\Delta Y_{\text{treated}} = 190 - 200 = -10$$

2. Calculate the change in employment for State Y (control group):

$$\Delta Y_{\text{control}} = 178 - 180 = -2$$

3. Apply the DiD formula:

$$\Delta Y = (-10) - (-2) = -10 + 2 = -8$$

Conclusion: The regulation led to a net decrease of 8,000 jobs in State X compared to the control group.

Problem 4: Adding Humor to Learning

Now for some fun: Imagine two coffee shops, **Latte Land** and **Espresso Empire**. Latte Land increases the price of coffee by 50 cents, while Espresso Empire keeps prices constant. The number of daily customers is recorded:

Coffee Shop	Before (t_1)	After (t_2)
Latte Land (treated)	100	95
Espresso Empire (control)	80	78

What's the impact of the price increase on customer retention for Latte Land?

Solution

1. Change for Latte Land:

$$\Delta Y_{\text{treated}} = 95 - 100 = -5$$

2. Change for Espresso Empire:

$$\Delta Y_{\text{control}} = 78 - 80 = -2$$

3. Apply the formula:

$$\Delta Y = (-5) - (-2) = -5 + 2 = -3$$

Conclusion: The price increase cost Latte Land 3 customers daily, relative to Espresso Empire. Lesson learned: Coffee lovers are price-sensitive, but not *that* much. Maybe throw in free biscotti next time?

These problems and solutions reinforce the **Difference-in-Differences** concept while connecting it to relatable scenarios. Whether it's wages, school programs, or coffee, the math stays consistent—just like the laughs!