

**Alan Krueger: The Credibility
Revolution, the Collage Approach,
and the Minimum Wage**

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Alan Krueger's Scholarly Legacy

- **Revealed the operation of real-world labor markets** as opposed to textbook competitive labor markets – efficiency wages, inter-industry and firm wage differentials, job queues, monopsony power, employer collusion, fairness concerns
- **More credible estimates** of impacts of the minimum wage, education resources, and social insurance policies
- Made the field of economics **more scientific and evidence-based** as **a leader of the credibility revolution** through the development and adoption of credible empirical methods (natural experiments and RCTs) to identify causal relationships
- Made field of economics more humanistic through **innovative survey methods** to better measure subjective well-being, time use, the pain and distress of the jobless, alternative work arrangements, ...

Alan Krueger and the Credibility Revolution

- Credible Identification Approaches: Natural Experiments and RCTs
 - Interaction of CSLs and quarter of birth – Angrist and Krueger (1991 *QJE*)
 - Differential and sharp changes in state laws, differential effects across states and demographic groups of federal law changes to get at impact of minimum wages, social security impact on labor supply, and incidence and impacts of social insurance policies with focus on workers' compensation policies
 - Use of RCTs to get at impact of education policies – Tennessee STAR class size reduction experiment – Krueger (1999 *QJE*)
- Collage Approach – exemplified in minimum wage research & Rockonomics
 - Credible identification approaches to get feasible LATEs using natural experiments and RCTs are an input but not the end of the research process
 - Talk to participants, new survey data, descriptive regressions and correlations to shed light on mechanisms
 - Use administrative data to improve measurement and validate survey results
 - Use history, institutional knowledge (also key to finding plausible sources of identifying variation), and economic theory to interpret what models fit best

Credibility Revolution and Minimum Wage Research I

- Conceptual Frameworks: Conventional Competitive Labor Market vs. Labor Market Frictions & Monopsony Power
- Traditional Empirical Analysis of Employment Impact of Minimum Wage
 - National Time Series Analysis of Teen Employment on Kaitz index (coverage weighted minimum wage over average wage)
 - State panel data using Kaitz index (**let it rip approach**)
 - $\ln E_{st} = \alpha + \beta \ln(MW_{st}/W_{st}) + X_{st}\gamma + \delta_s + \theta_t + \varepsilon_{st}$
 - Much of variation in minimum wage index from denominator and unobserved labor demand / labor market condition shocks lead to overly negative estimates

Credibility Revolution and Minimum Wage Research II

- **Natural experiment approach**

- Use natural experiments focusing on sharp changes in MW itself not just the ratio of (MW/W)
- Cross-state panel data analyses of state and federal minimum wage changes
- Within state and sector specific studies of differential impacts of minimum wage changes across establishments and types of workers and local minimum wage changes
- State border discontinuity analyses of state minimum wage changes
- Introduction of new minimum wages in Britain and Germany
- Examples Katz and Krueger (1992 *ILRR*), Card (1992 *ILRR*), Card and Krueger (1994 *AER*, 1995 *Myth and Measurement*), Card-Katz-Krueger (1994 *ILRR*), Dube et al. (2010 *RESTAT*), Cengiz-Dube-Lindner-Zipperer (2019 *QJE*)

Minimum Wage Research – Collage Approach

- Natural experiments to estimate impacts of minimum wage changes on wages and employment in low-wage labor market – 7 different complementary approaches in Card and Krueger *Myth and Measurement*
- Natural experiment estimates of wage spillover effects and impacts on wage inequality, poverty, and income inequality
- Documenting “Puzzles” about the minimum wage
 - Spike in wage distribution at minimum wage
 - Reluctance of employers to use youth and training subminimum wages
 - Reservation wages respond to minimum wage in field and in laboratory labor market experiments – Katz and Krueger (1991, 1992) and Falk-Fehr-Zehnder (2006 QJE)
 - Large job queues at minimum wage show can’t fully dissipate rents with lower benefits and more effort demands – Holzer, Katz, and Krueger (1991 QJE)

The Credibility Revolution Illustrated – Natural experiments from sharp minimum wage changes as sources of identifying variation for wage and employment impacts – Card and Krueger (1995, *Myth and Measurement*)

TABLE 12.1
Summary of Estimated Employment Effects

<i>Analysis</i>	<i>Source of Wage Change</i> (1)	<i>Nature of Comparison</i> (2)	<i>Proportional Effects on</i>	
			<i>Wages</i> (3)	<i>Employment</i> (4)
1. New Jersey–Pennsylvania Fast-Food Restaurants	New Jersey minimum wage rises to \$5.05 April 1992	Across states and within NJ between high- and low-wage restaurants	0.11*	0.04
2. Texas Fast-Food Restaurants	Federal minimum wage rises to \$4.25 April 1991	Between high- and low-wage restaurants	0.08*	0.20*
3. California Teenagers	California minimum wage rises to \$4.25 July 1988	Between teenagers in California and comparison areas	0.10*	0.12
4. Cross-States, Teenagers, 1989–1992	Federal minimum wage rises from \$3.35 to 4.25	Across states with higher and lower fractions earning \$3.35–4.24 in 1989	0.08*	0.00
5. Cross-States, Workers with Low Predicted Wages, 1989–1992	Federal minimum wage rises from \$3.35 to 4.25	Across states with higher and lower fractions earning \$3.35–4.24 in 1989	0.07*	0.02
6. Cross-States, Employees in Retail Trade, 1989–1992	Federal minimum wage rises from \$3.35 to 4.25	Across states with higher and lower fractions earning \$3.35–4.24 in 1989	0.05*	0.01
7. Cross-States, Employees in Restaurant Industry, 1989–1992	Federal minimum wage rises from \$3.35 to 4.25	Across states with higher and lower fractions earning \$3.35–4.24 in 1989	0.07*	0.03*

Note: Estimated wage and employment effects are proportional changes relative to pre-minimum-wage period. In rows 1 and 2, the wage effects are for starting wages only. In other rows, the wage effects are for mean log wages of the specified group.

*Indicates that the estimate is based on an underlying model in which the effect of the minimum-wage impact variable is statistically significant at the 5 percent level.

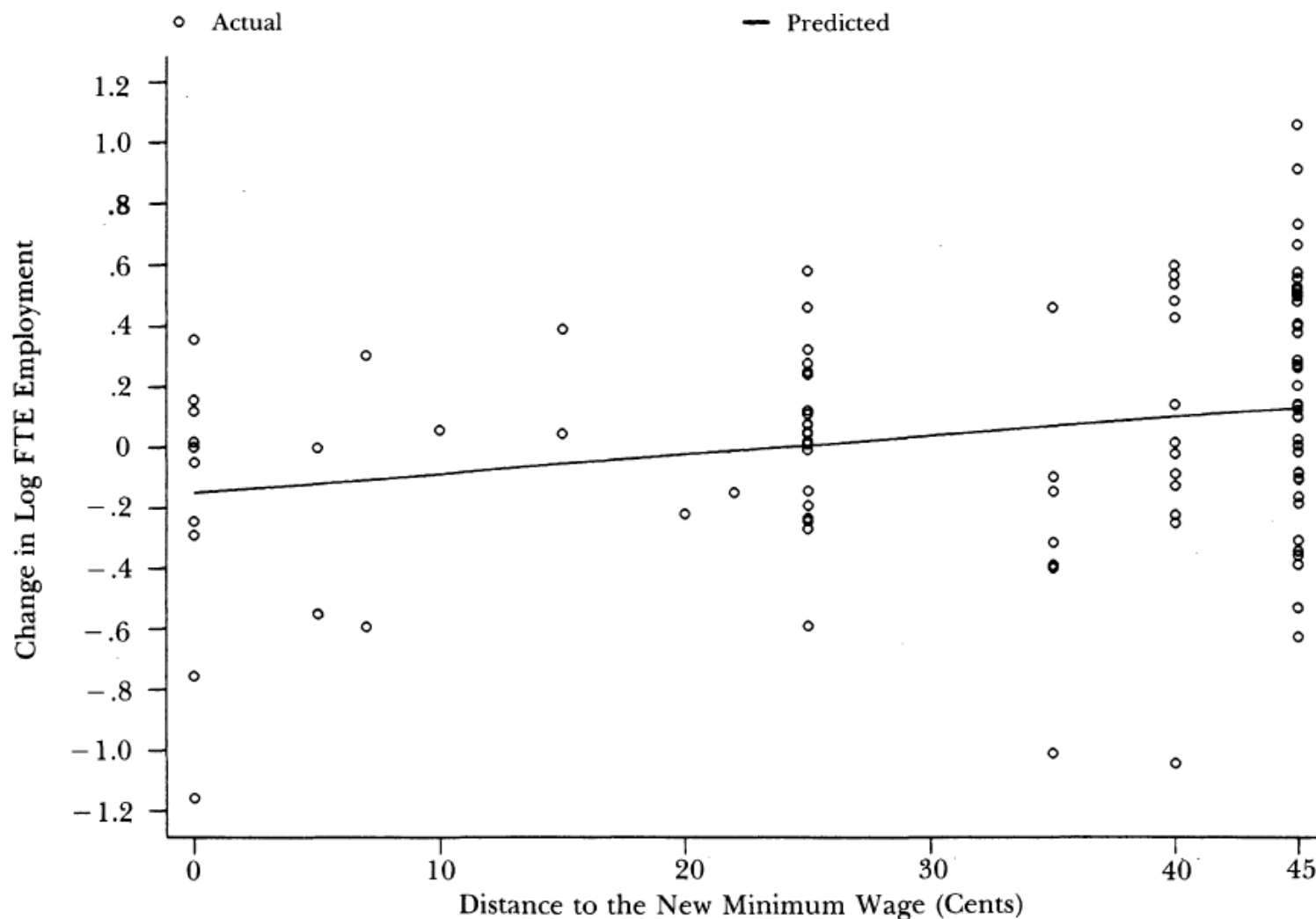
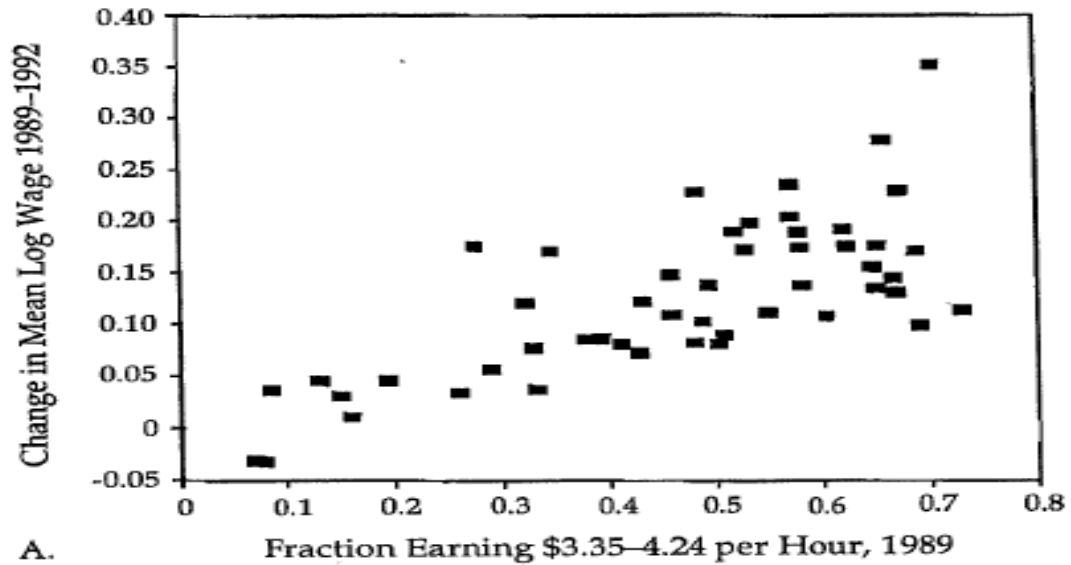
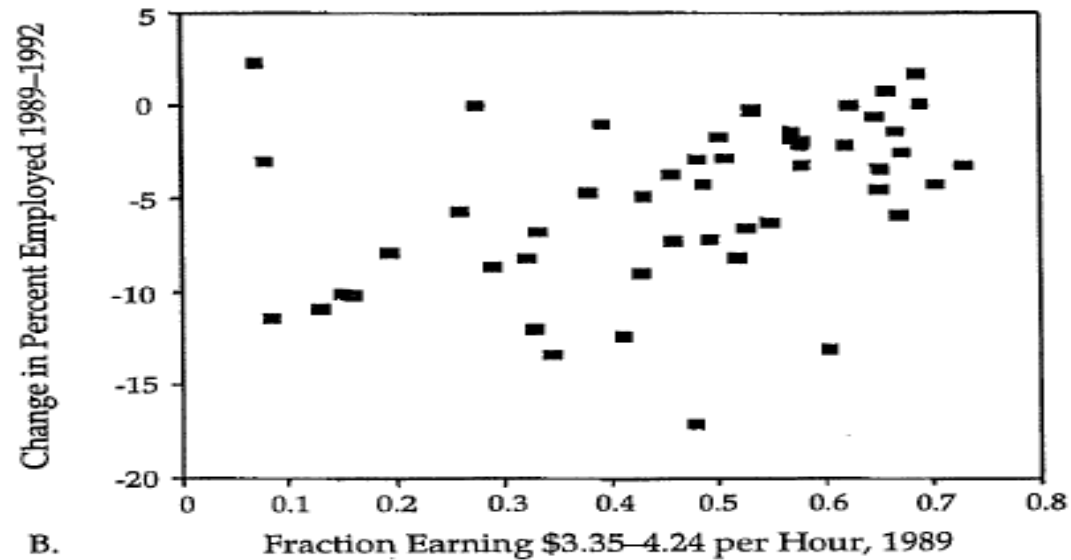


Figure 2. Employment Effects of the April 1, 1991, Minimum Wage Increase on Texas Fast-Food Restaurants: Changes in Full-Time Equivalent Employees (FTEs) Plotted Against the Difference Between the New Minimum Wage and the Establishment's Wage Rate Prior to the Effective Date of the New Minimum Wage Law.



A.



B.

Cross-State Analysis of 1990 and 1991 federal Minimum wage increase from \$3.35 to \$4.25 by Minimum wage bite, 1989 to 1992 changes

Card and Krueger (1995): *Myth and Measurement*

Figure 4.5 Interstate patterns of wage and employment growth, 1989-1992. A. Change in teenage wage rates. B. Change in teenage employment rates.

The idea: Contrast employment losses below MW with employment gains above MW

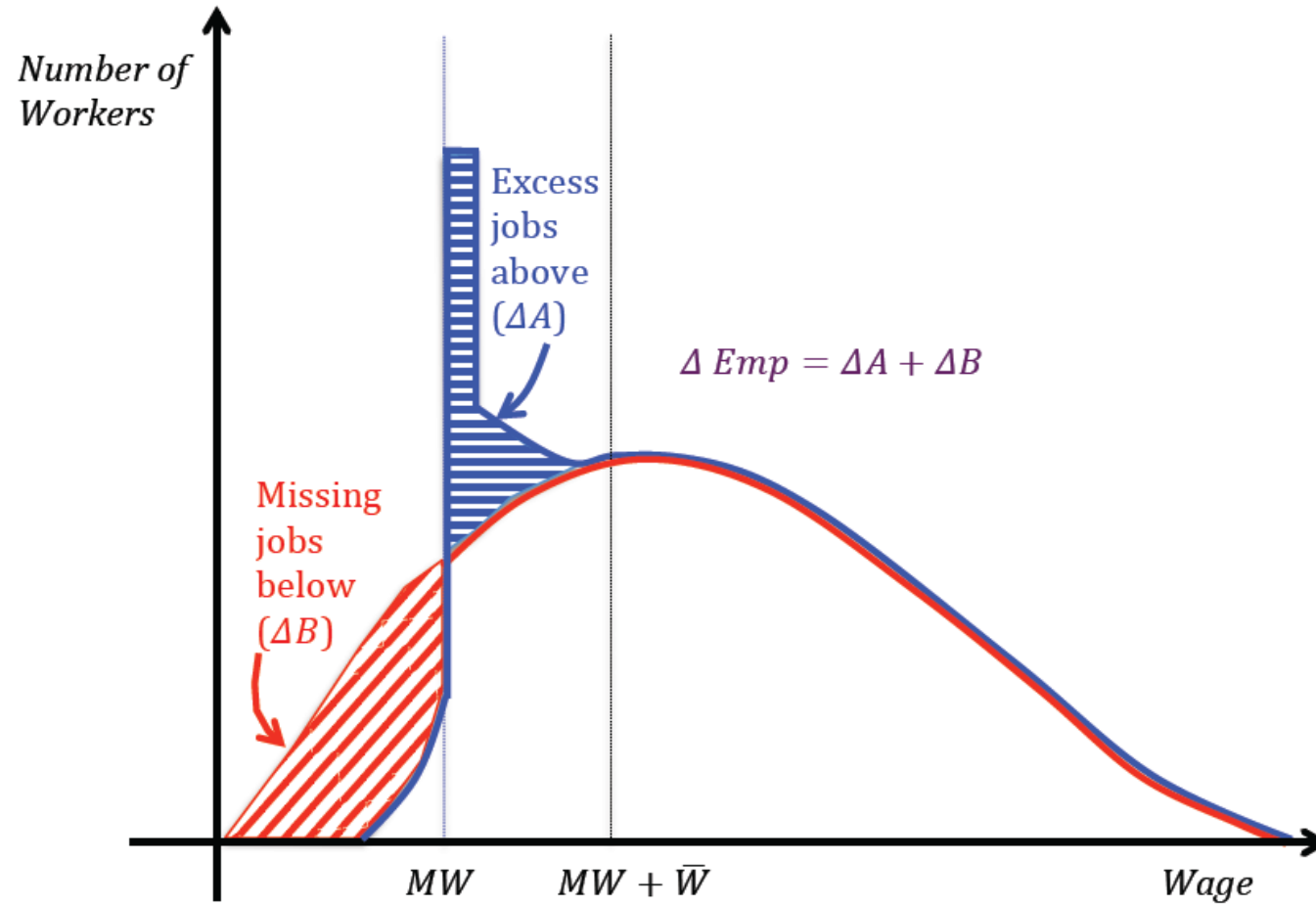
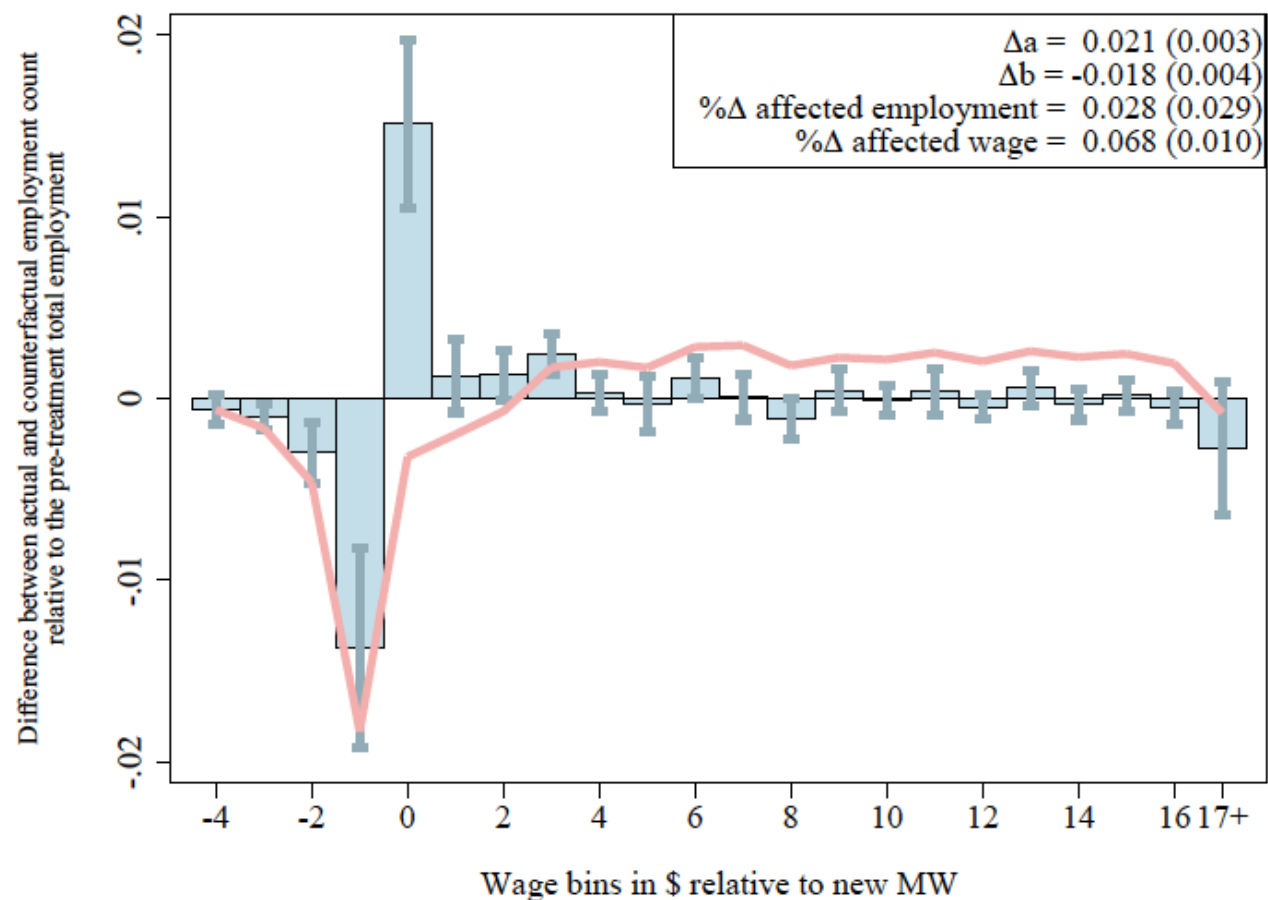


Figure 2: Impact of Minimum Wages on the the Wage Distribution



Notes: The figure shows the main results from our event study analysis (see equation 1) exploiting 138 state-level minimum wage changes between 1979-2016. The blue bars show for each dollar bin (relative to the minimum wage) the estimated average employment changes in that bin during the 5-year post-treatment relative to the total employment in the state one year before the treatment. The error bars show the 95%