Time Series Minimum Wage Studies Meta-Analysis

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Introduction

- the main goal of this project was to reproduce the results of a well-cited meta-analysis

Card, David, and Alan B Krueger. 1995. "Time-Series Minimum-Wage Studies: A Meta-Analysis." The American Economic Review 85 (2)

- and to extent the research by adding more studies:

Bernstein, Jared, and John Schmitt. 2000. "The Impact of the Minimum Wage." Economic Policy Institute.

Bazen, Stephen, and Velayoudom Marimoutou. 2002. "Looking for a Needle in a Haystack? A Re-Examination of the Time Series Relationship Between Teenage Employment and Minimum Wages in the United States." Oxford Bulletin of Economics and Statistics 64

- full repository of the project can be found on GitHub
- requirements to re-run the obtained results are:

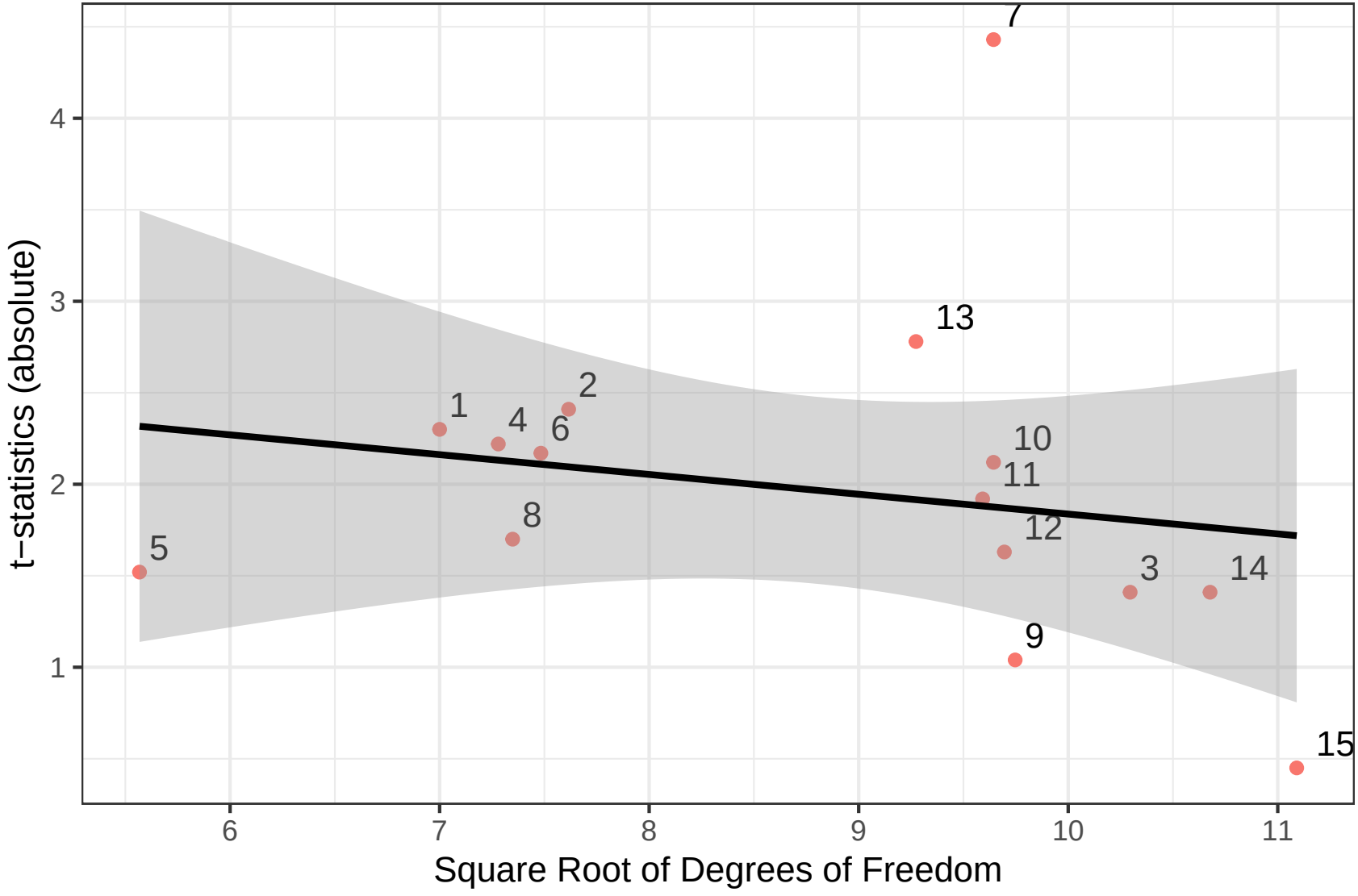
`R version 4.0.5`, `rmarkdown 2.8.0`, `tidyverse 1.3.1`, `stargazer 5.2.2`

Reproducing the Results (1/4)

- we needed to look for various statistics not only in the Card and Krueger meta-analysis, but in supporting papers as well as in original sources
- we found data for all 15 papers, but failed to reproduce `teenager sub-group` binary variable, due to lack of available information

Reproducing the Results (2/4)

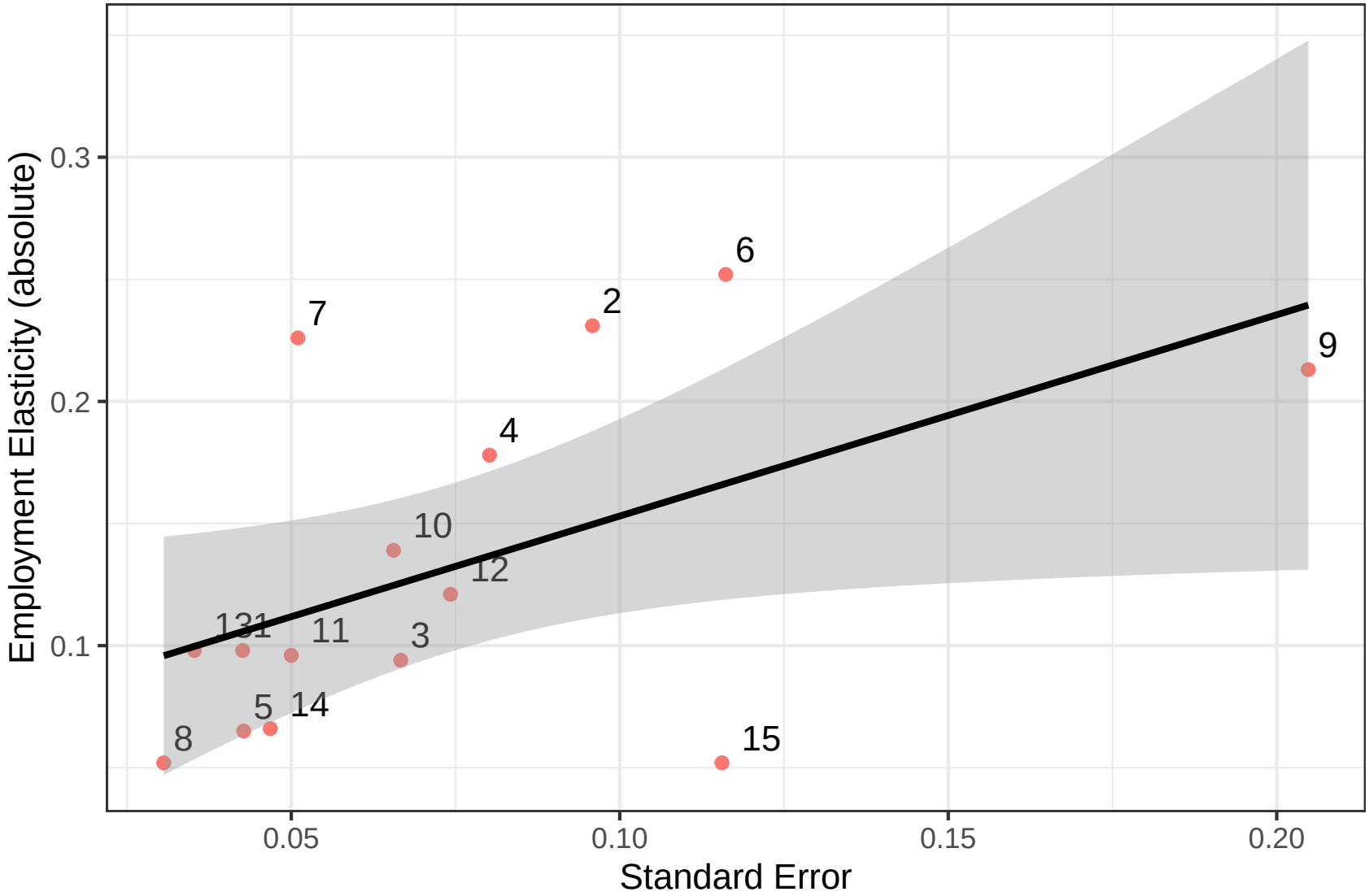
Figure 1. Estimated t-statistics compared to Degrees of Freedom



Note: Presented sample is the one analysed by Card and Krueger. The fitted regression line is simple linear model with 95 pct. confidence intervals.

Reproducing the Results (3/4)

Figure 2. Estimated Employment Elasticity compared to Standard Error Estimate



Note: Presented sample is the one analysed by Card and Krueger. The fitted regression line is simple linear model with 95 pct. confidence intervals. Line without confidence intervals represent the Standard Error multiplied by 2.

Reproducing the Results (4/4)

Table 1. Regression Models for the Logarithm of Absolute t-statistics of Minimum Wage Emplyoment Effect

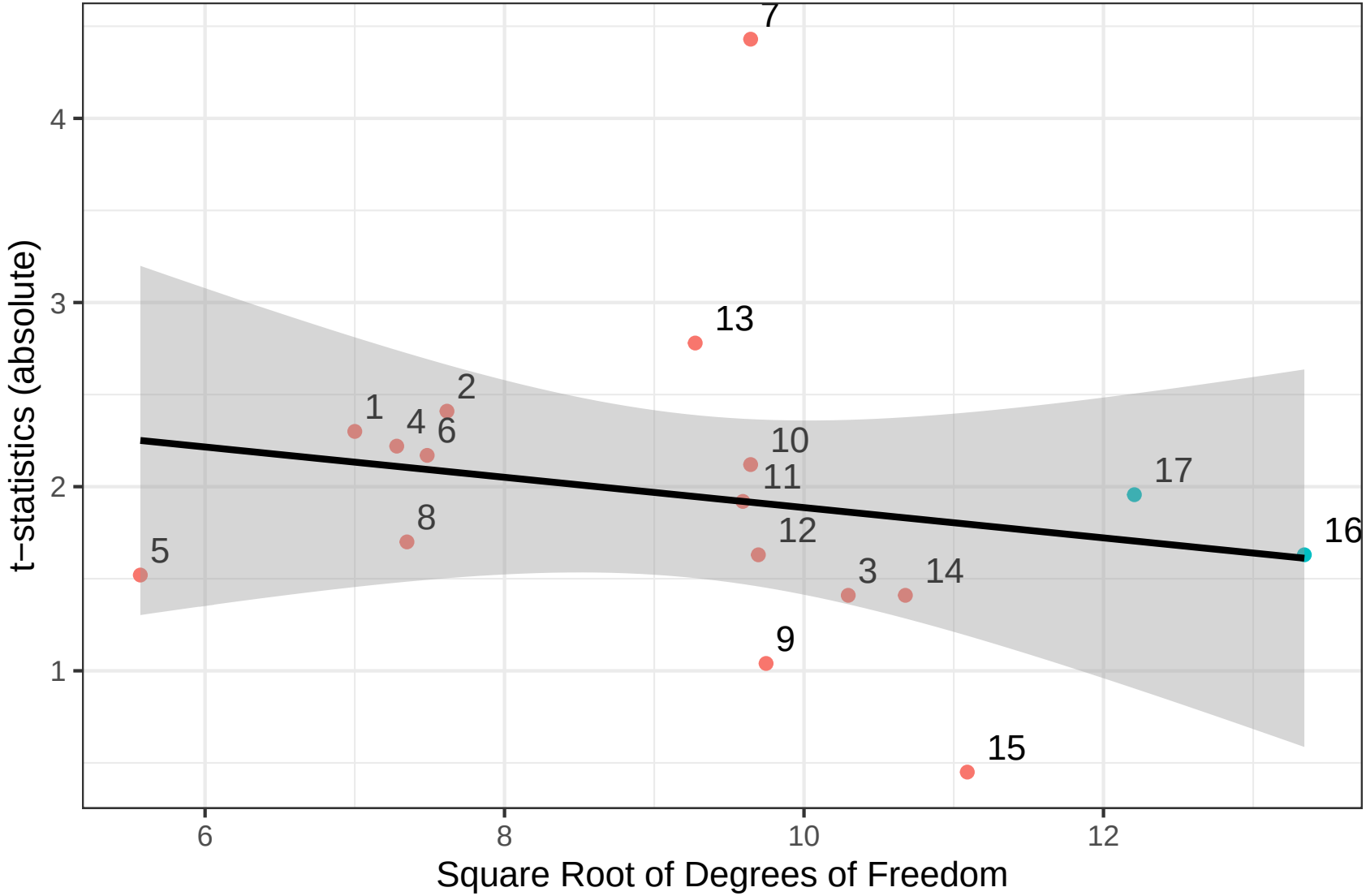
	Dependent variable:		
	log(t_stat)		
	(1)	(2)	(3)
l_sqrt_df	−0.81	−0.64	−0.94
	(0.69)	(0.66)	(0.62)
autoreg_correction		−0.07	−0.11
		(0.27)	(0.24)
log_spec		−0.55*	−0.63**
		(0.28)	(0.26)
no_exp_var			0.05*
			(0.03)
Constant	2.31	2.41	2.61*
	(1.49)	(1.40)	(1.27)
Observations	15	15	15
R^2	0.10	0.33	0.50
Adjusted R^2	0.03	0.15	0.30
Residual Std. Error	0.50 (df = 13)	0.47 (df = 11)	0.43 (df = 10)
F Statistic	1.37 (df = 1; 13)	1.83 (df = 3; 11)	2.51 (df = 4; 10)
Note:			*p<0.1; **p<0.05; ***p<0.01

Note: The sample used to estimate regression models is the same as in original meta-analysis by Card and Krueger. The binary variable for teenager sub-sample was removed, due to lack of information available to authors.

Extending the Meta-Analysis (1/4)

Extending the Meta-Analysis (2/4)

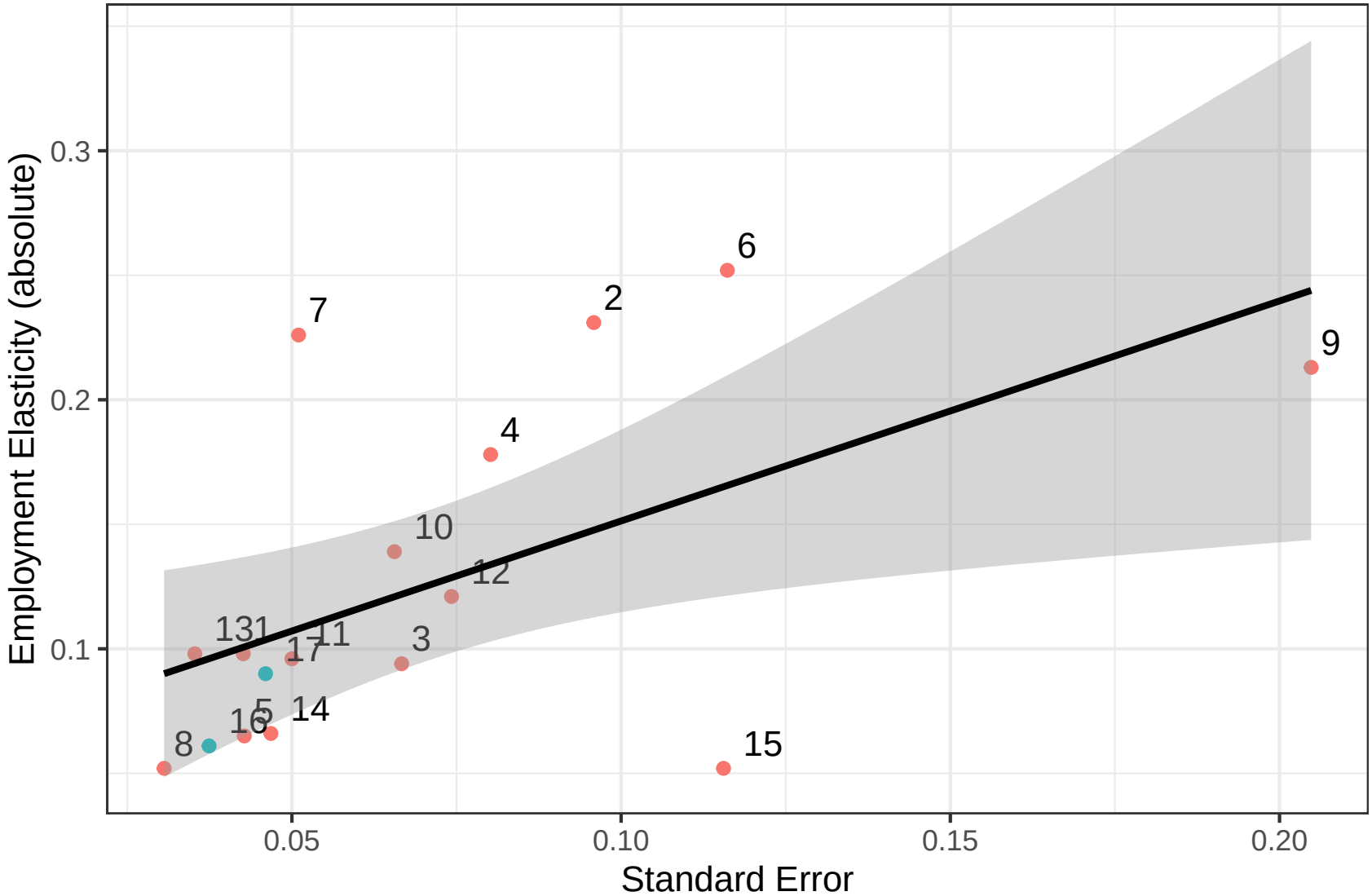
Figure 3. Estimated t-statistics compared to Degrees of Freedom (Extended)



Note: Presented sample is the one analysed by Card and Krueger extended by two additional studies published after the publication of the original meta-analysis. The fitted regression line is simple linear model with 95 pct. confidence intervals. Blue colour indicates the studies added to the reproduced original meta-analysis by Card and Krueger.

Extending the Meta-Analysis (3/4)

Figure 4. Estimated Employment Elasticity compared to Standard Error Estimate (Extended)



Note: Presented sample is the one analysed by Card and Krueger extended by two additional studies published after the publication of the original meta-analysis. The fitted regression line is simple linear model with 95 pct. confidence intervals. Line without confidence intervals represent the Standard Error multiplied by 2. Blue colour indicates the studies added to the reproduced original meta-analysis by Card and Krueger.

Extending the Meta-Analysis (4/4)

Table 2. Regression Models for the Logarithm of Absolute t-statistics of Minimum Wage Emplyoment Effect (Extended)

	Dependent variable:		
	log(t_stat)		
	(1)	(2)	(3)
l_sqrt_df	−0.54	−0.31	−0.47
	(0.53)	(0.54)	(0.52)
autoreg_correction		−0.05	−0.07
		(0.26)	(0.24)
log_spec		−0.52*	−0.57**
		(0.27)	(0.25)
no_exp_var			0.04
			(0.03)
Constant	1.76	1.69	1.65
	(1.18)	(1.13)	(1.07)
Observations	17	17	17
R^2	0.06	0.28	0.40
Adjusted R^2	0.001	0.11	0.20
Residual Std. Error	0.48 (df = 15)	0.45 (df = 13)	0.43 (df = 12)
F Statistic	1.02 (df = 1; 15)	1.64 (df = 3; 13)	2.00 (df = 4; 12)
Note:			*p<0.1; **p<0.05; ***p<0.01

Note: The sample used to estimate regression models is the same as in original meta-analysis by Card and Krueger extended by two additional studies published after the publication of the original meta-analysis. The binary variable for teenager sub-sample was removed, due to lack of information available to authors.

Conclusions

Thank You