

Spillover Effects of Amazon's 2018 Minimum Wage Increase

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Introduction

- The e-commerce industry consists of firms selling products over the Internet, and its convenience has led to the industry's flourishing despite the COVID-19 pandemic.
- Over the past two decades, Amazon has climbed its way to the top of the e-commerce industry.
- In November of 2018, Amazon raised their minimum wage to \$15 for all workers.
- Amazon's fulfillment and sortation centers employ approximately twenty percent of all warehouse employees in the U.S, one must ask whether or not their recent institution of a \$15 minimum wage in 2018 has had any spillover effects in the past two years.
- The spillover effects that will be studied include overall warehousing industry wages and employment as well as Amazon's impact clothing retail store employment and air travel costs.

Literature Review

- The warehousing industry has often consisted of low-wage workers who barely make enough to meet the cost of living in their area (Boncich and DeLara 2009; Allison, Herrera and Reese 2015).
- Mandel (2017) finds that a shift away from retail to e-commerce reliance has resulted in a reduction income inequality.
- Robischon (2017) finds that increased automation in Amazon warehouses led to need for more low-level employees for services such as boxing, organization and general supervision
- Cengiz et al. (2019) find that low-wage jobs remained unchanged over a five-year period following a minimum wage increase, and any wage spillovers were mostly found toward the bottom of the wage distribution.

Methodology and Data

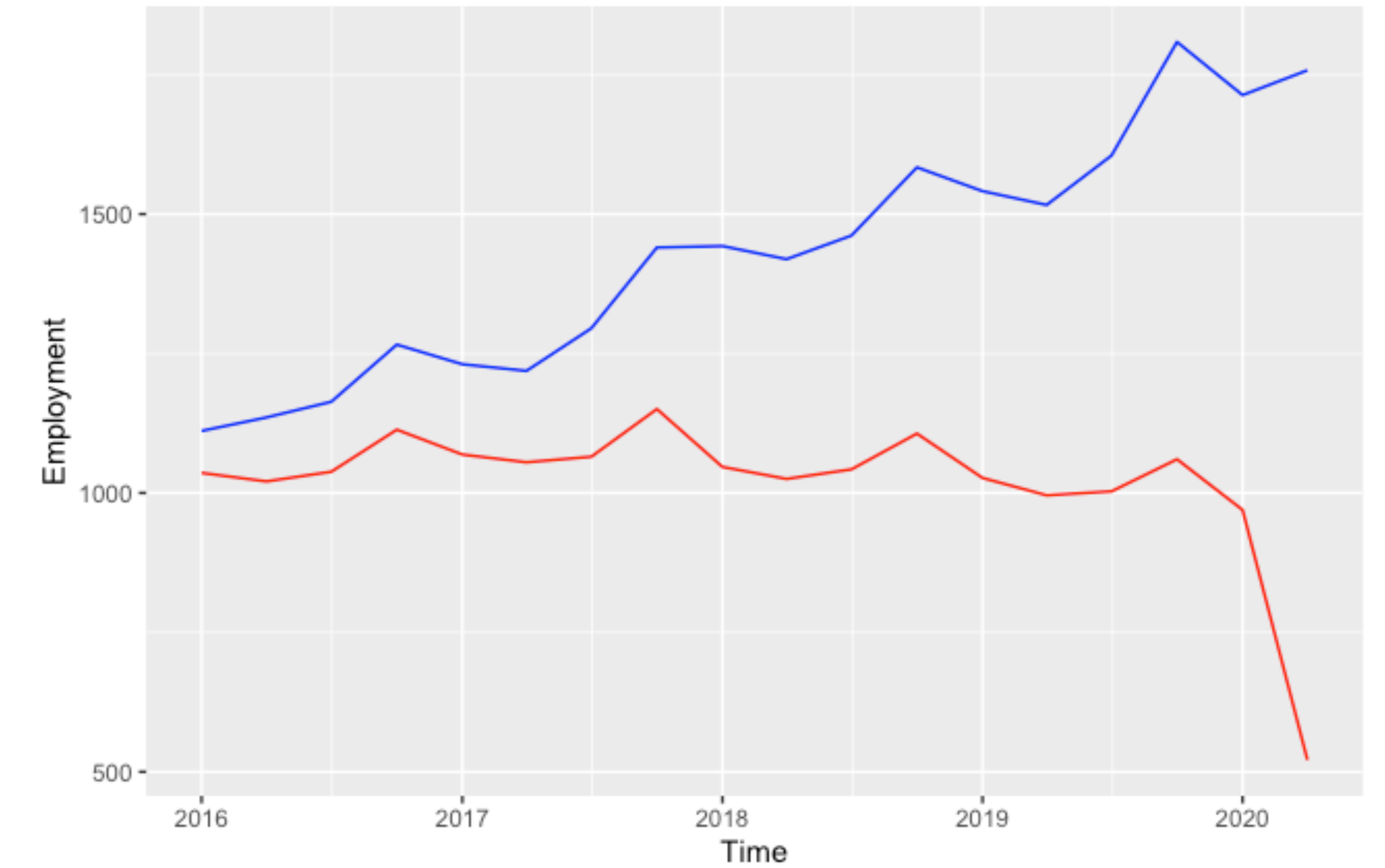
Conducted a county-level, panel data analysis of wages and employment in the warehousing industry as well as spillover effects on retail employment

$$\log(\text{Dep. var.}) = B_0 + B_1 * d\text{Amazon}_i + B_2 * D2018 + B_3 * d\text{Amazon}_i * D2018 + \text{Controls} + \varepsilon_{i,t}$$

Description of variables:

- Dep. Var: average total wages, average warehousing to total emp ratio, average retail to total emp. ratio
- dAmazon: Dummy variable; 1 if the county has an Amazon warehouse, 0 otherwise
- D2018: Dummy variable; 1 if the year is after 2018, 0 otherwise (Minimum wage bump occurred at the end of 2018)
- Controls:
 - County education level (% of population with at least a Bachelor's degree)
 - State minimum wage level
 - County level unemployment rate
 - Number of warehousing establishments in each county per quarter

Clothing Retail vs. Warehousing Employment



Empirical Analysis Results

	Dependent variable: log(AvgTotalWages)				Dependent variable: log(WarehousingEmpRatio)			
	FD (1)	panel linear FE (2)	RE (3)	OLS (4)	FD (1)	panel linear FE (2)	RE (3)	OLS (4)
dAmazon			0.007 (0.022)	0.198*** (0.042)			0.454*** (0.125)	-1.858*** (0.101)
d2018	-0.038*** (0.007)	0.006 (0.004)	0.0001 (0.004)	0.081*** (0.009)	0.014* (0.008)	0.027*** (0.008)	0.033*** (0.008)	0.110*** (0.016)
dAmazon2018	-0.024* (0.014)	-0.031*** (0.007)	-0.032*** (0.007)	-0.031*** (0.007)	0.024 (0.015)	0.160*** (0.013)	0.167*** (0.013)	0.166*** (0.013)
EducLevel			-0.004** (0.002)	-0.027*** (0.007)			-0.0003 (0.011)	0.321*** (0.018)
MinimumWage	-0.001 (0.006)	-0.005* (0.003)	0.0001 (0.002)	-0.006** (0.003)	-0.003 (0.008)	0.006 (0.007)	0.001 (0.006)	0.002 (0.006)
Unemp	0.047*** (0.006)	0.010*** (0.003)	0.006** (0.002)	0.016*** (0.004)	0.002 (0.011)	-0.039*** (0.010)	-0.034*** (0.009)	0.010 (0.012)
EstabsCount					0.008*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
Observations	10,423	11,300	11,300	11,300	5,455	6,047	6,047	6,047
R ²	0.014	0.005	0.857	0.788	0.014	0.107	0.101	0.979
Adjusted R ²	0.013	-0.079	0.857	0.770	0.013	0.010	0.099	0.977
Residual Std. Error				0.125 (df = 10405)				0.196 (df = 5440)
F Statistic	36.495*** (df = 4; 10418)	13.008*** (df = 4; 10419)	42.896*** (df = 894; 10405)	43.291*** (df = 894; 10405)	15.275*** (df = 5; 5449)	131.114*** (df = 5; 5450)	662.717*** (df = 606; 5440)	418.621*** (df = 606; 5440)

Note: *p<0.1; **p<0.05; ***p<0.01

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Interpretation and Conclusion

- In terms of the effect on total wages, we find that following 2018 Amazon counties found a 3.1% decrease in wages. This can be backed up by existing literature stating that Amazon's growth and automation has led to an increase in low-level employees.
- When looking at spillover effects on employment, we find that Amazon counties after 2018 saw a 16.6% increase in warehousing employees, and hence a positive effect of the minimum wage on employment.
- When average retail employment is set as the dependent variable, I find that retail employment is down 2.2% after 2018 in counties with an Amazon warehouse.

