

# COVID19 and discrimination towards Chinese products

## – Evidence from Amazon data

Danyang Zhang <sup>1</sup>    Alma Cortes Selva <sup>2</sup>    Yipu Deng <sup>3</sup>

<sup>1</sup> Ph.D. Candidate, Purdue University

<sup>2</sup> Moody's Corporation

<sup>3</sup> Assistant Professor, Hong Kong University

November 22, 2021

★★★★ Straight Outta China

Came straight from a factory in China, not exactly what I was looking for during a pandemic that started there.

★★ china

they ship from china you know where the virus first broke out

## ● Highlights of Data

- Directly identify discrimination to Chinese products from comments
- High data frequency
- Get around the problem of product quality (potentially & directly)
- From customers' perspective (same information customers can see)

- Political Tension and Trade
  - Du et al. (2017), Lin et al. (2019), Waugh (2019)
- Online retailers
  - Cui et al. (2012), Chong et al. (2017), Lu et al. (2013), Zhu and Zhang (2010), Luca (2016), Chen and Wu (2020)
- Impact of Covid-19 and Trade
  - Fuchs et al. (2020), Osberghaus et al. (2020), Finnoff et al.(2020)
- Unequal burden of Covid-19
  - Stearns et al. (2021), Amuedo-Dorantes et al. (2021)

- Main results:
  - Comments that express discrimination towards Chinese products (or simply identify the product as Chinese) lower the rating of these products (both by themselves and by affecting other consumers)
  - The cumulative impact of these comments are larger than the contemporaneous impacts
  - These impacts are short-lived

- Keepa
  - Under Health and Household, in title "face mask", at least 3 ratings
  - Daily data: price, average rating, number of ratings, sales rank
  - Constant over time: ASIN (Amazon Standard Identification Number), brand, manufacturer, product feature, product description
- Comments/reviews
  - Only on face mask
  - review title, review content, name of reviewer, date of review, rating associated with this review
- Panel (unbalanced)
  - Matched on ASIN and date
  - Time span: 2019.09.01 - 2020.09.07
  - Matched 70,136 comments
  - 1400 ASINs in final sample



# Distribution of ratings

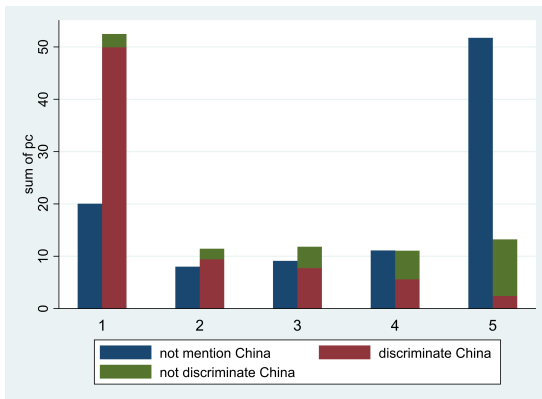


Figure 2: Within Chinese products, by comment type

China vs. non-China

Example (men vs dis)

# Discriminative Reviews

Table 1: comment-level data: Direct impact – discriminative comments give low ratings

	Review rating			No quality
Dummy(discrimination)	-1.982*** (0.0581)	-1.933*** (0.0579)	-1.928*** (0.0588)	-1.869*** (0.0680)
Ln(price)			0.129 (0.157)	0.118 (0.161)
Average rating			0.136*** (0.0392)	0.137*** (0.0395)
Ln(sales rank)			0.0185 (0.0166)	0.0189 (0.0168)
Constant	3.666*** (0.0555)	3.663*** (0.00127)	2.629*** (0.433)	2.639*** (0.440)
Date	No	Yes	Yes	Yes
ASIN	No	Yes	Yes	Yes
Observations	26,986	26,909	26,902	26,902
R-squared	0.032	0.203	0.204	0.195

Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: Column 4 is dummy for whether the review contains discrimination towards Chinese products but does not complain about quality of the product



- Product-Day Panel

$$Y_{it} = \alpha_{it} + \beta Discrimination_{it} + \gamma X_{it} + \theta_i + \theta_t + e_{it}$$

- $i$ : product (ASIN)
- $t$ : time (day)
- $Y_{it}$ : average rating, number of ratings (to proxy for sales)
- $Discrimination_{it}$ : share of discriminative reviews (on the same day, lagged, or cumulatively)
- $X_{it}$ : price, sales rank, average rating (lagged)
- $\theta_i, \theta_t$ : product and time fixed effects

Table 4: Contemporaneous and lag impact of discriminative comments on average rating

	Average Rating					No quality
Share of discriminative reviews	-0.125*	-0.116***	-0.111***			-0.119**
	(0.0743)	(0.0402)	(0.0408)			(0.0495)
L. Share of discriminative reviews				-0.133***	-0.0227*	
				(0.0413)	(0.0123)	
L. Average rating					0.966***	
					(0.00275)	
Controls	No	No	Yes	Yes	Yes	Yes
Date	No	Yes	Yes	Yes	Yes	Yes
ASIN	No	Yes	Yes	Yes	Yes	Yes
Observations	46,159	46,159	46,062	45,705	45,705	46,062
R-squared	0.000	0.578	0.579	0.580	0.978	0.579

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

sales

- Impact of the discriminative comments overtime- daily

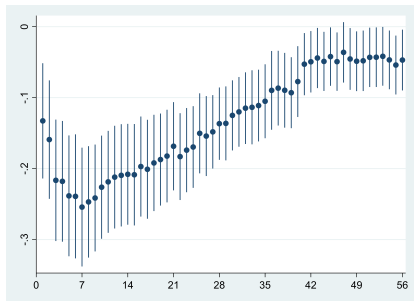


Figure 3: total impacts

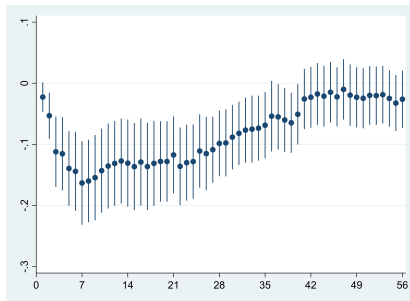


Figure 2: indirect impacts (though other customers)

Amazon Example

Table 5: Cumulative impact (use cumulative share instead of daily share)

		Average Rating			
					No quality
Share of discriminative reviews (Cumulative)	-1.349*** (0.325)	-1.235*** (0.303)	-1.221*** (0.292)	-0.0736*** (0.0229)	-1.075*** (0.294)
L.Average rating				0.965*** (0.00285)	
Controls	No	No	Yes	Yes	Yes
Date	No	Yes	Yes	Yes	Yes
ASIN	No	Yes	Yes	Yes	Yes
Observations	46,159	46,159	46,062	45,705	46,062
R-squared	0.019	0.585	0.587	0.978	0.584

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

sales

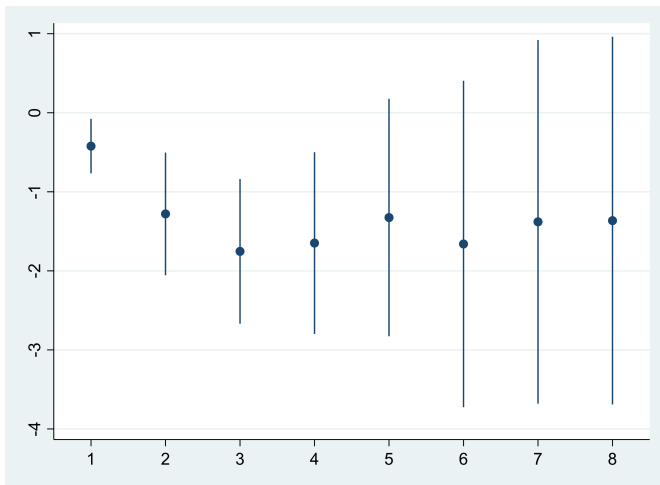


Figure 5: Cumulative impact of discriminative comments

# Why still buy it

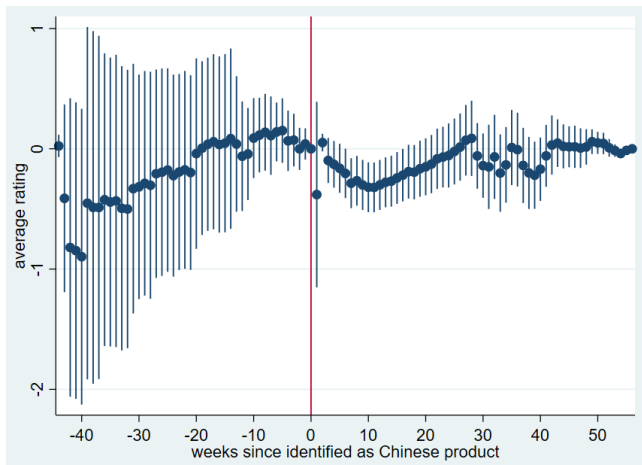
- Do not know / no information revealed previously
  - ★ Made in CHINA — Warning: these come directly from China. Package is written in Chinese. I have thrown them away. Make your own mask; it will be safer.
  - ★★ FYI These are made in China — Sold by a US company, but made in China.
- Not so much choice / hard to find a non-Chinese product
  - ★★★★★ Fast shipping—nice mask — I questioned getting a mask from China, but couldn't find one in the US
  - ★★★★★ Works well for me — I find it troubling that it's so difficult to find masks on Amazon that is not from China. I spent nearly an hour digging into every surgical mask trying to find ones not from China.

- Product-Week Panel

$$Y_{it} = \alpha_{it} + \sum_{k=-\infty}^{\infty} \beta_k \text{Treat}_{ik} + \gamma X_{it} + \theta_i + \theta_t + e_{it}$$

- $i$ : product (ASIN)
- $t$ : time (week)
- $Y_{it}$ : average rating
- $\text{Treat}_{ik}$ : week  $k$  since product  $i$  is identified as Chinese
- $X_{it}$ : price, sales rank
- $\theta_i, \theta_t$ : product and time fixed effects

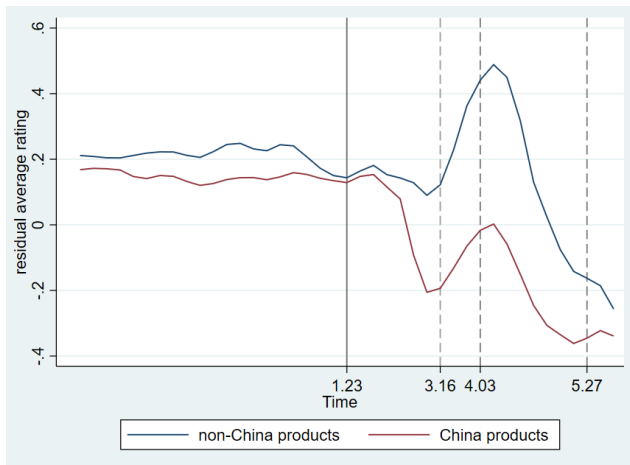
# Event Study



Event Study (fully-dynamic)



# DID - common trend



dis rise

share change

# DDD - Big Events

Events on 2020 (attitudes towards China/Chinese)

VARIABLES	(1) Jan 23	(3) Mar 16	(4) Apr 3	(5) May 27	(6) June 30
Treated*Event	-0.195** (0.0785)	-0.193** (0.0785)	-0.187** (0.0788)	-0.134* (0.0738)	-0.0415 (0.0619)
Controls	Y	Y	Y	Y	Y
Date	Y	Y	Y	Y	Y
ASIN	Y	Y	Y	Y	Y
Observations	151,564	151,564	151,564	151,564	151,564
R-squared	0.669	0.669	0.669	0.669	0.669

Notes: Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. On Jan 23, news on covid19 is first widely out (date that Wuhan has city lockdown). On Mar 16, former president Trump use the word "Chinese virus" on twitter. On Apr 3, CDC first changed tone and starts recommending wearing of face mask. On May 27, first time that cumulative death from covid19 in US exceeds 100,000 (widely covered in news). On June 30, Hong Kong's Security Law gets passed and executed.

# Future plans/Current problems

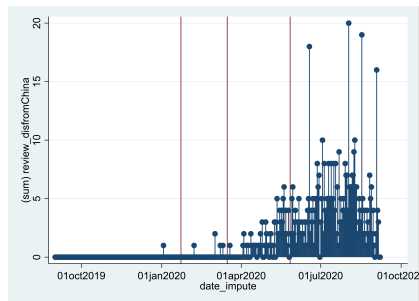
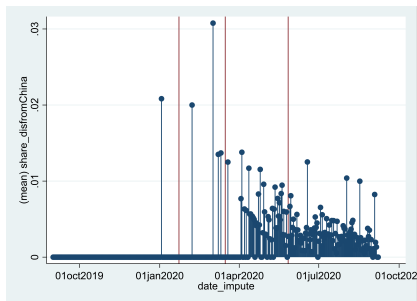
- Product scarcity New Products Over Time
- Price/sales
- Placebo using other countries Origin Countires of Products

# Thank you!

[zhan2692@purdue.edu](mailto:zhan2692@purdue.edu)

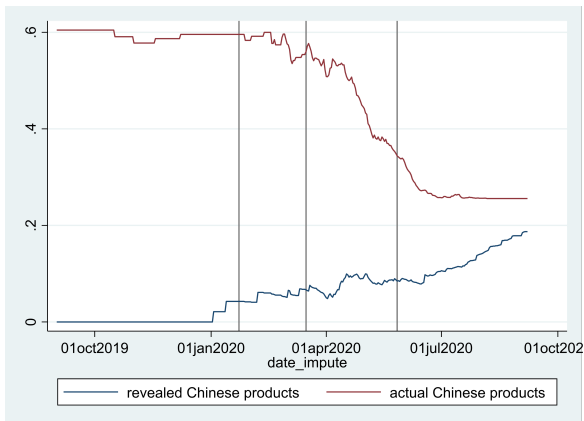
# Appendix

- Rise of discriminative comments (share and number)



Back

# Appendix



[Back](#)

# Appendix

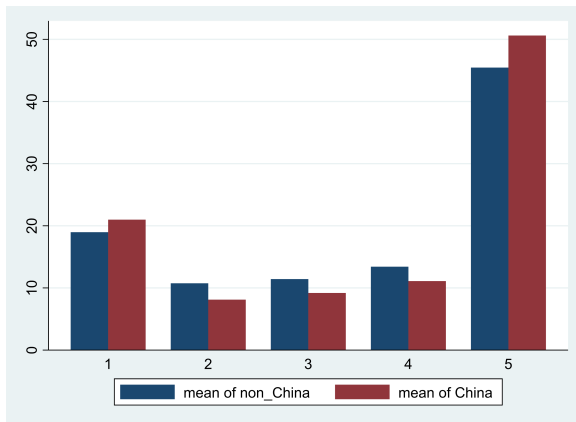


Figure 1: non-China vs. China

[Back](#)

# Appendix

- ★★★★★ comfortable mask, finally

Liked the mask. Disliked the fact that it is made in China!

- ★★★★★ Made in China!?

These masks seem to be working ok. The biggest disappointment was that they were made in China. After the Covid Pandemic, we are very suspicious of ANY items made in China.

- ★★★ Straight Outta China

Came straight from a factory in China, not exactly what I was looking for during a pandemic that started there. Seem to be VERY cheaply made.

- ★★ china

they ship from china you know where the virus first broke out

- ★ Crap

Made in china!!! Nuff said



- Reviews that mention China but does not express discrimination

★★★★★ Nothing wrong with these

People are complaining that this is from China but pretty much everything is from China. The virus is all around the world. There is a risk whether you order from China or California. Just spray with Lysol upon receipt. The masks are fine, no problems on my end.

- Reviews that mention China and are discriminative

★★★ china

they ship from china you know where the virus first broke out

Back

# Appendix

**SORT BY**  
Top reviews  
Most recent

**FILTER BY**  
All reviewers  
All stars  
All formats  
Text, image, video

38 global reviews

## From the United States



Barry Gibson



**Comfortable to wear**

Reviewed in the United States on August 7, 2020

Color: Blue | [Verified Purchase](#)

USED FOR THE PREVENTION OF DISEASE.

One person found this helpful

Helpful

Comment

Report abuse



Edward Cullen



**A must need**

Reviewed in the United States on October 15, 2020

Color: Blue | [Verified Purchase](#) | [Early Reviewer Rewards](#) (What's this?)

Great, the only problem is that they lean to the left on your face and you have to constantly adjust it. Otherwise than that it's a great value.

Helpful

Comment

Report abuse



Juan oyola



**Good product**

Reviewed in the United States on August 11, 2020

Color: Blue | [Verified Purchase](#)

The best thing they have is that they are disposable, you don't have to be washing. You breathe comfortably, lightly and with a proper fit.

Helpful

Comment

Report abuse

Back

Table 8: share of revealing reviews on sales (daily)

				Number of Ratings		No quality
Share of revealing reviews	34.42 (26.11)	-23.13** (9.930)	-21.44** (9.655)			-43.60*** (15.61)
L.Share of revealing reviews				-20.10** (10.03)	0.994 (1.009)	
L.Number of ratings					1.018*** (0.00178)	
Controls	No	No	Yes	Yes	Yes	Yes
Date	No	Yes	Yes	Yes	Yes	Yes
ASIN	No	Yes	Yes	Yes	Yes	Yes
Observations	46,159	46,159	46,159	45,801	45,801	46,159
R-squared	0.000	0.454	0.455	0.457	0.997	0.455

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Back

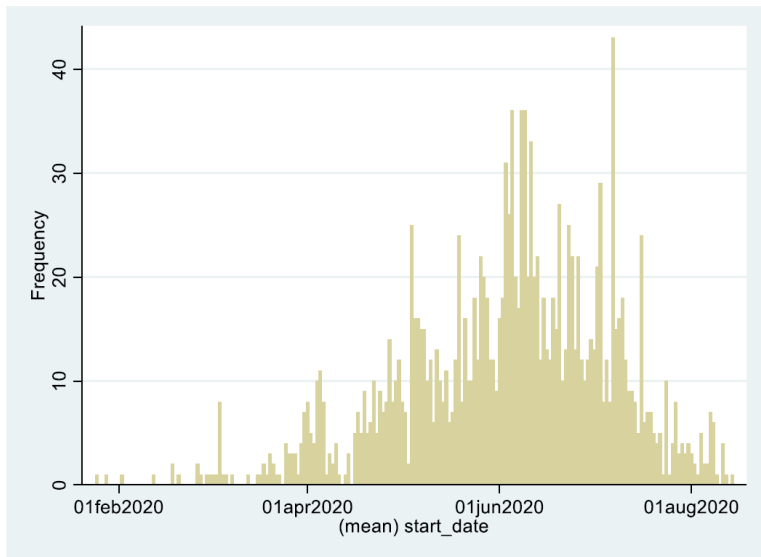
Table 9: Cumulative share of revealing reviews on sales

	Number of Ratings				No quality
Share of discriminative reviews (Cumulative)	-104.9** (42.50)	-246.7** (97.32)	-234.7** (92.76)	-0.277 (0.495)	-43.64 (100.1)
L.Number of ratings				1.018*** (0.00179)	
Controls	No	No	Yes	Yes	Yes
Date	No	Yes	Yes	Yes	Yes
ASIN	No	Yes	Yes	Yes	Yes
Observations	46,159	46,159	46,159	45,801	46,159
R-squared	0.001	0.457	0.458	0.997	0.455

Robust standard errors in parentheses, \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Back

# Panel



Back

# Panel

country_origin_QA	Freq.	Percent	Cum.
bahrain	1	0.07	0.07
bangladesh	4	0.29	0.36
bulgaria	2	0.14	0.50
canada	3	0.21	0.71
china	397	28.36	29.07
guatemala	1	0.07	29.14
india	3	0.21	29.36
italy	1	0.07	29.43
mexico	19	1.36	30.79
nicaragua	2	0.14	30.93
pakistan	1	0.07	31.00
southkorea	6	0.43	31.43
thailand	3	0.21	31.64
turkey	1	0.07	31.71
unknown	859	61.36	93.07
usa	67	4.79	97.86
vietnam	27	1.93	99.79
zimbabwe	3	0.21	100.00
Total	1,400	100.00	

[Back](#)