Journal of International Economics 114 (2018) 316–330

Contents lists available at ScienceDirect

Journal of International Economics

journal homepage: www.elsevier.com/locate/jie

Exposure to Chinese imports and media slant: Evidence from 147 U.S. local newspapers over 1998–2012

Yi Lu [a], Xiang Shao [b,*], Zhigang Tao [c]

[a] School of Economics and Management, Tsinghua University, Beijing, China
[b] School of Management, Fudan University, Shanghai, China
[c] Faculty of Business and Economics, University of Hong Kong, Hong Kong

ARTICLE INFO

Article history:
Received 29 December 2016
Received in revised form 9 July 2018
Accepted 10 July 2018
Available online 17 July 2018

JEL Classification:
F10
F14
L82
D72

Keywords:
Chinese import competition
Media slant
U.S. daily newspapers
Election

ABSTRACT

Does the recent surge in Chinese imports affect the media slant against China in the United States? Using a data set of 147 U.S. local newspapers over 1998–2012, this paper shows that newspapers whose circulation counties face greater exposure to Chinese imports report more negative news about China, and are more likely to endorse Democrats. The results hold with two identification strategies and three measures of media slant. The paper further shows that, in U.S. House and Senate elections between 2000 and 2012, media slant is associated with increased voting shares for Democrats, who are traditionally champions for the poor and critical of globalization.

1. Introduction

Trade liberalization in general and U.S. trade relations with China in particular have become a contentious issue in the United States. Imports from China have been shown to cast various adverse effects on American society; for example, a surge in the manufacturing unemployment (e.g., Autor et al., 2013; Acemoglu et al., 2016; Pierce and Schott, 2016a) and deterioration in public health (e.g., Autor et al., 2016; McManus and Schaur, 2016; Pierce and Schott, 2016b). On top of affecting people's material interests, Chinese imports might also change American society's perception of China, which might be reflected in and further amplified by the U.S. media coverage of China. Anecdotal evidence shows that substantial exposure to imports from China is associated with a deteriorating image of China in the U.S. media, with "China-bashing" becoming increasingly popular in U.S. election campaigns.[1] However, there is scarce systematic analysis of whether Chinese imports have caused a media slant against China. Using a data set of 147 U.S. local daily newspapers over 1998–2012, this paper investigates how exposure to Chinese imports influences newspapers' attitudes toward China and their party endorsements in presidential elections. To capture the significance of the changes in media behavior, the paper further studies whether the media slant against China in turn influences U.S. election results.

A newspaper, subject to space limitation, commonly expresses its attitudes through the selection of topics to be covered (or so-called agenda-setting behavior). By increasing the coverage of an issue, a newspaper can make readers believe in the importance of that issue and the image projected (McCombs and Shaw, 1972). An example is the case of *The New York Times* articles on the 2008 Summer Olympic

[1] Examples include CNN's Jack Cafferty stating that products manufactured in China are "junk" (http://edition.cnn.com/2008/WORLD/asiapcf/04/15/cnn.china/ accessed October 19, 2016); Coverage in *The Economist* of bipartisan hostility toward China in the 2012 presidential election (http://www.economist.com/node/21558581, accessed October 19, 2016); and 2016 Republican presidential candidate Marco Rubio proposing to strike hard on China, in an op-ed in *The Wall Street Journal* (http://www.wsj.com/articles/how-my-presidency-would-deal-with-china-1440717685, accessed October 19, 2016).

* Corresponding author.
E-mail addresses: luyi@sem.tsinghua.edu.cn (Y. Lu), xshao@fudan.edu.cn (X. Shao), ztao@hku.hk (Z. Tao).

https://doi.org/10.1016/j.jinteco.2018.07.004
0022-1996/

Games held in Beijing. Of the 49 articles published in August 2008 about the Beijing Olympics, 17 articles devoted some space to discussing issues (such as Tibet, human rights and censorship, authoritarianism, and pollution) in China that were likely to project a negative image of China, whereas the rest of the articles focused almost exclusively on athletes, Chinese culture, and tourism.

To measure a newspaper's slant against China, we use the proportion of articles devoted to negative issues about China in the newspaper's total articles on China. Specifically, we develop a list of negative keywords about China after analyzing all the articles on China published in *The New York Times* and *The Washington Post* from 1995 to 2012, and then use the list of keywords to identify articles on negative issues about China in U.S. local newspapers.[2] For robustness tests, we use the Harvard IV-4 psychosocial dictionary to come up with a list of negative keywords for constructing our measure of media slant. We also apply the natural language processing technique to analyze the negative sentiment of the newspaper content, and use it as an alternative measure of media slant. Our regressor of interest is the Chinese import competition at the newspaper level. To this end, we first calculate each county's exposure to Chinese imports, following Autor et al. (2013). Then, for each newspaper, we aggregate the import exposure of its circulating counties by weighting the circulating market shares of those counties.

Our identification explores variations across newspapers over 1998–2012. The cross-newspaper variation helps control for trends over the sample period that were common to all the newspapers, such as the possible improvement of the social, cultural, and political situation in China. The cross-time differencing helps eliminate intrinsic features of newspapers that were stable over the decade, such as the location of the editorial office. To address the potential endogeneity of the growth of Chinese imports in the United States, we adopt two estimation strategies. First, we follow Autor et al. (2013) in using the growth of Chinese imports in eight other developed countries as an instrumental variable (IV) for the growth of Chinese imports in the United States. Second, following Pierce and Schott (2016a), we employ a difference-in-differences method to explore the granting of Permanent Normal Trading Relations (PNTR) to China by the United States in 2001, which generated largely exogenous variations in Chinese import competition across industries.

We find that newspapers with circulation in counties that face greater exposure to Chinese imports report more negative news about China. Specifically, based on the IV estimation, a one-standard-deviation increase in Chinese import competition at the newspaper level leads to an increase of 0.063 to 0.078 points in the change in media slant, which is 24.5 to 30.4% of the standard deviation of the change in media slant. The results hold with three different measures of media slant, as well as two identification strategies (Autor et al., 2013; Pierce and Schott, 2016a). We test the robustness of our results by focusing on the media reports of a supposedly neutral news topic, the 2008 Summer Olympic Games held in Beijing, and find that newspapers whose circulating counties faced greater exposure to Chinese imports reported on the Beijing Olympics more negatively. We further conduct a series of robustness checks to address various estimation concerns, such as the validity of estimation strategies (i.e., residual approach, differential industry trends, pre-treatment trends, alternative instruments for imports, sample selection bias, and weighted regressions), and measurement (i.e., alternative keyword lists and measures, aggregation issues due to spatial correlation, the varing circulation weights and thickness of the media markets).

To shed light on how trade exposure impacts on the media slant, we conduct three exercises. First, we find no changes in overall newspaper reporting but increasingly negative reporting against China. Second, we find that the increase in negative reports about China comes mostly from non-trade-related news as opposed to trade-related news. Third, we find that the change in the share of manufacturing employment explains a large portion (i.e., 45.13% to 61.90% depending on the estimation specifications) of the effect of exposure to Chinese imports on media slant. These results confirm the important role of local labor market in transmitting the shocks of Chinese import competition to the society.

Studies on the U.S. media have centered on the effect of media on voting intentions (Stromberg, 2015). Meanwhile, recent works have shown that Chinese import competition significantly affects voting outcomes in the U.S. (i.e., Autor et al., 2016; Che et al., 2017) as well as other developed countries (e.g., Dippel et al., 2017). Inspired by these two lines of literature, we examine the interactions among exposure to Chinese imports, media slant, and elections in the U.S. in the second part of the study. We first study the effect of Chinese import competition on newspapers' endorsement of a party in the presidential elections. We find that newspapers whose circulating counties faced greater exposure to Chinese imports were more likely to endorse Democrats, who are traditionally against trade and for economic redistribution.[3]

Next, we examine the effect of change in media slant against China on the change in voting shares for Democrats in the House, Senate, and presidential elections at the county level between 2000 and 2012.[4] To calculate the media slant against China at the county level, we sum the media slant ratios of the local newspapers with circulation in that county, weighting the newspapers' county circulation divided by the county population. We find that media slant against China is associated with increased voting shares for Democrats in House and Senate elections. Recent studies by Autor et al. (2016) and Che et al. (2017) show that Chinese import competition increased the vote shares of Republican Candidate in the 2016 presidential election, as Donald Trump (the Republican nominee) took a strong position in protecting the U.S. economy from foreign competition. To reconcile these results with the effects of media on endorsement and voting, we further extend our analysis to 2016. The estimation results suggest that media slant against China increased vote share of Republicans in the 2016 elections, consistent with the message conveyed by Autor et al. (2016) and Che et al. (2017). Given that Republicans traditionally have been more supportive of free trade, but they were more supportive of trade protectionism than Democrats in the 2016 elections, these results are in line with the main message of our analysis. That is, media slant against China (whose imports competition adversely affected local economies) increased the share of votes going to the party that held an anti-trade position.

Finally, we apply the decomposition framework following Heckman et al. (2013) and Gelbach (2016) to quantify how much exposure to Chinese imports affects voting outcomes through the behavior of the media. We find that the change in media slant explains about 2.97% ~7.11% of the effects of exposure to Chinese imports on the House election, about 14.84%~17.25% of the effects for the Senate election, and about 4.37%~11.75%% of the effects for the presidential election. These results suggest that the behavior of the media plays a role in channeling the impact of Chinese import competition to U.S. election outcomes.

This study is related to a growing literature examining the sources of media slant. Stromberg (2015) provides a review of the literature. Mullainathan and Shleifer (2005) show theoretically that when there is significant reader heterogeneity, media outlets might slant their reports toward the prior beliefs of some segments of the readership. Gentzkow and Shapiro (2006) show that media slant toward readers' prior beliefs is more likely when there is a lack of competition in the

[2] We use the same automated keyword search method as in Larcinese et al. (2011) and Puglisi and Snyder (2011).

[3] Che et al. (2017) find that Democrats are more likely than Republicans to support legislation against foreign import competition and for economic assistance. Surveys by Gallup from 2000 to 2011 show that a higher percentage of Republicans than Democrats see trade as an opportunity (http://www.gallup.com/poll/181886/majority-opportunity-foreign-trade.aspx accessed October 19, 2016).

[4] Abundant research studies the effect of the media on political issues such as public spending (Stromberg, 2004; Snyder and Stromberg, 2010), voter turnout (Gentzkow, 2006), party voting share (Dellavigna and Kaplan, 2007), and witness appearance in Congressional hearings (Snyder and Stromberg, 2010).

newspaper market. Our work contributes to the literature by providing one of the few empirical studies on the sources of media slant. We show that newspapers in regions facing greater competition from Chinese imports have become more slanted against China. This finding is consistent with the demand-side determinants of media slant highlighted by Mullainathan and Shleifer (2005) and Gentzkow and Shapiro (2006). Presumably, readers in regions that are more affected by Chinese imports become more heterogeneous, on the one hand, and some of the readers have stronger prior (negative) beliefs about China, on the other hand. The paper also complements Gentzkow and Shapiro (2010) and Larcinese et al. (2011), by providing an economic determinant of media slant as opposed to media slant being caused by difference in partisanship or ideology.

This study is also part of an emerging literature highlighting the adverse effects of the latest wave of globalization initiated by China's joining the World Trade Organization, and the country's massive growth in exports to the world since then. Our finding that Chinese imports have caused a media slant against China is consistent with some of the negative impacts of Chinese imports on the American society documented in the literature, such as rising unemployment and mortality (e.g., Autor et al., 2013; McManus and Schaur, 2016; Pierce and Schott, 2016a). We find that such media slant in turn has had an impact on U.S. elections. The media slant has lent support for Democrats, who traditionally are champions for the poor and critical of globalization, implying a limit of globalization if redistribution mechanisms are not put in place to help the victims of globalization.

The work most closely related to this paper is Ramirez and Rong (2012). They find that the total number of "bad" news reports about China in U.S. newspaper and website contents from the *Factiva* database increases sharply three to four months after unexpected increases in the U.S. trade deficit with China. While their study uses the keyword search method exclusively for measuring media slant, we provide alternatives. Different from Ramirez and Rong (2012)'s times series analysis, this study explores variations across individual local newspapers over 1998–2012, which allows better identification of the effect of U.S. regions' exposure to Chinese imports on media slant in their local newspapers.

The paper is structured as follows. The data, variable construction, and empirical estimation framework are discussed in Section 2. The main empirical results are presented in Section 3, and the interpretation is presented in Section 4. Section 5 discusses trade exposure, media slant, and elections. Section 6 concludes.

2. Data, key variables, and estimation framework

2.1. Data

For our main analysis, we focus on U.S. daily newspapers with county-level circulation data and electronic archives of newspaper articles available from 1998 to 2012.[5] We choose 1998 as the starting year because it is the earliest year for which county-level circulation data are available. We choose 2012 as the ending year due to data availability.[6]

Newspaper county-level circulation data are obtained from the *Alliance of Audited Media*(formerly Audit Bureau of Circulation) – the largest provider of media circulation data in the United States.[7] Data on newspaper content are from *Newslibrary* and *Factiva* database.[8] We first check each newspaper for its consistency over the sample period; specifically, data on newspapers that have been merged or under joint operating agreements are combined. We then match the newspaper county-level circulation data with the newspaper content data. Following Gentzkow and Shapiro (2010), we exclude four national newspapers from our sample – *The New York Times*, *The Wall Street Journal*, *The Washington Post*, and *USA Today*[9] – as our focus is to explore the impact of regional variations in Chinese import competition on the media slant of local newspapers. Overall, we collect data on newspaper content for 145 newspapers from *Newslibary* and two newspapers (*The Boston Globe* and *The New York Post*) from *Factiva* database. This leaves us with a sample of 147 daily newspapers, covering 49 states in the United States (see the list of the newspapers in Appendix Table A1).[10]

We obtain international trade data from the United Nations' Comtrade database; data on county-level industry structure (by employment) from County Business Patterns of the U.S. Census Bureau; and census data for various control variables.

2.2. Key variables

2.2.1. Media slant

The study is concerned with media slant, which is caused by selective coverage of negative topics and issues that would project a negative image of China. This definition is commonly used in the literature (see, for example, Groseclose and Milyo, 2005; Gentzkow and Shapiro, 2010; Puglisi and Snyder, 2011).

For the main analysis, to measure media slant in coverage of China, we first construct a list of negative keywords, and then use it to identify negative reports about China, following Larcinese et al. (2011) and Puglisi and Snyder (2011).[11] For a detailed discussion on the measurement of negative reporting, see Appendix B1.

The list of negative keywords is constructed specifically for China-related news content, as a context-based dictionary is essential for improving the accuracy of identifying negative articles about China. We first search and analyze all the articles with titles containing the words "China or Chinese" in *The New York Times* and *The Washington Post* from 1995 to 2012, and count the frequency of all single words, two-word phrases, and three-word phrases each year. We keep those single words that appeared at least 10 times in a given year of the sample period, and the two-word and three-word phrases that appeared at least five times in a given year of the sample period. For each of these words/phrases, we judge whether it is associated with a negative image of China, and combine all those words with negative images to construct a list of negative keywords. The negative keywords mainly cover five issues: environment, health, and safety (with keywords such as air pollution and recall); law and governance (e.g., bribery,

[5] We extend the data to 2016 to study the impact of media slant on the 2016 election.

[6] According to the American Press Institute's report, 2012 was a pivotal year for digital subscriptions, with the majority of the 98 newspapers with total circulation of 50,000 or more starting to offer digital subscriptions. As we do not have data on digital subscriptions, we focus on the pre-2012 period.

[7] As the Alliance of Audited Media provides circulation data on select weekdays and weekends, we follow Goh et al. (2011) and aggregate the circulation data for each newspaper to the weekly level.

[8] Neither *Newslibrary* nor *Factiva* database covers the contents of articles published in *The Chicago Tribune* and *The Los Angeles Times*. While newspaper archives of *The Chicago Tribune* and *The Los Angeles Times* are available on their own websites, unfortunately, their website search engines do not support our keyword search method, which will be introduced in the next section. Hence, these two newspapers are not included in our sample.

[9] The national newspaper *Christian Science Monitor*is not in the sample due to lack of circulation data.

[10] We verify these newspapers' information, such as publication period and frequency, from the website of the Library of Congress (http://chroniclingamerica.loc.gov/search/titles/) and Ansolabehere et al. (2006).

[11] There are two other ways to measure media slant: (i) comparing the contents of media outlets with text by other sources that have clear patterns of preference (e.g., Groseclose and Milyo, 2005; Gentzkow and Shapiro, 2010); and (ii) directly using media endorsements in elections and ballot propositions. For this study, we choose the approach of Larcinese et al. (2011) and Puglisi and Snyder (2011), because of the lack of third-party sources as a benchmark preference on China and the lack of explicit newspaper endorsements for or against China.

intellectual property); human rights (e.g., censorship, human rights); international relations (e.g., sanction, hacker); and trade and other economics issues (e.g., trade deficit, dumping). The complete list of negative keywords is reported in Appendix Table A2. Similar to Larcinese et al. (2011), we test the keywords in different random samples of articles to minimize false positive results as much as possible.[12] As an illustration, we provide examples of negative articles in Appendix B2, as well as examples of non-negative articles. We also provide an illustrative example that compares articles on the similar topic but from regions with different exposure to Chinese imports (i.e., low exposure regions vs. high exposure regions) in Appendix B3.

Next, we use the *Newslibrary*database to search newspaper articles, and supplement it with the *Factiva*database for searching articles in two of the newspapers (*The Boston Globe* and *The New York Post*). For each newspaper, we first find all the China-related articles by locating those with headlines that contain "China" or "Chinese," and obtain the total number of reports about China (denoted $China_{m,t}$) by newspaper m in year t. Then, within these China-related articles, we search for reports containing the words or phrases in the list of negative keywords, and obtain the number of articles with negative reporting about China (denoted $Neg_{m,t}$). We use the proportion of negative reports about China in the total number of China-related articles as a measure of media slant against China:

$$NegRatio_{m,t} = \frac{Neg_{m,t}}{China_{m,t}} \tag{1}$$

Table 1, panel A, shows the summary statistics for media slant. The average change in media slant from 1998 to 2012 ($\Delta NegRatio_m$) is −0.126, with standard deviation 0.257.

We further divide our negative keywords into trade-related and non-trade-related, and construct two additional measures for media slant against China; that is, one for trade-related ($NegRatio^{trade}_{m,t} = \frac{Neg^{trade}_{m,t}}{China_{m,t}}$) and the other for non-trade-related ($NegRatio^{nontrade}_{m,t} = \frac{Neg^{nontrade}_{m,t}}{China_{m,t}}$).[13]

The aforementioned measure of media slant has the potential shortcoming of subjectivity in constructing the list of negative keywords. Therefore, in robustness checks, we use two alternative measures. First, we utilize the well-established sentiment dictionary from linguistics (Harvard IV-4 dictionary) to construct the negative keyword list. Second, we use natural language processing techniques from computer science to analyze the exact tone of newspaper content, instead of the negative keywords, to identify negative reports about China. Section 3.4 provides details on these measurements.

2.2.2. Trade Exposure to China at the Newspaper Level

Because the outcome variables concern the reporting behavior of newspapers, we need to measure the regressor of interest, import exposure to China, at the newspaper level.

We use two measures of the change in each newspaper's exposure to Chinese imports from 1998 to 2012, corresponding to two identification frameworks, which are elaborated in the next subsection. The first measure follows Autor et al. (2013) in two steps. We first construct county-level changes in Chinese import competition using industry-level import data from the United Nations' Comtrade database,[14] and county employment structure data from the U.S. Census Bureau's County Business Patterns database. Next, we use the newspapers' market shares across their circulating counties as weights (Fig. 1 shows the market share distribution of *The Boston Globe* across various counties as an example), and sum the changes in Chinese import competition calculated in the first step to get a newspaper-level measure of Chinese import competition (scaled by 1000). The measure is given by:

$$\Delta Import^{C}_{m} = \sum_{c} \frac{w^{1998}_{c,m}}{w^{1998}_{m}} \sum_{j} \frac{1}{1000} \frac{L^{1998}_{cj}}{L^{1998}_{c}} \frac{\Delta M^{C}_{j}}{L^{1998}_{j}} \tag{2}$$

where ΔM^{C}_{j} is the change in U.S. imports from China between 1998 and 2012 in industry j; L^{1998}_{cj} is employment in industry j in county c in 1998; L^{1998}_{c} is employment in county c in 1998; L^{1998}_{j} is employment in industry j in the United States in 1998; $w^{1998}_{c,m}$ is the weekly circulation of newspaper m in county c in 1998; and w^{1998}_{m} is the total circulation of newspaper m in 1998.[15]

The second measure of newspapers' exposure to Chinese imports follows Pierce and Schott (2016a) in using a policy shock (i.e., the U.S. granting of PNTR to China in October 2000). Imports from China had enjoyed normal trade relations (NTR) tariff rates even before the granting of PNTR, but the NTR status had to be reviewed every year. Hence, there was always the possibility that non-NTR rates could be applied to Chinese imports. The non-NTR rates averaged 37%, whereas the NTR rates were around 4% in 1999. Therefore, the granting of PNTR removed this uncertainty and largely boosted U.S. imports from China (for more discussions on these points, see Pierce and Schott, 2016a).[16] Following Pierce and Schott (2016a), we obtain an alternative measure of the change in newspaper m's readership exposure to Chinese imports (in percentage points):

$$PNTR_{m} = \sum_{c} \frac{w^{1998}_{c,m}}{w^{1998}_{m}} \sum_{j} \frac{L^{1998}_{cj}}{L^{1998}_{c}} \frac{100 * NTRGap_{j}}{L^{1998}_{j}}, \tag{3}$$

where $NTRGap_j \equiv NonNTRRate_j - NTRRate_j$ in 1999.[17]

Table 1, panel B, shows the summary statistics of the change in Chinese imports from 1998 to 2012. The average change in Chinese imports using Autor et al. (2013) method is 2.297, with standard deviation 1.872, and the average change in Chinese import competition using Pierce and Schott (2016a) method is 0.000137, with standard deviation 6.47×10^{-5}. For ease of comparing the estimation magnitudes from these two measures of Chinese import competition, we standardize the two measures with a mean of 0 and a standard deviation of 1.

[12] We ran several sampling strategies to extract newspaper articles randomly based on this list of negative keywords, and read those articles to exclude the possibility of false positives. For example, in one trial, we randomly chose 10 newspapers in a random year. We obtained 152 results of which 88.8% of hits were good and the rest were false positives. Of those "good" hits, 4.6% are about trade; 3.9% are about environment, health, and safety; 65.1% about human rights; 2.0% about law and governance; and 13.0% about international relations. False positive hits are mainly about cultural events, tourist advice, reports about natural disasters, or incidents involving ethnic Chinese in foreign countries. All the trials delivered similar patterns.

[13] For articles with both trade- and non-trade-related keywords, we classify them as trade-related articles.

[14] We extract 6-digit HS (Harmonized System code 1996) level trade data from the Comtrade website. We then convert HS-level trade data to the 4-digit SIC industry level using the concordance from Autor et al. (2013). Finally, we adjust all the trade values to 2007 U.S. dollars using the Personal Consumption Expenditure Deflator from the Federal Reserve Bank of St. Louis.

[15] An implicit assumption underlying this measurement is that the newspaper's readership within a county is a representative slice of the county population. Specifically, $\frac{w^{1998}_{cj,m}}{w^{1998}_{c,m}} = \frac{L^{1998}_{cj}}{L^{1998}_{c}}$, where $w^{1998}_{cj,m}$ is newspaper m's circulation in industry j in county c in 1998. However, this assumption may not hold in reality, which creates a measurement error. To the extent that such measurement error is orthogonal to Chinese import competition, it attenuates our estimates.

[16] The same policy shock may encourage American corporations to offshore operations to China and become more capital-intensive if they remain operating in the United States, both of which may lead to further unemployment in the United States and more media slant against China. Therefore, compared with the first measure, the second measure, which uses the NTR gap, may encompass more comprehensive consequences of Chinese import competition.

[17] We use ad valorem equivalent NTR and non-NTR tariff rates from Feenstra et al. (2002), and convert the 8-digit Harmonized System (HS) code to sic87dd code as in Autor et al. (2013) with concordances from the U.S. Bureau of Economic Analysis and Autor et al. (2013).

Table 1
Summary statistics for variables at the newspaper level.

	(1) N	(2) Mean	(3) S.D.	(4) Min	(5) Max
Panel A: Change in newspaper media slant (1998–2012)					
ΔNegative Ratio	147	−0.126	0.257	−0.667	0.588
ΔNegative Ratio-Trade	147	0.020	0.088	−0.333	0.415
ΔNegative Ratio-Non-Trade	147	−0.136	0.253	−0.8	0.57
Negative Ratio-Olympics	147	0.153	0.0762	0	0.4
Δ(NgtvTop500/China)	147	−0.0635	0.212	−0.706	0.5
ΔNegativity Score SentiAnalysis	147	−0.0757	0.423	−1.872	2.969
Panel B: Change in import exposure at the newspaper level					
Newspaper Exposure to Chinese Imports (U.S) 1998–2012 (in 1000 pts)	147	2.297	1.872	0.151	12.606
Newspaper Exposure to Chinese Imports (Other Eight Economies) 1998–2012 (in 1000 pts)	147	2.955	1.684	0.494	12.378
Newspaper PNTR Exposure (% pts)	147	0.000137	6.47e-05	1.78e-05	0.000333
Newspaper Exposure to Chinese Imports (U.S) 1998–2012 (Gravity Risiduals)	147	3.662	2.436	0.416	13.166
Panel C: Newspaper-Level Controls (in 1998)					
Population Share of Ethnic Asian (%)	147	1.884	2.344	0.131	15.884
Population Share of Bachelor's Degree (%)	147	13.026	3.262	4.236	23.419
Population Share of Graduate or Professional Degree (%)	147	7.019	2.223	2.194	13.972
Population Share of Unemployment (%)	147	5.971	1.623	1.758	10.613
Population Share of Female (%)	147	50.866	3.376	17.415	52.990
Median Income (in U.S. dollars)	147	39,486	7463	13,404	6224

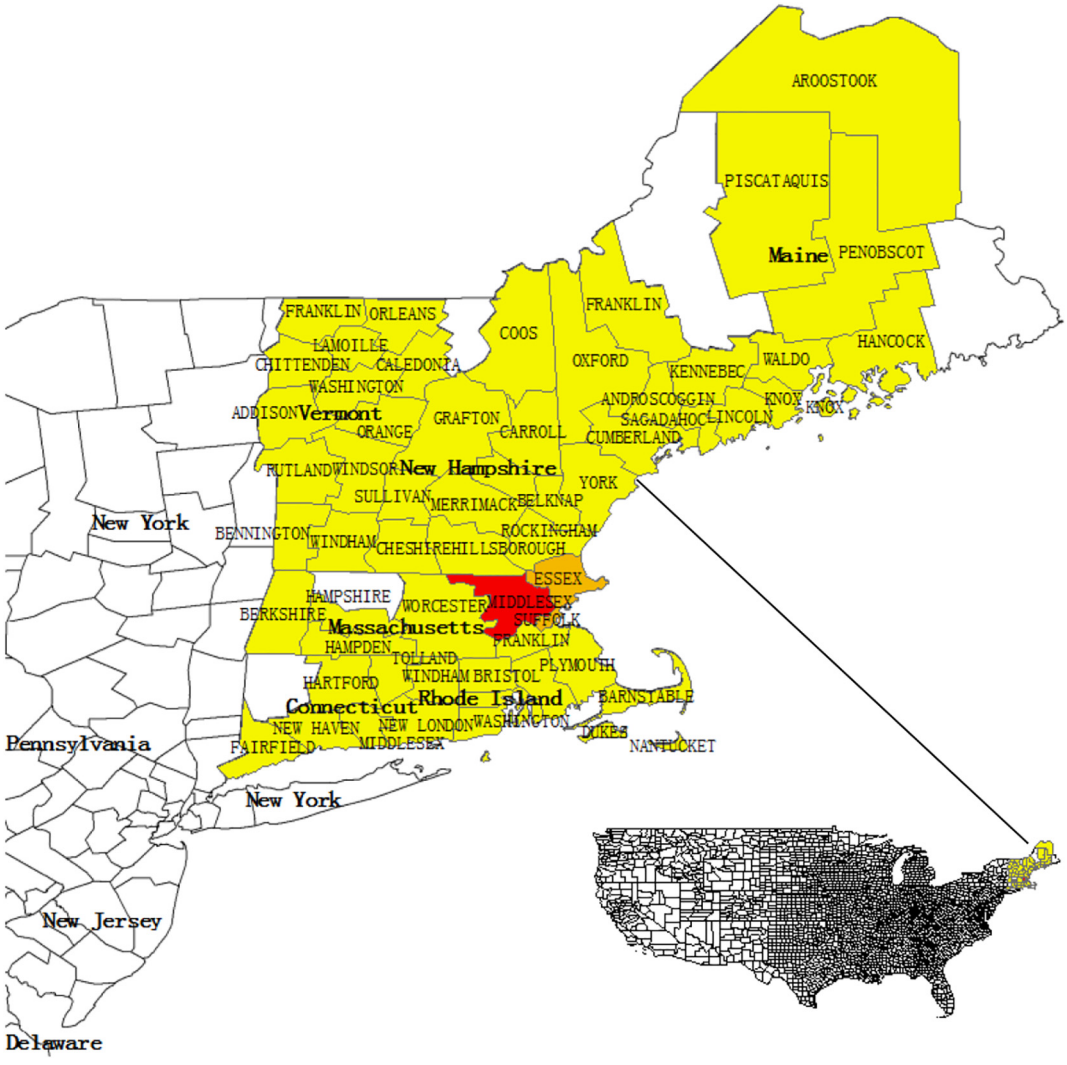

Fig. 1. Circulation map of the Boston globe in 2012. Fig. 1 shows the market share distribution of *The Boston Globe* across various counties in 2012 as an example of a local newspaper's circulation market. The darker the area is, the higher market share the newspaper enjoys in the county. Counties under 25 copies are not identified.

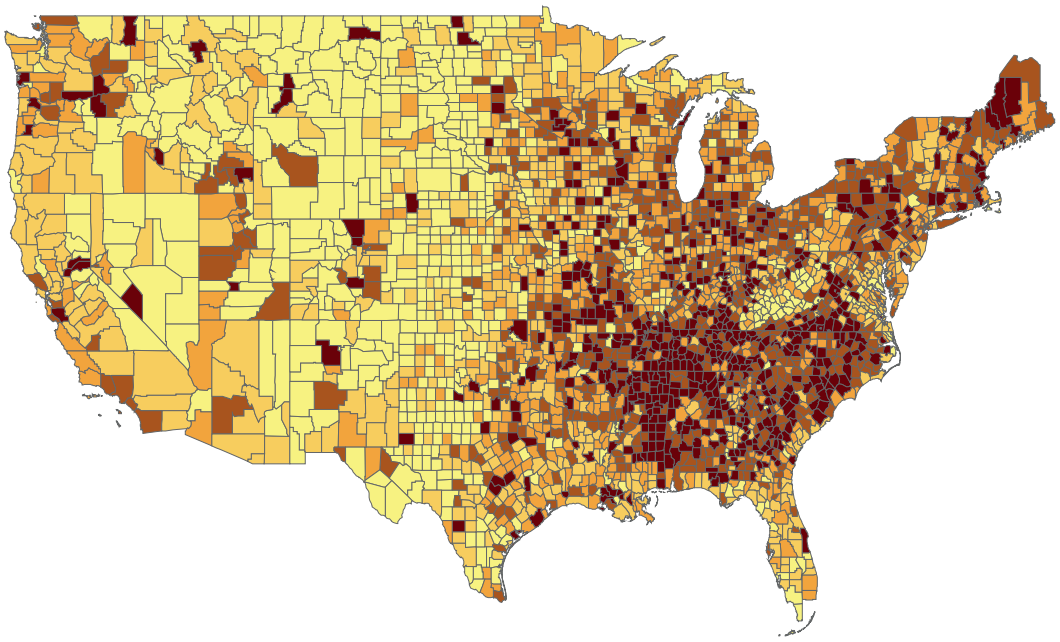

Fig. 2. U.S. exposure to Chinese imports across counties from 1998 to 2012. Fig. 2 plots the U.S. county-level exposure to Chinese imports from 1998 to 2012 calculated according to Autor et al. (2013). Darker color indicates greater increase in Chinese import competition from 1998 to 2012.

2.3. Identification Framework

Fig. 2 shows the change in Chinese import competition calculated using Autor et al. (2013) method from 1998 to 2012 across U.S. counties, with darker color indicating greater increase in Chinese import competition. Fig. 3 plots the headquarters of 147 newspapers and the change in media slant from 1998 to 2012 ($\Delta NegRatio_m$), with darker color indicating greater increase in media slant. Figs. 2 and 3 show a similar geographic distributions, indicating strong correlation between the increase in Chinese import competition and the increase in media slant against China.

To investigate the effect of exposure to Chinese imports on media slant, we use two prevailing identification strategies in the literature. The first one follows the strategy of Autor et al. (2013), who use

Fig. 3. Location of newspaper headquarter and change in negative ratio from 1998 to 2012. Fig. 3 plots the headquarters of the 147 newspapers in the sample and their changes in media slant from 1998 to 2012. Each balloon represents the headquarters of one of the 147 newspapers. Darker color indicates greater increase in media slant against China from 1998 to 2012.

variations in local exposure to Chinese imports. The estimation specification is

$$\Delta NegRatio_m = \alpha + \beta_1 \Delta Import_m^C + \mathbf{X_m^0}'\boldsymbol{\theta} + \Delta\varepsilon_m, \quad (4)$$

where $\Delta NegRatio_m \equiv NegRatio_{m,\ 2012} - NegRatio_{m,\ 1998}$ captures the change in media slant against China by newspaper m from 1998 to 2012; $\Delta Import_m^C$ measures the change in newspaper m's exposure to Chinese imports from 1998 to 2012; and ε_m is the error term.[18]

The first difference operation helps eliminate newspaper fixed effects; in other words, the analysis controls for all time-invariant differences across newspapers. Meanwhile, the identification in Eq. (4) comes from the cross-newspaper variations in the same sample period, which helps control for time effects that are common to all newspapers, such as the possible improvement in the social, cultural, and political situation in China. The remaining estimation biases of $\Delta Import_m^C$ could be caused by the endogenous change in Chinese imports from 1998 to 2012 (i.e., ΔM_j^C), and the nonrandom distributions of industrial structure and newspaper circulation across counties (i.e., $\frac{L_{cj}^{1998}}{L_c^{1998}}$ and $\frac{w_{c,m}^{1998}}{w_m^{1998}}$), which generate time-varying effects on $NegRatio_{m,\ t}$.

To address the first potential endogeneity issue, we follow Autor et al. (2013) in using an instrumental variable estimation strategy. They use imports from China to eight other developed countries' (Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain, and Switzerland), denoted ΔM_j^{Other8}, to construct $\Delta Import_m^{Other8}$ as an instrument for $\Delta Import_m^C$. The IV is constructed as:

$$\Delta Import_m^{Other8} = \sum_c \frac{w_{c,m}^{1998}}{w_m^{1998}} \sum_j \frac{L_{cj}^{1990}}{L_c^{1990}} \frac{\Delta M_j^{Other8}}{L_j^{1990}}. \quad (5)$$

Autor et al. (2013) discuss in detail the validity of this instrumental variable, and we follow closely in their strategy in conducting several robustness checks on the instrument (see Appendix C for details).

To mitigate the possible relationship between the outcome variable and counties' industrial and newspaper circulation structures, we measure all the weights in the early periods for which we have data (i.e., circulation distribution across counties in 1998, and employment structure distribution in 1990). We also include a vector of determinants of counties' industrial and newspaper circulation structures in the initial periods, aggregated at the newspaper level. Specifically, we have the circulation-weighted shares of the following readership attributes: Asian population, population with a bachelor's degree, population with a graduate or professional degree, unemployed population, female population, and median income level. Panel C in Table 1 summarizes the readership attributes in 1998. Hopefully, with these deterministic factors controlled for, newspapers are well balanced in the initial characteristics.

For the second estimation strategy, we follow the difference-in-differences (DD) framework used by Pierce and Schott (2016a). The estimation specification is as follows:

$$\Delta NegRatio_m = \alpha + \beta_2 PNTR_m + \mathbf{X_m^0}'\boldsymbol{\theta} + \Delta\upsilon_m. \quad (6)$$

Pierce and Schott (2016a) show that most variations of $NTRGap_j$ across industries are caused by the non-NTR tariff rates that were set 70 years prior to the granting of PNTR, thereby minimizing the concern of endogeneity problem associated with $NTRGap_j$. The first differencing operation, measures in the early periods, and the inclusion of $\mathbf{X_m^0}$ largely control for potential estimation biases caused by the nonrandom distribution of industrial structure and newspaper circulation across counties.

[18] As shown in Appendix Figure A1, according to the Gallup survey, the proportion of U.S. citizens who have a favorable attitude toward China has generally increased since 1998. One possible reason is the steady and improved relationship between China and U.S. during this period. Our identification controls for this macro trend by using the variations across newspapers within the same sample period.

Table 2
Baseline Results.

	ΔNegative Ratio		
	(1)	(2)	(3)
Newspaper Exposure to Chinese Imports 1998–2012 (Standardized)	0.070**	0.078***	
	(0.033)	(0.029)	
Newspaper PNTR Exposure (Standardized)			0.063***
			(0.024)
Control Variables	No	Yes	Yes
Method	IV	IV	DD
Observations	147	147	147
Weak identification	56.28	80.37	

Note: Robust standard errors are in parentheses. The table reports the results of the impact of Chinese import competition on media slant against China. The dependent variable is the change in percentage of newspaper's negative reports in total China-related reports from 1998 and 2012. Columns (1) and (2) report the estimation results using the instrumental variable framework of Autor et al. (2013) without and with control variables, respectively. Column (3) reports the estimation results obtained from the DD framework as in Pierce and Schott (2016a). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Control variables for newspaper and its readership attributes are the circulation-weighted shares of the following attributes at the county-level as a proxy for newspaper's readership attributes: Asian population, population with a bachelor's degree, population with graduate or professional degree, unemployed population, female population, and median income level. Weak identification tests represent the Wald version of the Kleibergen-Paap (2006) rk statistics. Estimates for the constant term and control variables are suppressed for space.
*** Significant at the 1% level.
** Significant at the 5% level.

3. Main results

3.1. Baseline results

The estimation results using the instrumental variable framework of Autor et al. (2013) are reported in columns 1 and 2 in Table 2, without and with additional controls $\mathbf{X_m^0}$, respectively. We find positive and statistically significant coefficients of the change in Chinese import competition, suggesting that exposure to Chinese imports causes newspapers in the United States to report more negative news about China.

In column 3, we report the estimation results obtained from the DD framework following Pierce and Schott (2016a). Consistently, we also find a positive and statistically significant coefficient of change in Chinese import competition (measured by the NTR gap), indicating that exposure to Chinese imports leads to more negative newspaper reports about China.[19]

In terms of the economic magnitude of the impact, the two specifications using two different identification strategies and measures of Chinese import competition generate similar numbers. Specifically, based on IV estimation, a one-standard-deviation increase in Chinese import competition at the newspaper level leads to an increase of 0.078 points in the change in media slant, which is 30.4% of the standard deviation of the change in media slant. The corresponding numbers for the DD estimation are 0.063 points, and 24.5%.

[19] It is interesting to investigate whether increasing U.S. exports to China has a positive effect on newspaper reports about China. To this end, we replace the regressor of interest in Eq. (4) with the change in newspaper exposure to U.S. exports to China, i.e., $\Delta Export_m^C = \sum_c \frac{w_{c,m}^{1998}}{w_m^{1998}} \sum_j \frac{1}{1000} \frac{L_{cj}^{1998}}{L_c^{1998}} \frac{\Delta E_j^C}{L_j^{1998}}$, where ΔE_j^C is the change in U.S. exports to China between 1998 and 2012 in industry j. For the positive words, we use the list in the Harvard IV-4 psychosocial dictionary; that is, the 500 and 1000 most often used single words, respectively. See Appendix Table A3 for the list of positive and negative keywords from the Harvard IV-4 dictionary. The estimation results are reported in Appendix Table A17. We find statistically and economically insignificant estimates. These results suggest that the effects of Chinese import competition and Chinese market access are asymmetric, which is consistent with the finding in the behavior literature that people pay more attention to losses than gains.

3.2. Robustness checks

In this subsection, we conduct a battery of sensitivity checks to address various estimation concerns.

3.2.1. Correlated demand shocks across countries

One potential concern with our IV estimation is that if there were unobserved demand shocks correlated across developed countries, our instrument (i.e., Chinese exports to eight other developed countries) would be correlated with U.S. demand structure, which in turn would bias our estimates. To address this concern, we adopt an alternative estimation framework used by Autor et al. (2013), which is based on the gravity residuals. Specifically, we first estimate a gravity model using bilateral trade data at the industry level from 1998 to 2012 with importer and product fixed effects, and obtain the residuals, which mainly capture the growth of Chinese imports in the U.S. due to productivity growth and changes in trade costs in China relative to the U.S. (details about gravity residuals approach are discussed in Appendix C3). The estimation results using this gravity residual framework are presented in Appendix Table A4. We continue to find a positive and statistically significant effect of exposure to Chinese imports on media slant, suggesting that our IV estimation results are not overly driven by correlated demand shocks across countries. Specifically, a one-standard-deviation increase in the measure using gravity residuals (2.436) leads to an increase of 0.038 points in the change in media slant. This magnitude is about half of the baseline estimate, and is similar to the magnitude change in Autor et al. (2013).

3.2.2. Differential industry trends

Another potential concern is that the employment structure we used to localize Chinese imports competition may be correlated with differential unobserved industry trends. For example, if some counties were specialized in declining manufacturing industries, then our estimates of exposure to Chinese imports could be confounded by these unobserved technology and industry trends that cause the decline of those industries. See McCaig (2011) for detailed discussions on this point. In our baseline estimations, to address this estimation concern, we use the employment structure in the initial period and control for a larger set of county initial conditions (such as share of Asian population).

Further, to alleviate this concern, we apply an alternative strategy used by Autor et al. (2013) and McCaig (2011). Specifically, we first follow Autor et al. (2013) in further including the initial share of manufacturing employment in the regression, which helps control for the overall trend of manufacturing in the sample period. The estimation results are reported in Appendix Table A5, columns 1 and 2. We continue to find positive and statistically significant estimates, with the magnitudes being barely changed. We then replace the initial share of manufacturing employment with initial shares of employment for each 2 digit manufacturing industry as in McCaig (2011). This can further help us eliminate the bias from differential 2 digit manufacturing industry trends. The estimation results are reported in Appendix Table A5, columns 3 and 4. We find similar results, with even more significant estimates.

3.2.3. Placebo test on the pre-treatment trends

For a further robustness check, we follow Autor et al. (2013) in conducting two placebo tests to examine any pre-treatment trends. First, we regress the change in media slant against China from 1998 to 2012 on the change in local manufacturing employment from 1990 to 1998. The estimation results are reported in Appendix Table A6, column 1. We do not find a statistically and economically significant estimate. These result suggests that the pre-treatment manufacturing employment trends do not predict future media slant trends, lending support to our identification. Second, we regress the change in media slant against China from 1987 to 1992 (the period prior to the rise of Chinese imports) on the change in newspaper exposure to Chinese imports from 1998 to 2012. The estimation results are reported in Appendix Table A6, column 2. Despite that data availability renders only 36 newspapers in the analysis, we obtain a precise estimate with a magnitude close to 0. Again, these results provide little evidence of reverse causality, lending support to our identification.

3.2.4. PNTR as an instrument for imports

As another robustness check, we use $PNTR_m$ as an instrument for $\Delta Import_m^C$ in Eq. (4). $PNTR_m$ is motivated by a policy shock in 2000, and its construction is based on the difference between the NTR tariffs and the non-NTR tariff rates that were set 70 years prior to the granting of PNTR. These make $PNTR_m$ arguably exogenous. The estimation results are reported in Appendix Table A7, column 1. We continue to find a positive and statistically significant estimate.

Alternatively, we implement this estimation strategy by first regressing Chinese imports on *PNTR* at the product level, and then using the predicted imports from the first step to construct the measure of local trade exposure $\Delta\widehat{Import}_m^C$ in the estimation of Eq. (4). The results are reported in Appendix Table A7, column 2. Again, we find similar results as in the baseline in Table 2.

3.2.5. Spatial correlation

Our measure of newspaper-level exposure to Chinese imports is constructed by aggregating the county-level exposure to Chinese imports with the county circulation share as the weight. This aggregation may lead to spatial interdependence, as a county may have several circulating newspapers and the import exposure of the same county is used in constructing of the import exposure of several newspapers. To examine whether this spatial interdependence biases our estimates, we conduct a robustness check by assigning each county to only its largest newspaper in the constructing newspaper trade exposure measure. The estimation results, reported in Appendix Table A8, are robust to this new measurement, suggesting that the spatial correlation issue is not driving our estimates.

3.2.6. Newspaper ownership

Newspapers are usually owned by conglomerates or individuals who have other businesses. Hence, if their other businesses are affected by Chinese import competition, the newspapers may change their reporting to reflect their owners' attitudes. To address this concern, we explore the situation that a conglomerate or an individual may own several newspapers circulated in different areas and hence, within-ownership, across newspapers variations can help eliminate the ownership effect. For the list of newspaper ownership, see Appendix Table A9. To this end, we add the owner identity dummies in the estimation. The results are reported in Appendix Table A10. We find similar results with barely changed coefficients.

3.2.7. Placebo tests looking at non-China-specific words and articles

Some keywords in the negative words list in Appendix Table A2 are not China-specific. This provides us with a placebo test by examining whether exposure to Chinese imports affects the degree of non-China-specific negative reporting. To this end, we search the non-China-specific negative wording in non-China related news, construct the negative reporting ratio, and re-estimate our baseline specifications. The estimation results are reported in Appendix Table A11, columns 1 and 2. We find that the estimated coefficients are neither statistically nor economically significant. Alternatively, we investigate whether the ratio of negative reporting on China over the total negative reporting using the non-China-specific negative keywords is affected by exposure to Chinese imports. The estimation results are reported in Appendix Table A11, columns 3 and 4. Again, we find neither statistically nor economically significant estimates. These two placebo tests further confirm the validity of our estimation framework.

3.2.8. Time-varying circulation weight and thickness of media markets

In constructing the measure of newspaper exposure to Chinese imports, we fix the circulation weight in the initial period, following Autor et al. (2013). This can help us focus on the time variations from the changes in imports, instead of the changes in newspaper circulation, in particular due to the entry and exit of newspapers in their local markets. As an illustration on this point, consider the measurement using the time-varying circulation data:

$$\Delta Import_m^C = \sum_c \left(\frac{w_{c,m}^{2012}}{w_m^{2012}} m_c^{2012} - \frac{w_{c,m}^{1998}}{w_m^{1998}} m_c^{1998} \right) = \sum_c \left(\Delta \frac{w_{c,m}^t}{w_m^t} \right) m_c^{2012} + \sum_c \frac{w_{c,m}^{1998}}{w_m^{1998}} \Delta m_c^t, \quad (7)$$

where $m_c^t \equiv \sum_j \frac{1}{1000} \frac{L_{cj}^{1998}}{L_c^{1998}} \frac{M_j^{C,t}}{L_j^{1998}}$. Hence, the changes in the newspaper exposure to Chinese imports can be decomposed into two parts: the changes in circulation over time (i.e., $\Delta \frac{w_{c,m}^t}{w_m^t}$) and the changes in import competition over time (i.e., Δm_c^t). Fixing the circulation weight $\frac{w_{c,m}^t}{w_m^t}$ in the initial period then allows us to concentrate on the changes in imports competition in generating the changes in the newspaper exposure to Chinese imports. Nonetheless, we conduct a robustness check by using the time-varying circulation weight to construct our regressor of interest, as in Eq. (7). Estimation results are reported in Appendix Table A12, columns 1. We continue to find negative and statistically significant estimates, but the magnitudes drop a bit. One possible reason is that if counties that are more affected by Chinese import competition had reduced newspaper circulation due to the exit of newspapers (i.e., $\Delta \frac{w_{c,m}^t}{w_m^t}$ is negatively correlated with Δm_c^t), then the measurement using time-varying circulation as the weight absorbs this negative circulation shock in their first term in Eq. (7), and then generates smaller effects.

We further examine whether variations in the thickness of the media market (i.e., the number of circulating newspapers) across counties affect the estimation. The estimation results controlling for the thickness of the media market are reported in Appendix Table A12, columns 2 and 3. We find similar results as in the baseline, with the magnitude barely changed. These results largely rule out the concern about the thickness of media market.

3.2.9. Sample selection bias

We also examine the potential concern about sample selection bias, that is, the effect of Chinese import exposure on the coverage of China-related reports (i.e., the proportion of China-related reports in total reports). The estimation results are reported in Appendix Table A13. We find insignificant results, suggesting that there is no extensive margin effect of the exposure to Chinese imports, and our aforementioned results are not biased due to the sample selection issue.

To understand further the lack of any extensive margin effect, we plot the trend in the extensive margin of news reports about China in Appendix Fig. A2a, and the distribution of the coverage of China-related reports across newspapers in 1998 and 2012 in Appendix Fig. A2b. Clearly, the distributions are both skewed toward the right, with a high concentration on the low coverage of China-related reports. In Appendix Fig. A2c, we further plot the distribution of the changes in coverage between 1998 and 2012 across newspapers. We find a normal distribution that narrowly centers around 0, indicating that for a majority of the newspapers, the changes in coverage over 1998–2012 is small and close to 0. These results shed light on the finding that there is no extensive margin effect of exposure to Chinese imports.

3.2.10. Agenda-setting behavior

Another potential concern is that the media slant is driven by editorials rather than newspapers' agenda-setting behavior. To address this concern, we focus on a subsample of newspaper articles that excludes opinion pieces. Specifically, we follow Gentzkow and Shapiro (2010) and exclude articles whose headlines contain the words "editor," "editorial," "opinion," "op-ed," and "letter". As shown in Appendix Table A14, our results are still as strong as the baseline results in Table 2.

3.2.11. Weighted regressions

Thus far, our estimations are based on unweighted regressions; hence, the estimates reflect the average response of the 147 local newspapers. To capture the average effects of newspaper readership, we re-estimate the equation using the circulation as the weight. The estimation results are reported in Appendix Table A15. We continue to find statistically significant estimates, with quite similar magnitudes. These results suggest the similarity between the newspaper average and readership average effects.

3.3. Event study of the 2008 Beijing olympics games

Our measure of media slant in the baseline results covers various types of issues during the sample period. As a result, the measure could be influenced by possible changes in the newspapers' focus on these issues over time. Therefore, in this section, we measure media slant focusing on newspaper coverage of one single event, the 2008 Summer Olympic Games held in Beijing. We repeat the same analyses as in the baseline results. The Olympics is a supposedly politically neutral event, so the coverage should involve a minimal degree of media slant and make it more difficult to identify the impact of Chinese import competition. Surprisingly, there was some "China-bashing" in newspaper reporting throughout the year of the Beijing Olympic Games, linking the Beijing Olympics to "Genocide Olympics,"[20] "Smog Olympics,"[21] "Human Rights Olympics,"[22] and so forth. It would be interesting to identify which local newspapers reported more negative news about the Beijing Olympic Games.

To construct the measure of media slant against China, we restrict the analysis to the sample of articles that were published in 2008 and contained the keyword "Olympics." We classify the articles as negative or not, depending on whether some of the negative keywords were included in the articles.[23] The refined media slant measure ($NegRatio_{m\ Olympics_{08}}$) is:

$$NegRatio_m^{Olympics08} = \frac{Neg_m^{Olympics08}}{China_m^{Olympics08}} \quad (8)$$

where $China_m^{Olympics08}$ is the number of reports on the Beijing Olympics in newspaper m in 2008; $Neg_m^{Olympics08}$ is the number of reports on the Beijing Olympics that contained negative keywords in newspaper m in year 2008; and $NegRatio_m^{Olympics08}$ is the proportion of negative reports on the Beijing Olympics in total reports on the Beijing Olympics in newspaper m in 2008.[24] As shown in Table 1, panel A, on average, 15.3% of the newspaper coverage of the Beijing Olympics is associated with negative issues about China, which is lower than the mean media slant (39.6%) in 1998 and 2012 used in our baseline analysis.

As in our main analysis, we use Autor et al.'s (2013) IV method and Pierce and Schott's (2016a) DD method. The estimation results are

[20] China's Genocide Olympics, the *New York Times*, January 24, 2008.
[21] Beijing's Olympic War on Smog, *Times*, April 15, 2008.
[22] Violence in Nepal as Tibetans Protest Olympics, the *Independent*, March 31, 2008.
[23] We exclude some keywords, such as "abuse," "violation," and "illegal," from the original keyword list in this test, as they are likely to generate false positive hits about sports scandals.
[24] There were no reports about the 2008 Beijing Olympics in 1998. Hence, our outcome in this exercise, $\Delta NegRatio_m^{Olympics08} \equiv NegRatio_{m,\,2008}^{Olympics08} - NegRatio_{m,\,1998}^{Olympics08}$, collapses to $NegRatio_{m,\,2008}^{Olympics08}$.

Table 3
2008 Beijing olympics news reports.

	ΔNegative Ratio (2008 Beijing Olympics)	
	(1)	(2)
Newspaper Exposure to Chinese Imports 1998–2008 (Standardized)	0.016*	
	(0.009)	
Newspaper PNTR Exposure (Standardized)		0.006
		(0.007)
Control Variables	Yes	Yes
Method	IV	DD
Observations	147	147
Weak identification	112.3	

Note: Robust standard errors are in parentheses. The dependent variable in this table is the percentage of newspaper's negative reports in total 2008 Beijing Olympics reports in 2008. Column (1) reports the estimation results using the instrumental variable framework of Autor et al. (2013) with control variables. Column (2) reports the estimation results obtained from the DD framework as in Pierce and Schott (2016a). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Estimates for the constant term and control variables are suppressed.
* Significant at the 10% level.

Table 4
Results with negative keyword list by Harvard iV-4.

	Δ(NgtvTop500/China)	
	(1)	(2)
Newspaper Exposure to Chinese Imports 1998–2012 (Standardized)	0.084***	
	(0.028)	
Newspaper PNTR Exposure (Standardized)		0.064***
		(0.020)
Control Variables	Yes	Yes
Method	IV	DD
Observations	147	147
Weak identification	80.37	

Note: Robust standard errors are in parentheses. The dependent variable is the change of percentage of newspaper's negative reports in total China-related reports from 1998 to 2012. Negative articles are identified with a negative keyword list constructed according to the top 500 most-often-used single words from all the China-related articles in *The New York Times* and *The Washington Post* (1995–2012) classified by the Harvard IV-4 sentiment dictionary. Column (1) reports the estimation results using the instrumental variable framework of Autor et al. (2013) with control variables. Column (2) reports the estimation results obtained from the DD framework as in Pierce and Schott (2016a). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Estimates for constant term and control variables are suppressed.
*** Significant at the 1% level.

reported in Table 3. We find that, consistent with our baseline findings, the coefficient of the change in Chinese import competition is positive under both specifications, albeit it is statistically insignificant in the DD estimation.[25] These results further confirm that the increase in Chinese imports causes newspaper articles in the United States to be more negative toward China.

3.4. Alternative measurement of media slant

The aforementioned measure of media slant may have potential measurement error caused by the subjectivity in constructing the list of negative keywords. For robustness tests, we use a well-known dictionary to construct a list of negative keywords for measuring the degree of media slant. We also use sentiment analysis of the newspaper content to measure the degree of media slant.

3.4.1. Matching sentiment dictionary

We rank the frequency of single words compiled from all the China-related articles in *The New York Times* and *The Washington Post* over 1995–2012, as previously discussed. We then select the 500 most often used single words and match them with the words from the Harvard IV-4 psychosocial dictionary (the list of matched single words is provided in Appendix Table A3).[26] Next, based on the Harvard IV-4 psychosocial dictionary, we classify the matched words into two categories: positive, negative.[27] We search the articles in U.S. local newspapers from 1998 to 2012, using the list of the negative words obtained through this process, and calculate the media slant ratio as the share of hits of China-related articles containing the negative words in the total number of China-related articles $\frac{Negative_m^{top500}}{China_m}$, where $Negative_m^{top500}$ and $China_m$ are the number of reports containing the negative words and the total number of reports about China, respectively. As shown in Table 1, panel A, the average change in $\frac{Negative_m^{top500}}{China_m}$ in all 147 newspapers from 1998 to 2012 is −0.064, with standard deviation 0.212.

With the ratio of media slant constructed above, we run the same estimations as in the baseline analysis, and summarize the regression results in Table 4. Columns 1 and 2 present with the IV and DD estimation results, respectively. Consistent with the baseline analysis, we find that with both the IV and DD estimations, the change in import exposure to China has a positive and statistically significant impact on the change in newspapers' media slant against China.

An additional advantage of using the Harvard IV-4 psychosocial dictionary is that we have both the list of negative keywords and the list of positive keywords. By taking into account the usage of positive as well as negative words, we can come up with a more refined measure of media slant. Specifically, we first calculate the difference between the number of reports containing negative words and the number of reports containing positive words, and then divide it by the sum of the two, namely, $\frac{Negative_m^{top500}-Positive_m^{top500}}{Negative_m^{top500}+Positive_m^{top500}}$, where $Negative_m^{top500}$ and $Positive_m^{top500}$ are the number of reports containing negative words and the number of reports containing positive words, respectively. We also experiment with using the 1000 most often used words instead of the 500 most often used words in constructing the measure of media slant. As shown in Appendix Table A16, these additional robustness checks yield qualitatively the same results as those in Table 4.

3.4.2. Sentiment analysis

In addition to using the keyword search method, which counts the usage frequency of a certain group of (negative) keywords in articles, we directly measure the tone of newspaper articles with sentiment analysis.[28] *Newslibrary* allows us to view the first 500 characters (around 90 words) of each article. Those words usually form the leading paragraph where writers commonly express their opinions. We apply the sentiment analysis method to do a textual analysis on those first 500 characters (leading paragraph, thereafter) of each newspaper article about China.[29]

Specifically, we use the Python Natural Language Toolkit package to tokenize the first 500 characters of each newspaper article into a list of single words. Next, for each word in the document, we search for the word in a sentiment dictionary called SentiWordNet 3.0 and find its negativity score.[30] We measure the negativity of each article by

[25] The estimated magnitudes are smaller than those in the baseline. One possible explanation is that there is less room for negative reporting on the Olympics Games than on the general issues.
[26] The Harvard IV-4 psychosocial dictionary is a common sentiment dictionary used to study the sentiment of newspaper articles (e.g., Tetlock (2007)).
[27] The word "human" is excluded from the positive list, as it is associated with several reports about human rights issues, which are mostly negative in China-related news.
[28] Natural language processing techniques have been vastly developed in the field of computer science and adopted by researchers in other fields. For example, Thomas et al. (2006) analyze the congressional floor debate transcripts to determine the attitudes of speeches. Tumasjan et al. (2010) analyze the twitter sentiment to predict election results.
[29] The procedure we implement is a rather simple version compared with the recent developments in this field. Issues such as score weighting and negation are not addressed. However, our random sample check shows that the technique delivers quite reliable results.
[30] SentiWordNet is one of the major lexical resources for sentiment analysis. Currently there are about 1100 published papers using SentiWordNet 3.0, according to Google Scholar.

Table 5
Negativity score from sentiment analysis.

	ΔNegativity Score SentiAnalysis	
	(1)	(2)
Newspaper Exposure to Chinese Imports 1998–2012 (Standardized)	0.093*	
	(0.056)	
Newspaper PNTR Exposure (Standardized)		0.058*
		(0.034)
Control Variables	Yes	Yes
Method	IV	DD
Observations	147	147
Weak identification	80.37	

Note: Robust standard errors are in parentheses. The dependent variable is the change in newspaper's negativity score derived from sentiment analysis between 1998 and 2012. Column (1) reports the estimation results using the instrumental variable framework of Autor et al. (2013) with control variables. Column (2) reports the estimation results obtained from the DD framework as in Pierce and Schott (2016a, 2016b). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Estimates for the constant term and control variables are suppressed.

* Significant at the 10% level.

calculating the total negative score of words in the leading paragraph divided by the total number of words in that paragraph, and use the average negativity score of all China-related documents in one newspaper as the measure of media slant of that newspaper. As shown in Table 1, panel A, for all 147 newspapers, the average change in the negativity score from 1998 to 2012 is −0.0757.

Table 5 reports the regression results for the media slant measure constructed by sentiment analysis. We find a positive and statistically significant impact of Chinese import competition on media slant, with both the Autor et al. (2013) (column 1) and Pierce and Schott (2016a) (column 2) methods.

4. Interpretation

We have shown that exposure to Chinese imports has increased negative reporting on China by U.S. local newspapers. In this section, we discuss interpretations of this result. Specifically, we first examine whether the result reflects an overall increase in the negative reporting, then document the source of these negative reports about China, and finally investigate the importance of the local labor market in explaining our findings.

4.1. General trend versus China-specific

One possible explanation for our findings is that newspapers whose readership was more exposed to increased Chinese imports between 1998 and 2012 were becoming more negative in their reporting in general. Do our estimates reflect the effects of increased Chinese import competition on media slant or capture an overall trend in newspaper reporting? To distinguish these two possible explanations, we conduct two exercises. In the first exercise, we directly study whether the overall reporting became more negative along with the increased exposure to Chinese imports. Specifically, we use the general negative words from the Harvard IV-4 psychosocial dictionary to search all the newspaper articles and construct a measure of the degree of negative reporting in general. The estimation results are reported in Table 6, columns 1 and 2. We find statistically and economically insignificant estimates.

In our second exercise, we conduct the same analysis by examining whether the reporting on Mexico (one of the major trading partners of United States) became more negative when the newspaper readership faced increased exposure to Chinese imports. The estimation results are reported in Table 6, columns 3 and 4. Clearly, the coefficients from the IV and DD estimations are negative and economically and statistically insignificant.

Table 6
GENERAL trend or China-specific trend.

	Δ(Negative/All articles)		Δ(Mexico Negative/Mexico News)	
	(1)	(2)	(3)	(4)
Newspaper Exposure to Chinese Imports 1998–2012 (Standardized)	0.004		−0.046	
	(0.011)		(0.045)	
Newspaper PNTR Exposure (Standardized)		0.003		−0.013
		(0.008)		(0.036)
Control Variables	Yes	Yes	Yes	Yes
Method	IV	DD	IV	DD
Observations	147	147	128	128
Weak identification	80.37		108.9	

Note: Robust standard errors are in parentheses. The dependent variables in columns (1)–(2) are the change in percentage of negative reporting in total reports from 1998 to 2012. The dependent variable in columns (3)–(4) are the change of percentage of negative reporting about Mexico in total Mexican reports from 1998 to 2012. The keyword list used here consists of negative words according to Harvard IV-4 (see Table A3). Columns (1) and (3) report the estimation results using the instrumental variable framework of Autor et al. (2013) with control variables. Columns (2) and (4) report the estimation results obtained from the DD framework as in Pierce and Schott (2016a). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Estimates for the constant term and control variables are suppressed for space.

Combined, these two exercises demonstrate that our findings do not represent overall changes in newspaper reporting. Instead, the findings reflect that increased Chinese import competition has made U.S. newspapers increasingly negative against China in their reporting.

4.2. Trade-related versus non-trade-related reporting

To understand the source of media slant against China, we divide all the negative reports about China into two parts (trade-related and non-trade-related), and construct two subcomponents of the media slant measure accordingly. One subcomponent is the percentage of negative trade-related reports in all China-related reports ($NegRatio^{trade}_{m,t} = \frac{Neg^{trade}_{m,t}}{China_{m,t}}$) and the other is the percentage of the negative non-traded-related reports in all China-related reports ($NegRatio^{nontrade}_{m,t} = \frac{Neg^{nontrade}_{m,t}}{China_{m,t}}$). Next we use the methods in Autor et al. (2013) and Pierce and Schott (2016a)

Table 7
Trade versus non-trade related news.

	ΔTrade Related Negative Ratio		ΔNon-Trade Related Negative Ratio	
	(1)	(2)	(3)	(4)
Newspaper Exposure to Chinese Imports 1998–2012 (Standardized)	0.016*		0.075***	
	(0.009)		(0.029)	
Newspaper PNTR Exposure (Standardized)		0.003		0.061**
		(0.009)		(0.024)
Control Variables	Yes	Yes	Yes	Yes
Method	IV	DD	IV	DD
Observations	147	147	147	147
Weak identification	80.37		80.37	

Note: Robust standard errors are in parentheses. The dependent variable in columns (1)–(2) is the change in percentage of negative reporting about trade-related news in total China-related reports from 1998 to 2012. The dependent variable in columns (3)–(4) is the change of percentage of negative reporting about non-trade-related news in total China-related reports from 1998 to 2012. Columns (1) and (3) report the estimation results using the instrumental variable framework of Autor et al. (2013) with control variables. Columns (2) and (4) report the estimation results obtained from the DD framework as in Pierce and Schott (2016). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Estimates for the constant term and control variables are suppressed.

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

to investigate the impact of Chinese import competition on each of the two subcomponents of media slant.

As shown in Table 7, we find that the change in the exposure of newspaper readership to Chinese imports has a positive impact on both the change in the percentage of negative trade-related reporting on China (columns 1 and 2) and the change in the percentage of negative non-trade-related reporting on China (columns 3 and 4). However, the effect of trade-related news is smaller than that of non-trade-related news. These results suggest that most of the increased negative reports about China are on non-trade-related news, such as human rights, the political regime, and so forth. These results are consistent with those from Larcinese et al. (2011), who find partisan bias in newspaper coverage to be less biased for trade issues than other economic issues.

One possible explanation for the results is that, compared with trade-related reports, it is less direct and easier for newspapers to express negative attitudes against China on some ideological topics, such as human rights and the political regime. Another explanation for the results is that newspaper coverage of trade issues is driven by special interest groups. It has been found that groups such as labor unions and environmentalists were underrepresented in newspaper coverage during the passage of North American Free Trade Agreement (Summa and Greanville, 1993), and instead coverage at the time largely relied on the interviews with business representatives, who were by and large pro-trade (Baker, 1993).

4.3. Role of the local labor market

An important channel through which exposure to Chinese imports affects media slant is the local labor market. Recent studies have found that Chinese imports cast significantly negative effects on local labor markets such as manufacturing unemployment (e.g., Autor et al., 2013; Acemoglu et al., 2016; Pierce and Schott, 2016a), wage reductions (e.g., Autor et al., 2014), job-related injuries and mortality (e.g., McManus and Schaur, 2016; Pierce and Schott, 2016b), and so forth. To the extent that displaced manufacturing workers constituted a significant portion of the local readership, the media, catering to the local discomfort, may have become more anti-Chinese.

To investigate how much exposure to Chinese imports affects media slant directly and indirectly through local labor markets, we use a decomposition method following Heckman et al. (2013) and Gelbach (2016). The decomposition proceeds in three steps. In the first step, we estimate the overall effects (including both direct and indirect effects through local labor markets) of exposure to Chinese imports on media slant (i.e., β^{full}) as already obtained in Table 2. Second, we include the share of local manufacturing employment in the regressions in the first step. The coefficient of exposure to Chinese imports represents its direct effect on media slant (i.e., β^{direct}). In the last step, the relative contribution of local labor markets to the effect of exposure to Chinese imports on media slant is calculated as $\frac{\beta^{full}-\beta^{direct}}{\beta^{full}}$.

With an IV specification, we find that the change in the share of manufacturing employment explains 61.90% ($\frac{0.042-0.016}{0.042}$) of the effect of exposure to Chinese imports on media slant. With a DD specification, we find that the change in the share of manufacturing employment explains 45.13% ($\frac{971.187-532.878}{971.187}$) of the effect of exposure to Chinese imports on media slant. These results confirm the important role of local labor market in transmitting the shock of Chinese import competition to the society.

5. Trade exposure, media slant, and elections

Our above analyses show that newspapers whose circulating counties face greater exposure to Chinese imports have more media slant against China. Indeed, “China bashing” has become popular in today's U.S. elections. Candidates from the Republican and Democratic parties try to capitalize on the public's negative views on China to court more votes. In this section, we further examine the interactions among exposure to Chinese imports, media slant, and the results of elections in the U.S. Specifically, we first study whether exposure to Chinese imports affects newspaper endorsement in presidential elections. We then look at whether media slant against China affects voting outcomes in various U.S. elections.[31] Lastly, we quantify how much trade exposure affects U.S. elections through media slant.

5.1. Newspaper endorsements in presidential elections

Newspaper endorsements are often studied in the media economics literature, because an endorsement is a statement of a newspaper's position on some important issues, and generally reflects the newspaper's ideological/partisan positions. To investigate whether exposure to Chinese imports affects newspapers' political position, we look at newspaper endorsements for U.S. presidential elections.

We collect data on newspaper endorsements for the 2000 and 2012 presidential elections from different sources, including Ansolabehere et al. (2006), Democracy in Action,[32] and the American Presidency Project.[33] We also search endorsements in newspaper archives. We find 115 newspapers in our sample with explicit expressions of endorsements (for Republicans, Democrats, or no endorsement) in both 2000 and 2012. We construct a variable, called change in newspaper endorsement in presidential elections between 2000 and 2012, which takes a value of 2 if the newspaper directly switched from Republicans to Democrats, a value of 1 if there was a pro-Democrat change (such as switching from Republicans to no-endorsement, or from no-endorsement to Democrats), a value of 0 if there was no change in endorsement, a value of −1 if there was a pro-Republican change (such as switching from no-endorsement to Republicans, or from Democrats to no-endorsement), and finally, a value of −2 if the newspaper directly switched from Democrats to Republicans.

As in our main analysis, we use Autor et al.'s (2013) IV method and Pierce and Schott's (2016a) DD method with the same set of independent variables and control variables of newspaper readership attributes. We further include newspapers' initial party endorsements in 2000 and circulation-weighted voting share for the Democrat in the 2000 presidential election, to control for the newspaper's and its readerships' initial partisan preference.[34] The results are shown in Table 8, columns 1 and 3. Given the ordinal nature of the dependent variable, we also use ordered probit regressions with the IV and DD methods in columns 2 and 4, respectively. The coefficients for the Chinese import competition variables are all positive, albeit less precise estimates are obtained using Autor et al.'s IV method. The results provide some evidence that increased Chinese import competition improves the likelihood that a newspaper endorses Democratic candidates, who tend to be more anti-trade than Republican candidates.

5.2. Impact of media slant against china on voting

We further examine the effect of the change in media slant against China on the change in voting shares for Democrats in the House, Senate, and presidential elections between 2000 and 2012. Because of the substantial changes in the boundaries of Congressional districts between 2000 and 2012 (as a result of redistricting after the 2000 and 2010 Censuses), we study the voting outcomes at the county level, since those boundaries do not change over time. This approach allows us to track changes in constant geographic areas over time.

[31] Previous studies have documented a significant impact of media on voting outcomes. For example, Enikolopov et al. (2011) find that the independent TV network has a positive effect on the voting share of major opposition parties in Russia.

[32] https://www2.gwu.edu/~action.

[33] http://www.presidency.ucsb.edu/data.php.

[34] We obtain county-level data on voting shares in the past elections from *Dave Leip's Atlas of U.S. Elections*.

Table 8
Change in newspaper endorsements in the presidential Elections (2000–2012).

	Endorsement Change (2000–2012)			
	(1)	(2)	(3)	(4)
Newspaper Exposure to Chinese Imports 2000–2012 (Standardized)	0.0969 (0.0939)	−0.0435 (0.209)		
Newspaper PNTR Exposure (Standardized)			0.158* (0.0847)	0.279* (0.151)
Control Variables	Yes	Yes	Yes	Yes
Method	IV	Ordered Probit with IV	DD	Ordered Probit with DD
Observations	115	115	115	115

Note: Robust standard errors are in parentheses. The dependent variable is the change in the newspaper's endorsement in presidential elections between 2000 and 2012, which takes the value 2 if the newspaper directly switched from Republicans to Democrats, the value 1 if there was a pro-Democrat change (such as switching from Republicans to no-endorsement, or from no-endorsement to Democrats), the value zero if there was no change in endorsement, the value −1 if there was a pro-Republican change (such as switching from no-endorsement to Republicans, or from Democrats to no-endorsement), finally the value −2 if the newspaper directly switched from Democrats to Republicans. Column (1) reports the estimation results using the instrumental variable framework of Autor et al. (2013), and column (3) reports the estimation results obtained from the DD framework as in Pierce and Schott (2016a). For comparison, Column (2) and 4 present the results of ordered probit model estimation corresponding to columns (1) and (3). The two import exposure measures are standardized with a mean of 0 and a standard deviation of 1. Control variables are the same as in the baseline results, plus newspapers' initial party endorsements in 2000 and circulation-weighted voting share for Democrats in the 2000 presidential election. Estimates for the constant term and control variables are suppressed.
* Significant at the 10% level.

Our estimation model is

$$\Delta VoteShare_c = \gamma \Delta media_c + \mathbf{X_c^0}\eta + \varepsilon_c, \tag{9}$$

where $\Delta V\,oteShare_c$ is the change in voting share for candidates of the Democratic Party candidates in county c between 2000 and 2012; and ε_c is the error term. Standard errors are clustered at the state level.

$\Delta media_c$ measures the change in media slant against China in county c between 2000 and 2012, which is defined as

$$\Delta media_c = \sum \left(\frac{circulation_{cm}^{2000}}{population_c^{2000}} * \Delta NegativeRatio_m \right) \tag{10}$$

where $circulation_{cm}^{2000}$ is the weekly circulation of newspaper m in county c in 2000; $popluation_c^{2000}$ is the population of county c in 2000; and $\Delta NegativeRatio_m$ is the change in media slant of newspaper m from 2000 to 2012 constructed in the same way as in the baseline analysis of Section 3.1. The measure is a summation of the media slant ratios of all the newspapers that have circulation in county c, with the ratio between circulation and county population being the weight.

Our identification of γ in Eq. (9) comes from the mismatch between the determination of newspaper slant (which aggregates the situations in all the newspaper's circulation markets) and the determination of county-level media slant (which aggregates the behavior of all newspapers circulated in the county). As an illustration of this identification strategy, consider the following example in which Newspaper A is circulated in four counties (i.e., counties 1–4) with a large concentration in county 1, and county 2 has four newspapers circulated (i.e., Newspapers A-D) with the largest newspaper being Newspaper A. Hence, the overall media slant in county 2 is determined by the slant of Newspaper A, which is mainly determined by the situations (such as Chinese import competition) in county 1. In other words, the degree of media slant in county 2 is exogenous to the conditions in the county, generating the randomness for our identification.

However, one concern about our identification is that the determination of newspaper slant and that of county-level media slant is aligned. In our previous example, further assume that Newspaper A is the largest newspaper in county 1. Then for county 1, its overall degree of media slant is largely determined by the content of Newspaper A, which is mainly determined by the situations in that county. This creates a possible correlation between our regressor of interest and the error term, which would bias the estimates. To address this concern, we exclude the newspaper-county cell where circulation of newspaper m in county c is more than 20% of newspaper m's total circulation.[35] Our final regression sample covers 1961 counties across the United States. Table 9 presents the summary statistics for variables at the county level.

Table 9
Summary statistics at the county level.

	N (1)	mean (2)	S.D. (3)	min (4)	max (5)
ΔHouse Democrat Share (2000–2012)	1943	−0.385	0.213	−0.869	0.711
ΔSenate Democrat Share (2000–2012)	1205	0.015	0.123	−0.325	0.699
ΔPresidential Democrat Share (2000–2012)	1961	−0.013	0.081	−0.424	0.242
ΔCounty Media Bias (2000–2012)	1961	−0.064	0.123	−1.008	0.385
Population Share of Ethnic Asian (%) in 2000	1961	0.887	1.716	0.000	30.900
Population Share of Bachelor's Degree (%) in 2000	1961	10.881	4.761	2.600	32.800
Population Share of Graduate or Professional Degree (%) in 2000	1961	5.742	3.440	0.900	36.000
Population Share of Unemployment (%) in 2000	1961	5.882	2.564	1.400	41.700
Population Share of Female (%) in 2000	1961	50.570	1.839	34.500	57.400
Median Income in 2000 (in U.S. dollars)	1961	36,265	9066	15,805	81,050

Note: Voting share data are from Dave Leip's Atlas of U.S. Elections. Voting share data for House and Senate elections are missing in some counties.

Table 10
The impact of media slant against China on democrats voting share (2000–2012).

	ΔHouse Democrats Share (1)	ΔSenate Democrats Share (2)	ΔPresidential Democrats Share (3)
ΔCounty Media Slant	0.107*** (0.0264)	0.0969*** (0.0199)	0.0133 (0.0113)
Control Variables	Yes	Yes	Yes
Observations	1943	1205	1961
R-squared	0.531	0.269	0.263

Note: Robust standard errors are in parentheses. The dependent variables in columns (1)–(3) are the changes of Democrats voting share at the county level in House, Senate, and presidential elections respectively. Control variables at the county level include Asian population, population with a bachelor's degree, population with graduate or professional degree, unemployed population, female population, and median income level and number of newspapers and initial Democrats voting share in 2000. Estimates for the constant term and control variables are suppressed.
*** Significant at the 1% level.

Table 10 presents the regression results of Eq. (9). We find a positive and statistically significant relationship between media slant against China and voting share for Democrats in House and Senate elections, albeit a positive and statistically insignificant relationship for presidential elections. In terms of the magnitude of the impact, we find that a one-standard-deviation increase in the change in media slant (0.123) is associated with an increase of 1.3% (6.2% of the standard deviation) in the change in voting shares for Democrats in House elections, an increase of 1.2% (9.7% of the standard deviation) increase in the change of the voting shares for Democrats in Senate elections. These results demonstrate the impact on elections of media slant triggered by increased Chinese imports.

[35] We also test the results with different thresholds (5 to 90%), and find the results to be qualitatively the same.

5.2.1. Elections in 2016

During the 2016 presidential election, the Republican nominee, Donald Trump, took a strong position in protecting the U.S. economy from foreign competition, especially from low-wage countries like China and Mexico, departing from the traditional Republican position on trade issues. Recent studies by Autor et al. (2016) and Che et al. (2017) find that areas that are more affected by Chinese import competition gained a larger Republican vote share. To square these results with our media endorsement findings in Table 8 (which are obtained using the elections data of 2000–2012), we further extend the analysis to 2016. Similar to Che et al. (2017), we divide the sample into two periods of changes (before and after 2012), and decompose the total change into: the changes in 2000–2012 and the changes in 2012–2016. We estimate the Eq. (9) by including an interaction between *Period* 12–16 (an indicator for the period of 2012–2016) and $\Delta media_c$ to examine whether the elections in 2016 are different from previous elections. The estimates are reported in Appendix Table A18. For the single term $\Delta media_c$ (which represents the media's effect on voting in the elections between 2000 and 2012), we find similar results as those in Table 10.

However, the interaction terms *Period* 12–16 $\times$ $\Delta media_c$ are all negative albeit statistically significant only for House voting. These results suggest that media slant against China increased the shares of votes for Republicans in the 2016 elections, consistent with the message conveyed by Autor et al. (2016) and Che et al. (2017). Given that Republicans were traditionally more supportive of free trade but were more trade protective than Democrats in the 2016 elections, these results are in line with the main message of our analysis, that is, media slant against China (whose imports competition adversely affected local economies) increased the share of votes going to the party that held an anti-trade position.

5.3. Role of media slant in channeling the effect of trade exposure on voting

Recent studies have shown that Chinese import competition significantly affects voting outcomes in the United States (i.e., Autor et al., 2016; Che et al., 2017) as well as other developed countries (e.g., Dippel et al., 2017). To quantify how much exposure to Chinese imports affects voting outcomes through the behavior of the media, we apply a decomposition framework following Heckman et al. (2013) and Gelbach (2016), and used in Section 4.3.

The decomposition proceeds in three steps. In the first step, we estimate the effect of exposure to Chinese imports on voting outcomes based on the specifications used in the literature (i.e., the IV framework by Autor et al., 2016; and the DD framework by Che et al., 2017). From these regressions, we obtain the full trade exposure effects γ^{full}. Second, we add the media slant variable in the regressions in the first step. The coefficients of exposure to Chinese imports give the direct effects of trade exposure on voting outcomes γ^{direct}, that is, the effects net of trade exposure-induced changes in the voting outcomes via media slant. In the last step, we calculate the relative contribution of media slant by calculating $\frac{\gamma^{full}-\gamma^{direct}}{\gamma^{full}}$.

With the IV specification, we find that the change in media slant explains about 7.11% ($\frac{0.00225-0.00209}{0.00225}$) of the effects of exposure to Chinese imports on House elections, about 14.84% ($\frac{0.00714-0.00608}{0.00714}$) of the effects on Senate elections, and about 11.75% ($\frac{0.00383-0.00338}{0.00383}$) of the effects on the presidential election. With DD specification, we find that the change in media slant explains about 2.97% ($\frac{52.95-51.38}{52.95}$) of the effects of exposure to Chinese imports on the House elections, about 17.25% ($\frac{52.93-43.80}{52.93}$) of the effects on Senate elections, and about 4.37% ($\frac{10.03-9.59}{10.03}$) of the effects on the presidential election. These results suggest that the behavior of the media plays a role channeling the impact of Chinese import competition to U.S. election outcomes. The moderate magnitude of the impact played by media slant could be due to two reasons. First, a major effect of exposure to Chinese imports comes from the local labor markets as identified in the literature and also shown in Section 4.3. As labor market changes (such as unemployment) may directly affect U.S. voting behavior, media slant plays a moderate role among the remaining channels from trade exposure to U.S. elections. Second, research using a variety of data and specifications show that the effects of U.S. media on voting behavior is at best mixed (Stromberg, 2015). The most significant effect is found by Dellavigna and Kaplan (2007), who show that Fox News increased the shares of votes for Republicans in presidential elections between 1996 and 2000 by 0.4–0.7 percentage points.

6. Conclusion

Globalization, the latest wave of which was unleashed by China's joining the World Trade Organization in 2001, has received a rude awakening from the United Kingdom's break from the European Union, and the almost unanimous critique of international trade by candidates in the 2016 U.S. presidential election. There is increasing evidence suggesting that imports from China, despite all the benefits associated with them, cast various adverse effects on U.S. society; for example, a surge in the manufacturing unemployment (e.g., Autor et al., 2013; Acemoglu et al., 2016; Pierce and Schott, 2016a) and deterioration in public health (e.g., Autor et al., 2016; McManus and Schaur, 2016; Pierce and Schott, 2016b). Anecdotal evidence suggests that there has been a rise of "China bashing," or media slant against China.

This paper uses a data set of 147 U.S. local newspapers over 1998–2012 to examine whether exposure to Chinese imports influences newspapers' attitudes toward China, and if the media slant against China in turn influences American election results. Using the IV approach of Autor et al. (2013) and the DD approach of Pierce and Schott (2016a), we find that newspapers whose circulating counties face greater exposure to Chinese imports report more negative news about China, and are more likely to endorse Democrats in presidential elections.

The results hold with three different measures of media slant as well as two identification strategies (Autor et al., 2013; Pierce and Schott, 2016a). Among others, we test our results based on a neutral news topic – the 2008 Summer Olympic Games held in Beijing, and find that newspapers whose readership faces more Chinese import competition report on the Beijing Olympics more negatively. Finally, we study the effects of media slant against China on election outcomes between 2000 and 2012 at the county level, and find that in the House and Senate elections, media slant is associated with increased voting shares for Democrats. As Democrats traditionally are champions for the poor and critical of globalization, our results imply a limit of globalization if redistribution mechanisms are not put in place to help its victims.

Acknowledgments

We are grateful to Keith Head (the editor), three anonymous referees, Qin Bei, Yi Che, David Dorn, Julan Du, Xiaoning Long, Changyuan Luo, Ivan Png, Andrea Prat, Peter Schott, Zheng Song, Michael Wong, Yanhui Wu, Pai Xu and Yifan Zhang for helpful discussion and comments, and to seminar participants at Fudan University School of Economics, Shandong University, SUIBE, Xiamen University, UIBE, Zhejiang University and 2017 China Economics Summer Institute. The usual disclaimer applies. We thank Linyang Gu, Mingcong Pan, Sang Wu and Yingrui Yang for excellent research assistance. Financial supports from The Research Grants Council of Hong Kong and Singapore MoE Tier 1 grant (R-122-000-216-112) are sincerely acknowledged.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jinteco.2018.07.004.

References

Acemoglu, D., Autor, D., Dorn, D., Hanson, G.H., Price, B., 2016. Import competition and the Great US employment sag of the 2000s. Journal of Labor Economics 34 (S1 Part 2), S141–S198.

Ansolabehere, S., Lessem, R., Snyder Jr., J.M., 2006. The orientation of newspaper endorsements in US elections, 1940.2002. Quarterly Journal of Political Science 1 (4), 393.

Autor, H., Dorn, D., Hanson, G.H., 2013. The China syndrome: local labor market effects of import competition in the United States. Am. Econ. Rev. 103 (6), 2121–2168.

Autor, H., Dorn, D., Hanson, G.H., Song, J., 2014. Trade adjustment: Worker-level evidence. Q. J. Econ. 129 (4), 1799–1860.

Autor, H., Dorn, D., Hanson, G.H., Majlesi, K., 2016. Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure. NBER Working Paper 22637. National Bureau of Economic Research, Cambridge, MA.

Baker, D., 1993. Trade reporting's information deficit. The FAIR reader: An extra. Review of Press and Politics in the 1990s 153–155.

Che, Y., Lu, Y., Pierce, J.R., Schott, P.K., Tao, Z., 2017. Does Trade Liberalization with China Influence US Elections?. Working papers. Yale University, New Haven, CT

Dellavigna, S., Kaplan, E., 2007. The Fox News Effect: Media Bias and Voting. Q. J. Econ. 122 (3), 1187–1234.

Dippel, C., Gold, R., Heblich, S., Pinto, R., 2017. Instrumental Variables and Causal Mechanisms: Unpacking The Effect of Trade on Workers and Voters (No. w23209). National Bureau of Economic Research, Cambridge, MA.

Enikolopov, R., Petrova, M., Zhuravskaya, E., 2011. Media and Political Persuasion: Evidence from Russia. Am. Econ. Rev. 101 (7), 3253–3285.

Feenstra, R.C., Romalis, J., Schott, P.K., 2002. US Imports, Exports, and Tariff Data, 1989-2001. Paper No. w9387. National Bureau of Economic Research, Cambridge, MA.

Gelbach, J.B., 2016. When Do Covariates Matter? And Which Ones, and How Much? J. Labor Econ. 34 (2), 509–543.

Gentzkow, M., 2006. Television and Voter Turnout. Q. J. Econ. 121 (3), 931–972.

Gentzkow, M., Shapiro, J., 2006. Media bias and reputation. Journal of Political Economy 114 (2), 280–316.

Gentzkow, M., Shapiro, J., 2010. What Drives Media Slant? Evidence from U.S. Daily Newspapers. Econometrica 78 (1), 35–71.

Goh, K.Y., Hui, K.L., Png, I.P., 2011. Newspaper reports and consumer choice: evidence from the do not call registry. Manag. Sci. 57 (9), 1640–1654.

Groseclose, T., Milyo, J., 2005. A Measure of Media Bias. Q. J. Econ. 120 (4), 1191–1237.

Heckman, J., Pinto, R., Savelyey, P., 2013. Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. Am. Econ. Rev. 103 (6), 2052–2086.

Kleibergen, F., Paap, R., 2006. Generalized reduced rank tests using the singular value decomposition. Journal of econometrics 133 (1), 97–126.

Larcinese, V., Puglisi, R., Snyder, J., 2011. Partisan bias in economic news: evidence on the agenda-Setting behavior of U.S. newspapers. J. Public Econ. 95 (9–10), 1178–1189.

McCaig, B., 2011. Exporting out of poverty: provincial poverty in Vietnam and US market access. J. Int. Econ. 85 (1), 102–113.

McCombs, M.E., Shaw, D.L., 1972. The agenda-setting function of mass media. Public Opinion Quarterly 36 (2), 176–187.

McManus, C., Schaur, G., 2016. The effects of import competition on worker health. J. Int. Econ. 102, 160–172.

Mullainathan, S., Shleifer, A., 2005. The Market for News. Am. Econ. Rev. 95 (4), 1031–1053.

Pierce, J., Schott, P., 2016a. The surprisingly swift decline of US manufacturing employment. Am. Econ. Rev. 106 (7), 1632–1662.

Pierce, J., Schott, P., 2016b. Trade Liberalization and Mortality: Evidence from US Countries (No. w22849). National Bureau of Economic Research, Cambridge, MA.

Puglisi, R., Snyder, J., 2011. Newspaper Coverage of Political Scandals. J. Polit. 73 (3), 931–950.

Ramirez, C.D., Rong, R., 2012. China Bashing: Does Trade Drive the "Bad" News about China in the USA? Rev. Int. Econ. 20 (2), 350–363.

Snyder, J., Stromberg, D., 2010. Press coverage and political accountability. J. Polit. Econ. 118 (2), 355–408.

Stromberg, D., 2004. Radio's Impact on Public Spending. Q. J. Econ. 119 (1), 189–221.

Stromberg, D., 2015. Media and Politics. Annual Review of Economics 7, 173–205.

Summa, J., Greanville, P., 1993. Free trade fever induces media delusions. *The FAIR Reader: An EXTRA.* Politics in the 1990s, pp. 145–148.

Tetlock, P.C., 2007. Giving Content to Investor Sentiment: The Role of Media in the Stock Market. J. Financ. 62 (3), 1139–1168.

Thomas, M., Pang, B., Lee, L., 2006. Get out the vote: determining support or opposition from congressional floor-debate transcripts. Proceedings of the 2006 Conference on Empirical Methods in Natural Language Processing, pp. 327–335 (Association for Computational Linguistics).

Tumasjan, A., Sprenger, T.O., Sandner, P.G., Welpe, I.M., 2010. Election Forecasts with Twitter: How 140 Characters Reflect the Political Landscape. Soc. Sci. Comput. Rev. 29 (4), 402–418.