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Did trade liberalization with China influence US elections?☆

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ABSTRACT

We examine election voting and legislators' roll-call votes in the United States over a twenty-five year period. Voters in areas more exposed to trade liberalization with China in 2000 subsequently shift their support toward Democrats, relative to the 1990s, though this boost for Democrats wanes after the rise of the Tea Party in 2010. House members' votes in Congress rationalize these trends, with Democratic representatives disproportionately supporting protection during the early 2000s. Together, these results imply that voters in areas subject to higher import competition shifted votes toward the party more likely to restrict trade.

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我们检查了 25 年来美国的选举投票和立法者唱名投票。 相对于 1990 年代，2000 年更容易与中国进行贸易自由化的地区的选民随后将他们的支持转向民主党，尽管在 2010 年茶党崛起后，对民主党的支持有所减弱。众议院议员在国会的投票使这些趋势合理化， 民主党代表在 2000 年代初期不成比例地支持保护。 总之，这些结果表明，在进口竞争激烈的地区，选民将选票转向更有可能限制贸易的政党。

1. Introduction

Democrats 民主党. → 反对贸易扩张

While international trade has long been a contentious issue in US elections, it has become even more controversial in the last two decades, as a surge in imports from China coincided with a steep decline in manufacturing employment. As a result, understanding the relationship between trade and elections is increasingly important, both for its reflection of the underlying distributional effects of trade, as well as its implications for future policy. In this paper, we examine the link between US trade liberalization with China and election voting, and then investigate whether legislators' policy choices rationalize this relationship.

We begin with an analysis of how votes cast for federal office-seekers respond to a substantial change in US trade policy, the granting of Permanent Normal Trade Relations (PNTR) to China in 2000, that effectively eliminated the possibility of a trade war between the two countries. We measure an area's exposure to this liberalization via the industry structure of the county, and relate this exposure to the share of votes cast for each party in elections for the House of Representatives, the Senate, and the Presidency.

Using a difference-in-differences empirical strategy, we provide novel evidence on the relationship between trade liberalization and party vote shares. In particular, we find that in the first decade after PNTR, counties more exposed to the change in policy

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虽然国际贸易长期以来一直是美国大选中的一个有争议的问题，但在过去的二十年中，它变得更具争议性，因为从中国进口的激增与制造业就业人数的急剧下降相吻合。 因此，了解贸易和选举之间的关系变得越来越重要，因为它反映了贸易的潜在分配效应，以及它对未来政策的影响。 在本文中，我们研究了美国与中国的贸易自由化与选举投票之间的联系，然后调查立法者的政策选择是否使这种关系合理化。

我们首先分析了投票给联邦求职者如何应对美国贸易政策的重大变化，即 2000 年授予中国永久正常贸易关系 (PNTR)，这有效地消除了美中贸易战的可能性。 2个国家。 我们通过县的产业结构来衡量一个地区对这种自由化的影响，并将这种影响与众议院、参议院和总统选举中每一党的投票份额联系起来。

使用差异中的差异经验策略，我们提供了关于贸易自由化和政党投票份额之间关系的新证据。 特别是，我们发现，在 PNTR 之后的第一个十年中，与 1990 年代相比，更容易受到政策变化影响的县显示出对民主党的投票份额相对增加，这种关系以前未被发现。 系数估计表明，将一个县从第 25 个百分位数移动到第 75 个百分位数，与众议院民主党候选人的投票份额相对增加 2.2 个百分点有关，与 49% 的民主党投票相比，影响相当大 参加 2000 年的国会选举。 这种反应在众议院选举中最为明显，这与该机构对地方问题的敏感性高于参议院或总统。 我们发现在参议院选举中的影响不太明显，并且在总统选举或选民投票率方面没有统计学上的显着关系。

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在论文的第二部分，我们提供了一个潜在的解释，解释为什么选民在 2000 年代初期将支持转向民主党。使用回归不连续分析，比较赢得小额利润率选举的民主和共和党代表的立法票，我们发现，2000年代初的民主党人比共和党人更有可能投票限制国际贸易。我们将民主党在 2000 年代初期的反贸易立场部分归因于反对支持贸易的共和党总统，这代表了 1990 年代克林顿总统任期内更加支持贸易的转变。结合较早的选举投票结果，这些调查结果表明，通过 PNTR 更容易受到进口竞争影响的地区的选民更有可能在 2000 年代初的众议院选举中投票给民主党，因为该党的代表更有可能投票反对扩大国际贸易

exhibit relative increases in the share of votes cast for Democrats *vis à vis* the 1990s, a relationship that has not been previously uncovered. Coefficient estimates suggest that moving a county from the 25th to the 75th percentile of exposure is associated with a 2.2 percentage point relative increase in the share of votes cast for Democratic candidates for the House of Representatives, a sizable impact compared to the 49 percent Democratic vote share in the 2000 Congressional election. This reaction is most evident in elections for the House, in line with that body being more sensitive to local concerns than the Senate or the Presidency. We find a a less-pronounced effect in elections for the Senate, and no statistically significant relationship for Presidential elections or for voter turnout.

尽管我们的主要结果着重于2000年代第一十年的变化，但相对于1990年代，我们也将分析扩展到2016年和唐纳德·特朗普的选举。在 2000 年代的第二个十年中，备受瞩目的共和党人开始采取更多的反贸易立场，并且出现了一种看法，即进口竞争大幅增加的地区的选民正在将选票转向这些反贸易共和党人。事实上，我们发现更容易受到 PNTR 影响的地区对"茶党"（共和党的一个分支，其观点包括对贸易协定的敌意）的好感度以及茶党积极分子的数量相对增加。在我们对选举和立法投票的分析中，我们也发现了与这些举措一致的证据，尽管我们警告说，后期的关系估计不准确。具体而言，我们发现 PNTR 风险敞口与民主党投票份额之间的正相关关系到 2016 年消失，并且从 2012 年到 2016 年，共和党人的反贸易投票与民主党人相似甚至更多。

In the second portion of the paper, we provide a potential explanation for why voters shifted support toward Democrats in the early 2000s. Using a regression discontinuity analysis comparing the legislative votes of Democratic and Republican representatives who win election by small margins, we find that Democrats in the early 2000s were significantly more likely to vote to restrict international trade than their Republican counterparts. We attribute Democrats' anti-trade positions in the early 2000s, in part, to opposition to a pro-trade Republican President, which represented a shift from being more supportive of trade during the Clinton Presidency in the 1990s. Combined with the earlier results for election voting, these findings suggest that voters in areas more exposed to import competition via PNTR were more likely to vote for Democrats in House elections in the early 2000s because representatives from that party were more likely to vote against expanding international trade.

While our main results focus on changes in the first decade of the 2000s, relative to the 1990s, we also extend our analysis to 2016 and the election of Donald Trump. During this second decade of the 2000s, high-profile Republicans began adopting more anti-trade positions, and a perception emerged that voters in areas with large increases in import competition were shifting their votes toward these anti-trade Republicans. Indeed, we find that areas more exposed to PNTR experience relative increases in the favorability of the "Tea Party"—a wing of the Republican party whose views included hostility toward trade agreements—and the number of Tea Party activists. We also find evidence consistent with these moves in our analyses of elections and legislative voting, though we caution that relationships in this latter period are imprecisely estimated. Specifically, we find that the positive relationship between exposure to PNTR and the Democratic vote share disappears by 2016 and that Republicans vote similarly or even more anti-trade than Democrats from 2012 to 2016.

我们在县一级对选举投票进行基线分析，因为县边界随着时间的推移基本上是稳定的，这使我们能够在很长一段时间内一致地跟踪投票信息，跨越每十年一次的人口普查后重新划定国会选区。这种一致性很重要，因为它使我们能够观察政策变化前后的结果，以及 2000 年至 2002 年重新划分时期之前和之后的结果，当时在我们的样本期间发生了很大一部分就业下降。尽管如此，由于国会选举是在区而不是县级确定的，我们使用县区人口份额构建了一个人行横道，使我们能够在我们的样本期间检查区级的选举数据。这些构建的地区级数据产生的结果在质量上与县级基线相同。

We perform our baseline analysis of election voting at the county-level because county borders are largely stable over time, allowing us to track voting information consistently over long periods that span the redrawing of Congressional districts after each decennial Census. This consistency is important because it allows us to observe outcomes before and after the policy change and also before and after the 2000 to 2002 redistricting period, when a large share of the employment decline during our sample period occurs. Nonetheless, because Congressional elections are determined at the district-, rather than the county-level, we construct a crosswalk using county-district population shares that allows us to examine election data at the district level over our sample period. These constructed district-level data yield results that are qualitatively identical to the county-level baseline.

Our paper relates to the growing literature on the relationship between trade and political outcomes in both political science and economics, with recent research focusing on the trade policy preferences of voters and legislators, and the polarization of the electorate. Margalit (2011), for example, uses plant-level information on Trade Adjustment Assistance to determine that voters are more sensitive to job loss due to foreign competition than other factors. Conconi et al. (2012) find that the import or export exposure of US Congressional districts determines how members of Congress vote on bills to grant Fast Track Authority to the President for trade negotiations.[1]

In regards to trade with China, Feigenbaum and Hall (2015) provide the first evidence on the relationship between Chinese imports and political outcomes, examining their impact on the roll-call behavior of legislators and electoral outcomes. They find that legislators from districts experiencing larger increases in Chinese imports become more protectionist in their voting on trade-related bills, and that incumbents are able to insulate themselves from electoral competition via their voting behavior.[2] Our finding that exposure to PNTR is associated with relative increases in Tea Party activity, but not with an increase in the probability of a Tea Party candidate being elected, is consistent with these results.

More recently, Autor et al. (2020) show that increased Chinese import competition has led to increased political polarization, in terms of the partisan rankings of members of Congress, recipients of political contributions, and cable news viewership. These authors also find that majority-white Congressional districts that experience larger increases in Chinese imports become more likely to elect conservative Republicans to the House, while majority-minority districts become more likely to elect liberal Democrats during that period, with a relative increase in the probability of electing a Republican candidate, on net. Their analysis is conducted with county-district pairs that aggregate to the district-level via weighting, and covers the years 2002 to 2016.[3]

Our analysis provides new information on the relationship between import competition and voting, relative to Autor et al. (2020), while also being broadly consistent with their results. Importantly, because our sample begins in 1992, and compares outcomes in the 2000s to those in the 1990s, we find a shift toward support for Democrats that is not apparent without a comparison

我们的论文涉及越来越多的关于政治科学和经济学中贸易与政治结果之间关系的文献，最近的研究侧重于选民和立法者的贸易政策偏好，以及选民的两极分化。例如，Margalit (2011) 使用有关贸易调整援助的工厂级信息来确定选民对外国竞争导致的失业比其他因素更敏感。康科尼等人。(2012) 发现，美国国会选区的进出口风险决定了国会议员如何对法案进行投票，以授予总统进行贸易谈判的快速通道权力

[1] Blonigen and Figlio (1998) find that legislators' votes for bills related to trade protection are positively associated with direct foreign investment in their districts, and Conconi et al. (2020) examine the role of skilled labor abundance in Representatives' votes on trade and immigration bills.

[2] Relatedly, Jensen et al. (2017) find that votes for presidential incumbents rise with expanding US exports and fall with rising US imports. In related research on immigration rather than trade, Mayda et al. (2016) find that the share of votes cast for Republicans in US elections responds to the level of immigration, with the effect varying based on the share of naturalized migrants and non-citizen migrants in the population. Outside the United States, Dippel et al. (2015) and Colantone and Stanig (2018) examine data for Western European countries and find that higher imports from either Eastern Europe or China are associated with increases in the share of votes for nationalist and far right parties.

[3] Bombardini et al. (2020) examine U.S. politicians' expectations regarding the effects of increased import competition from China and find that U.S. legislators had extensive information regarding the "China Shock," but did not place much weight on its negative effects.

关于与中国的贸易，Feigenbaum 和 Hall (2015) 提供了关于中国进口与政治结果之间关系的第一个证据，研究了它们对立法者点名行为和选举结果的影响。他们发现，来自中国进口大幅增长的地区的立法者在对贸易相关法案的投票中变得更加保护主义，并且现任议员能够通过他们的投票行为使自己免受选举竞争的影响。2 我们发现，接触 PNTR 与 relative increases in Tea Party activity, but not with an increase in the probability of a Tea Party candidate being elected, is consistent with these results.

最近，Autor 等人。(2020) 表明，中国进口竞争的加剧导致政治两极分化加剧，在国会议员的党派排名、政治捐款的接受者和有线新闻收视率方面。这些作者还发现，在中国进口增加较多的白人占多数的国会选区更有可能选举保守的共和党人进入众议院，而在此期间，占多数的少数选区更有可能选举自由派民主党人。选举共和党候选人的可能性，在网上。他们的分析是通过加权聚合到县级的县-区对进行的，涵盖了 2002 年至 2016 年。

to the earlier period. However, when we extend our analysis through 2016, we find that the shift toward Democrats that peaks in 2008 unwinds in the 2010s, indicating a movement back toward Republican candidates in trade-exposed areas, consistent with Autor et al. (2020).

Our paper makes several additional contributions to this literature. First, we exploit a major change in U.S. trade policy as part of our identification strategy to examine the relationship between trade and political outcomes. Second, as mentioned, our analysis covers a longer time period than previous studies, thereby uncovering a shift towards and then away from Democrats, relative to the 1990s, that is not apparent in shorter time horizons. Third, we provide evidence of an economic rationale for the observed voting behavior by showing that voters in areas more exposed to increased import competition via PNTR shifted their votes toward Democrats when Democratic representatives were, in fact, more likely to restrict trade. Finally, we consider the relationship between this policy shock and voting in a range of national political offices, as well as voter turnout.

Our research also relates to a group of papers that establish a causal link between increased import competition and a range of socio-economic outcomes, highlighting the distributional implications of trade. Autor et al. (2013) show that local labor markets subject to larger increases in imports from China experience relative increases in the uptake of disability insurance, along with declines in manufacturing employment. Greenland and Lopresti (2016) document an increase in high school graduation rates in import-competing areas, and Greenland et al. (2019) show that these areas experience relative reductions in population growth. Feler and Senses (2017) find that the provision of public goods decreases in these areas as property tax revenue falls, and Feler and Senses (2017) and Che et al. (2018) show that they also experience relative increases in property crime. Pierce and Schott (2020) find that counties with greater exposure to PNTR exhibit increases in mortality due to drug overdoses and Autor et al. (2019) find that US regions with rising imports from China exhibit changes in marriage and fertility patterns.

Finally, the results in this paper offer context for the 2016 election of Donald Trump, who adopted tariff increases with far-ranging effects, underscoring the important policy implications of elections. Amiti et al. (2019) and Fajgelbaum et al. (2019) find welfare losses resulting from recent US tariffs on China, with Flaaen et al. (2020), Waugh (2019), Flaaen and Pierce (2019), and Bown et al. (2020) providing further detail on the trade-offs that can arise between protecting firms and harming consumers and downstream industries. Blanchard et al. (2019) find that Republicans in trade-exposed areas lost electoral support in the 2018 Congressional elections, while Fetzer and Schwarz (2019) and Fajgelbaum et al. (2019) examine whether other countries' retaliatory tariffs are geographically targeted.

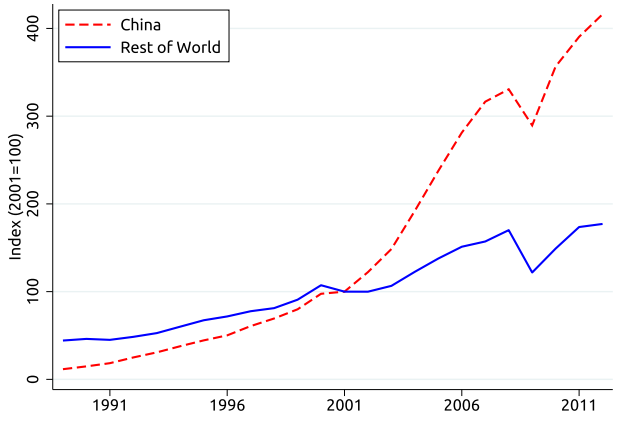
We proceed as follows. Section 2 describes the growth of China as a US trade partner and focus of political discourse, and Section 3 describes construction of variables and data sources. Section 4 presents our empirical strategy and results examining the relationship between exposure to trade liberalization and voting. Section 5 explores the robustness of the baseline results for House of Representatives elections, and Section 6 extends the analysis through 2016. Lastly, Section 7 focuses on the regression discontinuity analysis examining how representatives from each political party voted on trade-related bills, and Section 8 concludes.

我们的研究还涉及一组论文，这些论文在增加的进口竞争和一系列社会经济结果之间建立了因果关系，强调了贸易的分配影响。 Autor 等人。 （2013 年）表明，受中国进口大幅增长影响的当地劳动力市场的伤残保险接受度相对增加，同时制造业就业人数下降。 Greenland 和 Lopresti（2016 年）记录了进口竞争地区的高中毕业率增加，Greenland 等人。 （2019 年）表明，这些地区的人口增长相对减少。 Feler and Senses (2017) 发现，随着财产税收入的下降，这些领域的公共产品供应减少，以及 Feler and Senses (2017) 和 Che 等人。 （2018 年）表明，他们的财产犯罪也相对增加。 Pierce 和 Schott（2020 年）发现，由于药物过量和 Autor 等人，接触 PNTR 较多的县的死亡率增加。 （2019）发现，从中国进口增加的美国地区表现出婚姻和生育模式的变化。

最后，本文的结果为 2016 年唐纳德·特朗普 (Donald Trump) 的选举提供了背景，他通过了具有深远影响的关税上调，强调了选举的重要政策含义。 阿米蒂等人。 (2019) 和 Fajgelbaum 等人。 (2019) 与 Flaaen 等人一起发现了美国最近对中国征收关税造成的福利损失。 (2020)、Waugh (2019)、Flaaen 和 Pierce (2019)，以及 Bown 等人。 （2020 年）提供了有关在保护企业与损害消费者和下游行业之间可能出现的权衡取舍的更多细节。 布兰查德等人。 (2019) 发现贸易敏感地区的共和党人在 2018 年国会选举中失去了选举支持，而 Fetzer 和 Schwarz (2019) 以及 Fajgelbaum 等人。 (2019) 研究其他国家的报复性关税是否具有地理针对性。

2. China and US politics

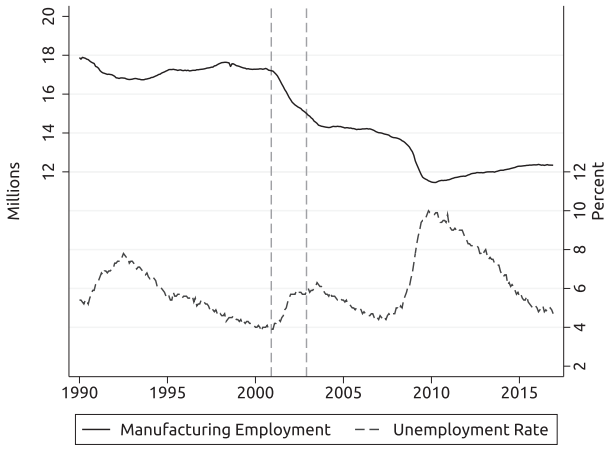
Political discourse over international trade, in both the United States and globally, increasingly focuses on China, mirroring its rapid rise as a global economic power. Over the past forty years, China has jumped from being an insignificant contributor to world GDP to being the United States' largest source of imports, with its share rising from 3 percent in 1990 to 17 percent in 2007, and 21 percent in 2016. A key feature of this increase was a surge in imports following the US granting of PNTR to China in 2000, which is illustrated in Fig. 1. US exports to China also grew over this period, but less rapidly, with the result that by 2007 the United States' trade deficit with China exceeded $250 billion US dollars, or 1.7 percent of US GDP, up from 0.3 percent of GDP in 1990.



无论是在美国还是在全球，关于国际贸易的政治讨论都越来越关注中国，这反映了中国作为全球经济强国的迅速崛起。 过去 40 年，中国从对世界 GDP 的贡献微不足道一跃成为美国最大的进口来源国，其份额从 1990 年的 3% 上升到 2007 年的 17% 和 2016 年的 21%。 这一增长的主要特征是 2000 年美国授予中国 PNTR 后进口激增，如图 1 所示。美国对中国的出口也在此期间增长，但增长速度较慢，结果是到 2007 年 美国对华贸易逆差超过 2500 亿美元，占美国 GDP 的 1.7%，高于 1990 年的 0.3%。

Fig. 1. US imports from China vs rest of world. Source: US Census Bureau. Figure displays indexes of US imports from China and from the rest of the world from 1989 to 2012. The base year for the indexes is 2001.

2000 年之后从中国进口的猛增可能引起了政界人士和公众的共鸣，因为它恰逢劳动力市场的显着变化。 特别是，图 2 中的实线表明，随着来自中国的进口增长步伐加快，美国制造业就业人数大幅下降，在 2000 年 10 月和 2007 年 3 月通过 PNTR 之间下降了 19%。Pierce 和 Schott（2016 年）表明， 在更容易受到 PNTR 影响的行业中，这种下降幅度更大，而 Autor 等人。 (2013) 表明，具有来自中国的进口竞争激烈的行业的通勤区的制造业就业下降幅度更大。 尽管该国某些地区的非制造业就业人数强劲增长（Fort 等人，2018 年；Bloom 等人，2019 年），但有证据表明，进口竞争的影响已蔓延到劳动力市场的更广泛方面。 Autor 等人。 例如，（2013 年）表明，在进口竞争程度较高的地区，工人对残疾等社会福利计划的接受程度更高，而 Pierce 和 Schott（2020 年）表明，更容易受到 PNTR 影响的县的失业率都相对较高 2000 年代劳动力参与率相对较低



随着美国对华贸易逆差扩大以及对制造业就业岗位流失的担忧加剧，美国各级政府的立法者在一系列因素的影响下都对国际贸易表态。 通常，对贸易的看法受到地区特征的影响，工业区的一些代表比服务型地区的代表更怀疑贸易。 例如，代表北卡罗来纳州东部的民主党众议员伊娃·克莱顿（Eva Clayton）在为中国就 PNTR 进行投票前提出问题，“[m] 北卡罗来纳州东部必须输掉，研究三角才能获得优势？”5 党派关系 也是立法者对贸易相关法案进行投票的一个关键因素，各方对贸易的看法会随着时间的推移而发生变化（Irwin，2020）。 在 1990 年代，民主党在反对扩大贸易协定的工党和更亲贸易的“新民主党”之间分裂，总统比尔克林顿就是一个例子，他主持了北美自由贸易协定的批准和 PNTR 的授予 中国（Kamarck 和 Podkul，2018 年；Rorty，1998 年）。 在 2000 年代，即使众议院民主党领导层与共和党人一起支持新的自由贸易协定 (FTA)，许多普通民主党代表仍投票反对扩大自由贸易协定 (Palmer, 2007)。 大萧条之后，随着“茶党”的兴起，国会中越来越多的共和党人加入了民主党人的行列，反对贸易协定。 到 2016 年，共和党和民主党总统候选人不仅反对新的贸易协定，还呼吁推翻现有的协定。 6 如第 7 节所述，两个政党的这些不断变化的观点在解释选民在这段时间内的偏好方面发挥了关键作用。

Fig. 2. US manufacturing employment and unemployment rate. Source: US Bureau of Labor Statistics. Figure displays US manufacturing employment (left axis) and the overall unemployment rate (right axis) from 1990 to 2016. Vertical lines highlight the dates of the 2000 and 2002 elections.

The jump in imports from China after 2000 likely resonated with politicians and the public because it coincided with noticeable shifts in the labor market. In particular, the solid line in Fig. 2 shows that as the pace of import growth from China stepped up, US manufacturing employment plunged, dropping 19 percent between passage of PNTR in October 2000 and March 2007. Pierce and Schott (2016) show that this decline was steeper in industries more exposed to PNTR, while Autor et al. (2013) show that commuting zones with industries facing higher import competition from China experienced greater declines in manufacturing employment. Though non-manufacturing employment increased robustly in some parts of the country (Fort et al., 2018; Bloom et al., 2019), there is evidence that the effects of import competition carried through to broader aspects of the labor market. Autor et al. (2013), for example, show that workers in regions experiencing higher levels of import competition exhibit greater uptake of social welfare programs such as disability, and Pierce and Schott (2020) show that counties more exposed to PNTR experience both relatively higher levels of unemployment and relatively lower levels of labor force participation during the 2000s.[4]

As the US trade deficit with China expanded and concerns over the loss of manufacturing jobs grew, US legislators at various levels of government staked out positions on international trade, influenced by a range of factors. Often, views on trade were shaped by district characteristics, with some representatives from industrial districts more skeptical of trade than those in service-oriented districts. Representative Eva Clayton, for example, a Democrat representing eastern North Carolina, asked in the lead-up to a vote on PNTR for China, "[m]ust eastern North Carolina lose in order for the Research Triangle to gain?"[5] Party affiliation also was a key factor in how legislators voted on trade-related bills, with the views of the parties on trade changing over time (Irwin, 2020). In the 1990s, Democrats were split between the labor wing of the party that opposed the expansion of trade agreements, and the more pro-trade "New Democrats," exemplified by President Bill Clinton who presided over approval of NAFTA and the granting of PNTR to China (Kamarck and Podkul, 2018; Rorty, 1998). In the 2000s, even as the House Democratic leadership joined Republicans in supporting new free trade agreements (FTAs), many rank-and-file Democratic representatives voted against expansion of FTAs (Palmer, 2007). After the Great Recession, with the rise of the "Tea Party," more Republicans in Congress joined Democrats in their opposition to trade agreements. And by 2016, Republican and Democratic candidates for President were not only opposing new trade agreements but calling for the reversal of existing agreements.[6] These changing views for both political parties play a key role in explaining the preferences of voters over this time period, as discussed in Section 7.[7]

本节描述了用于衡量来自中国的进口竞争风险、选举投票和其他可能影响投票行为的变量的数据。

3. Data

我们利用美国关税表的结构来定义衡量每个行业——进而是每个县或地区——对 PNTR 的影响。 美国关税表有两套基本关税税率： NTR 关税，各行业平均为 4%，适用于从世界贸易组织 (WTO) 其他成员进口的商品； 和非 NTR 关税，这些关税由 1930 年的 Smoot-Hawley 关税法确定，通常大大高于相应的 NTR 税率，各行业平均为 34%。 虽然来自中国等非市场经济体的进口产品默认适用较高的非 NTR 税率，但美国关税法允许总统授予这些国家每年可更新的 NTR 税率，但须经国会批准。

从 1980 年开始，美国总统每年都给予中国这样的豁免，但在 1989 年中国政府镇压天安门广场抗议活动后，国会的年度批准在政治上变得有争议且不确定。在整个 1990 年代，重新批准仍然存在争议，尤其是在其他时期 美中关系的闪点，包括 1993 年中国向巴基斯坦转让导弹技术和 1996 年的台海导弹危机。 NTR 水平通常要高得多的非 NTR 率。

This section describes the data used to measure exposure to import competition from China, voting in elections, and other variables that may affect voting behavior.

即将上调关税的可能性抑制了企业在 1990 年代考虑与增加美国从中国的进口相关的投资。 8 PNTR 于 2000 年 10 月由国会通过，并于 2001 年 12 月中国加入 WTO 时生效，永久锁定美国对从中国进口的低 NTR 税率征收的关税，消除了这些不利因素，Handley 和 Limão（ 2017）估计相当于进口关税降低 13%。 9 正如 Pierce 和 Schott（2016 年）所记录的那样，受政策变化影响最大的行业和产品经历了美国制造业就业的~~较大下降~~，以及来自中国的进口（包括关联方进口）的较大增长以及对美国出口的较大增长。 美国在中国的外资企业。 10

[4] These trends are consistent with estimates of substantial adjustment costs for workers who switch industries or occupations, as shown in Artuc et al. (2010), Ebenstein et al. (2014), Acemoglu et al. (2016), and Caliendo et al. (2019).

[5] See http://history.house.gov/People/Detail/11065.

[6] Among Democrats, Hillary Clinton announced her opposition to the Trans Pacific Partnership (Steinhauer, 2016), while Bernie Sanders proposed "reversing trade policies like NAFTA, CAFTA and PNTR with China that have driven down wages and caused the loss of millions of jobs." The ultimate winner of the 2016 election, Republican Donald Trump, called for a 45 percent tariff on US imports from China (Haberman, 2016), and followed up those calls with substantial tariff increases directed primarily at China.

[7] Frieden (2019) argues that political discontent related to trade likely arose due to failure to compensate those harmed by international competition, as well as inattention by political parties to problems faced by large groups of voters.

我们分两步计算各县对 PNTR 的暴露程度。 第一个计算美国行业的风险敞口。 我们遵循 Pierce 和 Schott (2016) 将行业层面的风险敞口定义为如果在 PNTR 之前中国的 NTR 身份年度更新失败，美国对中国商品的关税就会增加，

3.1. Measuring exposure to PNTR

We make use of the structure of the US tariff schedule to define a measure of each industry's—and in turn, each county or district's—exposure to PNTR. The US tariff schedule has two basic sets of tariff rates: *NTR tariffs*, which average 4 percent across industries and are applied to goods imported from other members of the World Trade Organization (WTO); and *non-NTR tariffs*, which were set by the Smoot-Hawley Tariff Act of 1930 and are typically substantially higher than the corresponding NTR rates, averaging 34 percent across industries. While imports from non-market economies such as China are by default subject to the higher non-NTR rates, US tariff law allows the President to grant these countries access to NTR rates on an annually renewable basis, subject to approval by Congress.

US Presidents granted China such a waiver every year starting in 1980, but their annual approval by Congress became politically contentious and less certain following the Chinese government's crackdown on the Tiananmen Square protests in 1989. Re-approval remained controversial throughout the 1990s, especially during other flash points in US-China relations including China's transfer of missile technology to Pakistan in 1993 and the Taiwan Straits Missile Crisis in 1996. Importantly, if annual renewal of the waiver had failed, US tariffs on imports from China would have risen substantially from the temporary NTR levels to the generally much higher non-NTR rates.

The possibility of an upcoming tariff increase served as a disincentive for firms considering investments associated with increasing US imports from China throughout the 1990s.[8] PNTR, which was passed by Congress in October 2000 and took effect upon China's entry to the WTO in December 2001, permanently locked in US tariffs on imports from China at the low NTR rates, eliminating these disincentives, a change that Handley and Limão (2017) estimate is equivalent to a 13 percent reduction in import tariffs.[9] As documented in Pierce and Schott (2016), the industries and products most affected by the policy change experienced larger declines in US manufacturing employment, as well as larger increases in imports from China—including related-party imports—and larger increases in exports to the United States by foreign-owned firms in China.[10]

We compute counties' exposure to PNTR in two steps. The first calculates exposure for US industries. We follow Pierce and Schott (2016) in defining industry-level exposure as the increase in US tariffs on Chinese goods that would have occurred in the event of a failed annual renewal of China's NTR status prior to PNTR,

$$\text{NTR Gap}_j = \text{Non NTR Rate}_j - \text{NTR Rate}_j. \quad (1)$$

We refer to this difference as the NTR gap, and compute it for each four-digit SIC industry j using *ad valorem equivalent* tariff rates provided by Feenstra et al. (2002) for 1999, the year before passage of PNTR, and the concordance between Harmonized System and SIC codes from Pierce and Schott (2012). As illustrated in Fig. 3, NTR gaps vary widely across industries, with a mean and standard deviation of 30 and 18 percentage points, respectively. Moreover, as noted in Pierce and Schott (2016), the vast majority of the variation in the NTR gap across industries is attributable to variation in non-NTR rates, which were set 70 years prior to passage of PNTR.[11] This feature of non-NTR rates effectively rules out reverse causality that would arise if *non-NTR rates* were set to protect industries with declining employment or surging imports. Furthermore, to the extent that *NTR rates* were raised to protect industries with certain characteristics prior to PNTR, these *higher* NTR rates would result in *lower* NTR gaps, biasing our results away from finding an effect of PNTR. Lastly, as we discuss in Section 6, we find that there is no relationship between the NTR gap and the Democratic vote share in years prior to PNTR. This lack of a relationship is consistent with the parallel trends assumption inherent in difference-in-differences estimation.

We compute US counties' exposure to PNTR as the employment-share-weighted average NTR gap of the industries active within their borders,

$$\text{NTR Gap}_c = \sum_j \left(\frac{L_{jc}}{L_c} \text{NTR Gap}_j \right) \quad (2)$$

where L_{jc} is the employment of SIC industry j in county c and L_c is the overall employment in county c, defined as of 1990 to mitigate any potential relationship between counties' industrial structure and the year 2000 change in US trade policy. County-industry-year employment data are from the US Census Bureau's County Business Patterns (CBP).[12] Congressional district-level NTR gaps are calculated analogously, though calculating district-level NTR gaps and other district-level characteristics can only be accomplished by taking weighted averages of the counties (partial or total) that comprise a district.

NTR gaps can only be calculated for products subject to import tariffs, such as manufacturing, agriculture and mining products. NTR gaps for services, which are not subject to import tariffs are, by definition, zero. Given that services comprise a large share of

[8] Intuition for this disincentive can be derived, in part, from the literature on investment under uncertainty, e.g., Pindyck (1993) and Bloom et al. (2007), which demonstrates that firms are more likely to undertake irreversible investments as uncertainty surrounding their expected profit decreases. Handley (2014) introduces these insights to firms' decisions to export, and Handley and Limão (2017) examine the impact of the reduction of trade policy uncertainty associated with PNTR on trade and welfare.

[9] The passage of PNTR followed the bilateral agreement in 1999 between the US and China regarding China's eventual entry into the WTO.

[10] Heise et al. (2015) describe the effect of PNTR on the structure of supply chains, and Feng et al. (2016) discuss the effect of PNTR on entry and exit patterns of Chinese exporters, as well as changes in export product characteristics.

[11] Cross-industry variation in the NTR rate explains less than 1 percent of variation in the NTR gap.

[12] We follow the procedure outlined in Autor et al. (2013) to impute suppressed employment values at the industry-county-level.

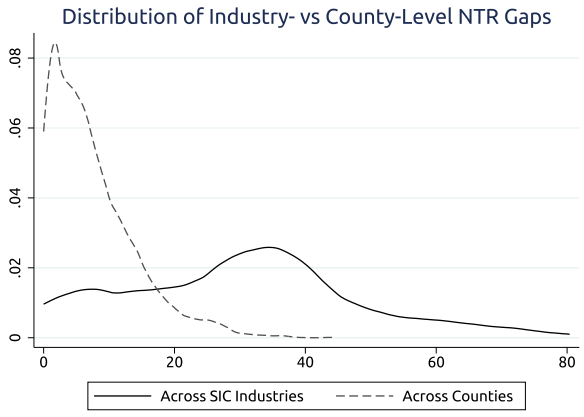


Fig. 3. The NTR gap across industries and counties. Source: Feenstra et al. (2002) and authors' calculations. Figure displays distributions of industry- and county-level NTR gaps.

Treatment Intensity

employment, the distribution of the*county*-level *NTR Gap*$_c$ is shifted leftwards relative to the distribution of manufacturing and other *industries* for which the *NTR* : *Gap*$_j$ is defined, as displayed visually in Fig. 3. This figure also highlights that the county-level NTR gap used in our main difference-in-differences term of interest is continuous, and our estimates therefore are a comparison of more-exposed versus less-exposed counties. The mean and standard deviation of the county-level NTR gap are 6.1 and 4.2 percentage points, and the difference between the 25th and 75th percentiles is 4.0 (=7.5 − 3.5) percentage points. Importantly, because our analysis below controls for counties' initial share of employment in manufacturing, the county-level NTR gap represents an area's exposure to PNTR's trade liberalization holding constant the extent to which it is intensively engaged in manufacturing activities.

3.2. Election data

除总统选举数据外，县级投票数据来自 Dave Leip 的美国总统选举地图集，该地图跟踪众议院和参议院选举的投票情况。 13 这些数据跟踪候选人在每个县、每个选举年获得的每个办公室的选票数量，以及登记选民的数量和选民投票率。 2000 年众议院选举（最接近中国获得 PNTR 的选举）的人口加权平均县级民主党选票份额为 49%，标准差为 22 个百分点。

Data on county-level voting are from *Dave Leip's Atlas of US Presidential Elections*, which tracks votes for elections for the House of Representatives and Senate, in addition to data on Presidential elections.[13] These data track the number of votes received by candidates for each of these offices in each county, in each election year, as well as the number of registered voters and voter turnout. The population-weighted average county-level Democratic vote share for the House of Representatives elections in 2000—the election closest to the granting of PNTR to China—is 49 percent, with a standard deviation of 22 percentage points.

3.3. Socio-economic characteristics

我们的回归分析包括对可能影响投票行为并可能与 PNTR 风险相关的社会经济特征的控制。 这些控制中的第一个是 1990 年一个县在制造业中的就业份额，以解释不同制造强度的县在投票行为方面可能处于不同轨迹的可能性，这些轨迹与它们通过 PNTR 的进口竞争风险无关。 制造业就业份额是使用人口普查局 1990 年县商业模式的数据计算的。我们还控制了其他人口变量，这些变量已被发现与政治科学和经济学文献中的投票行为具有重要相关性。 14 这些控制包括家庭收入中位数，以及拥有学士学位的县人口百分比，学位、研究生学位、非白人、65 岁或以上或退伍军人，所有这些都在人口普查局十年一次的人口普查中定义为 1990 年。 15这些控制的县级汇总统计数据见表 1。

Our regression analysis includes controls for socio-economic characteristics that might affect voting behavior and could potentially be correlated with exposure to PNTR. The first of these controls is the share of a county's employment in manufacturing in 1990, to account for the possibility that counties of differing manufacturing intensities may be on different trajectories in terms of voting behavior that are unrelated to their exposure to import competition via PNTR. The manufacturing employment share is calculated using data from the Census Bureau's County Business Patterns for 1990. We also control for additional demographic variables that have been found to be important correlates of voting behavior in the political science and economics literatures on voting.[14] These controls include median household income, and the percentages of a county's population that have a bachelor's degree, have a graduate degree, are non-white, are aged 65 or over, or are veterans, all defined as of 1990 in the Census Bureau's decennial Census.[15] County-level summary statistics for these controls are reported in Table 1.[16]

3.4. Additional controls for exposure to import competition

我们包括对分析期间发生的美国贸易政策的其他变化的控制，这些变化也可能影响了选举中的投票。 首先，我们包括对县的平均 NTR 率（Feenstra 等人，2002 年）及其在全球多纤维安排下逐步取消纺织品和服装配额的风险（Khandelwal 等人，2013 年）的时变控制， 每一项都是根据他们对这些政策变化的敞口的就业份额加权平均值计算得出的，如公式 2 所示

We include controls for other changes in US trade policy that occurred during the period of analysis and which also may have affected voting in elections. First, we include time-varying controls for counties' average NTR rate (Feenstra et al., 2002) and their exposure to the phasing out of textile and clothing quotas under the global Multi-Fiber Arrangement (Khandelwal et al., 2013),

[13] These data are available for purchase from www.uselectionatlas.org

[14] See, for example, Baldwin and Magee (2000), Conconi et al. (2012), Gilbert and Oladi (2012), Kriner and Reeves (2012), and Wright (2012).

[15] Scheve and Slaughter (2001) show that individuals' trade policy preferences are affected by skill level and home-ownership status, and Conconi et al. (2020) examine the role of skilled labor abundance in representatives' votes on trade and immigration bills.

[16] We exclude Hawaii from analysis in this paper because county-level population data for years prior to 2000 are unavailable. The results discussed below are qualitatively identical when also excluding Alaska, i.e., focusing solely on the continental United States.

在 Brambilla 等人之后，我们计算了县对 MFA 淘汰的影响。 （2010）和皮尔斯和肖特（2020）。我们将行业配额在 MFA 下的约束程度衡量为该行业配额下的纺织品和服装产品的平均填充率，其中填充率定义为实际进口除以配额下允许的进口。 平均填充率较高的行业面临更多的约束性配额，因此更容易受到 MFA 结束的影响。 MFA 未涵盖的产品的填充率为零。

最后，我们控制了各县对与北美自由贸易协定相关的美国关税削减的风险敞口，以 1994 年至 2000 年美国从墨西哥进口的关税税率的变化来衡量。来自 Hakobyan 和迈凯轮 (2016) 的北美自由贸易协定关税变化的行业层面衡量标准是汇总的 到县级以下等式。 (2)。与其他县级时间不变变量不同，该 NAFTA 暴露量测量与 PNTR 之前的指标相互作用，反映了 NAFTA 的自由化发生在 PNTR 之前的事实。 直观地说，各县对 PNTR 和 NAFTA 的敞口随着其在制造业中的就业份额而增加，制造业就业份额与每个敞口测量值之间的相关系数分别为 0.88 和 -0.55。 两种风险本身之间的相关性为 -0.69，表明 NTR 差距较大的行业在北美自由贸易协定下受到更大的关税削减。

Table 1
County attributes.

Attribute	Mean	SD	Min	Max
Median income ($000)	40.23	10.63	11.21	77.35
Bachelor (%)	13.09	4.97	0	40.3
Graduate (%)	7.18	3.5	0.3	29.7
Non-White (%)	19.39	15.31	0	94.9
65+ (%)	12.53	3.77	1.4	34
Veteran (%)	14.39	2.65	4.2	29
Manufacturing (%)	19.75	11.02	0	91.02
NAFTA exposure	−0.19	0.34	−4.84	0.28
MFA exposure	0.5	1.35	0	21.29
NTR tariff rate (%)	0.59	0.66	0	7.99

Source: US Census Bureau and authors' calculations. Table displays summary statistics of county attributes for the 3121 counties in the sample, weighted by population. Median household income is for 1990 and in thousands of dollars. Bachelor through Veteran refer to the percent of county population with noted attribute in 1990. Manufacturing refers to the manufacturing share of county employment in 1990. NAFTA, MFA, and NTR Tariff Rate refer to county-level exposure to those trade policies as defined in text.

each of which are calculated based on the employment-share weighted average of their exposure to these policy changes, as in Eq. (2).

We compute counties' exposure to the MFA phase-outs following Brambilla et al. (2010) and Pierce and Schott (2020). We measure the extent to which industry quotas were binding under the MFA as the average fill rate of the textile and clothing products that were under quota in that industry, where fill rates are defined as the actual imports divided by allowable imports under the quota. Industries with higher average fill rates faced more binding quotas and are therefore more exposed to the end of the MFA. Products not covered by the MFA have a fill rate of zero.

Finally, we control for counties' exposure to US tariff reductions associated with NAFTA, measured as the change in tariff rates on US imports from Mexico from 1994 to 2000. Industry-level measures of NAFTA tariff changes from Hakobyan and McLaren (2016) are aggregated to the county-level following Eq. (2). Unlike other county-level time-invariant variables, this NAFTA exposure measure is then interacted with a *pre*-PNTR indicator, reflecting the fact that NAFTA's liberalization occurred in the pre-PNTR period. Intuitively, counties' exposure to both PNTR and NAFTA rises with their share of employment in manufacturing, with correlation coefficients between the manufacturing employment share and each exposure measure of 0.88 and −0.55, respectively. The correlation between the two exposures themselves is −0.69, indicating that industries with higher NTR gaps were subject to greater tariff reductions under NAFTA.

4. Exposure to PNTR and voting

本节探讨美国向中国授予 PNTR 与在美国选举中投票之间的联系。 我们首先研究 1992 年至 2008 年期间众议院的投票情况，然后将分析扩展到其他办公室——美国参议院和总统——以及选民投票率。 然后，我们讨论县级数据与县级数据的相对优势，然后证明我们的基线房屋结果对于使用使用县级人口信息构建的合成县级数据的稳健性。

This section explores the link between exposure to the US granting of PNTR to China and voting in US elections. We begin by examining voting for the House of Representatives over the period from 1992 to 2008, and then expand the analysis to other offices—the US Senate and President—as well to voter turnout. We then discuss the relative advantages of county- versus district-level data before demonstrating the robustness of our baseline House results to the use of synthetic district-level data constructed using county-district population information.

4.1. Baseline empirical strategy

我们的基线差异差异 (DID) 规范询问具有较高 NTR 差距（第一个差异）的县在美国贸易政策发生变化后是否经历了不同的投票变化（第二个差异）：

Our baseline difference-in-differences (DID) specification asks whether counties with higher NTR gaps (first difference) experience differential changes in voting after the change in US trade policy (second difference):

$$\text{Dem Share}_{ct} = \theta \text{Post PNTR}_t \times \text{NTR Gap}_c + \text{Post PNTR}_t \times \mathbf{X}_c'\boldsymbol{\gamma} + \mathbf{Z}_{ct}'\beta + \delta_{\mathbf{c}} + \delta_{\boldsymbol{t}} + \alpha + \varepsilon_{ct}. \quad (3)$$

The dependent variable is the share of votes cast for Democratic candidates for the US House of Representatives in county c in year t. The first term on the right-hand side is the DID term of interest, an interaction of a post-PNTR (i.e., $t > 2000$) indicator with the (time-invariant) county-level NTR gap, as defined in the preceding section. We begin by examining elections in the period from 1992 to 2008, an end point that coincides with the first election during the Great Recession, and the last such election before the emergence of the Tea Party, discussed below. We extend the period of analysis through 2016 and discuss reasons for changes in the relationship between exposure to PNTR and voting in Section 6.

In Eq. (3), $\mathbf{X}_c$ represents the full set of time-invariant demographic and policy control variables described in Section 3. These variables are defined as of 1990—the Congressional election year just preceding our analysis—and are interacted with the *Post* : $PNTR_t$ indicator to allow the relationship between these county characteristics and voting to differ before and after passage of PNTR. This treatment mirrors the manner in which exposure to PNTR enters the estimation equation. $\mathbf{Z}_{ct}$ represents a matrix of

因变量是 t 年在县 c 为美国众议院民主党候选人投票的份额。 右侧的第一项是感兴趣的 DID 项，它是一个后 PNTR（即 t > 2000）指标与（时间不变的）县级 NTR 差距的交互作用，如前一节所定义。 我们首先考察 1992 年至 2008 年期间的选举，这个终点恰逢大萧条期间的第一次选举，也是茶党出现之前的最后一次选举，如下所述。 我们将分析期延长至 2016 年，并在第 6 节讨论 PNTR 敞口与投票之间关系发生变化的原因。

在等式。 (3)，X c 代表第 3 节中描述的全部时间不变的人口和政策控制变量。这些变量定义为 1990 年——我们分析之前的国会选举年——并与 Post 相互作用：PNTR t 指标，以允许这些县特征与投票之间的关系在 PNTR 通过之前和之后有所不同。 这种处理反映了暴露于 PNTR 进入估计方程的方式。 Z ct 代表一个随时间变化的政策属性矩阵，包括与每个县的产业组合相关的美国平均进口关税税率，以及该县在逐步取消 MFA 时的风险。 δ c 和 δ t 代表县和年的固定效应。

这种 DID 识别策略的一个优点是它能够剔除时间不变的县的特征，同时还控制在特定年份对所有县产生相同影响的总体冲击，例如选举是否发生在总统选举与非选举期间。 总统选举年。 17 由于县人口规模差异很大，我们按初始年（1992 年）人口加权。 我们基线估计中的标准误差集中在州一级，这种方法允许州内的误差相互关联，因此产生统计显着性的保守估计。

表 2 的第一列使用方程式报告了众议院选举的结果。 (3)，我们首选的基线规范。 如该列所示，相对于 1990 年代，我们发现各县对 PNTR 的暴露与投给民主党的投票份额之间存在正相关且具有统计学意义。 就经济意义而言，对 DID 项的系数估计意味着，将一个县从 NTR 差距的第 25 个百分位移到第 75 个百分位（从 3.5% 到 7.5%）与投票份额增加 2.2 个百分点相关 民主党候选人，或 2000 年美国众议院选举中 49% 的民主党平均投票份额的 4.6%（如表的最后四行所示）。

time-varying policy attributes including the average US import tariff rate associated with each county's mix of industries, as well as the county's exposure to the phasing out of the MFA. δ_c and δ_t represent county and year fixed effects.

An advantage of this DID identification strategy is its ability to net out characteristics of counties that are time-invariant, while also controlling for aggregate shocks that affect all counties identically in a particular year, such as whether the election occurs during a presidential versus non-presidential election year.[17] Because county population sizes vary substantially, we weight by initial year (1992) population. Standard errors in our baseline estimates are clustered at the state-level, an approach that allows for correlation of errors within states, and which therefore yields conservative estimates of statistical significance.

4.2. Exposure to PNTR and House of Representatives elections

我们提供了一个理由，说明为什么在通过 PNTR 更容易受到进口竞争加剧的地区的选民可能会在第 7 节中将选票转向 2000 年代的民主党人。正如该节详细讨论的那样，民主党人更有可能在立法上采取反贸易立场 在 2000 年代，对于寻求限制进口竞争的代表的选民来说，它们是一个有吸引力的选择。 19 此外，民主党代表在 2000 年代转向反贸易立场是在 2000 年共和党总统选举后突然发生的，这使得这些政策选择对于对贸易敏感的选民来说更加突出。

The first column of Table 2 reports results for House of Representatives elections using Eq. (3), our preferred baseline specification. As indicated in that column, we find a positive and statistically significant relationship between counties' exposure to PNTR and the share of votes cast for Democrats, relative to the 1990s. In terms of economic significance, the coefficient estimate on the DID term implies that moving a county from the 25th to 75th percentile of the NTR gap (from 3.5 to 7.5 percent) is associated with a 2.2 percentage point increase in the share of votes cast for the Democratic candidate, or 4.6 percent of the 49 percent average Democratic vote share in the 2000 US House elections (as displayed in the last four rows of the table).[18]

We provide a rationale for why voters in areas more exposed to increased import competition via PNTR might shift votes toward Democrats in the 2000s in Section 7. As discussed in detail in that section, Democrats were substantially more likely to take anti-trade positions on legislation in the 2000s, making them an attractive choice for voters seeking representatives who would limit import competition.[19] Moreover, Democratic representatives' move toward anti-trade positions in the 2000s occurred abruptly following the election of a Republican President in 2000, making these policy choices more salient for trade-sensitive voters.

While these results may appear at odds with those from Autor et al. (2020), which finds that higher imports from China are associated with a shift, on net, toward conservative Republican candidates, it is important to note that our paper considers a longer time period. In particular, our analysis begins in 1992 and compares election voting in the first decade of the 2000s to election voting in the 1990s. By contrast, Autor et al. (2020) takes 2002 as a starting point and considers the relationship between imports and subsequent changes in voting. In this sense, our results highlight a shift in voting across time periods that was not considered by Autor et al. (2020). Moreover, our finding that the boost for Democrats in the early 2000s dissipates after the rise of the Tea Party in 2010—discussed below in Section 6—is consistent with the subsequent shift toward Republican candidates found by Autor et al. (2020).[20]

In terms of the control variables, we find that counties with higher household incomes and higher shares of the population with graduate degrees or that are over the age of 65 vote relatively more for Democratic House candidates in the 2000s, relative to the 1990s. In regards to economic significance, the impact of an interquartile shift in exposure to PNTR on the Democratic vote share is larger than an equivalent shift in the shares of the population with graduate degrees or that are over 65. Moving a county from the 25th to the 75th percentile of the distribution for median household income, however, is associated with an increase in the share of votes cast for Democrats in House elections that is roughly three times larger than the impact of PNTR. Lastly, higher exposure to NAFTA is associated with relative increases in the share of votes cast for Democrats in the pre-PNTR period in which the liberalization occurred—consistent with the the relationship for PNTR—though the relationship for NAFTA is only marginally significant.

虽然这些结果可能与 Autor 等人的结果不一致。 （2020 年）发现，从中国进口的增加与净向保守的共和党候选人的转变有关，重要的是要注意，我们的论文考虑了更长的时间段。 特别是，我们的分析始于 1992 年，并将 2000 年代第一个十年的选举投票与 1990 年代的选举投票进行了比较。 相比之下，Autor 等人。 (2020) 以 2002 年为起点，考虑进口与后续投票变化的关系。 从这个意义上说，我们的结果突出了 Autor 等人未考虑的跨时间段投票的转变。 （2020 年）。 此外，我们发现 2000 年代初期对民主党的支持在 2010 年茶党崛起后消失（下文第 6 节讨论）与 Autor 等人发现的共和党候选人随后转向共和党候选人是一致的。 (2020).20

4.3. The Senate and the Presidency

在控制变量方面，我们发现与 1990 年代相比，2000 年代家庭收入较高、拥有研究生学位或 65 岁以上人口比例较高的县对民主党众议院候选人的投票相对较多。就经济意义而言，PNTR 风险敞口的四分位数变化对民主党投票份额的影响大于拥有研究生学位或 65 岁以上人口份额的同等变化。将一个县从第 25 位移至第 25 位 然而，家庭收入中位数分布的第 75 个百分点与民主党在众议院选举中的投票份额增加有关，这大约是 PNTR 影响的三倍。 最后，在自由化发生的前 PNTR 时期，对 NAFTA 的较高风险与投给民主党的投票份额相对增加有关——这与 PNTR 的关系一致——尽管 NAFTA 的关系只是略微显着。

In this section, we examine the relationship between PNTR and county-level Democratic vote shares for two other offices, the US Senate and President. To do so, we re-estimate Eq. (3) with the dependent variable being the share of votes cast for Democrats in one of these two types of elections. In contrast to the House elections, which take place every two years, for Presidential elections, observations are defined only for years in which a Presidential election took place, i.e. 1992, 1996, etc. Senate elections occur every six years, with approximately one third of Senators up for election in any given election year. As a result, for the Senate regressions, observations for each county only appear in years in which their states held Senate elections.

As indicated in the second column of Table 2, we find a positive and marginally statistically significant relationship between exposure to PNTR and the share of votes cast for Democrats in Senate elections. In terms of magnitude, an interquartile shift in exposure to PNTR is associated with a relative increase in the Democratic vote share of 1.5 percentage points, or 3.1 percent of the average share of votes won by Democratic candidates for Senate across counties in the year 2000 (49 percent). Results in the third column of Table 2 reveal no statistically significant relationship between exposure to PNTR and the share of votes cast for the Democratic candidate for President.

[17] One disadvantage is that the long sample period renders it susceptible to biased standard errors associated with serial correlation (Bertrand et al., 2004).

[18] In these calculations, the interquartile ranges and means are weighted by 1992 county population.

[19] Democrats' relative opposition to trade in the 2000s followed a period in the 1990s in which Democrats and Republicans voted more similarly on trade-related bills.

[20] We provide a direct comparison of our measure of exposure to PNTR and Autor et al. (2020)'s measure of exposure to import competition in Appendix Section A. As described in that section, we find that when applied to identical time periods and levels of aggregation, the two measures of exposure exhibit similar relationships with the Democratic vote share. Thus, differences in findings between the two papers arise primarily because of the different time periods considered.

在本节中，我们研究了 PNTR 与另外两个办公室（美国参议院和总统）的县级民主党投票份额之间的关系。 为此，我们重新估计 Eq。 (3) 因变量是在这两种选举之一中投给民主党的票数。 与每两年举行一次的众议院选举相比，对于总统选举，观察仅定义为总统选举发生的年份，即 1992 年、1996 年等。参议院选举每六年举行一次，大约三分之一 在任何给定的选举年有参议员参加选举。 因此，对于参议院的回归，每个县的观察结果仅出现在其州举行参议院选举的年份。

如表 2 的第二列所示，我们发现 PNTR 风险敞口与参议院选举中民主党的投票份额之间存在正相关且在统计上显着显着。 就数量而言，PNTR 风险敞口的四分位数变化与 1.5 个百分点的民主党选票份额相对增加有关，即 2000 年民主党参议员候选人在各县赢得的平均选票份额的 3.1%（ 49%）。 表 2 第三列的结果显示，接触 PNTR 与民主党总统候选人的投票份额之间没有统计学上的显着关系。

Table 2
PNTR and county-level voting for democrats.

Variables	House democratic share$_{ct}$	Senate democratic share$_{ct}$	President democratic share$_{ct}$	Turnout$_{ct}$
Post *x* NTR Gap$_c$	0.561***	0.378*	0.023	0.048
	0.208	0.207	0.091	0.090
Post *x* Median HHI$_c$	0.207***	0.234**	0.075	−0.090
	0.058	0.114	0.048	0.054
Post *x* Percent Bachelors$_c$	0.094	0.083	0.627***	0.474***
	0.171	0.386	0.094	0.111
Post *x* Percent Graduate$_c$	0.440***	−0.187	−0.060	−0.259**
	0.163	0.380	0.111	0.124
Post *x* Percent Non-White$_c$	0.074	0.030	0.093***	0.123***
	0.051	0.038	0.016	0.039
Post *x* Percent Over 65$_c$	0.267**	0.474***	0.053	−0.243***
	0.118	0.175	0.072	0.090
Post *x* Percent Veteran$_c$	−0.127	−0.669**	0.256**	0.517***
	0.293	0.301	0.097	0.137
Post *x* Manufacturing Share$_c$	−0.105	−0.129	0.044	0.036
	0.068	0.092	0.040	0.037
Pre *x* NAFTA Exposure$_c$	−2.438*	−4.708***	−0.941	0.785
	1.245	1.527	0.578	0.779
MFA Exposure$_{ct}$	−0.147	−0.335	−0.961***	0.189
	0.233	0.448	0.194	0.174
NTR$_{ct}$	1.725	0.244	0.108	1.014
	1.299	1.264	0.772	0.763
Observations	27,661	18,836	15,505	14,212
R-squared	0.759	0.695	0.945	0.821
Estimation	OLS	OLS	OLS	OLS
Period	1992(2)2008	1992(2)2008	1992(4)2008	1992(4)2008
FE	c,t	c,t	c,t	c,t
Weighting	1992 Pop.	1992 Pop.	1992 Pop.	1992 Pop.
Clustering	State	State	State	State
Implied impact of PNTR	2.239	1.511	0.090	0.191
Standard error	0.832	0.828	0.364	0.361
Average democratic vote share (2000)	49	49	49	66
Impact/average * 100	4.6	3.1	0.2	0.3

Source: US Census Bureau, Dave Leip's Atlas of US Presidential Elections, and authors' calculations. Table reports difference-in-differences (DID) OLS regression results for the Democratic vote shares of the noted elections and turnout in county c in year t from 1992 to 2008, based on Eq. (3). The first covariate is the DID term of interest, which interacts a dummy for years after 2000 with the county-level NTR gap. The next seven covariates interact the post-2000 dummy with 1990 county attributes. The next covariate captures counties' exposure to NAFTA tariff reduction in the pre-PNTR period. Remaining covariates account for counties' average import tariff and exposure to the MFA in each year. The implied impact of PNTR is the product of the first DID term of interest and the weighted inter-quartile range of the NTR Gap. Standard errors adjusted for clustering at the state level are reported below coefficients. *, ** and *** signify statistical significance at the 10, 5 and 1 percent levels.

接触 PNTR 与民主党在众议院选举中的选票份额之间的更密切关系可能是其频率的结果，这使得众议员不太可能采取与其所在选区中位选民的偏好不一致的立场。 康科尼等人。 例如，(2014) 发现参议员比众议员更有可能在其任期的前四年支持贸易自由化，但他们在任期的最后两年面临即将举行的选举时的投票方式与众议员相似。 相关地，卡罗尔（2012）表明，参议员和总统比众议院代表更有可能支持符合整个国家长期利益而不是个别地区利益的政策（如自由贸易）。 最后，鉴于贸易自由化对制造业就业的负面影响可能在地理上集中（Autor 等，2013），任何影响都可能在众议院选举中最为明显，因为众议院选举涵盖了所考虑的最小地理区域。

The closer relationship between exposure to PNTR and the Democratic vote share for House elections may be the result of their frequency, which renders Representatives less likely to adopt positions at odds with the preferences of the median voter of their districts. Conconi et al. (2014), for example, find that Senators are more likely than Representatives to support trade liberalization in the first four years of their term, but that they vote similarly to Representatives in the final two years of their terms when they face imminent elections. Relatedly, Karol (2012) has shown that Senators and Presidents are more likely than House representatives to support policies (like free trade) that are in the long-run interests of the country as a whole versus the interests of individual districts. Finally, given that the negative impact of trade liberalization on manufacturing employment can be geographically concentrated (Autor et al., 2013), any effects might be most apparent in House elections, which cover the smallest geographic area of the offices considered.

4.4. Voter turnout

A large literature examines the impact of economic conditions on voter turnout, and changes in voting patterns associated with PNTR may be driven, in part, by changes in turnout. Charles and Stephens (2013) find that higher local-area wages and employment decrease turnout in elections for the US House of Representatives and other offices. In addition, a long literature in political science argues that, under certain conditions, economic adversity can increase voter turnout, e.g. Schlozman and Verba (1979). To examine whether the imposition of PNTR is associated with changes in voter turnout, we re-estimate Eq. (3), using

大量文献研究了经济状况对选民投票率的影响，与 PNTR 相关的投票模式的变化可能部分受到投票率变化的推动。 Charles 和 Stephens（2013 年）发现，较高的地方工资和就业率会降低美国众议院和其他办公室的选举投票率。 此外，长期的政治学文献认为，在某些条件下，经济逆境会增加选民投票率，例如 施洛兹曼和维巴 (1979)。 为了检查 PNTR 的实施是否与选民投票率的变化有关，我们重新估计了方程。 (3)，使用县级选民投票率作为因变量，投票率定义为在选举中投票的人数除以登记选民人数。 21

正如表 2 的最后一列所报告的，我们发现暴露于 PNTR 和选民投票率之间没有关系。 这种缺乏关系与 Dippel 等人一致。 (2015)，他们发现贸易竞争加剧对德国选举的投票率没有影响。 此外，它表明，在更多暴露的县向民主党候选人的转变并不是因为相对于 PNTR 之前的时期，投票人数比例发生了变化。

在本节中，我们将讨论使用县级与地区级数据来分析选举投票的相对优点，然后将我们的基线估计与来自地区级数据的类似结果进行比较。

我们在基线结果中使用县级数据而不是国会区级数据，因为从测量的角度来看，县级数据提供了巨大的好处。 特别是，县边界的稳定性使得投票数据能够在很长一段时间内以该水平一致地衡量，包括在每十年一次的人口普查之后重新划定国会选区之前和之后的时期。 22 相比之下，由于国会选区的边界每十年更改一次，而且投票数据仅根据同期选区收集，因此使用选区级别的数据会产生两种成本之一。 人们可以在地区层面始终如一地衡量投票数据，但仅限于在地区基本保持不变的连续五次选举期间（例如，1992-2000 年或 2002-2010 年的选举年）。或者，可以使用县或县-区对数据的人口加权平均值构建跨越重新划分时期的区级投票数据。 然而，如果县或县-区对在多个后续区之间分配的部分县或县-区对之间的投票份额不同，则这些加权平均值可能无法准确反映重划区的投票。

23 因为比较 2000 年政策变化前后的结果很重要，而且由于 2000 年和大衰退期间制造业就业人数急剧下降的三分之二发生在 2000 年 11 月和 2002 年 11 月选举之间的重新选区期间，这些成本 使用地区级数据对我们的研究问题非常重要。 24

county-year-level voter turnout as the dependent variable, with turnout defined as the number of people voting in the election divided by the number of registered voters.[21]

As reported in the final column of Table 2, we find no relationship between exposure to PNTR and voter turnout. This lack of a relationship is consistent with Dippel et al. (2015), who find no effect of increased trade competition on turnout in German elections. Furthermore, it suggests that the shift toward Democratic candidates in more-exposed counties is not the result of changes in the share of people voting relative to the pre-PNTR period.

4.5. District vs county-level analysis

此外，通过县级分析，在该聚合级别收集和报告因变量（投票）和关键自变量（暴露于 PNTR 和人口变量）。 对于地区层面的分析，贸易自由化的敞口必须计算为该区县的加权平均敞口。 25 然而，当一个县被分成多个区时，县商业模式数据不提供该县属于每个区的部分的产业结构信息，因此必须使用该县的整体曝光率。 这种不匹配会产生测量误差，如果地区边界的绘制受到在地区边界内包括或排除特定行业或公司的愿望的影响，这将与投票相关。 此类活动有充分记录的实例，包括有目的地重新划定地区边界，将俄亥俄州国会区的三个钢铁制造厂包括在内，以使其现任代表受益（Wang，2011 年）。

In this section we discuss the relative merits of using county- versus district-level data to analyze election voting, and then compare our baseline estimates to analogous results derived from district-level data.

We use county- rather than Congressional district-level data in our baseline results because county-level data offer substantial benefits, from a measurement perspective. In particular, the stability of county borders allows voting data to be measured consistently at that level over long periods of time, including before and after periods when Congressional districts are redrawn following each decennial Census.[22] By contrast, because the boundaries of Congressional districts change every ten years, and voting data are only collected based on contemporaneous districts, using district-level data comes with one of two costs. One could consistently measure voting data at the district-level, but be limited to periods of five consecutive elections when districts are largely constant (e.g. election years 1992–2000 or 2002–2010). Or, one could construct district-level voting data that span a redistricting period using population-weighted averages of data for counties or county-district pairs. These weighted averages, however, may not accurately reflect votes in the redrawn districts if vote shares differ across portions of counties or county-district pairs that are split between multiple subsequent districts.[23] Because it is important to compare outcomes before and after the policy change in 2000, and because two-thirds of the steep decline in manufacturing employment between 2000 and the Great Recession occurs during redistricting between the November 2000 and November 2002 elections, these costs of using district-level data are substantial for our research question.[24]

In addition, with a county-level analysis, both the dependent variable—voting—and key independent variables—exposure to PNTR and demographic variables—are collected and reported at that level of aggregation. For a district-level analysis, exposure to trade liberalization must be calculated as a weighted average of the exposure of counties in the district.[25] When a county is split across multiple districts, however, the County Business Patterns data do not provide information on the industrial mix of the portions of the county that fall within each district, so the overall exposure of the county must be used. This mismatch creates measurement error, which will be correlated with voting if the drawing of district boundaries is affected by the desire to include or exclude particular industries or firms within a district's boundaries. There are well-documented instances of this type of activity, including the purposeful redrawing of district boundaries to include three steel manufacturing plants in an Ohio Congressional district to benefit its incumbent Representative (Wang, 2011).[26]

Nevertheless, while county-level results are important for their implications of *the possibility* of changes in election outcomes, and, perhaps more importantly, of shifts in voters' preferences that can lead to changes in the policy choices of representatives (consistent with Feigenbaum and Hall (2015)), Congressional elections are determined at the district- rather than the county-level. As a result, we construct district-level data spanning our sample period using information on the shares of counties' populations that are associated with Congressional Districts. We then compare results from the two different levels of aggregation.

然而，虽然县级结果对选举结果可能发生变化的影响很重要，也许更重要的是，选民偏好的变化可能导致代表政策选择的变化（与 Feigenbaum 和 Hall 一致） （2015）），国会选举是在地区而不是县级确定的。 因此，我们使用与国会选区相关的县人口份额信息来构建跨越我们样本期的地区级数据。 然后，我们比较两个不同聚合级别的结果。

[21] We limit the sample for regressions examining voter turnout to years with Presidential elections, as turnout data are available only in Presidential election years prior to 2000. For the 57 county-year observations—an average of 11 per election year—in which turnout exceeds 100 percent, we censor turnout to 100 percent, but note that the results are qualitatively identical when these observations are excluded.

[22] We incorporate the small number of county code changes during our sample period using the set of "Substantial Changes to Counties and County Equivalent Entities" recorded by the Census Bureau and available online at https://www.census.gov/programs-surveys/geography/technical-documentation/county-changes.html.

[23] Nonetheless, in the next subsection, we follow this procedure to construct synthetic district-level data and find that this district-level analysis yields qualitatively identical results to those using county-level data.

[24] The steep decline in manufacturing employment between November 2000 and November 2002 implies that using 2002 as a starting point—as is necessary with consistently measured district-level data—could miss important information if the 2002 election already reflects the effects of that decline in employment. Indeed, news reports from the time underscore that the 2002 Congressional elections were already influenced by reactions to PNTR with China, and associated employment losses, including for pro-trade incumbent Tom Sawyer (D-OH), who was defeated in a primary in that year (Nichols, 2002):"Most, though not all, Republicans back the free-trade agenda pushed by major multinational corporations and Republican and Democratic presidents. Most Democrats oppose that agenda. Since the early 1990s, trade votes in the House of Representatives have tended to be close, however. That has meant that the margin of victory for the corporate trade agenda has often been delivered by a floating pool of Democrats—including Sawyer—who have been willing to vote with free-trade Republicans on key issues such as NAFTA, the General Agreement on Tariffs and Trade and normalization of trade relations with China…Patrick Woodall, research director for Public Citizen's Global Trade Watch, says Sawyer's defeat must be read as very bad news for those free-trade Democrats…"[W]hen you get outside Washington, you start running into Americans who have seen factories closed and communities kicked in the teeth by the North American Free Trade Agreement and all these other trade bills…Tom Sawyer's defeat ought to be a wake-up call for Democrats who think they can get away with voting for a free-trade agenda that does not protect workers, farmers and the environment. Tom Sawyer found out on Tuesday that there are consequences."

[25] The County Business Patterns did not publish district-level data until 2013.

[26] County-level data have two additional benefits over district-level data. First, because counties are typically smaller than districts, they capture greater variation in voting, exposure to PNTR, and demographic characteristics than is possible for most Congressional districts. Second, as smaller geographic units where control over taxation and spending reside, counties may be more likely to capture variation in economic outcomes. Feler and Senses (2017), for example, find a negative relationship between imports from China and provision of local government services, as declining property values depress property tax revenues. Dix-Carneiro et al. (2018) and Che et al. (2018) find that reductions in local government expenditures are associated with relative increases in crime, a further channel through which county-level exposure to trade liberalization may affect voting.

Table 3
PNTR and district-level voting for democrats.

Variables	House democratic share$_{dt}$
Post *x* NTR Gap$_d$	2.112***
	0.766
Post *x* Median HHI in 1990$_d$	0.200**
	0.088
Post *x* Percent Bachelors in 1990$_d$	6.899
	38.812
Post *x* Percent Graduate in 1990$_d$	74.014*
	38.907
Post *x* Percent Non-White in 1990$_d$	2.81
	7.152
Post *x* Percent Over 65 in 1990$_d$	−1.117
	18.572
Post *x* Percent Veteran in 1990$_d$	−6.862
	48.812
Post *x* Manufacturing Share$_d$	−0.524**
	0.258
Pre *x* NAFTA Exposure$_d$	−7.743*
	3.985
MFA Exposure$_{dt}$	−0.469
	0.486
NTR$_{dt}$	6.153
	5.291
Observations	3847
R-Squared	0.7754
Estimation	OLS
Period	1992(2)2008
FE	d,t
Weighting	1992 Pop.
Clustering	State
Implied impact of PNTR	7.03
Standard error	2.56
Average democratic vote share (2000)	48.6
Impact/average * 100	14.5

Source: US Census Bureau, Dave Leip's Atlas of US Presidential Elections, and authors' calculations. Table reports difference-in-differences (DID) OLS regression results for the Democratic vote shares for House district *d* in year *t* from 1992 to 2008, based on Eq. (3). The first covariate is the DID term of interest, which interacts a dummy for years after 2000 with the district-level NTR gap. The next seven covariates interact the post-2000 dummy with 1990 county attributes. The next covariate captures counties' exposure to NAFTA tariff reduction in the pre-PNTR period. Remaining covariates account for districts' average import tariff and exposure to the MFA in each year. The implied impact of PNTR is the product of the first DID term of interest and the weighted inter-quartile range of the NTR Gap. Standard errors adjusted for clustering at the state level are reported below coefficients. *, ** and *** signify statistical significance at the 10, 5 and 1 percent levels.

具体来说，对于每个县，我们计算了截至 1992 年选举时位于每个国会选区的人口比例。 对于随后的每次国会选举，我们使用这些份额来确定投给民主党的票数和 1992 年每个国会选区的总票数。 将 1992 年选区的这些选票相加，我们可以根据这组选区计算 1992 年至 2008 年选举中的民主党选票份额。 27 然而，如上所述，这些区级投票份额的准确性将取决于县级平均数在多大程度上代表了随着时间推移映射到不同区的县部分。

使用这些构建的综合地区级数据，我们然后重新估计等式。 (3) 用于众议院选举。 结果在表 3 中报告。如表中所示，我们继续发现 PNTR 暴露与民主党在众议院选举中的投票份额之间存在积极且具有统计学意义的关系，如县级数据所示。 控制变量的系数估计值在符号和显着性上也与基于县级数据的估计值高度相似（表 2 的第一列），除了 65 岁以上人口比例的系数失去了统计显着性，以及 制造业初始就业份额较高的县在 2000 年代投给民主党的选票份额相对减少。 基于县级和区级数据的结果的高度相似性表明，我们的基线调查结果不是由使用县级数据作为汇总水平驱动的。

Specifically, for each county, we calculate the portion of its population that is located in each Congressional district as of the 1992 election. For each subsequent Congressional election, we use these shares to attribute the number of votes cast for Democrats and the total number of votes cast to each 1992 Congressional district. Summing these votes by 1992 districts allows us to calculate the Democratic vote share for elections from 1992 to 2008 based on that single set of districts.[27] As discussed above, however, the accuracy of these district-level vote shares will depend on the extent to which county-level averages represent the portions of counties that map to different districts over time.

With these constructed synthetic district-level data, we then re-estimate Eq. (3) for House of Representatives elections. Results are reported in Table 3. As indicated in the table, we continue to find a positive and statistically significant relationship between exposure to PNTR and the share of votes cast for Democrats in House of Representatives elections, as in the county-level data. Coefficient estimates for the control variables are also highly similar in sign and significance to those based on county-level data (first column of Table 2), with the exceptions being that the coefficient for the share of the population over 65 loses statistical significance, and that counties with higher initial shares of employment in manufacturing experience relative reductions in

[27] This approach is similar to that used to construct county-district-level data spanning a redistricting period in Autor et al. (2020). Because we aggregate to the district-level, rather than the county-district-level, our approach does not require Census Block-level population information, which Autor et al. (2020) use to calculate the shares of county-district-pairs matched to new Congressional districts.

Table 4
Robustness checks for house of representatives results.

Variables	(1) House democratic share$_{ct}$	(2) House democratic share$_{ct}$	(3) House democratic share$_{ct}$	(4) House democratic share$_{ct}$	(5) House democratic share$_{ct}$	(6) House democratic share$_{ct}$
Post *x* 1{High NTR Gap$_c$}		3.861**				
		1.712				
Post *x* NTR Gap$_c$	0.561***		0.537**	0.301**	0.601***	−0.141
	0.208		0.212	0.134	0.212	0.123
Post *x* Median HHI in 1990$_c$	0.207***	0.129	0.206***	0.212***	0.200***	
	0.058	0.090	0.057	0.058	0.06	
Post *x* Percent Bachelors in 1990$_c$	0.094	0.307	0.086	0.113	0.09	
	0.171	0.276	0.171	0.174	0.168	
Post *x* Percent Graduate in 1990$_c$	0.440***	0.305	0.443***	0.446***	0.453***	
	0.163	0.254	0.164	0.164	0.168	
Post *x* Percent Non-White in 1990$_c$	0.074	0.009	0.073	0.078	0.075	
	0.051	0.072	0.051	0.05	0.052	
Post *x* Percent Over 65 in 1990$_c$	0.267**	0.118	0.266**	0.279**	0.262**	
	0.118	0.154	0.118	0.12	0.114	
Post *x* Percent Veteran in 1990$_c$	−0.127	−0.062	−0.134	−0.131	−0.108	
	0.293	0.365	0.293	0.296	0.298	
Post *x* Manufacturing share$_c$	−0.105	−0.039	−0.112		−0.127*	
	0.068	0.077	0.067		0.068	
Pre *x* NAFTA Exposure$_c$	−2.438*	−0.184	−2.403*	−2.161*	−2.440*	
	1.245	1.033	1.24	1.243	1.269	
MFA Exposure$_{ct}$	−0.147	−0.075	−0.143	−0.097	−0.167	
	0.233	0.224	0.234	0.234	0.233	
NTR$_{ct}$	1.725	2.362*		1.868	1.821	
	1.299	1.203		1.300	1.302	
Observations	27,661	20,275	27,661	27,661	27,661	27,661
R-squared	0.759	0.718	0.759	0.759	0.758	0.750
Estimation	OLS	OLS	OLS	OLS	OLS	OLS
Period	1992(2)2008	1992(2)2008	1992(2)2008	1992(2)2008	1992(2)2008	1992(2)2008
FE	c,t	c,t	c,t	c,t	c,t	c,t
Weighting	1992 Pop.	1992 Pop.	1992 Pop.	1992 Pop.	2000 pop.	1992 Pop.
Clustering	State	State	State	State	State	State

Notes: Table reports difference-in-differences (DID) OLS regression results for the Democrat vote shares for House elections in county c in year t from 1992 to 2008. Column 1 repeats the baseline results from Table 2, column 1. Relative to the baseline, column 2 includes only counties in top and bottom quartiles of exposure to PNTR and replaces NTR gap in the DID term with an indicator for 1 if a county's NTR gap is in the top quartile. Column 3 excludes the NTR rate. Column 4 excludes the interaction of the manufacturing employment share with the post-PNTR indicator. Column 5 weights by 2000 population instead of 1992 population. Column 6 includes only the difference-in-differences term and fixed effects. Standard errors adjusted for clustering at the state level are reported below coefficients. *, ** and *** signify statistical significance at the 10, 5 and 1 percent levels.

the share of votes cast for Democrats in the 2000s. The strong similarities of the results based on county- and district-level data indicate that our baseline findings are not driven by the use of county-level data as a level of aggregation.

5. Robustness of house results to alternate specifications

本节检查我们的众议院选举基线结果对替代规范的稳健性。 为了便于比较，表 4 的第 1 列重复了表 2 的第 1 列的基线结果。

This section examines the robustness of our baseline results for House of Representative elections to alternate specifications. To assist comparison, column 1 of Table 4 repeats the baseline findings from column 1 of Table 2.

5.1. Discrete exposure

第一个稳健性检验考虑了对 PNTR 暴露程度的替代度量。 正如第 3.1 节所讨论的，县级 NTR 差距是连续的，各县面临不同程度的 PNTR 暴露，与典型差异差异方法中的二元"治疗"组和"控制"组相反。 作为替代方案，我们只考虑人口加权 NTR 差距分布的顶部和底部四分位数的县，定义一个二元变量，对于暴露量最高的四分位数的县取值 1（对于最低四分位数的县取值为零），并将该二进制变量与 PNTR 后指标交互。 然后，我们包括这个替代的差异差异项来代替方程式中的连续版本。 (3)。 请注意，本规范仍然比较暴露水平不同的县，但通过二元变量比较暴露最多和最少的县在精神上更接近于传统的差异差异方法。 如表 4 的第 2 列所示，我们继续发现，较高的 PNTR 风险敞口与投给民主党的选票份额的相对增加有关。

The first robustness check considers an alternative measure of exposure to PNTR. As discussed in Section 3.1, the county-level NTR gap is continuous, with counties experiencing varying levels of exposure to PNTR, as opposed to the binary "treatment" and "control" groups in the canonical difference-in-differences approach. As an alternative, we consider only counties in the top and bottom quartiles of the population-weighted NTR gap distribution, define a binary variable that takes the value one for counties in the top quartile of exposure (and zero for those in the lowest quartile), and interact that binary variable with the post-PNTR indicator. We then include this alternate difference-in-differences term in place of the continuous version in Eq. (3). Note that this specification still compares counties with differing levels of exposure, but the comparison of the most- to the least- exposed counties via a binary variable is closer in spirit to the traditional difference-in-differences approach. As indicated in column 2 of Table 4, we continue to find that higher exposure to PNTR is associated with relative increases in the share of votes cast for Democrats.

在接下来的两个稳健性检验中，我们考虑了两个特定协变量的相关性，即 NTR 关税税率和制造业就业份额。 如方程式中所述。 (3)，NTR 关税税率既出现在 NTR 差距的计算中，又作为一个单独的协变量出现。 将 NTR 税率作为协变量考虑了标准 NTR 关税及其随时间变化的影响可能与 NTR 差距的影响不同，后者衡量在 PNTR 之前关税可能增加多少。 我们通过重新估计等式来探索 NTR 关税率协变量的重要性。 (3)但不包括NTR关税税率。 如表 4 的第 3 栏所示，排除 NTR 关税税率会产生主要差异-无差异项的系数估计值，该估计值与基线结果（第 1 栏）中的定性相同。
如第 3.1 节所述，协调关税表中行业的 NTR 差距仅大于零。 由于这些行业主要由制造业组成，以及一些农业和采矿业，县级制造业就业份额与 NTR 差距之间的相关性为 0.88。 初始制造业就业份额是一个重要的协变量，它使我们能够将 PNTR 的暴露程度隔离开来，甚至以一个地区的一般工业化水平为条件，并确定工业化和投票之间的关系在 2000 年之后可能如何变化（考虑到与 Post dummy 的相互作用）。

5.2. Excluding NTR_{ct} and counties' manufacturing shares

然而，为了检查包含这个协变量是否会使我们的结果对高相关性过度敏感，我们估计了一个版本的等式。 (3) 不包括制造业就业份额。 如表 4 的第 4 列所示，我们继续发现 PNTR 风险敞口与民主党投票份额之间存在正向且具有统计学意义的关系，尽管幅度较小。

In the next two robustness checks, we consider the relevance of two specific covariates, the NTR tariff rate and the manufacturing employment share. As noted in Eq. (3), the NTR tariff rate appears both in the calculation of the NTR gap and as a separate covariate. Including the NTR rate as a covariate allows for the possibility that standard NTR tariffs, and their changes over time, might have effects separate from the effect of the NTR gap, which measures how much tariffs could have increased before PNTR. We explore the importance of the NTR tariff rate covariate by re-estimating Eq. (3) but excluding the NTR tariff rate. As shown in column 3 of Table 4, excluding the NTR tariff rate yields a coefficient estimate for the main difference-in-differences term that is qualitatively identical to that in the baseline results (column 1).

As discussed in Section 3.1, the NTR gap is only greater than zero for industries in the Harmonized Tariff Schedule. Because these industries consist primarily of manufacturing industries—along with some agriculture and mining industries—there is a correlation of 0.88 between the county-level manufacturing employment share and the NTR gap. The initial manufacturing employment share is an important covariate that lets us isolate exposure to PNTR even conditional on an area's general level of industrialization and determine how the relationship between industrialization and voting may change after 2000 (given the interaction with the *Post* dummy). However, to examine whether inclusion of this covariate renders our results unduly sensitive to the high correlation, we estimate a version of Eq. (3) that excludes the manufacturing employment share. As shown in column 4 of Table 4, we continue to find a positive and statistically significant relationship between exposure to PNTR and the Democratic vote share, though somewhat smaller in magnitude.

5.3. Weighting by 2000 population

在我们的基线实证方法中，我们基于样本县级人口的起始样本对观察结果进行加权，以避免在政策变化期间对该变量产生任何内生反应。 作为一项额外的稳健性检查，我们改为基于 2000 年（即政策变化年份）的人口权重。 如表 4 的第 5 栏所示，这种替代加权程序产生的结果在质量上与第 1 栏所示的基线结果相同。

In our baseline empirical approach, we weight observations based on start-of-sample county-level population to avoid any endogenous response in that variable around the time of the policy change. As an additional robustness check, we instead weight based on population in 2000, the year of the policy change. As indicated in column 5 of Table 4, this alternative weighting procedure yields results that are qualitatively identical to the baseline results shown in Column 1.

5.4. Excluding county attributes

包括县固定效应和事前县属性的控制与后虚拟变量相互作用意味着我们的主要利益估计取决于这些变量。 县固定效应控制可能影响投票的县的任何时间不变属性，从而增加"更多"与"更少"暴露县的可比性。 特定的事前县属性与 Post dummy 的交互有助于确保 DID 感兴趣系数拾取的任何趋势中断独立于与这些属性相关的趋势中断，从而允许数据在各种 协变量。 后者在第 1 列的基线结果中的统计意义突出了它们的相关性。 在那里，我们发现与 1990 年代相比，最初收入较高、受教育程度较高或在 65 岁以上人口中所占比例较大的县在 2000 年代转向投票给民主党人。
如表 4 的第 6 列所示，当排除县级控制变量时，感兴趣的主要 DID 项在统计上不显着。 这一结果并不令人惊讶，因为排除相关的统计显着协变量会导致估计有偏差，并且在这种情况下，可能会掩盖 PNTR 与其他控制投票的力量的影响。

Including county fixed effects and controls of *ex ante* county attributes interacted with the *Post* dummy means that our main estimates of interest are conditional on these variables. County fixed effects control for any time-invariant attributes of counties that may influence voting, thereby increasing comparability of "more" versus "less" exposed counties. Interactions of specific *ex ante* county attributes with the *Post* dummy help ensure that any break in trend picked up by the DID coefficient of interest is independent of breaks in trend associated with these attributes, allowing the data to speak in a horse-race among the various covariates. The statistical significance of the latter in the baseline results in column 1 highlights their relevance. There, we find that counties with initially higher incomes, that are more educated, or have larger shares of the population over 65 shift toward voting for Democrats in the 2000s, relative to the 1990s.

As indicated in Column 6 of Table 4, the main DID term of interest is statistically insignificant when county-level control variables are excluded. This outcome is not surprising given that exclusion of relevant statistically significant covariates can lead to biased estimates and, in this case, can obscure the effect of PNTR versus other forces governing voting.

5.5. Excluding county fixed effects

在我们的基线规范（等式（3））中，我们包括县固定效应，它捕捉县的任何时间不变特征，吸收水平的时间不变 NTR 差距项，并产生县内 PNTR 之间关系的估计 和民主党的选票份额。 另一种方法是估计一个规范，其中我们排除了县固定效应，在水平中包括 NTR 差距项，并且还包括水平和与后虚拟变量相互作用的其他协变量。 我们在附录 C 部分的表 A.3 中报告了此规范的结果。正如那里所指出的，感兴趣的 DID 术语的结果与基线中的结果非常相似，继续表明更多地暴露于 PNTR 的县经历了相对增加 在投给民主党的选票中。

In our baseline specification (Eq. (3)), we include county fixed effects, which capture any time-invariant characteristics of counties, absorb the time-invariant NTR gap term in levels, and yield within-county estimates of the relationship between PNTR and the Democratic vote share. An alternative approach is to estimate a specification in which we exclude county fixed effects, include the NTR gap term in levels, and also include the other covariates both in levels and interacted with the post dummy. We report the results of this specification in Table A.3 in Appendix Section C. As noted there, the result for the DID term of interest is very similar to that in the baseline, continuing to indicate that counties more exposed to PNTR experience relative increases in the share of votes cast for Democrats.

6. Extension to 2016

研究人员和评论员指出，在过去十年中，共和党候选人同时在工业领域获得支持，同时更加反对国际贸易（Mutz，2017；Davis 和 Chinni，2018）。 为了检验这种看法，我们将分析扩展到 2016 年，并采用灵活的广义差异法，允许 PNTR 风险敞口与投票之间的关系因选举年而异。 特别是，我们估计以下等式：

Researchers and commentators have noted that, over the last decade, Republican candidates simultaneously gained support in industrial areas while becoming more opposed to international trade (Mutz, 2017; Davis and Chinni, 2018). To examine this perception, we extend our analysis through 2016 and adopt a flexible generalized difference-in-differences approach that allows the relationship between exposure to PNTR and voting to vary from election year to election year. In particular, we estimate the following equation:

这里，因变量 Dem Share𝒸𝓉是 t 年众议院选举中 c 县民主党人的投票份额。 等式右侧的第一组项。 (4) 是县级 NTR 差距与 1994 年至 2016 年选举年指标的相互作用。这种概括使我们能够通过系数估计 θt 确定民主党份额 ct 与 NTR 差距之间存在任何关系的特定年份 ，以及该关系随时间的任何变化，相对于 1992 年被遗漏的年份。X c 代表第 3 节中描述的一组不随时间变化的人口统计和政策控制变量。这些变量还与完整的年份虚拟变量集相互作用 ，反映了暴露于 PNTR 进入估计方程的方式。 下一组术语 Zct 再次由在县级层面变化的控制变量组成，即县对标准 NTR 关税的敞口和逐步退出 MFA。 δ c 和 δ t 代表县和年的固定效应，它们捕捉到时间不变的县级特征和在特定年份对所有县产生相同影响的总体冲击。 我们再次按 1992 年县人口和州聚类标准误差加权。

我们总结了估计方程的结果。 (4) 在图 4 中。该图显示了 PNTR 与县在经济意义方面对民主党众议院候选人的投票之间的关系，即，将县从 NTR 差距分布的第 25 个百分位移动到第 75 个百分位的估计影响 . 也就是说，对于除省略的 1992 年之外的每一年，我们将对该年 DID 感兴趣项的系数估计值乘以各县的 NTR 差距的加权四分位数范围。 阴影表示该经济显着性估计的 90% 置信区间，该置信区间也是通过将置信区间的上限和下限乘以 NTR 差距的四分位数范围来计算的。

图 4 突出了投票的三个不同阶段。 在从 1992 年到 2000 年的第一阶段，我们发现贸易自由化的敞口与投给民主党的投票份额之间没有关系，置信区间以零为中心。 重要的是，在 1990 年代，PNTR 风险敞口与民主党投票份额之间缺乏关系，这也为差异差异方法中固有的平行趋势假设提供了支持。 在 2000 年通过 PNTR 之后，系数估计值明显上升，表明贸易自由化和投票之间的关系进入了第二阶段。 在这个阶段，影响是积极的并且具有统计意义，这意味着更多地受到 PNTR 影响的县表现出对民主党的投票份额相对增加。 2008 年之后，在贸易暴露县中对民主党人的这种不成比例的支持减弱，开始了第三阶段的投票。 在 2012 年短暂反弹之后，系数估计值再次下降并失去统计意义，这表明在国会选举中，受贸易影响的县再次以与受贸易影响较小的县相似的方式进行投票。 然而，我们警告说，如图 4 所示，系数从 2000 年代到 2010 年代的变化是微妙的，并且估计不准确。

$$\text{Dem Share}_{ct} = \sum_t \theta_t \, 1\{\text{year} = t\} \times \text{NTR Gap}_c + \sum_t \gamma_t \, 1\{\text{year} = t\} \times \mathbf{X}_c + \mathbf{Z}'_{ct}\beta + \delta_c + \delta_t + \varepsilon_{ct}. \quad (4)$$

Here, the dependent variable, *Dem Share*$_{ct}$, is the share of votes cast for the Democrat in county c in House of Representatives elections in year t. The first set of terms on the right hand side of Eq. (4) are interactions of the county-level NTR gap with indicators for election years 1994 to 2016. This generalization allows us to determine—via coefficient estimates θ_t—the specific years in which any relationship between *Dem Share*$_{ct}$ and the NTR gap is present, and any changes in that relationship over time, relative to the left-out year 1992. $\mathbf{X}_c$ represents the set of time-invariant demographic and policy control variables described in Section 3. These variables are also interacted with the full set of year dummies, mirroring the manner in which exposure to PNTR enters the estimating equation. The next set of terms, $\mathbf{Z}_{ct}$, again consists of control variables that vary at the county-year-level, namely the county's exposure to standard NTR tariffs and the phasing out of the MFA. δ_c and δ_t represent county and year fixed effects, which capture time-invariant county-level characteristics and aggregate shocks that affect all counties identically in a particular year. We again weight by 1992 county population and cluster standard errors by state.

We summarize the results of estimating Eq. (4) in Fig. 4. This figure displays the relationship between PNTR and counties' votes for Democratic House candidates in terms of economic significance, i.e., the estimated impact of moving a county from the 25th to the 75th percentile of the NTR gap distribution. That is, for each year except the omitted year 1992, we multiply the coefficient estimate for the DID term of interest for that year by the weighted interquartile range of the NTR Gap across counties. Shading represents the 90 percent confidence interval for this estimate of economic significance, which is also calculated by multiplying the upper and lower bounds of the confidence interval by the interquartile range of the NTR gap.

Fig. 4 highlights three distinct phases of voting. In the first phase, which lasts from 1992 to 2000, we find no relationship between exposure to the trade liberalization and the share of votes cast for Democrats, with the confidence intervals centered around zero. Importantly, this lack of a relationship between exposure to PNTR and the Democratic vote share in the 1990s also provides support for the parallel trends assumption inherent in the difference-in-differences approach. Following the passage of PNTR in 2000, coefficient estimates shift up noticeably, indicating the start of a second phase in the relationship between the trade liberalization and voting. In this phase, the impact is positive and statistically significant, implying that counties more exposed to PNTR exhibit relative increases in the share of votes cast for Democrats. After 2008, this disproportionate support for Democrats in trade-exposed counties wanes, beginning the third phase of voting. Following a brief rebound in 2012, coefficient estimates step down again and lose statistical significance, indicating that trade-exposed counties are once again voting similarly to less exposed counties in Congressional elections. We caution, however, that as shown in Fig. 4, the shift in coefficients from the 2000s to the 2010s is subtle and imprecisely estimated.

As will be discussed in more detail in Section 7, we find that these changes in the relationship between trade exposure and voting are consistent with the evolution of the two parties' positions on trade. In the early 2000s, when areas more exposed to PNTR exhibit relative increases in the Democratic vote share, Democratic House members were substantially more likely to vote to restrict trade than their Republican counterparts. As discussed further in Section 7, Democrats began taking these strongly anti-trade positions following the election of Republican George W. Bush to the Presidency in 2000. Democrats, as a result, established themselves as the anti-trade party in 2001 and 2002, just as the relationship between PNTR and manufacturing employment began to be realized. As indicated in Fig. 4, support for Democrats then begins to shift up noticeably in the 2002 election.

The decreased support for Democrats between 2008 and 2010, by contrast, coincides with the rise of the Tea Party wing of the Republican Party, whose members were more opposed to trade agreements than the overall population, and more likely than either Democrats or non-Tea Party Republicans to view China as an adversary and place a high priority on getting tougher on China with respect to trade.

Indeed, we examine the relationship between exposure to PNTR and the rise of the Tea Party and find evidence for a positive relationship with some aspects of Tea Party activity. In particular, we conduct a district-level analysis for House of Representatives elections in which we regress one of three measures of Tea Party activity—a survey favorability measure, the number of Tea Party activists, and an indicator for a Tea Party candidate winning an election—on exposure to PNTR and demographic control variables. We use data from 2010, which is the year associated with the rise of the Tea Party and the only year for which the relevant data are available.[28] Results are reported in Table 5.

As indicated in the Table, we find a positive, albeit marginally statistically significant relationship between exposure to PNTR and two measures of Tea Party activity—the favorability rating of the Tea Party and the number of Tea Party activists. We find no relationship between exposure to PNTR and the probability that a Tea Party candidate ultimately wins an election. These results

正如将在第 7 节中更详细讨论的那样，我们发现贸易风险敞口和投票之间关系的这些变化与双方贸易立场的演变是一致的。 在 2000 年代初期，当更多受 PNTR 影响的地区表现出民主党投票份额相对增加时，民主党众议院议员比共和党议员更有可能投票限制贸易。 As discussed further in Section 7, Democrats began taking these strongly anti-trade positions following the election of Republican George W. Bush to the Presidency in 2000. Democrats, as a result, established themselves as the anti-trade party in 2001 and 2002, 就在 PNTR 与制造业就业之间的关系开始显现的时候。 如图 4 所示，在 2002 年的选举中，对民主党的支持开始显着上升。

[28] Data on favorability and the number of Tea Party activists are from Madestam et al. (2013) and data on whether a Tea Party candidate won an election are from The New York Times (http://archive.nytimes.com/www.nytimes.com/interactive/2010/11/04/us/politics/tea-party-results.html).

相比之下，2008 年至 2010 年间对民主党的支持率下降，恰逢共和党茶党派的崛起，其成员比整体人口更反对贸易协定，而且比民主党或非茶党更有可能 共和党人将中国视为对手，并高度重视在贸易方面对中国采取更强硬的态度。

事实上，我们研究了接触 PNTR 与茶党兴起之间的关系，并发现与茶党活动的某些方面存在积极关系的证据。 特别是，我们对众议院选举进行了地区级分析，在该分析中，我们回归了三种茶党活动的措施之一，这是一项调查的良好性措施，茶党活动家的数量以及茶党候选人赢得的指标 选举——关于暴露于 PNTR 和人口控制变量。 我们使用 2010 年的数据，这是与茶党兴起相关的一年，也是唯一可以获得相关数据的年份。 表 5 报告了 28 个结果。

如表中所示，我们发现接触 PNTR 与茶党活动的两个衡量标准——茶党的好感度和茶党积极分子的数量之间存在正相关，尽管在统计上显着。 We find no relationship between exposure to PNTR and the probability that a Tea Party candidate ultimately wins an election. 这些结果将通过 PNTR 的进口竞争与共和党反贸易茶党派的某些方面联系起来。

Fig. 4. Implied impact of PNTR: U.S. House of Representatives. Source: US Census Bureau, Dave Leip's Atlas of US Presidential Elections, and authors' calculations. Figure displays the impact of PNTR on the Democratic vote share implied by estimation of the county-year-level OLS difference-in-differences (DID) specification described in Eq. (4). For each year, the implied impact is the product of the DID term of interest for that year and the weighted inter-quartile range of counties' exposure to PNTR. Shading represents the 90 percent confidence interval for this implied impact. Regressions are weighted by initial (1992) population and standard errors are adjusted for clustering at the state level.

Table 5
PNTR and tea party activity.

Variables	Number of tea party activists	Tea party favorability	Tea party candidate wins
NTR Gap$_d$	0.014*	0.013*	−0.008
	0.007	0.007	0.007
Median HHI in 1990$_d$	0.001	0.011***	−0.001
	0.003	0.003	0.002
Percent Bachelors in 1990$_d$	0.011	−0.011	−0.018
	0.012	0.012	0.012
Percent Graduate in 1990$_d$	−0.003	−0.064***	0.030**
	0.015	0.012	0.015
Percent Non-White in 1990$_d$	−0.007***	−0.010***	0.003**
	0.002	0.001	0.001
Percent Over 65 in 1990$_d$	−0.064***	−0.014*	−0.004
	0.006	0.007	0.008
Percent Veteran in 1990$_d$	0.157***	0.055***	−0.0002
	0.016	0.011	0.010
Observations	432	433	433

Notes: Table displays results of a district-level, OLS cross-sectional regression for the 2010 House of Representatives elections. Dependent variables include the number of tea party activists, the favorability of the Tea Party, and an indicator for whether a Tea Party candidate wins an election. Standard errors adjusted for clustering at the state level are reported below coefficients. *, **, and *** signify statistical significance at the 10, 5 and 1 percent levels.

draw a connection between exposure to import competition via PNTR and some aspects of the anti-trade Tea Party wing of the Republican Party.[29]

This new class of Republicans may have provided voters seeking to elect anti-trade politicians with an alternative to Democrats, explaining the attenuation of the boost for Democrats observed toward the end of the sample in Fig. 4.[30] This trend continued with the 2016 election of Donald Trump, who adopted several high-profile rounds of tariff increases, particularly against China. In the next section, we show that in the 2010s, Republicans become at least as anti-trade as Democrats.[31]

这种新的共和党人可能为寻求选举反贸易政客的选民提供了替代民主党人的机会，这解释了在图 4 样本结束时观察到的民主党人的提振作用减弱。 30 这种趋势在 2016 年大选中继续存在 唐纳德特朗普，他采取了几轮高调的关税增加，特别是针对中国。 在下一节中，我们将表明，在 2010 年代，共和党人至少与民主党人一样反贸易。

[29] Furthermore, they are consistent with Feigenbaum and Hall (2015)'s finding that incumbent Representatives in trade-exposed districts were able to insulate themselves from challengers by adopting anti-trade positions.

[30] Newmyer and Liberto (2010) report that 61 percent of the Tea Party's grassroots members were hostile to trade agreements, versus 53 percent for all respondents. A Pew Research Center poll described in Rosentiel (2011) notes 60 percent of Tea Party Republicans said it was very important to "get tougher on econ/trade issues" versus 49 percent for non-Tea Party Republicans and 52 percent of Democrats.

[31] It is difficult to determine whether Tea Party districts are responsible for the protectionist turn of the Republican party because general hostility to trade in Congress led to only a small number of bills being considered from 2010 forward. Furthermore, these bills were largely limited to uncontroversial matters with bipartisan support such as continuing AGOA trade preferences for Sub-Saharan African countries.

上一节确定，相对于 1990 年代，面临来自中国的进口竞争加剧的县的选民更有可能在 2000 年代初期投票给民主党众议院候选人。 对这种投票模式变化的一种解释是，这些县的居民改变了他们的选票，从他们认为可以通过追求限制国际贸易的立法立场来保护当地工业的政党中选出候选人。 本节通过使用回归不连续方法检查民主党和共和党在与国际贸易相关的法案上的投票差异来调查这种潜在的解释，以确定哪一方更有可能支持贸易保护，以及在哪个时间段内。

7. Party affiliation and legislator voting behavior

The previous section establishes that voters in counties facing larger increases in import competition from China are more likely to vote for Democratic House candidates in the early 2000s, relative to the 1990s. One explanation for this change in voting patterns is that residents of these counties shifted their votes to elect candidates from the party that they believed would protect local industries by pursuing legislative positions that restrict international trade. This section investigates this potential explanation by examining differences in the voting of Democrats and Republicans on bills related to international trade using a regression discontinuity approach, in order to determine which party was more likely to favor trade protection, and during which time period.

我们的第一步是确定在样本期间出现在美国众议院的一组贸易相关法案，将它们分类为“赞成”和“反对贸易”，并收集立法者对每项法案的投票。 为了识别与贸易相关的法案集，我们使用了比较议程开发的主题领域分类，该分类收集了美国国会所有唱名投票的数据，并将它们分类为子类别。 我们包括主要议题 18“对外贸易”下的法案，以及更具体的子议题 1802“贸易协定”和 1807“关税与进口”所涵盖的法案。 32 这个分类系统的一个关键特点是它涵盖了我们整个样本期，一直到 2016 年。我们关注的是法案最终通过的投票，不包括程序性投票。 我们还排除了不直接涉及贸易限制的法案，例如广泛的拨款法案。 33 附录表 A.4 提供了分析中使用的所有票据的清单。

7.1. Classification of international trade bills

Our first steps are to identify the set of trade-related bills appearing in the US House of Representatives over the sample period, classify them as “pro-” versus “anti-trade,” and collect legislators’ votes for each bill. To identify the set of trade-related bills, we use subject area classifications developed by Comparative Agendas, which collects data on all roll call votes in the US Congress, and classifies them into sub-categories. We include bills under major topic 18, “Foreign Trade,” and more specifically those covered by sub-topics 1802, “Trade Agreements,” and 1807, “Tariff & Imports”.[32] A key feature of this classification system is that it covers our entire sample period, extending through 2016. We focus on votes for final passage of a bill, excluding procedural votes. We also exclude bills that do not deal with trade restrictions directly, such as broad appropriations bills.[33] Appendix Table A.4 provides a list of all bills used in the analysis.

We classify bills as pro- versus anti-trade according to whether they remove or install trade barriers, respectively. To determine the classification of each bill, two authors and three research assistants read the text of each bill and gave it one of four preliminary rankings: clearly pro-trade, marginally pro-trade, marginally anti-trade, and clearly anti-trade. The final ranking—reported in Appendix Table A.4—is the mode of the preliminary rankings. Given rankings’ subjectivity, our baseline results focus on bills classified as clearly pro- or anti-trade, though, as reported in Appendix Section D, results are similar when all bills are included.[34] Lastly, House members’ votes in Congresses seated following Congressional elections from 1992 to 2014 are obtained from Govtrack.

我们分别根据它们是否消除或设置贸易壁垒将法案分类为支持贸易和反贸易。 为了确定每项法案的分类，两位作者和三位研究助理阅读了每项法案的文本，并为其给出了四个初步排名之一：明显支持贸易、略微支持贸易、略微反对贸易和明显反对贸易。 附录表 A.4 中报告的最终排名——是初步排名的模式。 鉴于排名的主观性，我们的基线结果侧重于明确归类为支持或反对贸易的法案，尽管如附录 D 部分所述，当包括所有法案时，结果是相似的。 34 最后，众议院议员在 1992 年至 2014 年国会选举后就座的国会中的选票来自 Govtrack。

7.2. Identification strategy

我们使用以下规范检查众议院议员对国际贸易法案的投票与其党派关系之间的关系，We examine the relationship between House members’ votes on international trade bills and their party affiliation using the following specification,

$$\text{Pro}-\text{Trade}_{dh} = \alpha + \beta \text{Democrat}_{dh} + \varepsilon_{dh}, \quad (5)$$

其中 d 和 h 表示国会选区和代表任职的特定两年期国会。 35 因变量 Pro-Trade dh 代表特定代表在特定国会期间所投赞成贸易票的份额。 如果代表是民主党人，则虚拟变量民主党人 dh 取值为 1，否则取值为 0，ε dh 是误差项。

我们将党派关系与贸易投票支持之间的关系分别考虑了三个时期，我们称之为“恒定区时期”。 这些不变的选区时期对应于国会选区通常保持不变的几十年，在每十年一次的人口普查之后发生的重新选区过程之间，即第 103 至 107 届（在 1992 年至 2000 年选举中选出）国会，第 108 至 112 届（2002 年） 至 2010 年选举）国会，以及第 113 届和第 114 届（2012 年和 2014 年选举）国会。 在不同时间段分割样本将涉及做出强有力的假设以跨越重新划分事件的地区或混合可能无法比较的地区。

where *d* and *h* denote Congressional districts and the particular two-year Congress during which representatives serve.[35] The dependent variable $Pro\text{-}Trade_{dh}$ represents the share of pro-trade votes cast by a particular representative during a particular Congress. The dummy variable $Democrat_{dh}$ takes the value 1 if the representative is a Democrat and zero otherwise, and ε_{dh} is the error term.

We consider the relationship between party affiliation and support for trade votes separately for three periods of time that we refer to as “constant-district periods.” These constant-district periods correspond to the decades in which Congressional districts are generally constant, between the redistricting process that occurs after each decennial Census, i.e., the 103*rd* to 107*th* (elected in the 1992 to 2000 elections) Congresses, 108*th* to 112*th* (2002 to 2010 elections) Congresses, and 113*th* and 114*th* (2012 and 2014 elections) Congresses. Splitting the sample at different time periods would involve either making strong assumptions to bridge districts across redistricting events or mixing districts that may not be comparable.[36]

Identification of β requires that representatives’ party affiliation be uncorrelated with the error term. As there may be several reasons why this assumption is violated, we follow Lee (2008) in identifying the causal effect of party affiliation on voting behavior using a regression discontinuity (RD) design that compares the legislative voting of Democrats and Republicans elected in close elections.[37] The intuition behind this design relates to the incomplete manipulability of elections. For example, exogenous

[32] Information on Comparative Agenda's classifications is available at https://www.comparativeagendas.net/pages/master-codebook. We add two bills that are clearly trade-related but do not appear in Comparative Agendas' list. These bills are HJRES121 in 1998 (105th Congress) and HJRES57 in 1999 (106th Congress). There is extensive overlap between the bills covered in Comparative Agendas and those from the Cato Institute employed by Feigenbaum and Hall (2015). For the 112th Congress, for example, both lists include bills covering implantation of the Colombia, Panama, and Korea FTAs, the application of CVD laws to non-market economies, and repeal of the Jackson-Vanik annual reviews of NTR status for Moldova and Russia.

[33] This restriction excludes eight bills, HR2670 (106th Congress), HR3008 (107th Congress), HR2682 (109th Congress), HR4944 (109th Congress), S203 (109th Congress), HR3074 (110th Congress), HR2638 (110th Congress), and HR4380 (111th Congress).

[34] For example, in the 109th Congress, HJRES 27, “Withdrawing approval of the United States from the agreement establishing the World Trade Organization” is ranked as being clearly anti-trade, while HRES57, “Urging the European Union to maintain its arms embargo on the People's Republic of China” is ranked as marginally anti-trade. We note that we obtain qualitatively similar results from 1992 to 2010 if bills are classified according to the economic liberalness of their sponsor, as defined by the National Journal (Che et al., 2016).

[35] For example, $h = 110$ represents the 110th Congress, which met from January 3, 2007 to January 3, 2009.

[36] In Appendix section J, we also discuss results that split the sample periods to correspond with Presidential elections. The general shifts in legislative voting on trade that we find when separating periods by Presidencies are broadly similar to our baseline results.

[37] Lee et al. (2004) and Lee (2008) use RD to investigate the effect of party affiliation on legislators' right-vs-left voting scores.

确定 β 要求代表的党派关系与误差项不相关。 由于可能有几个原因违反了这一假设，因此我们遵循 Lee（2008），使用回归不连续性（RD）设计来确定政党的因果关系对投票行为的因果影响，该设计比较了民主党和共和党人在近距选举中选出的立法投票 . 37 这种设计背后的直觉与选举的不完全可操作性有关。 例如，天气等因素的外生变化会影响投票率，从而影响每个候选人在给定选举中获得的最终选票份额。 如果在势均力敌的选举中，结果完全是由这种变化驱动的，那么将选票份额接近 50% 的民主党与共和党的投票记录进行比较无异于自然实验。 换句话说，除了只是获胜的“待遇”之外，其他一切都被认为是相同的。

variation in factors such as weather influences turnout and therefore the ultimate share of votes each candidate receives in a given election. If, in close elections, the outcomes are driven solely by this variation, comparison of the voting records of Democrats versus Republicans where vote shares are near 50 percent is tantamount to a natural experiment. In other words, other than the "treatment" of just winning, all else is assumed to be the same.[38]

Formally, define the assignment variable

$$\text{Margin}_{dh} \equiv \text{VoteShare}_{dh}^{\text{Democratic}} - \text{VoteShare}_{dh}^{\text{Republican}} \quad (6)$$

作为国会选区 d 中民主党和共和党候选人在国会选举中获得的选票份额的差异 h。 直观上，考虑到美国政治的两党性质，一个民主党候选人以积极的优势获胜(即margin dh> 0)为条件赢得选举的概率接近于统一，在边界0处有一个不连续。 Hahn 等 (2001) 表明，当 E ½ ε dh jMargin dh ¼ m 在截止点 0 处以 m 为单位连续时，方程中的 β。 (5) 可识别为

as the difference in the share of votes received by the Democratic and Republican candidates in Congressional district d for election to Congress h. Intuitively, given the two-party nature of US politics, the probability of a Democratic candidate winning an election conditional on a positive margin of victory (i.e., $Margin_{dh} > 0$) is near unity and has a discontinuity at the cutoff 0.[39] Hahn et al. (2001) show that when $E[\varepsilon_{dh}|\text{Margin}_{dh} = m]$ is continuous in m at the cutoff 0, β in Eq. (5) can be identified as

$$\hat{\beta}_{RD} = \frac{\lim_{m\downarrow 0} E[y_{dh}|\text{Margin}_{dh} = m] - \lim_{m\uparrow 0} E[y_{dh}|\text{Margin}_{dh} = m]}{\lim_{m\downarrow 0} E[\text{Democrat}_{dh}|\text{Margin}_{dh} = m] - \lim_{m\uparrow 0} E[\text{Democrat}_{dh}|\text{Margin}_{dh} = m]}. \quad (7)$$

Lee and Lemieux (2010) show that $\hat{\beta}_{RD}$ is essentially an instrumental variable estimator, where the first stage is

$$\text{Democrat}_{dh} = \gamma I\{\text{Margin}_{dh} \geq 0\} + g(\text{Margin}_{dh}) + \mu_{dh}, \quad (8)$$

and the second stage is

$$y_{dh} = \alpha + \beta \text{Democrat}_{dh} + f(\text{Margin}_{dh}) + \varepsilon_{dh}. \quad (9)$$

如上所述，我们的回归不连续性估计的识别假设，即 E ½ ε dh jMargin dh ¼ m 在截止点 0 处以 m 为连续，这意味着截止点的选举结果是由随机因素决定的，即 ，任何政党或候选人都不能完全操纵选举。 我们使用 Lee 和 Lemieux (2010) 建议的两项检查为这一假设提供定量支持。 首先，如果选举结果是完全可操纵的，那么分配变量 (Margindh) 的分布将在截止点 (Margin dh = 0) 不连续。 例如，如果仅凭天气决定选举结果接近，那么在民主党获胜的选区中，获胜的差距将大大大于他们输掉的选区。 我们使用 McCrary (2008) 开发的方法测试这种不连续性。 如附录 A.3 的左上图所示，截止点连续性零假设的检验统计量为 0.077，标准误为 0.119。 因此，我们未能拒绝不完全可操作性的假设，这与我们的识别假设一致。

$I\{.\}$ is an indicator function that takes a value of 1 if the argument in brackets is true and 0 if it is false, while $g(.)$ and $f(.)$ are flexible functions of the assignment variable—i.e. $Margin_{dh}$—that control for the direct effect of the strength of the Democratic versus Republican parties. Lee and Lemieux (2010) suggest both parametric and nonparametric approaches to estimate $\hat{\beta}_{RD}$, and we pursue both. Specifically, for the parametric approach, we use all observations and define $g(.)$ and $f(.)$ as third-order polynomial expansions of the assignment variable. For the nonparametric approach, we follow the procedure developed by Imbens and Kalyanaraman (2012) that uses local linear estimation within an optimal bandwidth w^*. Standard errors are clustered on the assignment variable. Further details and robustness checks for the two approaches are provided in Appendix Sections F and G.

As discussed above, the identifying assumption of our regression discontinuity estimation, which is that $E[\varepsilon_{dh}|\text{Margin}_{dh} = m]$ is continuous in m at the cutoff 0, implies that the election outcome at the cutoff point is determined by random factors, i.e., no party or candidate can fully manipulate the election. We provide quantitative support for this assumption using two checks suggested by Lee and Lemieux (2010). First, if election outcomes were fully manipulable, the distribution of the assignment variable ($Margin_{dh}$) would be discontinuous at the cutoff ($Margin_{dh} = 0$). For example, if weather alone determined close elections, it is unlikely that in the districts Democrats win, the margin of victory would be substantially larger than in the districts they lose. We test for this discontinuity using the method developed by McCrary (2008). As shown in the upper left panel of Appendix A.3, the test statistic for a null hypothesis of continuity at the cutoff point is 0.077 with a standard error of 0.119. Thus, we fail to reject the hypothesis of incomplete manipulability, consistent with our identifying assumption.

The second check examines characteristics of Congressional districts—such as median household income and the shares of the population that are not white, are veterans, or have a bachelors degree—in the neighborhood of the cutoff point directly. If there were full manipulation at the cutoff, districts on the margin would show discontinuities in distributions of these characteristics at the cutoff point. The remaining panels of Appendix Figure A.3 reveal that none of the distributions of key district attributes exhibit discontinuities at the cutoff 0, indicating that our hypothesis of a valid RD setting cannot be rejected.

Lastly, we caution that our RD estimates represent weighted average treatment effects, with the weights being proportional to the *ex-ante* likelihood that a representative's realization of the assignment variable is close to the threshold, i.e. comes from a district with an expected close election. Therefore, if the behavior of representatives facing close elections is different from the general population of representatives, our RD estimates may not capture the overall voting behavior of the party on trade bills.[40]

[38] Using RD to investigate the incumbent advantage, Lee (2008) argues:"It is plausible that the exact vote count in large elections, while influenced by political actors in a non-random way, is also partially determined by chance beyond any actor's control. Even on the day of an election, there is inherent uncertainty about the precise and final vote count. In light of this uncertainty, the local independence result predicts that the districts where a party's candidate just barely won an election—and hence barely became the incumbent—are likely to be comparable in all other ways to districts where the party's candidate just barely lost the election."

[39] See Appendix Figure A.2 for a visual representation of this discontinuity. Note that there are cases in which a third party wins the election even though the Democratic candidate receives more votes than the Republican candidate. As a result, $\Pr[\text{Democratic}_{d,t} = 1|\text{Margin}_{d,t} = m] \neq 1$ when $m > 0$.

[40] In Appendix Section K, we also report results of an OLS regression of the pro-trade vote share on a Democrat vote dummy for the three periods we consider in the RD analysis. Results are broadly consistent with those found with the RD approach. We find that Democrats were modestly more protectionist than Republicans from 1992–2000, become much more protectionist from 2002–2010, and then shift to being relatively more pro-trade than Republicans from 2012–2014.

第二项检查直接在临界点附近检查国会选区的特征，例如家庭收入中位数和非白人、退伍军人或拥有学士学位的人口比例。 如果在临界点进行全面操纵，边缘区域将在临界点处显示这些特征的分布不连续。 附录图 A.3 的其余面板显示，关键区域属性的分布在截止点 0 处没有表现出不连续性，这表明我们对有效 RD 设置的假设不能被拒绝。

最后，我们警告说，我们的 RD 估计代表加权平均治疗效果，权重与代表实现分配变量接近阈值的事前可能性成正比，即来自预期接近选举的地区。 因此，如果面对势均力敌的选举的代表的行为不同于一般代表人群，我们的 RD 估计可能无法捕捉到该党在贸易法案上的整体投票行为。

Table 6
Democrat affiliation and legislators' voting for pro-trade bills.

	(1)	(2)	(3)
	1992–2000	2002–2010	2012–2014
Panel A: Parametric approach			
Democrat	0.026	−0.298***	−0.082
	(0.035)	(0.048)	(0.091)
Stock-Yogo	87	85	NA
Kleibergen-Papp	410	265	NA
Observations	2174	1738	433
Panel B: Nonparametric, local linear approach			
Democrat	0.045*	−0.326***	−0.025
	(0.026)	(0.032)	(0.058)
Band	0.45	0.57	0.47
Observations	1576	1406	313

Notes: Table summarizes the results of district-year level regression discontinuity specifications of the share of pro-trade votes on an indicator for whether the representative is a Democrat. Column headers refer to the years in which the representatives are elected (their two-year service begins in January of the following years). Panel A reports results using parametric estimation with third-order polynomials. Panel B reports results using nonparametric local linear estimation, in which observations are limited to those within the optimal bandwidth. Standard errors clustered at the assignment variable level are reported below coefficients. *, ** and *** signify statistical significance at the 10, 5 and 1 percent level.

党派关系对代表投票赞成贸易法案的影响的形式回归不连续估计结果，RD β，对于三个恒定区周期中的每一个，都在表 6 中报告。 41 如上所述，我们同时使用参数和非参数结果，分别在面板 A 和 B 中报告。 标准误差聚集在赋值变量上。

7.3. Results

如小组第一栏所示，我们发现在 1990 年代，也就是民主党总统比尔克林顿主张扩大美国贸易协定的时期（Rorty，1998；Kamarck 和 Podkul，2018），民主党在贸易问题上的投票与共和党类似 相关的法案，基于面板 A 中的参数估计，或者稍微更支持自由贸易，基于面板 B 中的非参数估计。然而，第二列的结果表明，在这两种方法下，民主党在 2002 年期间 到 2010 年，在立法投票中比共和党人更反对贸易，因为普通民主党人联合起来反对新的贸易协定（Palmer，2007 年）。 这一结果为我们早先的发现提供了一个理由，即在受中国竞争加剧影响的县的选民在此期间投给民主党的份额增加了。 42 就经济意义而言，2002 年至 2010 年期间的系数估计表明，

Formal regression discontinuity estimation results for the effect of party affiliation on representatives' voting for pro-trade bills, $\hat{\beta}^{RD}$, for each of the three constant-district periods are reported in Table 6.[41] As mentioned above, we use both parametric and non-parametric results, reported in Panels A and B, respectively. Standard errors are clustered on the assignment variable.

As indicated in the first column of the panel, we find that in the 1990s, the period when Democratic President Bill Clinton advocated the expansion of US trade agreements (Rorty, 1998; Kamarck and Podkul, 2018), Democrats vote similarly to Republicans on trade-related bills, based on parametric estimation in Panel A, or are modestly more supportive of free trade, based on non-parametric estimation in Panel B. The results in column two, however, indicate that, under both approaches, Democrats in the period from 2002 to 2010 are much more anti-trade than Republicans in their legislative voting, as rank-and-file Democrats coalesced in opposition to new trade agreements (Palmer, 2007). This result provides a rationale for our earlier finding that voters in counties subject to larger increases in competition from China increase the share of votes cast for Democrats during this period.[42] In terms of economic significance, the coefficient estimate for the 2002 to 2010 period indicates that a Democratic affiliation is associated with a roughly 30 percent reduction in the share of pro-trade votes, relative to Republican affiliation. In column three, we find that the differential opposition of Democrats to pro-trade bills dissipates in the the 2010s, under both approaches, with Democrats and Republicans voting similarly on trade-related bills, though we caution that this period contains relatively few bills—as illustrated in Appendix Table A.4—due to both parties' hostility toward trade during this time.[43]

We next consider aspects of the nature and timing of changes in the two parties' voting on trade-related legislation. One issue to consider is why Democrats would become anti-trade relative to Republicans in the 2000s, when the two parties had voted similarly on trade-related bills in the 1990s. Two potential explanations include, first, that a party's control of the Presidency influences voting on trade-related bills and, second, that districts initially represented by Democrats were more exposed to PNTR, leading them to recognize the potential impact of trade shocks and change their views on trade bills.[44]

We find evidence that party control of the Presidency contributes to the shifts by the parties from the 1990s to 2000s. Appendix Table A.6 indicates a sharp break in representatives' votes on trade-related bills following the change from Democratic President Bill Clinton to Republican President George W. Bush. As shown in that table, the pro-trade share of votes cast by Democratic Representatives drops from 63 percent in the Congress elected in 1998 (the last Congress of Bill Clinton's presidency) to 40 percent in the Congress elected in 2000 (the first Congress of the G.W. Bush presidency). The Republican pro-trade vote share increases from 72 percent to 80 percent over the same time period. The clear timing of this shift indicates that the Presidential election mattered to Representatives' voting on trade bills.

We also find that areas that were more Democratic in 1992 were somewhat more exposed to PNTR (correlation of 0.12), suggesting that Democrats may have acquired information about the impact of trade shocks in the 1990s. This relationship is gone by 2000, when PNTR is enacted: The correlation between the Democratic vote share and the NTR gap in 2000 is 0.02, and a

相对于共和党的归属，支持贸易的选票份额减少了大约 30%。 在第三栏，我们发现，在这两种方法下，民主党人对支持贸易法案的不同反对意见在 2010 年代消失了，民主党人和共和党人在贸易相关法案上的投票相似，但我们警告说，这一时期包含的法案相对较少—— 如附录表 A.4 所示——由于在此期间双方都对贸易怀有敌意。 43

[41] A visual representation of the regression discontinuity results is provided in SectionF of the Appendix.

[42] Lu et al. (2018) provide another mechanism, in which areas subject to larger increases in import competition from China see more negative media coverage of China, which may increase the salience of the negative aspects of trade.

[43] We obtain qualitatively identical results using the bias-corrected estimator from Calonico et al. (2014). In Appendix section J, we present and discuss results in which the cutoffs between periods are based on Presidential elections. As discussed in that section, we continue to find broadly similar shifts in the parties' views on trade using these alternate cutoffs.

[44] Bombardini et al. (2020) consider politicians' expectations of the implications of the "China Shock," and the extent of information available to them at the time.

接下来，我们将考虑两党就贸易相关立法投票的性质和时间变化的各个方面。 需要考虑的一个问题是，为什么民主党人会在 2000 年代相对于共和党人变得反贸易，当时两党在 1990 年代就贸易相关法案进行了类似的投票。 两种可能的解释包括，第一，政党对总统职位的控制影响对贸易相关法案的投票；第二，最初由民主党代表的地区更容易受到 PNTR 的影响，导致他们认识到贸易冲击的潜在影响并改变他们的政策。 对贸易法案的看法.44

我们发现有证据表明，政党对总统职位的控制有助于政党从 1990 年代到 2000 年代的转变。 附录表 A.6 显示，在民主党总统比尔·克林顿（Bill Clinton）改任共和党总统乔治·W·布什（George W. Bush）之后，代表们对贸易相关法案的投票急剧下降。 As shown in that table, the pro-trade share of votes cast by Democratic Representatives drops from 63 percent in the Congress elected in 1998 (the last Congress of Bill Clinton's presidency) to 40 percent in the Congress elected in 2000 (the first Congress of G.W. 布什总统）。 在同一时期，共和党支持贸易的投票份额从 72% 增加到 80%。 这种转变的明确时机表明，总统选举对众议员对贸易法案的投票很重要。

我们还发现，1992 年更民主的地区在某种程度上更容易受到 PNTR 的影响（相关性为 0.12），这表明民主党可能已经获得了有关 1990 年代贸易冲击影响的信息。 这种关系在 2000 年 PNTR 颁布时消失了：2000 年民主党选票份额与 NTR 差距之间的相关性为 0.02，而民主党选票份额对当年 NTR 差距的回归产生了一个统计上没有的系数 意义重大。45 对各方贸易观点随时间发生变化的原因进行更全面的检查将是未来研究的一条富有成果的途径。

Table 7
The impact of democrat affiliation on trade bill voting by high and low exposure.

	(1) Full sample	(2) High exposure	(3) Low exposure
Panel A: 1992–2000 (nonparametric, local linear approach)			
Democrat	0.045*	0.067**	−0.022
	(0.026)	(0.032)	(0.039)
Stock-Yogo	16	16	NA
Kleibergen-Papp	627	438	NA
Observations	1576	948	679
Panel B: 2002–2010 (nonparametric, local linear approach)			
Democrat	−0.326***	−0.205***	−0.402***
	(0.032)	(0.061)	(0.061)
Stock-Yogo	16	NA	16
Kleibergen-Papp	222	NA	180
Observations	1406	358	525
Panel C: 2012–2014 (nonparametric, local linear approach)			
Democrat	−0.025	−0.052	−0.109
	(0.058)	(0.107)	(0.092)
Stock-Yogo	NA	NA	NA
Kleibergen-Papp	NA	NA	NA
Observations	313	155	134

Notes: Table summarizes the results of district-year level regression discontinuity specifications of the share of pro-trade votes on an indicator for whether the representative is a Democrat. Panel titles refer to the years in which the representatives are elected (their two-year service begins in January of the following years). Columns 1, 2 and 3 report results for the full sample and for districts with high and low PNTR exposure, respectively, where exposure is determined according to the district's NTR gap lying above or below the median. All regressions are nonparametric local linear estimation. The samples for columns 1, 2, and 3, are each restricted to be within the regression-specific optimal bandwidth, with the result that the number of observations for the full sample can be smaller or larger than the sum of the high- and low-exposure sub-samples. Standard errors clustered at the assignment variable level are reported below coefficients. *, ** and *** signify statistical significance at the 10, 5 and 1 percent level.

另一个需要考虑的问题是，如果这些立场有利于民主党，为什么共和党没有在 2000 年代初期立即采取保护主义立场。 我们在附录 H 部分讨论了延迟采取保护主义立场的两个潜在原因。 首先，共和党代表可能感到压力，要支持共和党乔治·W·布什政府的亲贸易立场，这与总统政府各党派立场的转变一致，如上文所述。 其次，我们发现了一些有限的证据——尽管估计不准确——民主党与 PNTR 相关的收益在“安全”的民主党选区稍大一些，而该选区通常会以较大的优势获胜。 这些选区的收益可能不太引起共和党人的关注，因为它们不会导致共和党代表的选区数量发生变化（Feigenbaum 和 Hall，2015 年）。46

regression of the Democratic vote share on the NTR gap in that year yields a coefficient that is not statistically significant.[45] Providing a fuller examination of the reasons for changes in the parties' views on trade over time would be a fruitful avenue for future research.

Another issue to consider is why Republicans did not *immediately* adopt protectionist positions in the early 2000s if those positions were benefiting Democrats. We discuss two potential reasons for this delay in adopting protectionist positions in Section H of the Appendix. First, Republican representatives may have felt pressured to support the pro-trade positions of the Republican George W. Bush administration, consistent with the shifts in parties' positions across Presidential administrations, as discussed immediately above. Second, we find some limited evidence—albeit imprecisely estimated—that Democratic gains associated with PNTR were modestly larger in "safe" Democratic districts, where the party typically won by large margins. Gains in these districts may have been of less concern to Republicans given that they would not lead to changes in the number of districts represented by Republicans (Feigenbaum and Hall, 2015).[46]

To provide additional perspective on these results, we examine whether the evolution in the voting of Democratic and Republican representatives on trade-related bills is driven by districts with high versus low exposure to PNTR. To do this, we split districts into those with NTR gaps above or below the median and generate regression discontinuity estimates for each group. As indicated in Table 7, from 1992 to 2000, before PNTR, Democratic representatives in high NTR gap districts were actually modestly more pro-trade than Republicans, a relationship that is not present in low-NTR gap districts. After passage of PNTR, however, from 2002 to 2010, Democrats in both high and low exposure districts are significantly more likely than Republicans to vote against pro-trade bills. This change occurs partly because the share of pro-trade votes cast by Democrats goes down from around 60 percent in the 1992 to 2000 period to around 50 percent in the 2002 to 2010 period, and partly because Republicans move from casting pro-trade votes around 65 percent of the time in the 1990s to nearly 85 percent of the time in the 2000s.[47] In the last period, from 2012 to 2014, Democratic and Republican legislators vote similarly on trade-related bills in both low- and high-exposure districts.[48]

[45] The decline in correlation from 1992 to 2000 could occur endogenously if pro-trade positions by some Democrats in the 1990s led the party to be punished by voters.

[46] Further examination of these and other reasons for the delay in Republican adoption of protectionist policies is another topic deserving of future research.

[47] Republicans in high NTR gap districts exhibit less of this move toward pro-trade votes between the 1990s and 2000s, voting for pro-trade bills only 80 percent of the time from 2002 to 2010 versus 88 percent for Republicans in low NTR gap districts. This difference in positions is consistent with Republicans adjusting their policies on trade toward the preferences of the median voter in more exposed districts, as found in Feigenbaum and Hall (2015). Furthermore, it helps explain the smaller difference between Democrats' and Republicans' positions in high-exposure districts, relative to low-exposure districts in the 2000s, as reported in Panel B.

[48] In Appendix Section I, we also estimate ordinary least squares regressions that examine the relationship between the share of pro-trade votes cast by legislators and the exposure of their district to PNTR, an indicator for Democratic affiliation, and interaction of the NTR gap and Democrat terms. We find that higher exposure to PNTR is associated with more anti-trade views across parties in the 1990s and early 2000s and that Democrats are especially anti-trade in the early 2000s.

为了对这些结果提供额外的视角，我们研究了民主党和共和党代表对贸易相关法案的投票演变是否受 PNTR 风险高或低的地区驱动。 为此，我们将地区划分为 NTR 差距高于或低于中位数的地区，并为每组生成回归不连续估计。 如表 7 所示，从 1992 年到 2000 年，在 PNTR 之前，高 NTR 差距地区的民主党代表实际上比共和党人更支持贸易，这种关系在低 NTR 差距地区不存在。 然而，在 PNTR 通过后，从 2002 年到 2010 年，高风险和低风险地区的民主党人明显比共和党人更有可能投票反对支持贸易的法案。 发生这种变化的部分原因是民主党投赞成贸易票的份额从 1992 年至 2000 年期间的约 60% 下降到 2002 年至 2010 年期间的约 50%，部分原因是共和党人从投赞成贸易票转向 从 1990 年代的 65% 到 2000 年代的近 85%。 47 在上一个时期，从 2012 年到 2014 年，民主党和共和党立法者在低风险和高风险地区都对贸易相关法案进行了类似的投票。

总之，本节中的回归不连续性结果为本文第一部分报告的选举投票模式提供了经济原理，包括特定时间段以及这些模式随时间的变化。 在 1990 年代，在 PNTR 通过之前，民主党和共和党代表对与贸易相关的法案进行了类似的投票，而选举投票大多与贸易自由化无关。 在 PNTR 通过后，从 2002 年到 2010 年，民主党人比共和党人更有可能投票反对支持贸易的法案，并且受到 PNTR 贸易自由化影响的县的选民将投票转向民主党人。 Finally, for Congresses elected in 2012 and 2014, Democrats and Republicans again vote similarly on trade-related bills, and the boost enjoyed by Democrats in the first decade of the 2000s disappears.

In sum, the regression discontinuity results in this section provide an economic rationale for the election voting patterns reported in the first part of the paper, both for specific time periods, as well as for changes in those patterns over time. In the 1990s, prior to passage of PNTR, Democrat and Republican representatives vote similarly on trade-related bills, and election voting is mostly unrelated to exposure to trade liberalization. After passage of PNTR, from 2002 to 2010, Democrats become much more likely than Republicans to vote against pro-trade bills, and voters in counties exposed to PNTR's trade liberalization shift their votes toward Democrats. Finally, for Congresses elected in 2012 and 2014, Democrats and Republicans again vote similarly on trade-related bills, and the boost enjoyed by Democrats in the first decade of the 2000s disappears.

本文研究了 25 年来贸易自由化与美国大选投票之间的关系。 在本文的第一部分，我们使用差异中的差异方法来估计县级风险敞口对美国授予中国永久正常贸易关系对民主党在众议院选举中的投票份额的影响 、参议院和总统。

8. Conclusion

This paper examines the relationship between exposure to trade liberalization and voting in US elections over a twenty-five year period. In the first portion of the paper, we use a difference-in-differences approach to estimate the impact of county-level exposure to the US granting of Permanent Normal Trade Relations to China on the share of votes cast for Democrats in elections for the House of Representatives, Senate, and President.

We find that US counties more exposed to increased competition from China via PNTR experience relative increases in the share of votes cast for Democrats in Congressional elections in the first decade of the 2000s, relative to the 1990s, and that this shift is present in both county- and constructed district-level data. In terms of economic significance, we find that, in the 2000s, moving a county from the 25th to the 75th percentile of exposure to PNTR is associated with a relative increase in the Democratic vote share in House elections of 2.2 percentage points, or a 4.6 percent increase relative to the average share of votes cast for Democrats in the 2000 Congressional elections. This relationship is robust to alternate specifications, excluding the NTR tariff rate or manuacturing employment share, and alternative weighting. We also show that this shift in voting toward Democrats unwinds in the 2010s, concomitant with the rise of the Tea Party faction of the Republican Party, though this change in the 2010s is not precisely estimated. Related results indicate that exposure to PNTR is associated with some aspects of Tea Party activity.

In the second portion of the paper, we find evidence that the relationship between exposure to trade liberalization and voting can be explained by the policy choices of Democratic and Republican Representatives over time. Using a regression discontinuity approach, we find that House Democrats in the early 2000s were substantially more likely than their Republican colleagues to vote against legislation supportive of free trade, consistent with the stronger election support for Democrats in trade-exposed areas during this period. By the second decade of the 2000s, however, following the rise of the Tea Party wing of the Republican Party, the two parties vote similarly on trade-related bills, providing a rationale for the loss of the boost for Democrats, though the set of trade bills considered in this period is small. All told, our results are consistent with voters in trade-exposed areas shifting support toward the party that advocates for trade policies consistent with their economic interests.

我们发现，与 1990 年代相比，在 2000 年代的前十年，美国各县通过 PNTR 更容易受到来自中国的激烈竞争，在国会选举中投给民主党的选票份额相对增加，而且这种转变在两个县都存在 - 并构建了地区级数据。 就经济意义而言，我们发现，在 2000 年代，将一个县从 PNTR 暴露的第 25 个百分位移动到第 75 个百分位，与民主党在众议院选举中的投票份额相对增加 2.2 个百分点或 4.6 个百分点相关。 相对于在 2000 年国会选举中投给民主党的平均票数增加百分比。 这种关系对于替代规格（不包括 NTR 关税税率或制造业就业份额）和替代权重是稳健的。 我们还表明，随着共和党茶党派的崛起，这种投票向民主党的转变在 2010 年代逐渐减弱，尽管 2010 年代的这种变化并未得到精确估计。 相关结果表明，接触 PNTR 与茶党活动的某些方面有关。

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

在论文的第二部分，我们发现证据表明，贸易自由化和投票之间的关系可以通过民主党和共和党代表随着时间的推移而做出的政策选择来解释。 使用回归不连续性方法，我们发现 2000 年代初期的众议院民主党人比他们的共和党同事投票反对支持自由贸易的立法的可能性要大得多，这与这一时期在贸易领域对民主党人的更强选举支持一致。 然而，到 2000 年代的第二个十年，随着共和党茶党派的崛起，两党在贸易相关法案上的投票相似，为民主党失去提振提供了理由，尽管 在此期间考虑的贸易票据很少。 总而言之，我们的结果与贸易敏感地区的选民将支持转向倡导符合其经济利益的贸易政策的政党一致。

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jinteco.2022.103652.

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