The Economic Origins of Authoritarian Values: Evidence from Local Trade Shocks in the United Kingdom

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Abstract

Authoritarian values have long been thought to be an important determinant of public opinion and political behavior, including most recently for surging waves of populist candidates across the developed world. Explanations for why some individuals have more authoritarian values than others have focused on various processes of socialization, security threats, and economic conflict. We argue that negative economic shocks cause the adoption of authoritarian values through a frustration-aggression mechanism. Large economic shocks hinder individuals' expected attainment of their goals as economic providers and consumers and this interference increases generalized aggression. Employing an original 2017 survey representative of the British population, this paper uses local economic shocks in Great Britain induced by China's integration with the world economy to estimate the causal impact of economic change on authoritarian values. We find that individuals living in regions in which local labor markets were more substantially affected by imports from China have significantly more authoritarian values. Our estimates are robust to the inclusion of a wide variety of demographic variables as well as controls for immigration patterns. We show that this relationship is driven by the effect of the trade shock on authoritarian aggression and not other dimensions of authoritarianism such as submission or conventionalism. We interpret these results as signaling the importance of economic shocks from many sources such as technological change and macroeconomic cycles on value formation and ultimately political behavior.

1 Introduction

The election of Donald Trump to the presidency in the United States, the success of the Leave campaign in the United Kingdom's referendum on exiting the European Union, and the relatively strong performance of far-right candidates and parties such as the National Front's Marine Le Pen in France and the AfD in Germany have sparked a renewed interest in the determinants of support for populist politics. Existing explanations for attitudes and behaviors supportive of populists are typically divided into two main threads: those that emphasize the economic threats driving such support, and those that instead focus on the value systems underlying affinity for the platforms of populist parties.

The debate surrounding the rise of populists tends to present these two classes of explanations as competing. For example, the literature on public attitudes toward immigration and trade—two policy areas salient in populist politics—is often focused on the relative explanatory power of economic versus value concerns in driving policy opinions. Similarly, journalistic and academic debates on the rise of Donald Trump can be split into two camps: those who argue that Trump's mostly white working-class, non-college educated supporters have suffered economically due to rising inequality, technological change, and foreign competition (e.g. see Hirsh 2016; Surowiecki 2016; Frank 2016), and those who argue that his support is best explained by value systems characterized by prejudice and racial resentment (e.g. see Drum 2016; Klinkner 2016; Yglesias 2016). Even if accounts recognize that economic interest and values may be complimentary, they still typically treat these explanatory frameworks as separate from each other.

This paper argues that values can be in part consequences of economic conflict. This suggests that simply thinking of value and interest explanations—whether they are competing or complimentary—as disjoint accounts invites misinterpretation of the larger factors driving the behavior that values are thought to explain. If values are endogenous to economic conflict, they are still central to the narrative of understanding these phenomena but their role needs to be interpreted carefully.

One set of individual values that has received renewed attention in response to the resurgence of populism globally is a bundle of characteristics often referred to as "authoritarian values," understood as an individual preference for conventionalism and submission and belief that these value outcomes should be achieved by force. This definition draws directly from Altemeyer (1981) but builds on a long literature before that and resonates with many subsequent treatments of authoritarianism. Authoritarian values have long been argued to have an important effect on public opinion and political behavior, and have recently been associated with voting for Donald Trump in the 2016 US presidential election.[1] In a recent review, Pettigrew (2016) argues that "few relationships in social science are as stable and virtually universal as the link between authoritarianism and prejudice." A substantial literature links authoritarianism with voting for extreme political parties and with political conservatism in general (Lubbers and Scheepers 2000; Jost et al. 2003; MacWilliams 2016).

To motivate our interest in authoritarianism as a strong correlate of populist behavior, Figure 1 below presents a smoothed locally-weighted average—drawn from a nationally-representative sample of adults in the United Kingdom that was fielded by the authors—of the proportion of respondents voting Leave in the Brexit referendum against a measure of authoritarian preferences which we describe in detail below.[2] As can be seen in the figure, there is a remarkably strong bivariate association between individuals with greater authoritarian tendencies and the likelihood of voting in favor of the United Kingdom leaving the European Union: while individuals at the lowest observed values of authoritarianism have under a 20% likelihood of voting for Brexit, respondents at the highest values have over a 90% likelihood of doing so, with the figure demonstrating a clearly positive slope. It is apparent that these individual values are strongly associated with support for the Leave campaign – yet why might this relationship exist?

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[1]See e.g. MacWilliams (2016)

[2]In the Appendix, we report details of bivariate and multivariate regressions which consistently return a strong positive and statistically significant relationship between individual authoritarianism and voting leave, even after accounting for a host of additional individual and regional controls.
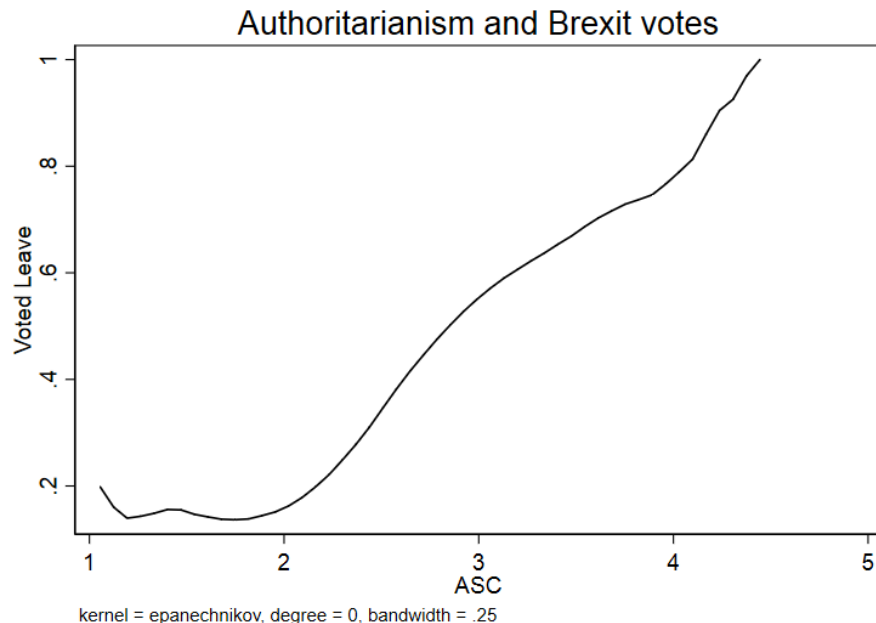
Figure 1: *Smoothed locally-weighted average of the proportion of respondents voting Leave in the Brexit referendum by authoritarian values as measured by the ASC scale.*

While the political effects of authoritarian values have been well documented in a number of settings, the origins of such values are much less well established. From the publication of Adorno et al.'s (1950) seminal *The Authoritarian Personality*, most treatments have viewed authoritarianism as a fixed characteristic formed in childhood and early adult socialization. In this paper, we build on the early work of Fromm (1941), Lipset (1959), and Rokeach (1960) and argue that contemporaneous economic threats increase the adoption of authoritarian values – i.e., authoritarianism is not a fixed disposition, and is at least partly shaped by economic conditions. While much prior empirical work investigating authoritarian personalities has often operationalized this as a unidimensional concept, we build off recent psychometric work that argues, following Altemeyer's (1981) original conceptualization, that authoritarianism is actually comprised of three separate sub-dimensions: authoritarian aggression, submission, and conventionalism (e.g., Duckitt et al. 2010, Dunwoody & Funke 2016).

Given the three components of authoritarianism—submission, conventionalism, and aggression—

there are at least three mechanisms by which economic shocks could increase the adoption of authoritarian values. First, the shock may be experienced as a problem that needs fixing and therefore induce individuals to be more disposed to submission to a leader who is going to solve the problem. Second, the shock may force comparisons between an unsatisfactory present and an idealized past and push individuals to value convention and how things used to be. Third, a large economic shock hinders individuals' expected attainment of their goals as economic providers and consumers and this interference increases generalized aggression through a frustration-aggression mechanism (Dollard et al. 1939; Berkowitz 1989). Each of these mechanisms are logically plausible and may complement one another in describing how authoritarian values respond to economic threats.

We focus on one potential source of economic conflict: the impact of Chinese imports on local labor market outcomes in the United Kingdom. We pursue this line of inquiry for two reasons: first, given a common narrative in the current press about the rise of populism as a result of a "backlash against globalization," we believe there is inherent conceptual interest in understanding whether international economic competition is indeed associated with changing individual values that affect support for populist platforms. Rodrik (2017) suggests a number of mechanisms that connect globalization to both left-wing and right-wing variants of populism and our analysis of authoritarian value change considers a complimentary way that economic integration may have shaped contemporary populism. Second, the focus on Chinese import shocks lends itself to a credible research design for estimating the causal effect of increased import competition from China on authoritarian values. Our focus on trade is not, however, because we think globalization has necessarily been the most important economic shock facing citizens in the UK or other developed democracies. Technological change, financial crises, and changing equity norms have also been sources of economic stress that likely rival or even surpass the effects of trade competition, suggesting that any relationship we uncover between economic threats and individual values may be, if anything, a lower bound on the size of such effects from other sources.

Our research design follows Autor et al. (2013) and a growing number of studies (e.g. Feigenbaum and Hall 2015; Autor et al. 2016; Dippel, Gold, and Heblich 2016; Colantone and Stanig 2017) that use the impact of China's internal economic reforms on imports to the developed world as an exogenous economic shock to local labor markets. These papers have continued to find large and economically important deleterious consequences for local labor markets from rising Chinese import competition; given our interest in understanding the effects of economic threat on authoritarian values, this strategy allows us to identify an important source of downturn in local economies in the U.K. that is plausibly outside the control of politicians in these regions. Using Chinese imports as a measure of economic conflict, we estimate the causal effect of economic threat on authoritarian values. We focus on Chinese imports to Great Britain because of Britain's position in the world economy and the role authoritarian values played in leading Britain out of the European Union.

Using an original 2017 survey representative of the British population, we relate individuals' authoritarian values to changes in the exposure of local labor markets to Chinese import competition. We adopt Dunwoody and Funke's (2016) Aggression-Submission-Conventionalism (ASC) scale which is explicitly designed to measure the three constructs in Altemeyer's definition of authoritarianism. We present results using the ASC scale and each of its three components.[3] We find that individuals living in regions where the local labor market was more substantially affected by imports from China have significantly more authoritarian values as measured by the ASC scale. Our estimates are robust to the inclusion of a wide variety of demographic variables and controls for immigration patterns. We also use Chinese imports into the United States to instrument for Chinese imports to the United Kingdom and again find that individuals that experienced greater negative shocks to their local labor markets had more authoritarian values. We consider the possibility that this relationship is due either to individual-level sorting prior to the rise of Chinese imports or following it. Controlling for initial regional manufacturing, and using aggregated data

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[3]The paper will also discuss results for alternative measures of authoritarianism.

on population change and individual-level data identifying moving histories, we find little evidence consistent with these alternative interpretations

We also estimate the impact of Chinese imports on each of the three components of the ASC scale: aggression, submission, and conventionalism. We find a strong effect for the authoritarian aggression measure but not submission or conventionalism. This pattern of results is consistent with the idea that the primary effect of the China shock in the UK was to thwart individuals' achievement of their expected goals as providers and consumers and this interference increased aggression through a frustration-aggression mechanism.

Our results provide novel empirical evidence linking economic threat to authoritarian values. Previous empirical work showing that economic change fosters authoritarian values has primarily been based on aggregate correlations across countries or across time within countries or individual-level correlations between economic characteristics and authoritarian values. Our study provides credible causal estimates that Chinese imports had a positive effect on authoritarian values and that this effect was due to the impact of Chinese imports on authoritarian aggression but not conventionalism or submission.

Our findings have important implications for the literature on the determinants of support for populists parties and the economic policies that they often advocate. Some researchers and commentators argue that economic change and individual interests largely account for changes in support for populists and patterns of economic policy preferences. Others contend that cultural factors such as authoritarian values are central for understanding these phenomena. Our study suggests that this debate may be misguided in that it pits non-economic values against economic interests when in fact economic interests may help shape core values.

2   Economic Threat and Authoritarian Values

This paper addresses whether and how negative economic shocks influence the adoption of more authoritarian values. In this section, we first examine the importance of answering these questions in the context of the existing literature. We then present a theoretical framework for explaining the mechanisms by which economic shocks might affect authoritarian values.

2.1   Authoritarian Values and Political Behavior

Authoritarian values are defined here as an individual preference for tradition and order joined with the belief that these outcomes should be achieved by the application or threat of violence (Altemeyer 1981). Much of the literature studying authoritarianism has focused on measuring these values and demonstrating that they are associated with political behavior and attitudes. This research has strongly suggested that authoritarian values are associated with support for extreme political parties as well as attitudes toward racial and ethnic minority groups (Lubbers and Scheepers 2000; Pettigrew 2016).

The interpretation of this association, however, depends on the origins of authoritarianism. The most straightforward approach is to view authoritarianism as a fixed value disposition of individuals that is the product of childhood and early-adulthood socialization. This is the view taken by one of the most important and influential early contributions to this literature—*The Authoritarian Personality*—by Theodor Adorno and colleagues.[4] They argue that authoritarian personalities are developed as a result of early childhood experiences with strict parenting. In this view, parents who threaten and dominate children foster in them a repressed hostility that is later projected on outgroups. Subsequent work later jettisoned most of the Freudian elements of Adorno et al.'s account of authoritarianism but retained the view that it was a fixed value disposition acquired early in life.

If these types of approaches are the right way to think about the origins of authoritari-

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[4]Adorno et al. 1950.

anism, it suggests an important conclusion for interpreting the association between authoritarian values and political behavior and attitudes. Because these values are pre-determined, it may be compelling to think about these fixed dispositions as explaining behavior and opinion. While some of the work that treats authoritarianism as the product of early socialization has emphasized the potential importance of economic, security, and social threats in this process, it is the presence of these threats early in life that matters for acquiring an authoritarian disposition. Therefore, while economic, security, and social factors may be important, it is their impact on the values formed well before the political behaviors and opinions to be explained that matter.

An alternative approach to understanding the origins of authoritarian values emphasizes the importance of contemporary economic, security, and social threats on political behavior and opinion. In one of the earliest analyses of authoritarianism, Fromm (1941) claimed that a chief factor in the development of authoritarian values is perceived insecurity. In his account, authoritarian tendencies arise as a coping mechanism to deal with the threat and uncertainty associated with rapidly changing modern capitalistic societies. Rokeach (1960) built on this perspective, emphasizing how intolerant and dogmatic views are borne out of anxiety caused by external threats and uncertain environments. Similarly, Lipset (1959) argued that one reason authoritarianism is concentrated among working-class individuals is because they experience higher levels of economic anxiety.

This understanding of the origins of authoritarian values suggests a rather different interpretation of the correlation between authoritarian values and political behavior and opinion. If authoritarian values are in part endogenous to economic, security, and social threats, then such correlations cannot be simply interpreted as evidence that values explain these behaviors and opinions – the perceived contemporary threat is fundamental to explaining the outcome.

It should be clear that these approaches to the determinants of authoritarianism may be complimentary. In our view, it seems almost self-evident that values are in part determined

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through childhood and early-adult socialization. The question that seems less clear, especially given the use of authoritarianism as an explanatory variable, is whether the origins of authoritarian values include *contemporary* economic, security, and social threats. If these are even part of the story, it has substantial implications for how we understand the role of authoritarian values and environmental threats in accounting for an array of political and social attitudes and behaviors.

Evidence that contemporary threats generally and economic threats specifically foster authoritarian values has primarily been based on aggregate correlations across countries or across time within countries or individual-level correlations between economic characteristics and authoritarian values. Sales (1973) found that several archival indicators of authoritarianism (such as the size of police budgets, power themes in comic books, and the length of prison sentences for sex offenders) were significantly higher during the elevated societal threat periods of the 1930s and the late 1960s compared to the years immediately prior. Doty, Peterson, and Winter (1991) performed a similar study using different time periods and found comparable results. Perrin (2005) studied authoritarian sentiment in letters to editors before and after 9/11 and found increases in both authoritarianism and anti-authoritarianism and thus greater value polarization. Feldman (2003), Stenner (2005), and Hetherington and Suhay (2011) show that individual-level variation in exposure to threat is correlated with the activation of authoritarian values among those pre-disposed to be authoritarian. It is worth noting that these three works tend to think of authoritarian values as a fixed characteristic of individuals and interpret their results as evidence that threats activate pre-determined values as opposed to evidence that the values themselves are influenced by contemporary threats.

A number of experimental studies have attempted to manipulate the saliency of threats to assess their influence on authoritarian values and/or political behavior (see e.g. Duckitt and Fisher 2003, Lavine et al. 2005, Hetherington and Suhay 2011, and Richey 2012). These experiments generally focus on physical threats such as terrorism rather than economic

factors. Further, they manipulate saliency rather than the actual threat. Taken together, there is little in the way of credible causal evidence that contemporary threats cause increased authoritarianism and certainly none for economic threats specifically. The question of the origins and assignment of authoritarian values remains an open one (Lavine et al. 2005).

2.2 Economic Change and Authoritarianism

The foregoing discussion advances the claims that understanding whether authoritarianism is sensitive to economic change is consequential for understanding mass political behavior and that previous research has not presented convincing causal evidence. The remainder of this section provides a theoretical framework for why there might be such a relationship.

Altemeyer's (1981) three-component definition of authoritarianism provides a natural starting point for identifying how economic shocks might influence the adoption of these values. Altemeyer argued that there were three components to authoritarianism: submission, conventionalism, and aggression. We argue that each of these may be influenced by the presence of negative economic shocks.

First, a shock may be experienced as a problem that needs fixing and induce individuals to want to submit to a strong leader who is going to solve the problem. Alberto Fujimori's 1990 campaign for President of Peru and subsequent early rule provides a familiar example of this phenomenon. In the context of a deep economic crisis, Fujimori ran on an ambiguous economic platform that promised an end to hyperinflation and high unemployment without the painful shock therapy advocated by the leading establishment candidate in the election. His background was that of an engineer and mathematician, non-politician, and non-European child of immigrants and his campaign capitalized on these characteristics by portraying him as a problem-solver who could be trusted by the people even if it was unclear what his solutions would be. Facing established candidate parties on the left which seemed to have no hope of solutions and parties on the right who were promising shock therapy, voters overwhelming opted to place their faith in Fujimori. Obviously, whether the economic crisis

led to authoritarian submission in this case cannot be established in a narrative but this account of Fujimori's campaign illustrates one possible mechanism through which negative economic shocks might increase the adoption of authoritarian values.

Second, a shock may force comparisons between an unsatisfactory present and an idealized past and push individuals to value convention and how things used to be. An exemplar of this phenomenon can be found in the rhetoric of the National Front and Marine Le Pen in France. An important comparison informs the National Front's economic analysis—the unsatisfactory economic performance of the last several decades compared to a somewhat mythical thirty years of high growth following World War II. The National Front's critique of the EU, globalization, and much more is closely tied to a desire to return France, its economy and its culture, to those post-war years. It is an open question whether negative economic events push individuals to value convention more or that it is simply among those with these values that the National Front's analysis is more likely to resonate. That said, it illustrates well the idea that economic change may make convention and tradition more attractive and lead to greater authoritarianism.

Third, an economic shock can hinder individuals' expected attainment of their goals as economic providers and consumers and this interference increases generalized aggression through a frustration-aggression mechanism (Dollard et al. 1939; Berkowitz 1989). One of the key men highlighted in Robert Lane's (1962) classic qualitative analysis of the political beliefs of the American "common man" is Ferrera. As described by Lane, Ferrera was a star high school athlete who attended college for two years and who had high expectations for himself (Lane 1962, pp. 104-108, 181-182). Interviewed in his late thirties, Ferrera had drifted from one job to the next, had recently been unemployed, was currently a shoe salesman, and had not found success in any of his career choices. Lane emphasizes Ferrera's profound sense of disappointment "in himself, in his status in the eyes of the world" (Lane 1962, p. 107). Based on the use of a ten-item authoritarianism scale similar to the "F-scale," Ferrera is coded as one of the most authoritarian men in Lane's sample (Lane 1962,

p. 185) and the discussion reveals a man who exemplifies authoritarian values and the political ideologies associated with such values. While Lane has his own interpretation of the connection between Ferrera's disappointments and his political beliefs and attitudes, it is a connection that resonates with the frustration-aggression hypothesis. It is not so much low wages or poverty or unemployment that lead to authoritarian aggression but the process of expecting certain roles and status in the family and community through one's job and role as a provider and those expectations being blocked that translates to authoritarian aggression.

We argue that each of these mechanisms are logically plausible and may complement one another in describing how authoritarian values respond to economic threats. The empirical question then is whether there is evidence that economic shocks cause more authoritarian values and if so which of these mechanisms provides the most plausible account.

3   Research Design

The empirical goal of this paper is to estimate the causal effect of one type of economic threat on individual authoritarian values. Given prior work emphasizing the negative consequences for local labor markets of Chinese import competition, our research strategy is to focus on the impact of China's integration with the world economy on authoritarian values in Great Britain. Our general approach is to follow a now commonly-employed identification strategy originally developed by Autor, Dorn, and Hanson (2013) for estimating the effect of Chinese import shocks on labor market outcomes in the United States. In addition to obviously being applied to Great Britain, our analysis differs from theirs in that the dependent variable is authoritarian values and is measured at the individual level by employing an original survey.

Our selection of Great Britain as a case is due to two factors. First, it is our view that authoritarian values contributed to the success of the Leave campaign in the Brexit referendum, as suggested by Figure 1 at the beginning of this paper (see Appendix E for additional evidence consistent with this claim). Given the importance of Brexit to international eco-

nomic and political relations, it is essential to understand whether the relationship between authoritarianism and political behavior should be seen as the result of long standing, socialized values or that an important part of the story is the endogenous adoption of authoritarian values in reaction to economic threat. Second, as we will demonstrate below, Britain's position in the world economy and outstanding data provide an opportunity for a convincing research design for estimating the relationship between economic shocks from trade with China and authoritarian values. We also think it is a case that is likely to generalize to other advanced industrial democracies but leave that question for future research.

Three important clarifications about the research design are essential. First, given abundant accounts of the election of Donald Trump in the US and the Brexit vote in the UK as resulting from a "backlash against globalization," we believe there is inherent interest in understanding whether import competition has, in fact, shaped citizen values in ways that accord with these arguments. In addition, there are strong methodological benefits in studying trade shocks as we think there is a compelling research design for doing so. This does not mean that we think that other economic shocks such as those from financial crises or technological change are less important. Finally, as highlighted in the previous section, to say that authoritarian values are in part endogenous to economic threat does not imply that these values are not also in part the product of socialization and properly thought of as an independent cause of behavior. Authoritarian values can be the product of both and these complimentary determinants must be fully accounted for in interpreting correlations between these values and behavior.

3.1   Data

Our empirical approach requires individual-level survey data that measure authoritarianism. Although there are existing surveys that contain certain measures of authoritarian values, we fielded an original survey so that we could select our preferred multidimensional measures of individual characteristics and most importantly identify the geographic location of each

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respondent in a way that would allow us to assign him or her to local labor markets as defined by the UK's Office of National Statistics. This later assignment is critical for determining the extent to which each individual in our survey faced a labor market that had been substantially impacted by Chinese imports.

Our nationally-representative survey of 1,913 UK adults was implemented by YouGov in July 2017 using matched sampling. As reported in the Appendix, the demographic characteristics of our sample matched closely the overall distribution of such characteristics in the UK population. It is, however, not possible to collect the data necessary to measure local import shocks for Northern Ireland (see Appendix C for discussion). Consequently, the 57 respondents from Northern Ireland are excluded from our analyses.

The main dependent variable in our analysis is a combined index of measures designed to capture authoritarian *aggression, submission*, and *conventionalism (ASC)*. While past scholarship on authoritarianism is replete with multiple suggestions of potential measurement approaches, we follow what we regard as current best practices suggested by recent research in the psychometric literature emphasizing the importance of separating out each of the three subdimensions of authoritarianism identified by Altemeyer (1981). Specifically, we follow the design proposed in Dunwoody & Funke (2016), who develop three sets of six questions for each sub-dimension of authoritarianism.[5] Example questions for the aggression dimension included statements like "It is necessary to use force against people who are a threat to authority" and "Strong punishments are necessary to send a message;" questions

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[5]Given our adaptation of Altemeyer's theoretical definition of authoritarianism, employing his Right-Wing-Authoritarianism (RWA) scale might seem a natural alternative. The RWA scale, however, has, despite its extensive use, received substantial criticisms. One set of critiques has to do with the items being similar to the opinions and behaviors that authoritarianism is suppose to predict. Another set of criticisms are due to the idea the theoretical construct is inherently multidimensional but the RWA measure is single dimensional. See Feldman (2003), Stenner (2005) Duckitt et al. (2010), and Dunwoody and Funke (2016) for detailed discussions. Dunwoody and Funke's ASC scale addresses these concerns by employing items distinct from the policy preferences and outgroup attitudes that authoritarianism might explain and by specifying three separate measures—still following Altemeyer's theoretical definition—that can be analyzed together or separately.

for the submission dimension included "Our leaders know what is best for us" and "We should believe what our leaders tell us;" questions for the conventionalism dimension included "People should respect social norms" and "Traditions are the foundation of a healthy society and should be respected." The entire battery of questions is provided in Appendix B. The order of the statements was randomized. For each statement, there was a five-point scale from "strongly disagree" to "strongly agree;" we take the arithmetic mean of each subset to generate measures of *average aggression*, *average submission*, and *average conventionalism* and subsequently take the average of these three components to generate our baseline outcome ASC.[6]

In order to implement Autor et al.'s (2013) empirical strategy in the British context, it is first necessary to identify local labor markets that correspond to the commuting zones that they use for the United States. The UK's Office of National Statistics employs a similar methodology for defining Travel to Work Areas (TTWAs) based on actual commuting patterns (see Appendix C for further description). We employ 1991 TTWAs and match each respondent's 2016 residence to a 1991 TTWA; the use of 1991 TTWAs is due to the fact that this is the baseline year that we use for measuring changes in Chinese imports by industry.[7] The matching process involved asking respondents to report their outward postcodes and then matching each postcode to a TTWA (or multiple TTWAs) using the boundary files for each provided by the Office for National Statistics (see Appendix D for further description).

We then constructed measures of local labor market exposure to import competition equal to the change in Chinese import exposure per worker in a TTWA with imports weighted in the TTWA by its share of national employment in a given industry (Autor et al. 2013).

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[6]The overall distribution of these data is described in Figure A-1. We also examine each of these sub-indices individually below.

[7]Note that, when we instead contruct our shock measure over time periods beginning in the year 2000, we likewise employ 2000 TTWAs to maintain consistency. As reported in Appendix Table A-6, our primary results of interest are not affected by this alternative coding choice.

More precisely, we define

$$\Delta IPW_{uit} \;\; = \;\; \sum_{j} \frac{L_{ijt}}{L_{ujt}} \frac{\Delta M_{ucjt}}{L_{it}}$$

where L referes to the size of a workforce, M refers to imports, u refers to United Kingdom, c refers to China, i indexes TTWA regions, t indexes year, and j indexes 4-digit UK 1992 SIC industries. In essence, ΔIPW captures regional-specific exposure to rising Chinese imports in particular sectors, weighted by the importance of employment in that sector in a particular region. For example, if the shoe industry saw a large surge in imports from China, regions of the UK in which a greater fraction of employment is found in the shoe sector would record greater Chinese import competition, as captured by higher values of ΔIPW. The employment data by industry and TTWA come from the *ONS Business Register and Employment Survey* (see Appendix C for more details). The import data by sector come from the U.N. Comtrade database.[8] For our baseline specifications, we calculate change in import exposure for the time period 1991-2007 which matches the full period used in Autor et al. (2013).[9] Visual inspection of the distribution of the shock data indicated that it was log-normally distributed; therefore, for our primary specifications we take the natural log of these data and use *ln Δ IPW (1991-2007)* as our main treatment variable.[10] Figure 2 maps the values of Δ *IPW (1991-2007)* by quintiles across Great Britain.

As Autor et al. (2013) argue, the primary determinant of the surge in Chinese imports into western economies was internal reform to the Chinese economy. These reforms were

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[8]Accessible at *https://comtrade.un.org/data/*.

[9]In the Appendix we report results for import shocks constructed over two other time periods (1991-2015, 2000-2007) to address the possibility that differential effects of Chinese import competition could have arisen only following the Great Recession of 2008-2011, as well as to address the possibility that import competition with China could have become particularly pronounced following Chinese accession to the WTO in 2000. As reported in Table A-6, our primary findings are not affected by consideration of alternative time frames.

[10]The full distribution of this measure is provided in Figure A-2. As reported in Table A-4, our main findings of interest are unchanged if we instead use a simple dummy for above-average levels of *IPW*, or employ the untransformed measure directly.
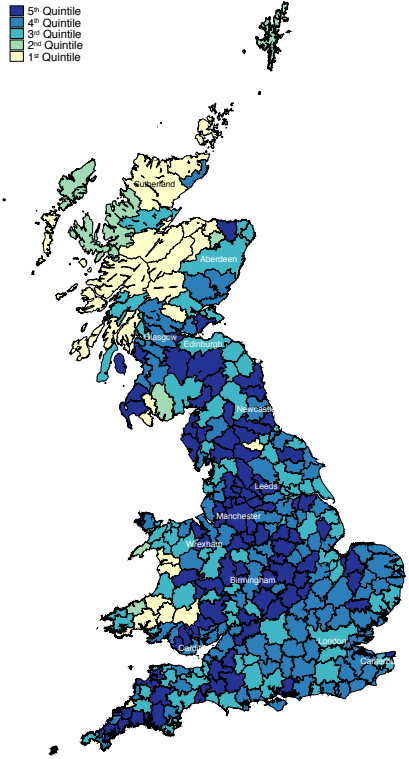
Figure 2: *Change in Chinese Import Penetration 1991-2007.*

taken for domestic economic and political reasons, exogenous to local economic and political conditions in western countries. That said, it is possible that trade policies in the EU, which could be influenced by domestic economic and political conditions in Great Britain, affect the extent of Chinese imports in some sectors and, therefore, the shock to local economies. We think this concern is likely less important in the context of our paper than in the original Autor et al. (2013) study because our dependent variable is individual authoritarianism and trade policy for the UK is made at the EU level. Nonetheless, we follow their research design and construct an instrumental variable analogous to the one they propose for their US analysis. In the Autor et al. (2013) paper, they instrument for their import penetration measure with an equivalent measure based on Chinese imports to other wealthy economies.

We construct the following instrument based on Chinese imports to the United States:[11]

$$\Delta IPW_{ait} \;\; = \;\; \sum_{j} \frac{L_{ijt}}{L_{ujt}} \frac{\Delta M_{acjt}}{L_{it}}$$

where a refers to United States (America), c refers to China, i indexes TTWA regions, t indexes year, and j indexes 4-digit UK 1992 SIC industries. Δ *IPW (US, 1991-2007)* is equal to the change in Chinese imports to the United States per worker over this time period, weighted by each region's share of national employment by sector.[12]

In addition to *ln Δ IPW (1991-2007)*, we constructed a number of control variables that measure respondent socio-demographic and political characteristics and exposure to immigration. *Female* is equal to 1 if the respondent self-identifies as female and 0 otherwise. *Age* is a continuous count of respondent age in years.[13] *Married* is equal to 1 if the individual is currently married and 0 otherwise. *Higher Certification* and *University Degree* are dichotomous indicator variables indicating whether or not the respondent has earned a higher certification or professional qualification (such as teaching or nursing) or a university degree, respectively.[14] The excluded category therefore is individuals who have achieved the GCE

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[11]We do not use a larger set of comparable "other" countries because the likely other comparable cases, for example France, are in the EU customs union with the UK and therefore have common trade policies.

[12]In addition to using Chinese imports to other countries in the construction of their instrumental variable, Autor et al. also lag the regional and industry employment weights by ten years. Here, we continue to use the employment data for 1991 due to data availability. Autor et al. were concerned about the possibility that beginning period employment may have already adjusted in anticipation of China's subsequent integration with the world economy and that this could induce an endogenous relationship between their dependent variables—primarily characteristics of the labor market such as levels of manufacturing employment—and Chinese import penetration. This seems much less of a concern for our dependent variable.

[13]We find very similar results if we include a quadratic term for age, or instead construct a series of dummies for different age ranges.

[14]Individuals were coded as a 1 for *Higher Certification* if they had completed any of the following: GCE A level or Higher Certificate, Scottish Higher Certificate, Nursing qualification, or Teaching qualification (not degree). Individuals were coded as a 1 for *University Degree* if they had completed any of the following: University diploma, University or CNAA first degree, University or CNAA higher degree, or other technical, professional or higher

O-level—approximately equivalent to a high school diploma in the U.S.—or less. To measure exposure to immigration, we measure the levels and changes in the non-UK born population in the local authority district in which the respondent lived. Local authority districts (LAD) are sub-national units that reflect local governmental boundaries. *% Non-UK Born* is equal to the percent of the population in the local authority district not born in the UK in 2015. Δ *% Non-UK Born* is equal to the percentage point change in this quantity from 2001 to 2015. The source for these data are the UK Census (Office of Population Censuses and Surveys 1997; Office for National Statistics 2011; Office for National Statistics, National Records of Scotland 2016).

3.2 Econometric Model

We model authoritarian values as a function of exposure to trade shocks from China's integration into the world economy, individual socio-demographic characteristics, and exposure to immigration. Our baseline model is:

$$ASC_r = \beta_0 + \beta_1 * ln\Delta IPW_i + \mathbf{X_r}\psi + \mathbf{Z_k}\phi + \epsilon_i$$

where r indexes individual respondents, i indexes TTWA regions, and k indexes LAD regions. We initially estimate this equation by ordinary least squares and report standard errors clustered on TTWA regions.[15]

As discussed above, we also estimate this equation using *ln Δ IPW (US, 1991-2007)* to instrument for *ln Δ IPW (1991-2007)*. The theory supporting the relevance of the instrument is that reforms in China led to a surge in its imports in many wealthy countries around the world and the US measure captures this general effect. For the instrument to be valid, we must also assume that changes in Chinese imports to the United States only have an effect

degree.

[15]All reported regression results employ population weights. See Appendix A for more information about the sample and population weights.

on British authoritarianism through their impact on Chinese imports into Great Britain. This could be violated if, for example, British citizens paid attention to and responded to changes in the US economy directly. Given the low levels of information that citizens have about political and economic trends in other countries, this seems unlikely.

4   Estimates of the Effect of Chinese Import Shocks on Authoritarian Values

Table 1 reports our OLS estimates for the *ln Δ IPW (1991-2007)* measure of local Chinese import shocks. Across all specifications, the estimates for *ln Δ IPW (1991-2007)* are positive and statistically significant. Larger import shocks to the local labor market in which an individual lives are positively correlated with greater authoritarian values, and the magnitude of this relationship is substantively important. For example, using the estimate in column 1 of Table 1, a two standard deviation increase in *ln Δ IPW (1991-2007)* is associated with approximately one-third standard deviation increase in *ASC*. We believe that this is an effect of substantial political importance, especially when considered in light of the relationship between authoritarianism and voting for Brexit. Substituting in this one-third of a standard deviation increase in *ASC* into a model predicting voting Leave suggests an increase of approximately three percentage points in support for Brexit – enough to have swung the outcome of a tightly fought election like the referendum on leaving the EU. Estimates for the socio-demographic and political variables are generally consistent with correlations reported in previous research: older, less-educated and married respondents express greater authoritarianism on average.

Given that our theoretical framework emphasizes how threat leads individuals to seek greater order and adopt authoritarian values, it is important to control for other types of threat that may have coincided with economic change due to globalization. Most saliently, Britain received significant numbers of immigrants from Europe and the rest of the world

over this period: total net migration to the UK increased by 654 percent from 1991 to 2015. Net migration rose from 44,000 in 1991 to 332,000 in 2015 (ONS 2016).[16] Previous work has argued that immigrants, especially those from different language, ethnic, or racial groups, are often perceived as a social, political, and in some contexts economic threat that leads order-seeking individuals to adopt more authoritarian values. We investigate this possibility by adding *% Non-UK Born* and *Δ % Non-UK Born* measuring the level and changes in the foreign born population in a local area district to our baseline specification. As reported in Table 1, the estimates for these coefficients are small and statistically insignificant – adding these measures has no impact on the magnitude of our estimates for *ln Δ IPW (1991-2007)*. We emphasize this latter point but also note that our analysis is not designed to determine the possible effect of immigration on authoritarian values and caution against focusing on our null results for the immigration coefficients.

There are several alternative covariates that we do not include in our baseline specifications for fears of introducing post-treatment bias. However, we demonstrate here the robustness of our general results to their inclusion. In Appendix Table A-4, we introduce measures for *Personal Income*,[17] local *Inequality, Right Ideology*,[18] as well as dummies for whether respondents identified as *Working Class* or *Middle Class.* The results reported in Table A-4 indicate being on the right of the ideological spectrum is positively correlated with authoritarian values but including ideology has little impact on our estimates for *ln Δ IPW (1991-2007).* This specification only makes sense if one views political ideology as predeter-

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[16]Net migration is the number of immigrants minus the number of emigrants. The Office for National Statistics produces estimates of international migration based on the International Passenger Survey, a survey of passengers arriving and departing the UK. Someone arriving to the UK intending to stay for 12 months or more is an immigrant and someone departing the UK for 12 months or more is an emigrant.

[17]These are coded by dividing the sample population into income terciles to generate measures of *Lower income* for those respondents who report personal annual income less than £10,000, and *Upper income* for respondents who report personal annual income greater than £20,000.

[18]*Right Ideology* is on an 11-point left-right scale ranging from 0 to 10. The exact wording of the questions was "In politics people sometimes talk of 'left' and 'right.' Where would you place yourself on this scale, where 0 means the left and 10 means the right?".

VARIABLES	(1) ASC	(2) ASC	(3) ASC
ln Δ IPW (91-07)	0.082***	0.068***	0.067***
	(0.025)	(0.021)	(0.023)
Female		0.027	0.027
		(0.029)	(0.028)
Age		0.005***	0.005***
		(0.001)	(0.001)
Higher Cert.		-0.106***	-0.106***
		(0.039)	(0.039)
University		-0.235***	-0.233***
		(0.032)	(0.031)
Married		0.104***	0.103***
		(0.023)	(0.024)
% non-UK born			-0.001
			(0.001)
Δ % non-UK born			0.002
			(0.002)
Observations	1,856	1,793	1,793
R-squared	0.01	0.13	0.13
TTWAs	241	239	239

*** p<0.01, ** p<0.05, * p<0.1

Table 1: *Chinese Import Shocks and Authoritarian Values in the United Kingdom, OLS Estimates, 1991-2007.* The table reports the results of OLS regressions of the variable *ASC* on *ln Δ IPW (1991-2007)* and various control variables. The table reports OLS coefficient estimates and robust standard errors clustered by TTWA in parentheses.

mined. It seems more likely that it is, in part, a consequence of changing interests and values like authoritarianism. Somewhat surprisingly, once a control for ideology is included, we find that female respondents score slightly higher on authoritarian values.[19] Most importantly, when introducing these additional controls either singly or jointly, we still continue to find a strongly significant relationship between *ln Δ IPW (1991-2007)* and *ASC*.

Our OLS estimates suggest a strong positive partial correlation between local import

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[19]While local inequality and self-identification as middle class are correlated with ASC when introduced individually, these results do not survive inclusion in the full set of additional robustness covariates.

shocks and authoritarian values. As discussed above, one concern about giving these estimates a causal interpretation is that the magnitude of Chinese imports are a function of both changes in the Chinese economy and demand factors in the UK. These demand factors in turn may be related to or even driven by differences in authoritarian values, although the direction of these potential biases is unclear. For example, places with greater authoritarianism might successfully lobby for more trade protection which would lead to lower imports or such places might be less likely to adopt new technologies which allow firms in relatively wealthy countries like the UK to compete with Chinese firms which would lead to higher imports in these regions.

Our IV estimates reported in Table 2 address this problem by instrumenting for Chinese imports by industry into the UK with Chinese imports by industry into the United States. This instrumental variables approach is valid so long as US-China trade policy is exogenous to local distributions of individual values across the UK, and so long as such values are not influenced by US imports of Chinese goods other than through the impact of Chinese import competition on local labor markets. Given extant research on public opinion on trade which suggests that many individuals lack well formed beliefs about trade even in their own country, let alone in others, this exclusion restriction seems likely to hold.[20] The first stage results are reported in columns 1, 3 and 5 and indicate our instrument is highly correlated with our potentially endogenous regressor with an F-statistic for a test of weak excluded instruments of over 1300 in all cases. The IV estimates for our key coefficient of interest, *ln Δ IPW (1991-2007)*, remain positive and statistically significant, with hardly any variation in effect magnitude across the estimation approaches, reinforcing the view that Chinese imports into regions of the UK were likely exogenous to local trends in authoritarianism. We interpret this as credible evidence of a causal relationship between local area economic shocks and authoritarian values.

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[20]See, e.g., Guisinger (2017), Rho & Tomz (2017).

VARIABLES	(1) ASC	(2) ASC	(3) ASC	(4) ASC	(5) ASC	(6) ASC
ln Δ IPW (US, 91-07)	0.993***		0.988***		0.981***	
	(0.027)		(0.027)		(0.026)	
ln Δ IPW (91-07)		0.081***		0.069***		0.067***
		(0.026)		(0.023)		(0.024)
Female			0.002	0.027	0.006	0.027
			(0.010)	(0.029)	(0.010)	(0.028)
Age			-0.000	0.005***	-0.000	0.005***
			(0.000)	(0.001)	(0.000)	(0.001)
Higher Cert.			0.003	-0.106***	0.003	-0.106***
			(0.015)	(0.039)	(0.015)	(0.039)
University			-0.016	-0.235***	-0.010	-0.233***
			(0.012)	(0.032)	(0.012)	(0.031)
Married			0.005	0.104***	0.004	0.103***
			(0.010)	(0.023)	(0.010)	(0.024)
% non-UK born					-0.005***	-0.001
					(0.001)	(0.001)
Δ % non-UK born					0.001	0.002
					(0.001)	(0.002)
Observations	1,856	1,856	1,793	1,793	1,793	1,793
R-squared	0.88	0.01	0.86	0.13	0.89	0.13
Weak ID F stat	1328	1328	1334	1334	1423	1423

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2: *Chinese Import Shocks and Authoritarian Values in the United Kingdom, IV Estimates, 1991-2007.* The table reports the first and second stage results for IV regressions of the variable *ASC* on *ln Δ IPW (1991-2007)* and various control variables. The table reports coefficient estimates and robust standard errors clustered by TTWA in parentheses.

5 Interpretation

5.1 Dissaggregating ASC into sub-inidices

To this point, we have provided evidence that regional shocks from expanded import competition with China are associated with higher authoritarian values on average. Yet, drawing on recent psychometric work, our discussion above emphasized that several theoretical accounts of authoritarianism have suggested that there are three important sub-dimensions of this bundle of values: authoritarian aggression, submission, and conventionalism. As noted previously, there are reasons to suspect that any of these three dimensions could be at play in a linkage between economic shocks and authoritarianism. If economic troubles encourage individuals to submit to authorities who can provide solutions during tough times, we might expect Chinese import shocks to be associated with rising submission to authorities. Alternately, if downturns in the economy drive individuals to lament for "the way things were," we would expect to find that greater trade competition should increase respondent preferences for conventionalism. Finally, if worsening labor markets decrease respondent economic capacity, thereby reducing their ability to achieve economic goals, this could trigger a sense of frustration that has often been linked in prior work with heightened aggression as a response.

Although any or all of these mechanisms might be at play, which is actually at work is fundamentally an empirical question. To assess which of these mechanisms is driving our observed association between import shocks and authoritarian values, we re-estimate our baseline specifications—using both OLS and IV—on each of the sub-indices used to generate our average *ASC* measure. As shown in Table 3, we recover strongly significant evidence for a linkage between negative economic shocks and authoritarian aggression – Columns 1 and 2 show that *ln Δ IPW (1991-2007)* is a highly significant predictor of greater average aggression scores. In contrast to the strong results for aggression, we find no significant association between trade shocks and authoritarian submission, as reported in columns 3 and

VARIABLES	(1) Aggr. OLS	(2) Aggr. IV	(3) Subm. OLS	(4) Subm. IV	(5) Conv. OLS	(6) Conv. IV
ln Δ IPW (91-07)	0.104***	0.106***	0.036	0.041	0.060*	0.054
	(0.030)	(0.031)	(0.027)	(0.030)	(0.034)	(0.035)
Female	-0.013	-0.013	0.024	0.024	0.070**	0.070**
	(0.041)	(0.041)	(0.035)	(0.035)	(0.034)	(0.034)
Age	0.006***	0.006***	-0.000	-0.000	0.011***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.207***	-0.207***	-0.023	-0.023	-0.088*	-0.088*
	(0.055)	(0.055)	(0.057)	(0.057)	(0.052)	(0.051)
University	-0.356***	-0.356***	-0.113**	-0.112**	-0.229***	-0.230***
	(0.049)	(0.048)	(0.047)	(0.047)	(0.033)	(0.033)
Married	0.113***	0.113***	0.106***	0.106***	0.089**	0.089**
	(0.035)	(0.035)	(0.031)	(0.031)	(0.039)	(0.039)
% non-UK born	-0.004**	-0.004**	-0.001	-0.001	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Δ % non-UK born	0.005**	0.005**	0.002	0.002	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,793	1,793	1,793	1,793	1,793	1,793
R-squared	0.111	0.111	0.016	0.016	0.129	0.129
TTWAs	239	239	239	239	239	239

*** p<0.01, ** p<0.05, * p<0.1

Table 3: *Chinese Import Shocks and the Components of Authoritarianism in the United Kingdom, OLS & IV Estimates, 1991-2007.* The table reports the results of OLS and IV regressions of the variables *ASC Aggression*, *ASC Submission*, and *ASC Conventionalism* on *ln Δ IPW (1991-2007)* and various control variables. The table reports coefficient estimates and robust standard errors clustered by TTWA in parentheses.

4. Finally, while our shock measure is weakly associated with authoritarian conventionalism when estimated using OLS in Column 5, this effect becomes no longer significant under instrumental variables estimation in Column 6. We also note that, while our findings for aggression are strongly robust to alternative functional forms for our treatment variable, we do not find support for a relationship between *IPW* and conventionalism using alternative specifications. We take this to suggest that our observed relationship between trade shocks and authoritarianism is driven almost entirely by higher rates of authoritarian aggression among respondents in areas more exposed to Chinese import competition.

5.2 Interpretation: Labor market consequences of import competition

Above, we have argued that economic threats are likely to lead individuals to adopt authoritarian values, and have demonstrated that respondents from regions of the UK that faced greater import competition from Chinese goods score systematically higher on our authoritarianism index. In investigating the three subdimensions of our main outcome, we discovered that this relationship appears driven by higher rates of authoritarian aggression in particular among respondents in more heavily exposed places. The key frustration-aggression mechanism which we argue generates this effect requires that Chinese imports had a negative effect on labor market outcomes in a way that had the potential to block individuals' anticipated outcomes as economic providers and consumers. While Autor et al.'s (2013) work has demonstrated substantial deleterious effects of Chinese import competition on commuting zones in the US, we evaluate in this section the effect of the "China shock" on labor market outcomes in our data for the UK.

To substantiate the labor market effects of Chinese imports, we first consider the impact of $ln \Delta IPW$ on manufacturing employment. Given advantages in manufacturing production that have driven it to become the "world's workplace," Chinese imports into the UK unsurprisingly come predominantly from manufacturing industries. Given standard models of trade competition, the most natural place to look for labor market impacts of rising imports would therefore be in the share of the labor force employed in manufacturing. We construct the variable Δ *% Manufacturing Employment* equal to the percentage change of employment in the manufacturing sector by local authority district (LAD).[21] Data on manufacturing employment come from the Business Register and Employment Survey (BRES), which is the UK's official source of employee and employment estimates by detailed geog-

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[21]Theoretically, analysis at the TTWA level tracks more directly onto Autor et al.'s (2013) approach using commuting zones, and our ΔIPW measures are constructed at this level. However, geographic data on employment and wages in the UK are predominantly available by LAD, and so we match TTWAs to LADs in order to implement the analysis.

VARIABLES	(1) Δ %Manuf. 91-07	(2) Δ %Manuf. 91-07	(3) Med. wage '07	(4) Med. wage '07
ln Δ IPW (91-07)	-3.857***	-4.078***	-28.770***	-22.957***
	(0.275)	(0.289)	(5.892)	(6.174)
Estimation	OLS	IV	OLS	IV
Observations	380	380	369	369
R-squared	0.342	0.341	0.061	0.059

*** p<0.01, ** p<0.05, * p<0.1

Table 4: *Labor Market Consequences of Chinese Import Shock, by LAD 2011, OLS & IV Estimates.* The table reports the results of OLS and IV regressions of the variables Δ *% Manufacturing Employment* and *Median Wages* on *ln Δ IPW (1991-2007)*. The table reports coefficient estimates and robust standard errors in parentheses.

raphy and industry (ONS 2017). As our primary treatment *ln Δ IPW (91-07)* spans the period 1991-2007, we construct changes in manufacturing employment to match the time period of our trade shocks.[22] Column 1 of Table 4 reports results of OLS estimation of the effect of Chinese imports on manufacturing employment for the period 1991-2007; column 2 reports results instead employing our instrumental variable. As can be seen, in accordance with the findings of Autor et al. (2013) and others, using either estimation approach we identify a significant impact of Δ *IPW* on Δ *% Manufacturing Employment*, with manufacturing employment declining in regions more affected by import competition. If we estimate the size of this effect based on the coefficients reported in column 2, this suggests that a two standard deviation increase in *ln Δ IPW* decreases manufacturing employment by a full standard deviation, or approximately 4.8 percentage points.

Prior work in the US context has suggested that the labor market consequences of Chinese import competition are not limited only to the manufacturing sector; while this sector may bear the initial brunt of trade shocks, the local labor market is also expected to suffer as falling wages and rising unemployment within previously major employers begins to ripple

[22]In unreported further results, we find very similar effects when instead considering alternate time periods for our treatment and labor market outcomes.

throughout the broader economy. To demonstrate this more general labor market effect, we turn next to average wages in a given locality. Our wage data come from the Annual Survey of Hours and Earnings (ONS, 2017) and are described more completely in the Appendix. The wage data refer to weekly gross pay before tax, national insurance or other deductions, and excludes payments in kind (Statistical Bulletin, Annual Survey of Hours and Earnings 26 October 2016). The variable *Median Wages* (in real GBP) for a given year is the 50th percentile value of gross pay in the LAD in which the respondent lives. Again, to match the timing of our import shocks, we estimate the impact of *ln Δ IPW (1991-2007)* on *Median Wages* in 2007;[23] column 3 reports OLS results and column 4 reports IV results. In both, we demonstrate significant negative consequences for overall wage levels in localities more heavily exposed to Chinese imports, as should be expected if the downturn in regional manufacturing has negative spillover effects on the local economy more generally and consistent with prior work on the labor market consequences of Chinese import competition. Thus, looking either at manufacturing employment or average wages, we recover significant evidence that the "China shock" led to deteriorating local labor market outcomes in the UK in a way that could initiate the frustration-aggression mechanism.

5.3   Challenges to interpretation: Sorting

Yet, even finding that Chinese imports did in fact have consequences for local labor markets, can we be sure that the high level of authoritarian values in these regions that we document is due to value change induced by deteriorating labor market performance? What if, rather than localized labor market shocks leading to increased authoritarianism in respondents, instead individuals sorted themselves geographically by authoritarian traits following labor market dislocations? This might be particularly concerning if, for example, authoritarian individuals were less likely to relocate to different regions following economic downturns,

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[23]In unreported further results, we recover very similar findings when using alternate time periods for our shock and wage data.

whereas less authoritarian individuals might be more willing to move to follow new employment. Over time, such a process could hypothetically lead to more authoritarian types being "sorted" into regions that faced greater downturns due to trade shocks, but this would not be due to the adoption of authoritarian values in response to economic threat, as we argue. Similarly, if authoritarian values are correlated with, say, skill type, and if lower-skill individuals are more likely to have clustered in regions with greater manufacturing employment prior to being exposed to Chinese imports, we might again observe patterns similar to those we report that are not the result of changing individual authoritarian values.

We consider multiple approaches to address these concerns about ex ante and ex post sorting. First, in order to address worries that pre-treatment distributions of authoritarian individuals could be driven by regional concentration of manufacturing, we include several measures of start-of-period manufacturing employment across regions in the UK; if this ex ante sorting is driving our findings of higher authoritarian values in regions exposed to Chinese imports, then direct inclusion of manufacturing employment prior to the China shock should remove any effect of $ln\Delta IPW$. Column 1 of Table 5 reports our results after including a measure of the (logged) number of persons employed in manufacturing in 1991, by LAD region; inclusion of this pre-treatment regional manufacturing measure, however, is not itself significant and has no appreciable impact on the magnitude or significance of our primary treatment variable. This holds true if we instead introduce dummies for low or high-manufacturing employment regions in Column 2,[24] or a measure of the change in manufacturing employment over time in column 3. Given the stability of the effect of $ln\Delta IPW$ on authoritarian values across these specifications, we believe it is unlikely that our primary effect of interest is the result of pre-treatment regional sorting by individuals.

We employ two additional strategies to address concerns over ex post regional sorting. First, we draw on data on reported and actual respondent mobility. For individuals that have been part of the YouGov respondent pool for many years, we generate a measure of

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[24] "Low" manufacturing regions were those that fell in the bottom tercile of percentage employment in manufacturing, while "high" regions were those that fell in the upper tercile.

whether that respondent has moved to a different postcode over the course of their time in the panel. If the observed association between import shocks and higher authoritarianism were the result of, say, less authoritarian respondents moving to more dynamic (and less trade competing) regions of the country, while more authoritarian respondents were "stuck" in areas with declining economies, we would expect to find that the effect of $ln \Delta IPW$ on authoritariansism was less evident among movers than non-movers – more precisely, the coefficient on the interaction between respondent mobility and $ln \Delta IPW$ should be negative. Column 1 of Table 6 reports results from OLS regression of ASC on $ln \Delta IPW$ and its interaction with a dummy for whether a respondent has *changed postcode* according to Yougov data. As can be seen, we do not find that mobility itself is significantly associated with authoritarian values, nor do we find that the effect of trade shocks is significantly different after conditioning on respondent mobility. We take this as initial evidence that our primary finding seems less likely to be the result of regional sorting by respondents; however, we note that this approach has drawbacks insofar as the earliest entry of respondents in our sample to YouGov's pool occurs in 2009, and that sorting by respondents could have occurred prior to joining the pool. To address this concern, we separately asked respondents as part of our survey whether they had moved homes in the past 20 years, and if they answered affirmatively, whether any of these moves were to or from "places outside your current area." We combine this information to generate a dummy for whether respondents report having *moved in last 20 years*; inclusion of this more long-term measure of mobility along with its interaction with our trade shock measure in Column 2 produces very similar findings.

Beyond looking for differential treatment effects among our sample depending on move history, our second approach to evaluate whether our results may be driven by differential mobility trends is to consider the relationship between our shock measure and various regional-level measures of population. At a basic level, the sorting explanation for our findings should suggest that, as low-authoritarian individuals leave areas faced with economic downturn as a result of import competition, we should expect that regions facing greater

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shocks should experience a loss of population over time. However, it is certainly not the case that regions exposed to greater import competition demonstrate strong evidence of depopulation, as would be suggested by this account. In Table 7, we recover no significant relationship between *ln Δ IPW (91-07)* and several measures of population size. More precisely, column 1 reports results from an IV regression of (logged) *Total Population* in 2007 on *ln Δ IPW (1991-2007)*, while column 2 reports regression results for *Change in Total Population* from 1991-2007. While the coefficient is negative in each, in no case do we find that regions exposed to more severe Chinese import competition were systematically more likely to lose population (or, alternately, grow more slowly), as would be expected if non-authoritarian types were relocating to less exposed areas.

Finally, moving beyond population statistics generally, we collected UK Census data that identify, by LAD, the number of individuals that moved away from a particular region in 2011.[25] Again, if regions struck by trade shocks were more likely to see non-authoritarian individuals move away in search of new employment, we would expect to find that out-migration should be positively correlated with our China shock measure. However, as can be seen in columns 3 and 4 of Table 7, when we regress out-migration on *ln Δ IPW (1991-2007)*, we recover a significant *negative* association; this holds true whether we take the raw number of out-migrants (in column 3), or instead scale the number of out-migrants by the population of the LAD in 2007 (in column 4). These findings are quite difficult to square with an account arguing that import shocks lead non-authoritarians to migrate away from regions facing economic downturn; instead, this is more consistent with some accounts of migration in the US that emphasize that economic movement towards new jobs largely occurs during economic expansions, whereas out-migration tends to largely cease during recessions since moving is costly. In additional results reported in the Appendix,[26] we continue to find that outmigration is negatively correlated with regional Chinese import competition even

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[25]Note that 2011 was the most recent Census, and thus are the most recent migration data that we have obtained.

[26]See Table A-8.

after disaggregating migrants across 7 different levels of skill type, suggesting that the average effect on outmigration reported in Table 7 is not masking heterogeneous effects by skill type that might still drive ex post sorting. We believe these findings help alleviate the concern that our established relationship between import competition and authoritarianism is driven by "sorting" by types of individuals into different regions, and is more consistent with our theoretical account of individual authoritarian values changing in response to localized economic threats.

6   Conclusion

This paper provides novel evidence causally linking economic threat to authoritarian values. Economic threat is measured using Chinese imports. The dramatic growth in Chinese imports occurred primarily because of China's internal reforms and consequently provides an exogenous shock to local labor markets. We exploit this shock to estimate the causal effect of economic threat on individuals' authoritarian values. Using an original survey fielded in the United Kingdom, we find that individuals living in regions where the local labor market was more substantially affected by imports from China have significantly more authoritarian values.

Our evidence shows that economic factors, like import shocks, can shape individual values. This finding sheds new light on the determinants of policy preferences and political behavior. Previous research seeking to explain support for populist political parties or a variety of political attitudes and policy opinions typically focuses on either economic self-interests or non-economic values, like authoritarianism. Many studies pit these two explanations against each other and work to determine which has the larger effect. Our study suggests that such efforts are at best incomplete and very well may suggest incorrect accounts of what explains opinion and behavior. One has to ask: what accounts for the values that we observe? In the case of authoritarianism, an important determinant is contemporaneous economic shocks.

VARIABLES	(1) ASC	(2) ASC	(3) ASC
ln Δ IPW (91-07)	0.056**	0.059**	0.056**
	(0.026)	(0.025)	(0.026)
Manuf. employees (log, 1991)	0.018		
	(0.020)		
Low manuf. (%, 1991)		-0.007	
		(0.034)	
High manuf. (%, 1991)		0.014	
		(0.030)	
Δ % Manuf. emp. (1991-2015)			-0.002
			(0.003)
Female	0.028	0.028	0.028
	(0.029)	(0.029)	(0.029)
Age	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.106***	-0.106***	-0.107***
	(0.039)	(0.039)	(0.039)
University	-0.232***	-0.232***	-0.233***
	(0.031)	(0.031)	(0.031)
Married	0.104***	0.103***	0.103***
	(0.024)	(0.024)	(0.024)
% non-UK born	-0.001	-0.001	-0.001
	(0.001)	(0.002)	(0.001)
Δ % non-UK born	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)
Observations	1,793	1,793	1,791
R-squared	0.130	0.130	0.130
TTWAs	239	239	239

*** p<0.01, ** p<0.05, * p<0.1

Table 5: *Chinese Import Shocks, Manufacturing Employment, and Authoritarianism in the United Kingdom, OLS Estimates, 1991-2007.* The table reports the results of OLS regressions of the variable *ASC* on *ln Δ IPW (1991-2007)* and several measures of regional manufacturing employment at the start of our period, as well as various control variables. The table reports coefficient estimates and robust standard errors clustered by TTWA in parentheses.

| | (1) | (2) |
VARIABLES	ASC	ASC
ln Δ IPW (91-07)	0.061**	0.055*
	(0.024)	(0.031)
Changed postcode	0.081	
	(0.470)	
Changed PC X IPW	0.021	
	(0.068)	
Moved last 20 yrs		0.139
		(0.312)
Moved X IPW		0.026
		(0.044)
Female	0.026	0.027
	(0.028)	(0.029)
Age	0.005***	0.005***
	(0.001)	(0.001)
Higher Cert.	-0.105***	-0.106***
	(0.039)	(0.039)
University	-0.231***	-0.226***
	(0.032)	(0.030)
Married	0.103***	0.100***
	(0.023)	(0.023)
% non-UK born	-0.001	-0.001
	(0.001)	(0.001)
Δ % non-UK born	0.002	0.002
	(0.002)	(0.002)
Observations	1,793	1,793
R-squared	0.132	0.132
TTWAs	239	239

*** p<0.01, ** p<0.05, * p<0.1

Table 6: *Chinese Import Shocks, Individual Mobility, and Authoritarianism in the United Kingdom, OLS Estimates, 1991-2007.* The table reports the results of OLS regressions of the variable *ASC* on *ln Δ IPW (1991-2007)* and two separate measures of respondent geographic mobility, as well as various control variables. The table reports coefficient estimates and robust standard errors clustered by TTWA in parentheses.

VARIABLES	(1) Log pop.	(2) Δ Log pop.	(3) Out migrants (#)	(4) Out migrants (% pop.)
ln Δ IPW (91-07)	-0.019	-0.009	-504.600**	-0.002***
	(0.055)	(0.006)	(206.162)	(0.001)
Observations	380	380	380	380
R-squared	0.001	0.010	0.014	0.038

*** p<0.01, ** p<0.05, * p<0.1

Table 7: *Regional Mobility and Chinese Import Shock, by LAD 2011, IV Estimates.* The table reports the results of IV regressions of the variables *Total Population, Change in Total Population, Out Migrants, Number,* and *Out Migrants, % Population* on *ln Δ IPW (1991-2007).* The table reports coefficient estimates and robust standard errors in parentheses.

Understanding the origins of authoritarian values is important because they have the potential to fundamentally alter the political cleavages in advanced industrial democracies (Inglehart and Norris 2016, Hetherington and Weiler 2009, MacWilliams 2016). Our study suggests that economic change may be one important source of the growth in authoritarian values. There is substantial potential for this trend to continue. To the extent that increasing numbers of individuals lose their jobs, fear losing their jobs, or otherwise feel left behind because of competition from foreign imports, offshoring, and technological change, there is the potential that they will adopt authoritarian values to cope with rising anxiety from these transformations.

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Appendix for "The Economic Origins of Authoritarian Values: Evidence from Local Trade Shocks in the United Kingdom"

A   Sample

The survey was conducted in July 2017 by YouGov. The respondents were matched to a sampling frame based on gender and age. The frame was constructed by stratified sampling from the 2015 Eurobarometer. The matched cases were then raked to known quantities for age by gender and vote choice in 2015 by region, and estimates for social grade and attention to politics. Weights were applied to remove remaining imbalances after the matching procedure; the weights were trimmed to a maximum value of 7. Table A-1 shows the distributions of the sociodemographics in the population, the weighted sample, and the raw sample.

- Interview period: July 2017

- Sample size: 1,913

- Source of data on population socio-demographics: 2015 Eurobarometer, 2013 ONS (Labour Force Survey)

- Weights range from 0.001 to 7.001, with a mean of 1 and a standard deviation of 0.57.

Group	Population	Weighted Sample	Raw Sample
Gender: Male	49.1	49.4	45.7
Gender: Female	50.9	50.6	54.3
Age: 18-34	31.6	28.2	25.4
Age: 35-54	33.0	33.5	33.7
Age: 55+	35.4	36.8	38.9
Graduates:	38.0	40.7	45.3
A Levels:	21.0	19.4	19.5
Other Qualifications:	31.0	29.4	25.5
No Qualifications:	9.0	8.5	6.5

Table A-1: *Distribution of Socio-demographics in the Survey Sample and the Population.* The table shows the distributions of socio-demographics in the population, the weighted sample, and the raw sample. See text for data sources on the population socio-demographics.

B   ASC component questions

Dunwoody & Funke (2016) propose a battery of 18 questions to capture three distinct subdimensions of authoritarianism that they call "aggression, submission, and conventionalism." Each dimension is measured by taking the average level of support across six questions, three

of which are protrait and three of which are contrait and are therefore reverse coded. The exact set of questions for each dimension is provided below:

Authoritarian Aggression

- Strong force is necessary against threatening groups.

- It is necessary to use force against people who are a threat to authority.

- Police should avoid using violence against suspects.*

- People should avoid using violence against others even when ordered to do so by the proper authorities.*

- Using force against people is wrong even if done so by those in authority.*

- Strong punishments are necessary in order to send a message.

Authoritarian Submission

- We should believe what our leaders tell us.

- Our leaders know what is best for us.

- People should be critical of statements made by those in positions of authority.*

- People in positions of authority generally tell the truth.

- People should be skeptical of all statements made by those in positions of authority.*

- Questioning the motives of those in power is healthy for society.*

Conventionalism

- People emphasize tradition too much.*

- Traditions are the foundation of a healthy society and should be respected.

- It would be better for society if more people followed social norms.

- Traditions interfere with progress.*

- People should challenge social traditions in order to advance society.*

- People should respect social norms.

* = reverse coding.

C Contextual Data Sources

The main contextual data in this study are measures of trade shocks to local labor markets. We adopt the definition of a local labor market in the UK used by the Office of National Statistics (ONS). The ONS defines Travel to Work Areas (TTWAs) as self-contained, sub-regional labour markets where most people both live and work (Coombes and Bond 2007). TTWAs are analogous to the Commuter Zones (CZs) in the United States which are used in Autor et al.'s (2013) analysis of the impact of Chinese trade shocks on local labor market outcomes in the United States. TTWAs are constructed for the ONS by economic geographers based on a statistical analysis of census commuting data. The basic criteria used to construct TTWAs is that: at least 70 per cent of those who live in the area also work there and 70 per cent of those who work in the area also live there; and the working population as measured by the Census must be at least 20,000. In areas of low population density these criteria were amended so that the minimum working population of the TTWA was 3,500 and the self-containment criteria increased to at least 75 per cent (Source: Guide to Regional and Local Labour Market Statistics `http://webarchive.nationalarchives.gov.uk/20110218135832/http:/statistics.gov.uk/downloads/theme_labour/Guide_regional_local_lms.pdf`). TTWA boundaries are non-overlapping and internally contiguous covering all of Great Britain. In 1991, there were 297 TTWAs in Great Britain. Note that TTWAs have subsequently been updated but the key initial employment levels by industry and local labor market that we need are for 1991 and so we use 1991 TTWAs.

As discussed in the main text, our measure of local labor market exposure to Chinese import competition, following Autor et al. (2013), is the change in Chinese import exposure per worker in a TTWA, where imports are apportioned to the TTWA according to its share of national employment in each industry. Information on industry employment by TTWAs is derived from the ONSs Business Register and Employment Survey (BRES).

The Business Register and Employment Survey (BRES) publishes employment estimates at detailed geographical and industrial levels. BRES collects comprehensive employment information from businesses in England, Scotland and Wales, representing the majority of Great Britain's economy. Due to the survey's large sample size (approximately 80,000 businesses), BRES is able to produce good quality estimates for detailed breakdowns by industry and geography. Because it is a survey of business, the quality of the industry data is high and the BRES data are recommended in preference to industry data from household surveys. Detailed BRES data are published on the National Online Manpower Information Service (NOMIS) website. Access to the NOMIS data is restricted to holders of Chancellor of the Exchequers Notices. The main aim of these restrictions is to protect the identity of individual businesses, which have made statistical returns, from being disclosed or otherwise deduced. Our results were produced using detailed disclosive data obtained under a Notice. As a result, the publically available BRES data, which are rounded and excluded to ensure non-disclosure, will not produce exactly the results reported here. The BRES data published on NOMIS exclude Northern Ireland. Northern Ireland is smaller than England, Scotland and Wales, and as a result the issues of identifiable data and potential disclosure are far greater (Source: Email communication ONS staff March 8, 2017). For this reason, the Northern Ireland Statistics and Research Agency does not allow their microdata to be published on NOMIS. Neither would they provide us access to their detailed employment

data. Therefore, we exclude Northern Ireland from our sample. Using the BRES data, we compile employment data by TTWAs at the 4-digit UK 1992 SIC code. The Standard Industrial Classification (SIC) codes classify business establishments by the type of economic activity in which they are engaged. The 4-digit UK 1992 SIC codes are identical to NACE Rev 1. There are 503 unique 4-digit SIC classes spanning 17 sections (i.e. sectors).

We measure average wages and income inequality using data from the UKs Annual Survey of Hours and Earnings (ASHE), which is the most detailed and comprehensive source of earnings information in Great Britain. ASHE is based on a 1% sample of employee jobs, drawn from HM Revenue and Customs Pay As You Earn (PAYE) records. We construct measures of average wages and income inequality using data on weekly earnings for full-time employees. Full-time employees are defined as those who work more than 30 paid hours per week or those in teaching professions working 25 paid hours or more per week. The earnings information relates to gross pay before tax, national insurance or other deductions, and excludes payments in kind. Using these earning measures, for average wages, we use the 50th percentile. For our inequality variable, we calculate the ratio of the 80th percentile to the 20th percentile. We construct these earnings measures for respondents' local authority districts (LAD). Local authority districts reflect local government boundaries. Although LADs do not necessarily correspond with self-contained local labor markets, they do reflect respondents' neighbourhoods. In greater London, for example, there are 33 local authority districts. Revisions have been made in local authorities areas over time (Coombes and Bond 2007). We carefully account for these changes using boundary files provided by the Office for National Statistics (`http://geoportal.statistics.gov.uk/`) to ensure that respondents are matched to the correct neighbourhood.

Immigration data come from the UK census (Office of Population Censuses and Surveys 1997; Office for National Statistics 2011; Office for National Statistics, National Records of Scotland 2016). These data report the country of birth for residents by local authority districts. We calculate the percent of the local authority district's residents born outside of the United Kingdom. The percentage of non-UK born persons varies greatly across Great Britain. In 2011, the largest share of immigrants (42.4%) was in the central London borough of Newham; the smallest (1.04%) was in the Welsh borough Blaenau Gwent.

D Matching Contextual Data to Survey Data

Our contextual data is collected at the level of Travel to Work Areas (TTWA) and Local Authority Districts (LAD). To match these to our individual survey respondents, we asked each respondent to report their outward postcode. In the United Kingdom, there are 2,983 live postcode districts identified by the outward postcode and, therefore, we have fairly precise geographic information for each respondent. For both TTWAs and LADs, the matching is accomplished using boundary files for the outward postcodes and TTWAs/LADs provided by the Office for National Statistics (http://geoportal.statistics.gov.uk/). For most outward postcodes, a unique TTWA or LAD could be assigned. If the outward postcode is located in more than one TTWA or LAD, we use a weighted average based on the proportion of the outward postcode in each TTWA or LAD.

E   Authoritarianism and Political Behavior in Great Britain

Above we have argued that authoritarian values are a strong predictor of political behavior. Here, we demonstrate that—in the UK context in which our study is based—authoritarianism is strongly associated with voting behavior on the most important recent political event: the "Brexit" referendum to decide whether the UK should remain in the European Union. To test this, we asked our survey respondents whether they had voted in the Brexit referendum; if they had, we asked whether they had voted to leave or remain in the EU. We use this answer to create our outcome, *Voted Leave*, which takes a value of one if respondents voted in the referendum to leave the European Union and zero otherwise.[27]

In column 1 of Table A-2, we report results of a simple bivariate OLS regression of *Voted Leave* on our measure of authoritarianism, *ASC*; the positive coefficient on authoritarianism is highly significant and substantively meaningful. In column 2 we introduce our additional set of demographic control variables, and still continue to find that authoritarianism remains robustly associated with voting to leave the EU. Interpreted in the context of a linear probability model, our results in column 2 suggest that a one unit increase in the authoritarianism measure (scaled from 1-5) is associated with an increase in the likelihood of voting for Brexit of approximately 22 percentage points. Columns 3 through 8 reported analogous results for each of the three sub-indices of the ASC measure. The estimates suggest that voting for leave is strongly positively associated with both the aggression index and the convention index. While we believe that political ideology and partisan identity may in part be affected by the dynamics of authoritarianism, and thus do not include them in our initial regressions due to concerns over introducing post-treatment regressors, we demonstrate in Table A-3 that our measure of authoritarianism remains positively and significantly related to the Brexit vote even after introducing controls for ideology and partisanship.

The evidence in this section establishes that authoritarian values are correlated with important public behavior. Our paper suggests a more nuanced interpretation of these correlations in light of the fact that they can be influenced by contemporary economic shocks.

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[27]Respondents that did not report voting in the referendum are dropped.

VARIABLES	(1) Leave	(2) Leave	(3) Leave	(4) Leave	(5) Leave	(6) Leave	(7) Leave	(8) Leave
ASC	0.296***	0.219***						
	(0.023)	(0.024)						
Aggression			0.215***	0.167***				
			(0.013)	(0.014)				
Submission					0.040*	0.016		
					(0.020)	(0.020)		
Conventional.							0.202***	0.145***
							(0.012)	(0.014)
Female		0.015		0.028		0.025		0.014
		(0.024)		(0.024)		(0.025)		(0.025)
Age		0.004***		0.004***		0.005***		0.003***
		(0.001)		(0.001)		(0.001)		(0.001)
Higher Cert.		-0.152***		-0.138***		-0.178***		-0.163***
		(0.045)		(0.045)		(0.046)		(0.046)
University		-0.232***		-0.223***		-0.296***		-0.255***
		(0.036)		(0.035)		(0.035)		(0.034)
Married		-0.019		-0.022		0.009		-0.007
		(0.028)		(0.028)		(0.030)		(0.027)
% non-UK		-0.002		-0.002		-0.003**		-0.003*
		(0.001)		(0.001)		(0.001)		(0.001)
Δ % non-UK		0.006***		0.005***		0.007***		0.006***
		(0.002)		(0.001)		(0.001)		(0.001)
Observations	1,579	1,526	1,579	1,526	1,579	1,526	1,579	1,526
R-squared	0.131	0.200	0.147	0.217	0.003	0.138	0.113	0.188
TTWAs	239	238	239	238	239	238	239	238

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A-2: *OLS Results, Authoritarianism and Brexit vote*

VARIABLES	(1) Vote Leave	(2) Vote Leave	(3) Vote Leave	(4) Vote Leave
ASC	0.080***			
	(0.022)			
Aggression		0.088***		
		(0.014)		
Submission			-0.059***	
			(0.021)	
Conventionalism				0.069***
				(0.013)
Female	0.042*	0.046*	0.053**	0.041*
	(0.023)	(0.023)	(0.024)	(0.023)
Age	0.002**	0.002**	0.002**	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.135***	-0.125***	-0.143***	-0.137***
	(0.042)	(0.042)	(0.042)	(0.043)
University	-0.191***	-0.180***	-0.211***	-0.193***
	(0.034)	(0.034)	(0.033)	(0.033)
Married	-0.023	-0.027	-0.012	-0.021
	(0.027)	(0.028)	(0.028)	(0.026)
% non-UK born	-0.002*	-0.002	-0.002**	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Δ % non-UK born	0.004***	0.004***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Right Ideology	0.047***	0.042***	0.059***	0.047***
	(0.009)	(0.009)	(0.008)	(0.009)
Voted Conservative	0.011	0.016	0.051	0.021
	(0.042)	(0.041)	(0.042)	(0.041)
Voted Labour	-0.185***	-0.179***	-0.183***	-0.185***
	(0.046)	(0.046)	(0.046)	(0.046)
Voted Lib. Dem.	-0.308***	-0.291***	-0.292***	-0.304***
	(0.060)	(0.061)	(0.061)	(0.060)
Observations	1,526	1,526	1,526	1,526
R-squared	0.287	0.298	0.287	0.291
TTWAs	238	238	238	238

Robust standard errors clustered by TTWA in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A-3: *Voted Leave, including ideology and partisanship controls*
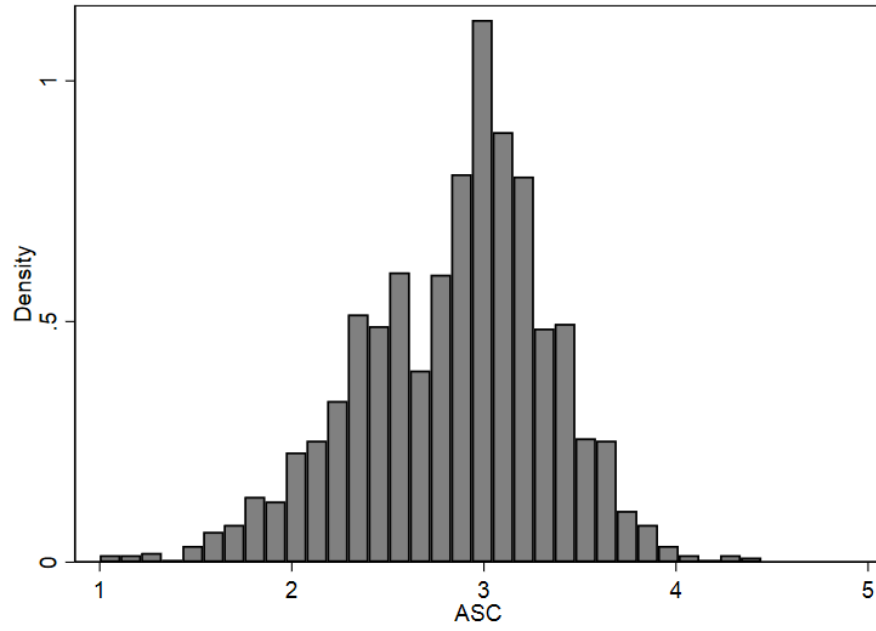
F Additional Figures

Figure A-1: *Distribution of average authoritarianism measure (ASC).*
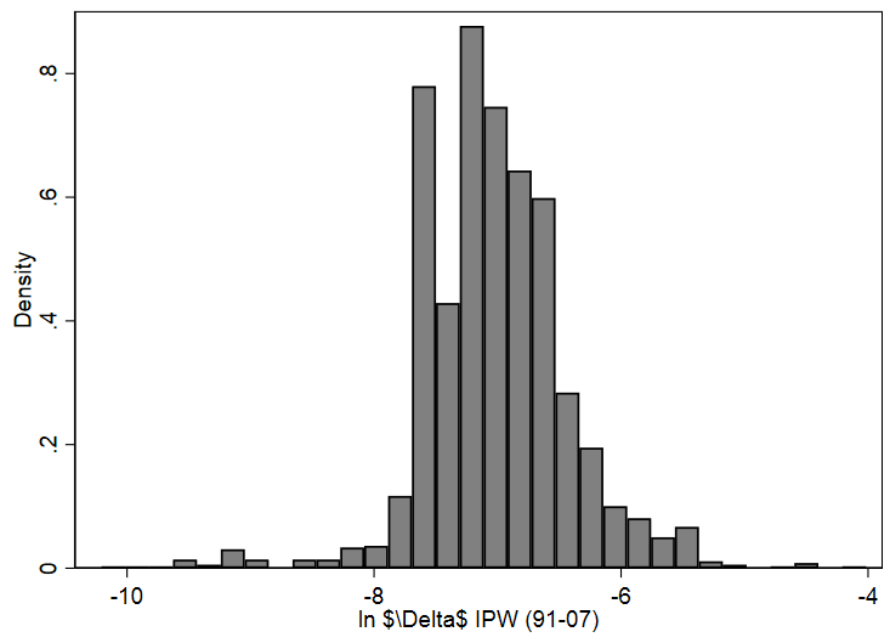
G Additional Figures

Figure A-2: *Distribution of (natural log of) import competition measure.*

H   Additional Tables

VARIABLES	(1) ASC IV	(2) ASC IV	(3) ASC IV	(4) ASC IV	(5) ASC IV
ln Δ IPW (91-07)	0.078***	0.077***	0.071***	0.075***	0.068***
	(0.029)	(0.029)	(0.024)	(0.027)	(0.026)
Female	0.061*	0.040	0.067**	0.031	0.086***
	(0.036)	(0.034)	(0.026)	(0.033)	(0.027)
Age	0.006***	0.007***	0.003***	0.006***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.135***	-0.121**	-0.106**	-0.146***	-0.112***
	(0.048)	(0.049)	(0.043)	(0.049)	(0.043)
University	-0.311***	-0.275***	-0.199***	-0.302***	-0.224***
	(0.037)	(0.038)	(0.028)	(0.037)	(0.029)
Married	0.111***	0.128***	0.082***	0.117***	0.077**
	(0.031)	(0.030)	(0.030)	(0.029)	(0.030)
% non-UK born	-0.002	-0.001	-0.002	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Δ % non-UK born	0.003	0.003	0.001	0.003	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Lower income	-0.074				-0.053
	(0.054)				(0.042)
Upper income	0.059				0.032
	(0.042)				(0.036)
Inequality		0.047*			0.040
		(0.028)			(0.026)
Right Ideology			0.130***		0.127***
			(0.008)		(0.008)
Middle Class				0.157**	0.081
				(0.067)	(0.057)
Working Class				0.103	0.076
				(0.064)	(0.054)
Observations	1,783	1,734	1,783	1,783	1,734
R-squared	0.137	0.133	0.321	0.135	0.327
TTWAs	242	234	242	242	234

Robust standard errors clustered by TTWA in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A-4: *Robustness: Alternate covariate profiles*

VARIABLES	(1) ASC OLS	(2) ASC IV	(3) ASC OLS	(4) ASC IV
High Δ IPW (91-07)	0.085***	0.115***		
	(0.032)	(0.044)		
Δ IPW (91-07)			0.035**	0.032**
			(0.015)	(0.014)
Female	0.034	0.034	0.034	0.034
	(0.034)	(0.033)	(0.034)	(0.034)
Age	0.006***	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.126***	-0.125***	-0.127***	-0.127***
	(0.048)	(0.048)	(0.049)	(0.048)
University	-0.285***	-0.284***	-0.283***	-0.284***
	(0.037)	(0.037)	(0.038)	(0.037)
Married	0.125***	0.125***	0.124***	0.124***
	(0.030)	(0.030)	(0.030)	(0.030)
% non-UK born	-0.001	-0.000	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Δ % non-UK born	0.002	0.002	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,783	1,783	1,783	1,783
R-squared	0.129	0.128	0.127	0.127
TTWAs	242	242	242	242

Robust standard errors clustered by TTWA in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A-5: *Robustness: Alternate codings of IPW*

	(1)	(2)	(3)	(4)
VARIABLES	ASC OLS	ASC IV	ASC OLS	ASC IV
ln Δ IPW (1991-2015)	0.077***	0.078***		
	(0.027)	(0.028)		
ln Δ IPW (2000-2007)			0.060**	0.153***
			(0.025)	(0.051)
Female	0.033	0.033	0.037	0.041
	(0.033)	(0.033)	(0.034)	(0.035)
Age	0.006***	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.127***	-0.127***	-0.132***	-0.134***
	(0.049)	(0.049)	(0.049)	(0.049)
University	-0.281***	-0.281***	-0.283***	-0.277***
	(0.038)	(0.038)	(0.038)	(0.039)
Married	0.123***	0.123***	0.120***	0.120***
	(0.030)	(0.029)	(0.029)	(0.029)
% non-UK born	-0.001	-0.001	-0.001	0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Δ % non-UK born	0.003	0.003	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,783	1,783	1,778	1,763
R-squared	0.129	0.129	0.126	0.119
TTWAs	242	242	241	235

Robust standard errors clustered by TTWA in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A-6: *Robustness: Alternate time periods for IPW*

	(1)	(2)	(3)
VARIABLES	No Scotland	No Wales	No Scotland/Wales
ln Δ IPW (91-07)	0.064***	0.076***	0.076***
	(0.024)	(0.024)	(0.027)
Female	0.009	0.027	0.008
	(0.028)	(0.029)	(0.029)
Age	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)
Higher Cert.	-0.109***	-0.110***	-0.113***
	(0.041)	(0.041)	(0.043)
University	-0.239***	-0.241***	-0.248***
	(0.032)	(0.032)	(0.032)
Married	0.100***	0.098***	0.094***
	(0.025)	(0.024)	(0.026)
% non-UK born	-0.001	-0.001	-0.001
	(0.002)	(0.001)	(0.002)
Δ % non-UK born	0.003	0.002	0.002
	(0.002)	(0.002)	(0.002)
Observations	1,638	1,700	1,545
R-squared	0.132	0.134	0.138
TTWAs	206	216	183

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

Table A-7: *Robustness: Dropping regions*

	(1) High manage.	(2) Low manage.	(3) Intermed.	(4) Small employer	(5) Technical	(6) Semi-routine	(7) Routine	(8) Unemp.	(9) Students
ln Δ IPW (91-07)	-0.531***	-0.725***	-0.300***	-0.150***	-0.121***	-0.217***	-0.092**	-0.080**	-0.064
	(0.145)	(0.177)	(0.086)	(0.047)	(0.036)	(0.057)	(0.042)	(0.033)	(0.225)
Observations	380	380	380	380	380	380	380	380	380
R-squared	0.047	0.061	0.048	0.042	0.046	0.047	0.017	0.016	0.001

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A-8: *Robustness: Regional out-migration by skill type*