Stalled Racial Progress and Japanese Trade in the 1970s and 1980s*

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Abstract

Many of the positive economic trends coming out of the Civil Rights Era for black men stagnated or reversed during the late 1970s and early 1980s. These changes were concurrent with a rapid rise in import competition from Japan. We assess the impact of this trade shock on racial disparities using commuting zone level variation in exposure. We find it decreased black manufacturing employment, labor force participation, and median earnings, and increased public assistance recipiency. However these manufacturing losses for blacks were offset by increased white manufacturing employment. This compositional shift appears to have been caused by skill upgrading in the manufacturing sector. Losses were concentrated among black high school dropouts and gains among college educated whites. We also see a shifting of manufacturing employment towards professionals, engineers, and college educated production workers. We find no evidence the heterogeneous effects of import competition can be explained by unionization, prejudice, or changes in spatial mismatch. Our results can explain 66-86% of the relative decrease in black manufacturing employment, 17-23% of the relative rise in black non-labor force participation, and 34-44% of the relative decline in black median male earnings from 1970-1990.

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1 Introduction

The mid-1970s through the mid-1980s saw a striking reversal of the economic gains made by black men in the Civil Rights era. From 1962 to 1976, the black/white median earnings ratio rose from 52% to 70%.[1] By 1984, it had fallen to 61%, roughly the same level as it was in 1968 (Figure 1). There was a similar erosion in labor force participation and employment (Figure 2). Blacks were hit especially hard in areas that experienced manufacturing declines (Gould, 2018), after having made rapid gains in this sector during the 1960s, even surpassing whites (as a fraction of employment; Figure 3). These losses are even more surprising given that the black workforce was gaining ground in both quality and quantity of education in this time period (e.g, Card and Krueger, 1992; Neal, 2006). While some important racial inequality indicators would stabilize in the late 1980s, these economic losses continue to be felt today.[2] The causes of this change in fortune remain an open question.

Also during this time period the United States experienced an unprecedented increase in import competition from a rapidly growing East Asian economy: Japan.[3] From 1975 to 1986 American imports of Japanese manufactured goods would grow by an average of $8.5 billion dollars per year, representing an increase from 1.1% to 3.5% of total U.S. spending in this sector (Figure 4). This surge in imports would cease in the late 1980s in part due to U.S. trade restraints, a devaluation of the dollar, and a shift of Japanese firms towards foreign direct investment in the United States (Irwin, 2017).

In this paper, we assess the extent to which the Japanese trade boom can explain the deterioration of black economic well-being. We use geographic variation in imports exposure, following the identification and instrumental variable approach introduced in the "China shock" literature by Autor et al. (2013), to look at differences in changes in racial disparities across local labor markets. We find a substantial negative impact of this import competition on black employment outcomes. A $1,000 increase in Japanese imports per worker led to a 0.59 percentage point decrease in a commuting zone's black manufacturing employment rate. However, we find no impact on manufacturing employment in the *aggregate*. Instead,

[1] These figures are constructed from the Current Population Survey (CPS). See Appendix A.1 for details of data construction. Note that unlike with our main empirical analysis, these figures include Hispanic whites, as the CPS does not track Hispanic ethnicity in the earlier years. For a more comprehensive review of trends in racial differences in this era, see Smith and Welch (1989), Bound and Freeman (1992), and Lang and Lehmann (2012).

[2] For example, after taking into account the continued declines in labor force participation, the racial gap in median earnings today is at 1950 levels, substantially larger than it was in 1970 (Bayer and Charles, 2018).

[3] Japanese GDP grew by 240% during the 1960s as part of the "Japanese Economic Miracle." It would grow by another 50% during the 1970s due to both capital accumulation and improvements in technology (Boskin and Lau, 1990). This growth was contemporaneous with declining barriers to trade, and a strong U.S. dollar which made U.S. industries particularly vulnerable to rising international competition. See Irwin (2017) for a comprehensive review of U.S. trade in this era.

we find *higher* manufacturing employment for whites, offsetting the effect on blacks.

Our results suggest that this disparate impact was a consequence of trade-induced skill upgrading in the manufacturing sector. Job losses were concentrated among black high school dropouts, who found at most limited re-employment in non-manufacturing, while gains in manufacturing employment centered on the primarily white college educated. Likewise, we find a growth in professional occupations within manufacturing, particularly for engineers, and a shift to higher-educated production workers.

Black manufacturing workers in this time period were particularly vulnerable to changes in the relative demand for skill. In 1970, 60% of black manufacturing workers had less than a high school degree compared to 38% of whites, and blacks occupied 15% of manufacturing jobs for those with less than a high school degree (compared to 10% overall).[4] Further these education figures will understate true skill differences given racial disparities in school quality (Smith and Welch, 1989; Card and Krueger, 1992; Neal and Johnson, 1996). 84% of black manufacturing workers were working in production jobs, compared to 66% of whites, and among production workers blacks had on average .5 years less formal education. In the North, where the manufacturing sector was largest, more than half of black workers were recent migrants who were educated in segregated schools during the Jim Crow Era South.[5] In fact, we see the strongest negative effects for Southern-born blacks, who had the lowest quality of education.

This cross-race redistribution of jobs had important consequences for labor market disparities. Nearly all black workers displaced by trade left the labor force altogether rather than finding reemployment, leading to a 0.54 percentage point increase in the labor force non-participation gap for every $1,000 increase in import competition. This same increase led to a 3.6 log point widening of the median male earnings gap, 2.6 log point widening of the household income gap, and 0.6 percentage point widening of the welfare recipiency gap. Given that the average black worker faced a $1,413 increase in exposure to Japanese imports, these effects are substantial, accounting for 17-23% of the decline in relative labor force participation and 34-44% of the decline in relative earnings during this time period.

We explore several alternative mechanisms for this disparate impact. While we find evidence that Japanese trade hastened the "white flight" of residents from central cities, we find no evidence for a suburbanization of manufacturing jobs themselves. We also find little evidence that unionization or racial prejudice can explain the differing impact of trade on employment outcomes. Further, black workers neither lived in areas that were more exposed

[4] Unless otherwise noted, all figures in this paragraph are authors' calculations from the CPS.

[5] Figure from authors' calculations from U.S. Census Integrated Public Use Microdata Series samples. This was a consequence of the 1940-1970 "Great Migration" which saw 4 million blacks move from the rural South to the industrial North. See, for example, Boustan (2009) for a comprehensive review.

to imports than whites, nor worked in industries that received a higher degree of import competition.[6] The evidence we present is for disparate responses to exposure, not disparate exposure itself.

A large literature has focused on the negative impacts of the recent growth in Chinese import competition on the American manufacturing sector. The "China shock", an average annual increase of $14.6 billion imports per year from 1991-2007, negatively impacted employment, unemployment, earnings, and job growth; and spurred the decline in manufacturing (Autor et al., 2013; Acemoglu et al., 2016; Pierce and Schott, 2016).[7] However, we know little about whether the American economy's response to China is typical or atypical of trade shocks. Previous studies of trade in the 1980s have focused on the role of exchange rates and trade deficits generally (e.g., Katz and Revenga, 1989; Revenga, 1992), which were influenced by Japan as well as traditional Western trading partners and developing countries such as the Asian tigers; or been limited to specific industries (e.g., Grossman, 1986). We are the first to provide a comprehensive look at the impact of Japan's rapid export expansion on U.S. labor markets.

Our findings suggest the economic consequences of Japanese imports on black Americans were similar to the consequences China has had on the overall labor market. Yet, there are several important differences worth highlighting between both our results and the nature of the trade shock. First, Japan was already a highly developed country when the import expansion began, trailing only the United States and the Soviet Union in GDP in 1972. Second, while China's story has focused on its abundance of cheap labor, much of Japan's success was attributed to innovative management practices. Many would later be copied to mixed success by American firms (Powell, 1995; Ichniowski and Shaw, 1999). Finally, our evidence suggests that Japanese competition led to a change in the skill composition of manufacturing; for China the negative effects have been felt at all skill levels (Autor et al., 2013).

Our identification strategy is based on Autor et al. (2013), which uses variation in import exposure across local labor markets due to differences in the product composition of their manufacturing industries. We account for the endogeneity of trade by instrumenting with the exposure predicted by historical local industry shares and the products exported by Japan to six other highly developed countries. While there has been a recent debate about

[6]The average black worker in 1970 lived in a CZ which experienced an increase in imports per worker of $1,413 and worked in an industry that experienced a .020 increase in the Japanese import penetration ratio. This compares to $1,601 and .024 for whites. Note, however, these industry figures can only be calculated at fairly aggregated level compared to the data we use for CZ-level exposure. See the discussion in section 3.1.

[7]Figures are in 1999$ and taken from the U.S. Census Bureau.

the validity of such approaches (e.g., Goldmsith-Pinkham et al., 2018; Borusyak et al., 2018), we show that our instrument performs well with respect to several different robustness and validation exercises proposed in the literature.

What caused the reversal of black economic progress is still not well understood. Wilson (1987) and other supporters of "demand-side" explanations proposed this was a symptom of the de-industrializing economy, trade being one of its causes.[8] In support of this theory, several empirical studies have found black workers were disproportionately negatively affected by decreases in labor demand (proxied by changes in national employment by industry) in the 1970s and 80s (e.g, Acs and Danziger, 1993; Bound and Holzer, 1993, 2000). However such studies are unable to disentangle demand decreases caused by foreign competition from other important factors of the time period, such as skill-biased technical change.[9] Murphy and Welch (1991) examine the susceptibility of various race, gender, and skill groups to trade deficits based on their distribution of employment across four broadly defined industry categories. From this they calculate that the 1980s trade deficits should have increased the black-white wage gap, but their projection is much smaller than the actualized growth, and their model does not allow for differential effects within industry or account for the endogeneity of trade exposure. We provide the first direct evidence, using credible exogenous geographic variation, that increased foreign competition was responsible for a large portion of the decreased labor demand for and subsequent economic malaise of black workers.

The 1980s especially was a time of broad manufacturing declines and increased economic hardship for low-skill workers, and previous work has found some evidence that import competition played a role in these changes (Borjas et al., 1992; Borjas and Ramey, 1995). However, the consensus view is that these structural shifts were primarily driven by other factors, especially skill-biased technical change (e.g., Berman et al., 1994; Feenstra and Hanson, 1999; Katz and Autor, 1999; Autor et al., 2008). Our results are consistent with this view. While we find large aggregate decreases in manufacturing in commuting zones whose pre-existing industrial composition made them vulnerable to Japanese competition, all of this effect can be explained by differences in workforce composition, particularly worker education levels, and the size and occupation mix of the manufacturing sector. Further, because blacks made up a small portion of the labor force, and because black high school dropouts especially were overwhelmingly located at the lowest tail of the skill distribution,

[8]See also Kasarda (1989). This was in contrast to "supply-side" explanations, advanced by, among others, Mead (1986), that centered around a decreased willingness of black workers to accept low wage work.

[9]For example, Reardon (1997) finds that blacks were more affected by within-industry skill composition changes in the 1980s than cross-industry changes in demand, and concludes that technological change is responsible for widening racial disparities. However trade can also cause changes in the relative demand for skilled workers, as domestic firms adopt more competitive practices and close unproductive factories (Bernard et al., 2006).

any aggregate changes in inequality were small.

Theoretical models of trade generally predict the most disruptive labor market effects occur when import increases come from low wage countries (Krugman, 2000, 2008). While Japan had lower wages than the United States throughout this time period, it was already an OECD member by 1970. Still, several recent theoretical papers have demonstrated that trade can lead to increases in inequality even when both partners are similarly developed. For example, trade can trigger technological advancement within firms as they preempt competitive threats through skill-biased innovations (e.g., Neary, 2002; Thoenig and Verdier, 2003). Alternatively, trade can cause factors to reallocate across firms toward those of higher productivity and skill intensity (Monte, 2011; Burstein and Vogel, 2017). Epifani and Gancia (2008) develop a model where the increased market size caused by reductions in trade barriers can increase demand for skilled workers because of stronger returns to scale in the skill-intensive sector. Our results lend support to these theories. More generally, it is by now well recognized that trade has winners and losers. In this instance, it appears the losses were concentrated on black workers.

The remainder of this paper is organized as follows: Section 2 describes our data sources and treatment; Section 3 explains our identification strategy; Section 4 discusses our results; and Section 5 concludes and conjectures on the significance of our results for the persistence of economic and racial inequalities.

2 Data

2.1 Labor Market Data

Our primary sources for labor market data are the 1960 5%, 1970 1% form 1 and form 2 metro, and 1990 5% Integrated Public Use Microdata Series (IPUMS) samples of the United States Decennial Census (Ruggles et al., 2015). We also use the 1980 5% state sample in a robustness exercise. As in Autor et al. (2013), we define local labor markets by commuting zones (CZs) using the definitions created by Tolbert and Sizer (1996). We match workers to CZs using Public Use Micro Areas (PUMAs) in 1990 and 1960, and Census County Groups in 1980 and 1970 following crosswalks provided in Autor and Dorn (2013) and Rose (2018). Unless otherwise stated, we restrict our attention throughout to working age males due to concerns about changes in female labor force participation across time. This is particularly important given the racial differences in selection of women into the labor market (Neal, 2004). To ensure an adequate sample for calculating race-specific statistics, we restrict attention to CZs in the continental U.S. which had a black male working age population of at least 500 in both 1970 and 1990. This restriction primarily affects rural Western commuting zones (see Appendix B.2) and results in a sample of 358 CZs. We winsorize all CZ-level control and outcome variables by race/year to the 2nd and 98th percentiles to further account for measurement error due to sample size. See Appendix A.2 for more details on data construction.

We present descriptive statistics for our sample in Table 1.[10] We see evidence of stalled or reversed racial progress across multiple dimensions. Relative to whites, the fraction of the black population in manufacturing fell by 0.6 percentage points, the unemployment rate rose by 3.9 percentage points, and the labor force non-participation rate rose by 3.6 percentage points. While blacks saw small gains among those with positive earnings, once including non-earners the median earnings gap for working age males widened by 23 log points. We also see a relative decrease in household income and increase in welfare recipiency.

2.2 Import Competition

To calculate industry-level exposure to Japanese imports, we begin with bilateral trade data in SITC Revision 1 from UN Comtrade.[11] Autor et al. (2013) provide a crosswalk from 1992 Harmonized System (HS) product-level codes to SIC 87 industry codes. However, the HS system was not introduced until 1988 and is not consistently available for our countries of interest until the early 1990s. We therefore constructed a new crosswalk from SITC Revision 1 to HS, which we describe in Appendix A.3. We then utilize the Autor et al. (2013) crosswalk to bridge our trade data to industries.

Following Autor et al. (2013), we measure import competition through changes in imports per worker (IPW). For each CZ i we calculate

$$\Delta IPW_{uit} = \sum_j \frac{L_{ijt}}{L_{ujt}} \frac{\Delta M_{ujt}}{L_{it}} \tag{1}$$

where L_{ijt} is the number of workers in commuting zone i in industry j at the beginning of period t, L_{ujt} is that same value for the United States, L_{it} is the total number of workers in these industries in commuting zone i at the beginning of period t, and ΔM_{ujt} is the change in imports in that industry's product space during the time period. As in Autor et al. (2013), we restrict IPW to include only manufacturing imports. We explore the geographic dispersion of IPW in more depth in Appendix B.2. In general, we find that the most exposed areas were in the Midwest and Northeast, and the least were the inland West and South.

[10]In this table and throughout, we weight by the race-specific 1970 commuting zone working age male population.

[11]These data are available at https://comtrade.un.org.

We calculate 1970 CZ-level industry employment using the County Business Patterns (CBP). The CBP is an annual series that provides county-level economic data by industry, including the number of establishments, employment during the week of March 12, and payroll information extracted from the U.S. Census Bureau's Business Register. The 1970 series is reported in SIC 1967 codes, which we convert to SIC 1987 codes.[12] The CBP suppresses the employment counts for some counties to avoid identifying individual employers. As detailed in Appendix A.4, we impute employment in these instances based on establishment counts following Autor and Dorn (2013).

As nationwide CBP data is not available prior to 1970, for our instrument we calculate CZ-level industry employment using the 1960 5% IPUMS sample from the Decennial Census. We disaggregate the 1960 Census industry codes into SIC 1987 according to each CZ's industry composition in the 1970 CBP.[13] See Appendix A.5 for more details.

2.3 Geographic Outcomes

We also explore the impact of import competition on the distribution of workers and jobs between cities and suburbs. Here, we utilize the 1970 Census definition of central cities, under which 167 commuting zones include a central city.[14] We calculate residential populations from place- and county-level tabulations of the 1970 and 1990 Census of the Population available from IPUMS National Historical Geographic Information System (NHGIS; Manson et al., 2017).

For the location of jobs, we use tabulations from the 1972 and 1987 Census of Manufactures (CoM).[15] These data include counts of manufacturing establishments and employees by state, county, and place. Occasionally, employee counts are suppressed. For counties, we impute missing observations by utilizing the state-level counts of establishments and employees net of the counts in non-suppressed counties. This generates a residual employment count that we distribute to the suppressed counties according to their number of establishments, which is always available. For suppressed cities an analogous calculation is not possible, as the CoM provides information only for places with at least 450 manufacturing employees. We

[12] We use an employment-based weighted crosswalk from the NBER-CES Manufacturing Industry Database to convert SIC 1972 to SIC 1987, and construct a parallel crosswalk using the 1972 Census of Manufactures to convert SIC 1967 to SIC 1972.

[13] Our findings are broadly robust to using an instrument constructed directly from Census industry codes, or an instrument based only on the 1970 CBP. These results are available upon request.

[14] We omit four cities (and their associated CZs) which consolidated with their county between 1970 and 1990: Lexington, KY; Indianapolis, IN; Jacksonville, FL; and Columbus, GA. This is to avoid conflating changes in population and employment with the substantial geographical changes they experienced.

[15] The CoM is part of the Economic Census, and is conducted in regular five year intervals during off-years of the Census of the Population.

therefore impute missing employment counts by multiplying the number of establishments in the city by the average establishment size in the state.

3 Empirical Strategy

3.1 Specification

We adopt a similar approach to Autor et al. (2013). In our preferred specification, for outcome Y of race $k \in \{w, b\}$ in commuting zone i we estimate

$$\Delta(Y_{ik,1990-1970}) = \alpha_k + \beta_k \Delta IPW_{ui,1990-1970} + \gamma_k X_{i,1960} + \varepsilon_{ik}, \tag{2}$$

where $X_{i,1960}$ is a vector of commuting zone characteristics measured in 1960. In words, we estimate a fully-interacted regression that allows for local labor market conditions to affect blacks and whites in different ways. Our main interest is the disparate impact of import exposure on blacks, $\beta_b - \beta_w$, which is most easily displayed as the coefficient on the interaction between $\Delta IPW_{ui,1990-1970}$ and a black indicator.

We prefer using the long difference approach over stacked first differences including 1980 data for several reasons. First, 1980 was a recession year, while 1970 and 1990 were relatively normal economic times.[16] The recession was caused in large part by sudden, steep increases in interest rates by the Federal Reserve, and was thus felt almost exclusively by consumer durables typically purchased on credit, especially automobiles (Westcott and Bednarzik, 1981). Because Japanese import competition was also highest in these industries, we are concerned about conflating the effects of trade with the peculiarities of this recession. Second, as illustrated in Figure 4, Japanese imports peaked in 1986 before receding in the latter half of the 1980s. We are thus concerned that the 1990-1980 difference may not accurately reflect the effects of Japanese import competition since all of the change in this decade came four years before the measurement of the economic outcomes. The long difference will be less sensitive to this issue, since it encompasses the totality of the Japanese trade influx.[17] In Appendix B.3 we provide estimates for each decade separately, and using a stacked first differences approach as in Autor et al. (2013). We find stronger evidence for negative effects on black employment in the 1970s, and positive effects on white employment in the 1980s, but it is unclear if this is due to the patterns of trade adjustment, or the reasons discussed

[16] According to the NBER, the United States entered recession in June of 1990. However, the 1990 census was taken April 1st, and the income data reflect 1989 outcomes.

[17] This also partially addresses concerns recently raised by Jaeger et al. (2018) that shift-share instruments can conflate the short- and long-run effects of economic shocks when these shocks are ongoing and correlated across time.

above. We also perform a validation exercise for our IV by estimating a placebo regression of 1970-1990 import increases on the 1960-1970 change in manufacturing employment, and find no evidence of any effects.

An alternative approach would be to exploit variation in exposure by industry of employment, such as in Acemoglu et al. (2016). Using geographic variation offers several advantages for our context. First, we can measure whether job losses led to re-employment or changes in labor force participation, the latter of which saw very important changes for black men in this era. Second, the industry-based approach would not allow us to measure indirect effects that could be particularly important for understanding racial differences. For example, whites who experience job losses in a trade-affected manufacturing industry may displace black workers in an industry which received little exposure (due to prejudice or otherwise). Finally, industry of employment variation requires information on industrial employment counts by race, while our strategy requires only (non race-specific) geographic employment counts and race-specific population counts. The latter is readily found in publicly available data sets, while the former is available only for a highly aggregated set of industries.[18]

3.2 Instrumental Variable and Identification

Because Japanese imports may be driven by domestic changes in American industries, we adopt the strategy implemented by Autor et al. (2013) for China, and instrument with the observed change in Japanese import penetration in other highly developed economies.[19] Specifically, our instrument is defined as

$$\Delta IPW_{oi,1990-1970} = \sum_j \frac{L_{ij1960}}{L_{uj,1960}} \frac{\Delta M_{oj,1990-1970}}{L_{i1960}}, \tag{3}$$

where the subscript o indicates the sum across these other countries.[20] In words, our instrument is the change in import exposure faced by the average worker that would have been predicted from (1) the commuting zone's industrial composition in 1960 (i.e., before

[18] Our import exposure is based on 380 different SIC87 manufacturing industries as reported by the CBP. The only publicly available race-specific employment data come from the CPS or the Census, which have just 59 manufacturing industries in 1960. Census/CPS data also include a non-trivial number of workers who are simply classified as working in manufacturing without a specific industry to which we can map trade. While we do find evidence of reduced employment when implementing the Acemoglu et al. (2016) approach on these limited data, the estimates are much too imprecise to identify whether these effects differed by race. These results are available upon request.

[19] Hummels et al. (2014) use a similar instrument to predict the offshoring and export behavior of Danish firms.

[20] We use a similar set of countries as Autor et al. (2013): Australia, Denmark, Finland, New Zealand, Spain, and Switzerland. Unlike them, we exclude Germany because of complications arising with reunification, and Japan for obvious reasons.

Japanese import competition began), and (2) the ability of Japan to penetrate these industries in other countries during our time period. The variation in the exposure each CZ receives can be further subdivided into two avenues: the manufacturing share of the local economy and the composition of products they manufacture. Our preferred specification will control for initial manufacturing share, and thus isolate the latter variation.

Our instrument is a "shift-share" instrument that combines local industry employment shares and national industry-level "shifts" (trade shocks). There has been a recent debate on the sources of identification for such instruments (e.g., Goldmsith-Pinkham et al., 2018). Borusyak et al. (2018) develop a quasi-experimental framework that views the trade shocks (i.e., the industry-level exports from Japan to other countries) as "as-if" randomly assigned across industries. They then prove shift-share estimators are consistent under two conditions: (1) industry trade shocks are orthogonal to the unobservable factors in the CZs in which they are located, and (2) shocks across industries are sufficiently independent.[21]

Our instrument will satisfy the orthogonality condition provided that exports that are common across countries are driven by changes within Japan (e.g. productivity shocks) rather than forces in the United States. Specifically, we assume that any demand increases or negative productivity shocks for U.S. industries are uncorrelated with similar changes in our IV countries, and that changes in other countries' Japanese imports are not driven by negative productivity shocks to U.S. exporting industries. These assumptions are similar to those outlined in Autor et al. (2013).

The most obvious concerns for these assumptions center around the computer and automobile industries. Advances in computer technology during this era may represent a worldwide positive demand shock. In general, this should bias us away from finding negative impacts of trade, because U.S. firms also experienced this shock, but how this would bias the effect on racial disparities is unclear. Likewise any bias caused by the automobile industry, which faced the largest increase in import competition in absolute terms, is also uncertain. While much of this growth was due to improvements in Japanese manufacturing technology, the 1970s oil shocks caused a worldwide shift in demand from large cars (a specialty of American firms) to the smaller, more fuel efficient cars already preferred in Japan (Crandall, 1984; Ohta and Griliches, 1986).[22] Note that none of the countries we use in constructing

[21]Goldmsith-Pinkham et al. (2018) argue instead that shift-share estimators are consistent only if the industry employment shares in each CZ are orthogonal to the CZ-level unobservables. The key difference between their result and Borusyak et al. (2018) is that the latter relies on large sample asymptotics for both CZs and industries, while the former assumes only a large sample of CZs. In our setting, we have 358 CZs and 380 industries, with little correlation in shocks across industries outside of 135 3-digit industry codes. See Appendix B.5.

[22]Further complicating this industry is the Voluntary Export Restraint (VER) Japan implemented under U.S. pressure which led to a strategic shift by Japanese manufacturers to higher quality automobile exports

our instrument were major importers of U.S. automobiles in our time period, which should minimize the impact of any global drop in demand for these products on our estimates.[23]

In Appendix B.4 we perform a numerically equivalent transformation of our main specification developed by Borusyak et al. (2018) that isolates variation caused by each industry, and show that our results are robust to excluding automobiles and computers. We also perform a series of additional robustness checks recommended by Borusyak et al. (2018). These include excluding industries with outlying instrument exposure, including 1-digit and 2-digit CZ-level industrial classification employment shares (thus allowing that the expected trade shock from Japan may have varied at these levels), and using the individual highly developed countries' imports as separate instruments. Our results are robust to all of these exercises, and only the 2-digit industry employment shares meaningfully reduce the magnitudes of our estimates. Further, we fail to reject the overidentifying restrictions in the multiple instruments case.

We also provide a test for the second condition (dispersion) in Appendix B.5. Following Borusyak et al. (2018), we exploit the hierarchical design of the SIC system, and estimate intraclass correlation coefficients for clusters of similar industries. We find little correlation in the trade shock within two- and one-digit industry clusters, consistent with a high level of independence in the distribution of shocks.

We show the time variation in imports from Japan for the United States and our six other developed countries in Table 2. From 1970 to 1990, U.S. imports from Japan rose by $94.5 billion (in 1999$), a 374% increase. In the same time period, the six other countries saw an even larger increase in percentage terms of 389%. The United States also saw an increase in exports to Japan, but not nearly at the same rate, resulting in a trade deficit of $57.8 billion by 1990. We also see in column (3) that this period was one of a general increase in globalization. But, the pace of import increases from Japan outstripped that from the rest of the world, both in the United States and the other developed countries we study.

In Table 3 we estimate our first-stage regression. Unsurprisingly our instrument is very strong, with an F-statistic over 80.

in the 1980s (Feenstra, 1984, 1988).

[23] In 1970, Switzerland, the largest importer of U.S. automobiles in our set of other developed countries, accounted for just over 1% of American automobile exports. The largest customer, Canada, accounted for almost 75%.

4 Results

4.1 The Impact of Japanese Trade on Employment Disparities

In Table 4 we perform the 2SLS estimation of equation (2) on the manufacturing employment share of the male working age population.[24] All percentage variables are scaled in percentage points. Column (1) is the standard regression in the literature that does not allow for racially heterogeneous effects. Without any additional controls, we find a large, negative and statistically significant effect of Japanese imports on commuting zone manufacturing share, with a point estimate nearly double that found by Autor et al. (2013). However, once accounting for the pre-existing size of the manufacturing sector in column (2), and characteristics of the CZ's workforce in column (3) any potential effects are reduced to 0. Instead, we find strong evidence for a secular decline in manufacturing. Also of importance appear to be the pre-existing stock of college educated workers and the occupational mix of the local manufacturing sector.[25] This is consistent with evidence presented in, for example, Autor et al. (2003) and Autor et al. (2008), that skill-biased technical change was the dominant driver of changes in the wage structure during this time period.

This specification, however, masks substantial heterogeneity by race. In columns (4) and (5) we estimate equation (2) separately for whites and blacks, respectively. The results are striking. While a \$1,000 increase in Japanese import competition led to a .59 percentage point decline in black manufacturing share, it also led to a .19 percentage point *increase* in white manufacturing share. In other words, columns (3)-(5) suggest that, rather than eliminating manufacturing jobs, Japanese competition led to a shifting of employment from blacks to whites.

For our remaining results, we use the full set of CZ-level controls and estimate the fully-interacted version of (2), reporting $\beta_b - \beta_w$ as the interaction between $\Delta IPW_{ui,1990-1970}$ and a black indicator.[26] Column (1) of Table 5 repeats the estimates from columns (4) and (5) of Table 4 using this approach. Columns (2)-(4) provide the same estimation for non-manufacturing employment share, the unemployment rate, and non-labor force participation rate, respectively.[27] For whites, we see evidence of a movement of workers from the non-

[24] Standard errors are clustered at the state level. Borusyak et al. (2018) derive an alternative set of standard errors which are asymptotically equivalent to those derived by Adão et al. (2018) and allow for correlations within similar industries across CZs. We find in practice that these standard errors are smaller than the state-clustered errors. See Appendix B.6.

[25] Given that many of the information technology advancements that enabled certain types of jobs to be offshored were yet to occur, the offshorability index is best viewed as an additional measure, beyond routine-intensity, of manufacturing task composition. See Appendix A.6 for details on the construction of these indices.

[26] We now add our instrument interacted with a black indicator to the first stage.

[27] While by definition all individuals must at any given time be either employed in manufacturing, employed

manufacturing sector and from out of the labor force into manufacturing, although neither of these effects is statistically significant. In contrast, we find at best weak evidence that black workers who moved out of manufacturing found re-employment in non-manufacturing. We also see no increase in black unemployment. Instead the vast majority of displaced black manufacturing workers drop out of the labor force. We estimate a $1,000 increase in Japanese import competition led to a .45 percentage point increase in the black labor force non-participation rate, or a .54 percentage point widening of the racial labor force non-participation gap.

We provide a series of robustness checks of our main results on manufacturing employment in Table 6. In column (1) we replace our CZ-level controls with race-specific CZ workforce characteristics. That is, we define the college educated percentage of the population as the fraction of white working age males with a college education, and similarly for blacks.[28] While this provides the benefit of, for example, better measuring how one racial subgroup may have been more vulnerable to skill-biased technical change, it provides a drawback in that it implicitly assumes that when these factors impact the white labor force there are no spillovers onto the black. Making this change has a negligible impact on our point estimates. In column (2), we include 10 1-digit manufacturing sector employment shares and their interactions with race, following the classification system in Autor et al. (2014). This allows us to better account for secular trends within manufacturing that may be correlated across similar industries. However it also reduces some good variation given that similar industries tend to co-locate, and measurement error in our mapping from products to industries will likely misclassify trade within these large sectors.[29] These controls slightly reduce the point estimate of our interaction term, but the magnitude remains large and statistically significant.

In column (3) we re-estimate column (1) of Table 5 using OLS. Similar to Autor et al. (2013), we find that OLS biases our estimates of trade on manufacturing employment upwards for both black and white workers. In column (4), we estimate the OLS specification measuring exposure as net imports rather than imports, and our results are essentially unchanged. In column (5), we adopt a 2SLS strategy for net imports. Following Autor et al. (2013) our first stage in this specification includes an analogous second instrument reflecting

in non-manufacturing, unemployed, or out of the labor force, our coefficients do not add up exactly to 0 because of winsorization.

[28]Note that we are unable to compute a race-specific $\Delta IPW_{ui,1990-1970}$ as we lack a sufficient sample of black manufacturing workers in 1960, or any race-specific employment data in the CBP. However, the argument against using a race-specific measure in this case is particularly strong. It rules out, for instance, that white workers who are displaced by trade do not in turn displace black workers in unaffected industries.

[29]This is especially a concern given the imputation method used in constructing the 1960 CZ-level industry distribution.

the change in exports to Japan from the same set of high-income countries. An important caveat is that our exports instrument is not statistically significant in the first stage once controlling for our main imports instrument. Nonetheless, our results are virtually unchanged from column (1) of Table 5. In column (6), we again follow Autor et al. (2013) and construct a measure of imports that isolates final goods from intermediates, exploiting 1972 input-ouput data from the Bureau of Economic Analysis (BEA; see Appendix A.7 for more details). If anything here we find a stronger effect on disparities.

4.2 Understanding the Mechanisms of the Disparate Impact

4.2.1 Skill Upgrading in Manufacturing

The previous subsection established that Japanese trade caused an influx of white workers into manufacturing, replacing black workers who dropped out of the labor force. We now analyze the mechanisms that caused this disparate impact.

We first explore heterogeneous effects by skill group in Table 7. We divide our sample by race and education: high school dropouts, high school graduates, and college educated.[30] Due to the small number of college educated black workers, particularly in 1970, we are unable to explore effects for this subgroup. We then estimate equation (2) separately for each group.

First, in Panel A we find high school dropouts moved out of manufacturing and into non-manufacturing employment. However, underlying this is substantial heterogeneity. Black high school dropouts saw a large decrease in manufacturing employment, roughly half of which manifests itself in higher non-labor force participation. The drop in manufacturing employment for white non-manufacturing workers is statistically insignificant. Instead, they see large gains in non-manufacturing employment fueled by higher labor force participation.

We see little effect of Japanese import competition on the labor market outcomes of high school graduates in Panel B. Black workers saw decreases in labor force participation, but it is unclear to what extent this was due to lower manufacturing employment or a shifting of the unemployed out of the labor force, both of which have non-trivial but imprecisely estimated effects. White high school graduates saw a small, though statistically significant increase in unemployment, but no substantial effects on any other outcome. In Panel C, we see that all of the gains in manufacturing employment came from college educated workers, particularly among whites. This was fueled by a corresponding drop in non-manufacturing employment.

[30] High school graduates have exactly 12 years of education, while we define college educated as those with more than 12.

The results in Table 7 are strongly suggestive of blacks being disparately affected by a change in the demand for skill within manufacturing. While we cannot directly rule out all other factors for the racial differences in outcomes among high school dropouts, we note the substantial differences in skills within the same quantity of education because of historical differences in school quality.[31] We find only mild evidence for negative effects on higher skill blacks, and the positive employment effects accrued entirely to our highest measurable skill group, college educated whites.

While quality of education data is not itself readily available in the Census, the "Great Migration" presents the opportunity to look for heterogeneous effects within black workers who plausibly differed in schooling quality. From 1940 to 1970, 4 million blacks moved out of the rural South. Due to both differences in resources and as a consequence of segregation, we would expect these workers to have lower quality formal education than their Northern born counterparts.[32] To explore how the effect of Japanese trade differed among blacks born in and outside of the South, we restrict attention to CZs which had a substantial population of Southern and non-Southern born blacks.[33] We then calculate employment outcomes in each CZ separately for these groups, and estimate an analogous set of regressions to Table 5.

There are some important caveats to this exercise. First, the skill levels of Southern born blacks in 1990 will look much different than in 1970. Even before desegregation in the 1960s, black Southern schools were seeing improvements on many measurable dimensions (Card and Krueger, 1992). Further, given that the Migration ended by 1970, many Southern born blacks in the North will be children of migrants that were educated primarily in higher quality Northern schools. Our census division fixed effects (and their interactions with the Southern born indicator) should alleviate some of these concerns. It is not obvious why import exposure (or our instrument) would be correlated with changes in the relative skill-level of Southern born blacks beyond these regional differences, though it cannot be ruled

[31]For example, in the National Longitudinal Survey of Youth 1979 cohort, which due to their later birth year would be a cohort with a lower school quality gap than the majority of the black working age population in both 1970 and 1990, white high school drop outs actually scored in higher percentiles of the Armed Forces Qualifying Test than black high school *graduates*. See also Lang and Manove (2011), who show that blacks are incentivized to receive higher levels of formal education relative to their skill level in the presence of statistical discrimination.

[32]For example, in 1940 Southern blacks attended schools which with 25% higher pupil-teacher ratios and 10 percent shorter terms than Southern whites (Card and Krueger, 1992). Northern black newspapers expressed concern that these new Southern migrants would hurt the reputation of the local black workforce (Grossman, 1991). See Boustan (2009) for more discussion of skill differences between Great Migrants and Northern-born blacks.

[33]We make a similar restriction to that in our main results, requiring at least 500 working age Southern and non-Southern born black males in both 1970 and 1990. This restriction leaves us with a sample of 185 CZs.

out.

We display the results of this exercise in Table 8. Remarkably, within this sample of CZs we see only mild evidence for negative effects for black workers born outside of the South, concentrated on labor force participation. In contrast, we see strong evidence for negative impacts on Southern born black employment outcomes.

In Table 9 we look for direct evidence of skill upgrading in manufacturing. The first two columns look at the education composition of manufacturing jobs. We find a $1,000 increase in Japanese import competition led to .89 percentage point increase in the share of manufacturing jobs held by college educated workers. We also estimate a decrease in the share held by high school dropouts, though this is not statistically significant. The final four columns look at the occupation composition of manufacturing. We find that a $1,000 import increase led to a .14 percentage point increase in the share of manufacturing employment held by managers and professionals (column 3), all of which is accounted for by an increase in engineers (a subcategory of professionals, column 4). In contrast, we see no change in the share of employment to production workers (column 5). However, in column (6) we see an increase in the skill level of production workers. The share of manufacturing employment belonging to college educated production workers rose by .65 percentage points for every $1,000 increase in Japanese imports.

4.2.2 Japanese Trade and the Geography of Employment

In Table 10 we explore the impact of trade on the distribution of workers and jobs across geographies using Census population tabulations from the NHGIS. In column (1) we first look at changes in CZ population in response to Japanese import competition. The empirical treatment of CZs as separate labor markets relies in part on the idea that workers are slow to migrate across CZs in response to changes in economic conditions. Consistent with several previous studies (e.g., Bound and Holzer, 2000; Autor and Dorn, 2013), and despite the long time horizon we look at, we do not find any evidence of aggregate out-migration from CZs in response to Japanese trade. However, when we instead look at the share of the commuting zone population that is black in column (2), we find that imports exposure caused CZs to become *blacker*. In other words, despite blacks bearing the negative economic effects of trade, CZs which faced a high degree of import competition experienced increases in the black population, offsetting any out-migration from whites or non-black minority groups. While surprising on its face, this is consistent with work by Glaeser and Gyourko (2005) that shows that weak labor demand causes increases in the population of low-skill workers who are attracted by the now lower prices of housing.

In columns (3) and (4) we instead look at the distribution of workers within a CZ between the central city and the suburbs.[34] While we find little evidence that central city populations declined, we find strong evidence that the black share of their population increased; a $1,000 increase in Japanese import competition increased the black share of the central city population by 1.6 percentage points. Thus, white residents left the inner cities in response to trade, and were replaced by an inflow of new black residents, which is again consistent with the work of Glaeser and Gyourko (2005).

A popular explanation for black-white employment differences is the "spatial-mismatch" hypothesis originally advanced by Kain (1968). That is, jobs are located in areas where black workers do not live and are difficult for them to reach. The previous set of results are suggestive of this mechanism if jobs followed white workers to the suburbs. In column (5) of Table 10 we find little evidence that manufacturing jobs shifted from residents of central cities to residents of suburbs. In column (6) we use data from the 1987 and 1972 CoM to look at the location of jobs themselves, and likewise find no evidence they moved out of central cities.[35]

4.2.3 Other Explanations: Prejudice and Unions

Unionization in the United States remained relatively high in 1970, particularly for manufacturing workers. Another hypothesis is that whites were insulated from this trade shock due to better union protections. This seems unlikely given that blacks actually had higher unionization rates than whites throughout the 70s and 80s (Farber et al., 2018). Further, testing this hypothesis is difficult, given that unionization data for this time period is notoriously poor. For example, the CPS does not begin tracking unionization rates until 1973, and even these are only available at the level of often arbitrary state groupings. Nonetheless, we followed recent work by Farber et al. (2018) and constructed state-level estimates of unionization rates for the 1967-1972 time period using data from Gallup surveys. As unionization rates are largely driven by industrial composition, we took the residual of this variable from a regression on state-level manufacturing share, and then matched it to the state of the largest city in each CZ. Column (1) of Table 11 includes this variable along with its interaction with import competition in our main manufacturing specification, while column (2) adds interactions with race.[36] While our results suggest that unionization may

[34] We remind the reader that we have a reduced sample size here as only 167 CZs have a Census-defined central city in 1970. All of our main results from Section 4.1 are robust to using just these 167 CZs (results available upon request).

[35] As discussed before, the CoM is not conducted simultaneously with the Census, but instead at a different set of five year intervals. Consistent with Table 4, we find no effect on CZ-level manufacturing employment from trade in the 1972-1987 period. However the CoM does not track employment by race, so we cannot replicate our main results using these data.

[36] We see a small reduction in sample size here as not all states were surveyed by Gallup.

have shielded manufacturing jobs from import competition, we find no evidence that whites received greater protections.

Another alternative explanation for our findings is that, when forced to lay off workers due to increased Japanese competition, managers chose to only lay off blacks due to racial prejudice. If this were the case, it is not clear how such managers were then able to gather resources to hire high-skill whites. That notwithstanding, we tested this hypothesis using county-level voting data from the Atlas of U.S. Presidential Elections for the 1968 presidential election, which included George Wallace, a serious pro-segregation third party candidate.[37] In column (3) of Table 11 we include an indicator for whether the CZ was at or above the national median in Wallace vote share, along with its interactions with race and import penetration.[38] If anything, blacks appear to have seen less negative effects from trade in highly prejudiced areas. Column (4) instead includes an indicator for whether the CZ was at or above the median of its census division, with similar results.

4.3 The Impact of Japanese Trade on Earnings

In the previous sections we established that Japanese trade led to a displacement of the relatively low-skill black population from manufacturing and a replacement with the relatively higher-skill white population. We now explore how these structural changes influenced black financial outcomes.

In the first three columns of Table 12, we estimate the impact of Japanese competition on median male wages and earnings.[39] These results must be taken with caution because of the effect of Japanese import competition on the composition of employment. While we saw in Table 7 trade caused a movement of high-skill whites into manufacturing, these workers were primarily drawn from employment in non-manufacturing. The strongest *net* employment effects were an increase in the labor force participation of the lowest skill whites and a decrease in the labor force participation of the lowest skill blacks. It is therefore not surprising that we see no disparate impact on weekly wages of those with earnings in column (1). In column (2), we find a negative, but statistically insignificant effect on the black-white annual earnings gap for these workers.

However, as is well-known in the literature (e.g., Butler and Heckman, 1977; Brown,

[37] Wallace received 13.5% of the popular vote and won five states. Since 1948, Wallace is the only third party candidate to have won a state, and only H. Ross Perot in 1992 received a higher vote share.

[38] We exclude CZs in Louisiana, as parish-level voting data is not available.

[39] We prefer working with medians for several reasons. First, earnings data is topcoded, and the topcode varies across censuses. Second, medians will be less sensitive to outliers, which is relevant particularly for smaller CZs that contain few black workers. Finally, we cannot calculate a mean log earnings inclusive of non-earnings as in column (3) of Table 12 as the log of 0 is undefined. In Appendix B.7, we report results using means and generally find results which are less negative but consistent with those reported here.

1984; Chandra, 2003) and can be seen in Table 5, estimates of changes in the earnings gap in this time period can understate the true magnitude of the changes in relative black financial circumstances due to the large decrease in labor force participation by black men. In column (3), we estimate the impact on median male earnings inclusive of individuals who report zero income.[40] Once we allow for non-earners we see a large and statistically significant negative impact of trade on black workers, with little impact on whites. Our estimate suggests a $1,000 increase in Japanese import competition led to a 3.6 log point increase in the black-white median earnings gap.

The final three columns of Table 12 look at household finances.[41] The impact of reduced black male employment may have been partially offset if other household members, including black women, found employment opportunities in response. The ability to do so is hampered by the fact that black women's labor force participation has historically been higher than whites' (Neal, 2004). We see this was not the case for earnings in column (4). While the economic standing of white families did not change in response to import competition, the median black-white family earnings gap rose by 2.6 log points for every $1,000 of exposure. We see a smaller effect when we look at household income rather than earnings in column (5), which appears to be due to a relative increase in welfare recipiency (column 6).

Interestingly, we also find increased welfare recipiency for white families. Because welfare is an outcome that specifically measures the economic health of those near the bottom of the income distribution, this further suggests the importance of the demand for skill. While white high school dropouts do not appear to be affected on the aggregate, perhaps due to historical differences in school quality, within the left tail of this group should be a set of workers more comparable in skill to black high school dropouts. Those workers should reasonably have felt similar impacts of trade as low-skill blacks. The evidence of increased welfare recipiency supports this story.[42]

[40] While the log of 0 is undefined, this does not cause problems for calculating median earnings as we simply assume these earnings are below median. After performing the winsorization, there is no commuting zone in which the median worker of any race reported 0 earnings.

[41] We calculate the sum of all income of individuals in the household ages 16-64 and divide by the total number of 16-64 year olds in the household. The race of the household is determined by the race of the household head.

[42] As an additional test of this hypothesis, we calculated what percentile in each CZ the median black earner would have been in the 1970 white distribution. Similar to Bayer and Charles (2018), we then compared the change in black median male earnings to the earnings of this percentile white in response to Japanese trade. When we considered only those with positive earnings, we found a strong negative impact on whites near the median of the black distribution, despite no negative impact on median black earnings. However, once including those without earnings, we found a large negative impact on median blacks and no evidence of negative effects on comparable whites, similar to those reported in Table 12. These results are available upon request.

4.4 Quantifying the Impact of Japanese Trade

Our previous results have shown that Japanese import competition exacerbated racial differences in employment, earnings, and the financial standing of households. In Table 13 we perform two back of the envelope calculations to quantify these impacts. First in column (1) we calculate the national change in the racial gap from 1970-1990 across several economic variables using the full IPUMS samples of the respective Decennial Censuses. Note that this includes geographies excluded from our regression analysis due to the small number of black workers living in these communities. We show descriptive statistics for this sample in Appendix B.8. In general, we see that blacks appear to perform slightly better in the national sample relative to what we see in our regression sample in Table 1, though the trends are similar.[43]

The average black worker lived in a commuting zone which was exposed to $1,413 (in 1999 dollars) worth of new Japanese imports, while the average white worker was exposed to $1,601. In column (2) we use these values, as well as our estimates from Tables 5 and 12 to estimate the change in national disparities were Japanese imports to have remained at 1970 levels for both white and black workers. This will overstate the explanatory power of trade if part of the import increase was due to domestic demand increases, and demand-induced imports have a smaller impact on racial disparities than imports induced by exogenous factors. In column (3), we follow Autor et al. (2013) and Acemoglu et al. (2016) and obtain a more conservative estimate using just the exogenous increase in imports determined by our instrument. We first multiply the realized per worker import increases by the partial R^2 from the first stage regression (.764), and then compute our counterfactuals as before using these values.

There are some important caveats to this exercise. Because our identification is entirely from cross-commuting zone exposure, these estimates are best viewed as accounting for only the direct effects of foreign competition. They will not take into account, for example, a common national effect on racial disparities caused by access to lower prices, higher quality, or increased variety of consumer goods. They will also not take into account changes caused by movements of capital out of highly affected CZs and redistributed in a way orthogonal to trade exposure.[44] Nonetheless, we believe these estimates are informative on the importance

[43]This is possibly due to the CZs outside of our regression sample being exposed to less Japanese trade, which we have shown negatively impacted black workers.

[44]For example, these calculations may overstate the overall negative impact of Japanese trade if it caused a relocation of manufacturing firms from the North to the South, and these new Southern factories employed blacks at high rates. While our primary identification strategy is not able to account for such changes, in unreported results we found, using cross-industry differences in Japanese import exposure, that trade competition had no impact on the propensity of industries to increase Southern employment.

of trade in explaining changes in disparities.

The impact is substantial. We can explain 66-86% of the relative decrease in black manufacturing employment, and 17-23% of the relative rise in black non-labor force participation due to Japanese import competition. In the absence of this trade influx, the median earnings gap for working age males would have seen a 34-44% slower divergence, while household earnings would have converged at 1.7-2.0 times the rate. Welfare recipiency would have grown by 37-48% less.

5 Conclusion

Much of the popular press has focused on the effects of Chinese import competition on white working class communities. But many of the identified impacts, including declines in manufacturing employment, labor force participation, and earnings, are reminiscent of the economic hardships experienced by black communities in the 1970s and 1980s. Using modern methods, we find strong evidence that import competition in this time period from Japan played a sizable role in these hardships. Every $1,000 increase in imports exposure per worker resulted in a decrease in black manufacturing employment by .59 percentage points, a rise in labor force non-participation of .46 points, and a decline in median household earnings by 2.8 log points.

However, we do not see evidence for aggregate losses for the American manufacturing sector. Instead we find a shifting of employment, particularly from low-skill blacks to high-skill whites. Thus the net effect of this period of globalization was a redistribution of welfare from a disadvantaged community to an advantaged one. Our results suggest that the costs of foreign competition in the 1970s-1980s were obscured by disproportionately loading onto black Americans. They also provide a wealth of evidence that increased import exposure was instrumental in the stalling of black economic progress during this time period, mirroring the effects widely acknowledged for white working class communities in the 2000s.

To the extent that these disparities were caused by changes in the demand for low-skill manufacturing workers, one natural question is to ask whether this reversal was inevitable. The subsequent national declines in American manufacturing have been accompanied by changes in technology which have made the remaining sector more high-skill (Charles et al., 2018). However, the timing of the Japanese trade shock may have made it particularly damaging. Black workers had only recently made advances in manufacturing. The inability to sustain this success may have played a role in the failure to close gaps for longer-term progress markers, such as the home ownership (Collins and Margo, 2001). It likewise conceivable that this economic disruption reduced the ability of parents to invest in human capital for the next generation. Indeed, progress on education and test gaps would begin to stall and reverse at the end of the 1980s, concurrent with a rise in youth incarceration and drug violence (Neal, 2006; Evans et al., 2016). Had blacks continued to make economic progress during these decades, they may have been less vulnerable to eventual technological changes.

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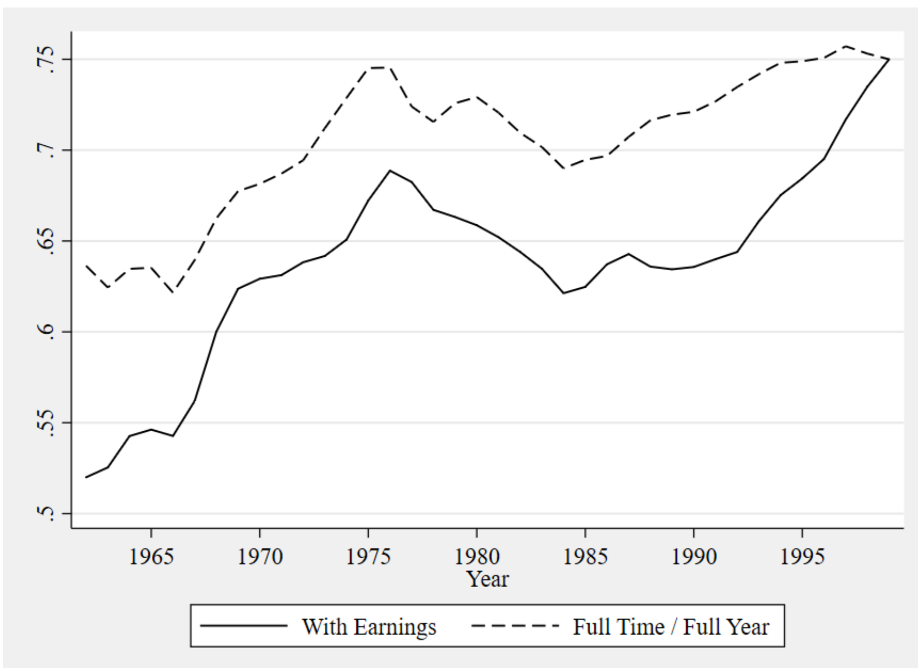
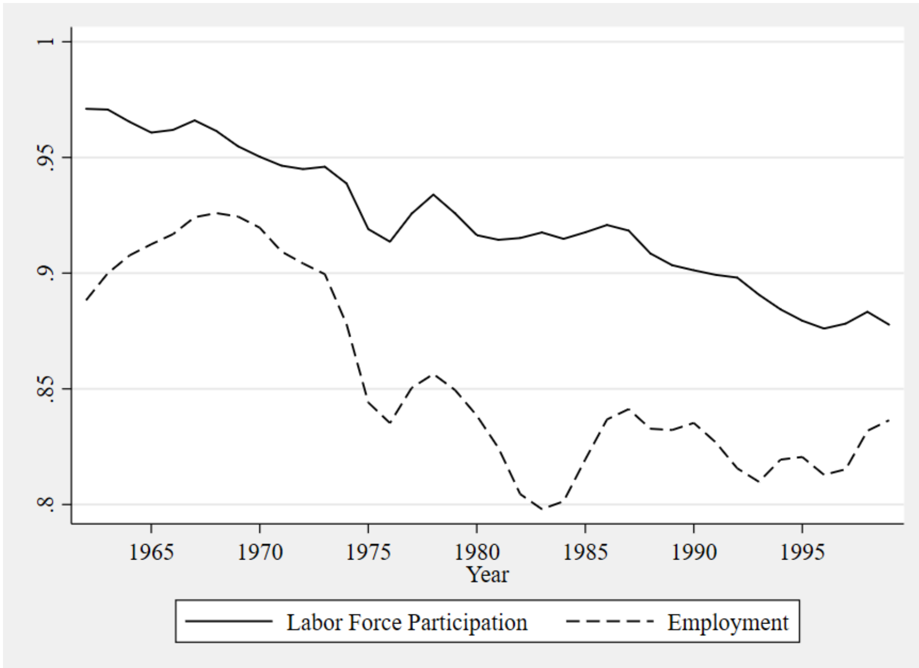
Figure 1: Ratio of Median Earnings for Working Age Population: Black Men/White Men, 1962-1999



Notes - Yearly scatterplot data smoothed using LOWESS with bandwidth=0.15

Source - Current Population Survey (1962-1999).

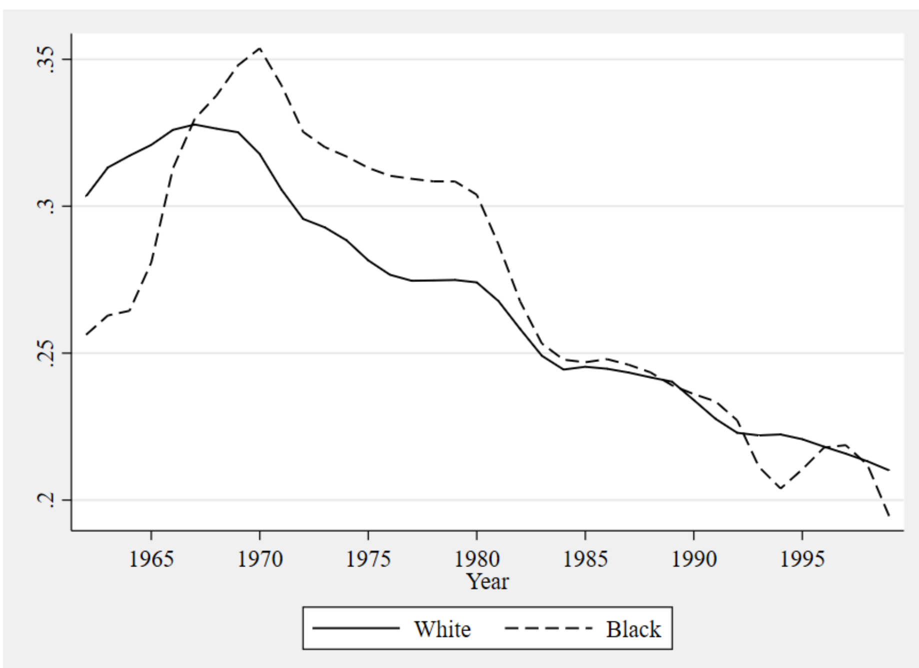
Figure 2: Ratio of Employment Rates for Working Age Population: Black Men/White Men, 1962-1999



Notes - Yearly scatterplot data smoothed using LOWESS with bandwidth=0.15

Source - Current Population Survey (1962-1999).

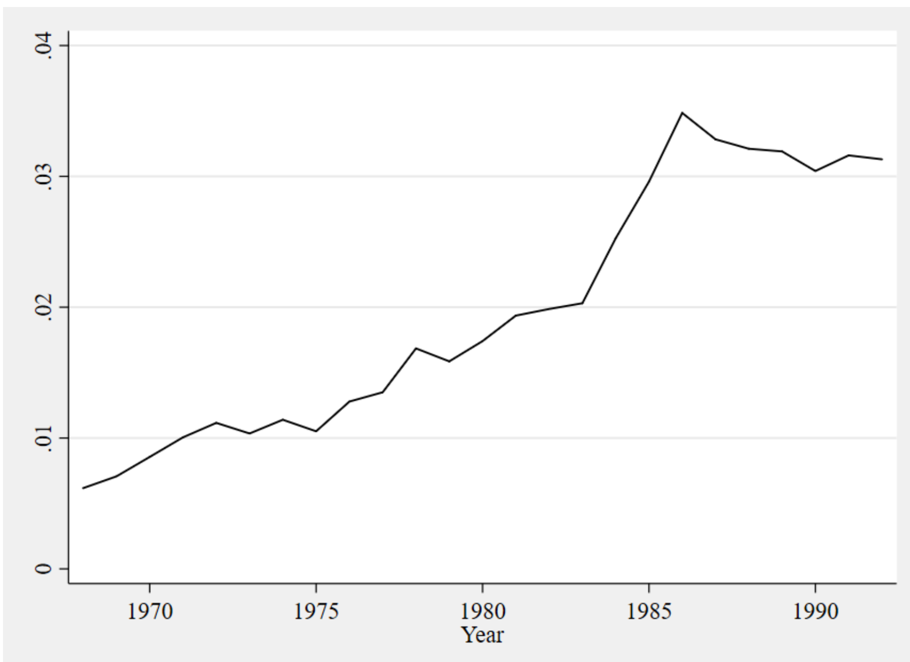
Figure 3: Fraction of Employment in Manufacturing: Working Age Men, 1962-1999



Notes - Yearly scatterplot data smoothed using LOWESS with bandwidth=0.15

Source - Current Population Survey (1962-1999).

Figure 4: U.S. Import Penetration Ratio in Manufactured Goods for Japan, 1968-1992



Source - Authors' calculations using trade data from UN Comtrade and domestic output data from the BEA.

Table 1: Descriptive Statistics: Regression Sample

	Black		White		ΔGap
	1970	1990	1970	1990	
	(1)	(2)	(3)	(4)	(5)
Percentage of population employed in manufacturing	19.432	13.372	23.620	18.147	-0.587
	(8.68)	(6.27)	(8.73)	(6.29)	
Percentage of population employed in non-manufacturing	51.588	48.695	59.078	62.997	-6.811
	(10.18)	(9.69)	(8.34)	(7.20)	
Unemployed share of population	4.380	9.808	2.748	4.311	3.866
	(1.85)	(2.83)	(0.99)	(1.14)	
Labor force non-participation rate	24.531	28.084	14.530	14.447	3.637
	(5.16)	(6.27)	(2.99)	(3.02)	
Median log weekly wage, male earners	613.088	613.290	652.737	650.471	2.467
	(27.25)	(18.38)	(14.86)	(16.06)	
Median log annual earned income, male earners	996.847	995.625	1043.513	1040.489	1.803
	(29.87)	(20.49)	(16.15)	(17.19)	
Median log annual earned income, all working-age males	977.015	948.890	1035.449	1030.179	-22.855
	(37.81)	(34.56)	(18.09)	(21.93)	
Median log HH earned income	933.542	947.747	989.553	1003.265	0.493
	(37.27)	(30.98)	(16.15)	(21.18)	(0.00)
Median log HH total income	939.089	958.054	990.343	1010.350	-1.041
	(35.47)	(26.96)	(15.93)	(19.35)	(0.00)
HH welfare rate	14.142	18.064	2.842	4.374	2.389
	(4.55)	(5.55)	(1.23)	(1.78)	(0.00)
Observations	358	358	358	358	

Notes - Standard deviations in parentheses. Percentage and rate variables are scaled in percentage points, while earnings and income variables are scaled in log points.
Source - 1970 form 1 and 2 1% metro and 1990 5% IPUMS samples of the United States Decennial Census.

Table 2: Value of Trade with Japan for the U.S. and Other Selected High-Income Countries and Value of Imports from all Other Source Countries, 1970-1990

	Imports from Japan	Exports to Japan	Imports from rest of world
	(1)	(2)	(3)
Panel A: United States			
1970	25.2	19.8	146.3
1990	119.7	61.9	538.6
Growth 1970-1990	374%	213%	268%
Panel B: Six other developed countries			
1970	4.8	6.8	97.9
1990	23.7	20.1	311.8
Growth 1970-1990	389%	194%	219%

Notes - Values are in billions of 1999 U.S. Dollars.

Source - UN Comtrade

Table 3: Japanese imports to the U.S. and to Other Countries: First Stage Estimates

	(ΔImports to US)/worker	
	(1)	(2)
(Δ Imports from Japan to OTH)/worker	4.694***	4.949***
	(0.395)	(0.537)
Controls	No	Yes
Observations	358	358
R^2	0.764	0.786

Notes - Robust standard errors clustered by state in parentheses. Regression in column (2) includes census division fixed effects and commuting zone-level controls for black percentage of population, foreign-born percentage of population, percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, and percentage of employment in routine occupations in 1960; $*p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 4: Japanese Imports on Change in Manufacturing Employment/ Working Age Population in CZs, 1990-1970 Long Difference: 2SLS Estimates

	All			White	Black
	(1)	(2)	(3)	(4)	(5)
(Δ Imports from Japan to US)/worker	-1.264***	-0.096	0.034	0.193*	-0.592***
	(0.427)	(0.199)	(0.111)	(0.117)	(0.137)
Percentage of employment in manufacturing$_{1960}$		-0.295***	-0.222***	-0.238***	-0.187**
		(0.032)	(0.044)	(0.046)	(0.078)
Black percentage of population$_{1960}$			-0.053**	-0.050**	-0.054
			(0.025)	(0.025)	(0.039)
College percentage of population$_{1960}$			-0.204***	-0.220***	-0.272***
			(0.067)	(0.067)	(0.093)
Foreign-born percentage of population$_{1960}$			0.003	0.017	0.039
			(0.048)	(0.045)	(0.081)
Average offshorability index of occupations$_{1960}$			0.079**	0.062	0.194***
			(0.035)	(0.038)	(0.053)
Percentage of employment in routine occupations$_{1960}$			-0.108	-0.087	-0.163*
			(0.067)	(0.072)	(0.098)
Census Division FE	No	No	Yes	Yes	Yes
Observations	358	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by 1970 population. $*p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 5: Japanese Imports and Change in Racial Employment Status Gap, 1990-1970 Long Difference: 2SLS Estimates

	Mfg emp	Non-mfg emp	Unemp	NILF
	(1)	(2)	(3)	(4)
(Δ Imports from Japan to US)/worker	0.193*	-0.097	-0.010	-0.086
	(0.117)	(0.096)	(0.034)	(0.054)
(Δ Imports from Japan to US)/worker × Black	-0.785***	0.228	-0.071	0.542***
	(0.173)	(0.217)	(0.127)	(0.121)
Observations	716	716	716	716

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 6: Japanese Imports on Change in Manufacturing Employment/ Working Age Population in CZs, 1990-1970 Long Difference: Robustness Exercises

	Race-specific	1-dig shares	Gross imports	Net imports		Final goods
	2SLS	2SLS	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
(ΔImports from Japan to US)/worker	0.187 (0.157)	0.268 (0.189)	0.211** (0.122)	0.166* (0.139)	0.213* (0.109)	0.227 (0.146)
(ΔImports from Japan to US)/worker × Black	-0.638*** (0.159)	-0.509** (0.211)	-0.595*** (0.135)	-0.564*** (0.140)	-0.830*** (0.187)	-1.035*** (0.233)
Observations	716	716	716	716	716	716

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 7: Japanese Imports and Change in Employment Status by Race and Skill Group, 1990-1970 Long Difference: 2SLS Estimates

	Mfg emp	Non-mfg emp	Unemp	NILF
	(1)	(2)	(3)	(4)
	Panel A: HS Dropouts			
All Workers				
(Δ Imports from Japan to US)/worker	-0.257**	0.348***	0.043	-0.127
	(0.114)	(0.094)	(0.059)	(0.121)
Black Workers				
(Δ Imports from Japan to US)/worker	-0.877***	0.295	0.112	0.406*
	(0.109)	(0.204)	(0.120)	(0.216)
White Workers				
(Δ Imports from Japan to US)/worker	-0.090	0.402***	0.050	-0.345***
	(0.119)	(0.089)	(0.045)	(0.129)
	Panel B: HS Grads			
All Workers				
(Δ Imports from Japan to US)/worker	-0.192	0.094	0.064	0.033
	(0.159)	(0.111)	(0.044)	(0.050)
Black Workers				
(Δ Imports from Japan to US)/worker	-0.263	0.012	-0.228	0.350*
	(0.283)	(0.344)	(0.168)	(0.193)
White Workers				
(Δ Imports from Japan to US)/worker	-0.079	0.043	0.092**	-0.035
	(0.160)	(0.129)	(0.038)	(0.057)
	Panel C: College Educated			
All Workers				
(Δ Imports from Japan to US)/worker	0.272*	-0.329***	0.045	0.017
	(0.158)	(0.124)	(0.030)	(0.093)
White Workers				
(Δ Imports from Japan to US)/worker	0.300**	-0.312**	0.038	-0.028
	(0.150)	(0.121)	(0.029)	(0.090)
Observations	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Each entry represents a separate regression for that race and/or skill group. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. $*p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 8: Japanese Imports and Change in Employment Status for Southern versus Non-Southern Born Blacks, 1990-1970 Long Difference: 2SLS Estimates

	Mfg emp	Non-mfg emp	Unemp	NILF
	(1)	(2)	(3)	(4)
(Δ Imports from Japan to US)/worker	0.016 (0.181)	-0.028 (0.284)	-0.244* (0.130)	0.237* (0.132)
(Δ Imports from Japan to US)/worker × Southern Born	-0.586* (0.347)	-0.084 (0.476)	0.323*** (0.073)	0.264 (0.193)
Observations	370	370	370	370

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by group-specific 1970 population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a Southern-born indicator; and interactions of the Southern-born indicator with all of these variables. The sample includes CZs with a population of at least 500 Southern born and 500 non-Southern born working age black males in 1970 and 1990. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 9: Japanese Imports and Change in Skill Composition of Manufacturing, 1990-1970 Long Difference: 2SLS Estimates

	Share of Manufacturing Employment					
	College	HS dropout	Prof	Eng	Prd wrk	College prd wrk
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ Imports from Japan to US)/worker	0.892*** (0.221)	-0.248 (0.204)	0.143* (0.087)	0.154*** (0.035)	-0.056 (0.103)	0.648*** (0.123)
Observations	358	358	358	358	358	358
1970 mean of DV	19.7	43.2	13.0	3.5	65.9	5.0

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by 1970 population. Left-hand side variable in column (1) is the share of manufacturing employment belonging to college educated workers. Left-hand side variable in column (2) is the share of manufacturing employment with less than a high school degree. Left-hand side variable in column (3) is the share of manufacturing employment in management and professional occupations. Left-hand side variable in column (4) is the share of manufacturing employment in engineering occupations. Left-hand side variable in column (5) is the share of manufacturing employment in production occupations. Left-hand side variable in column (6) is the share of manufacturing employment belonging to college educated workers in production occupations. Each regression includes census division fixed effects; and commuting zone-level controls for black percentage of population, foreign-born percentage of population, percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, and percentage of employment in routine occupations in 1960. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 10: Japanese Imports and Changes in the Geography of Employment, 1990-1970 Long Difference: 2SLS Estimates

	CZ Population		Central City Population		Central City Man Share	
	Log pop (1)	Share black (2)	Log pop (3)	Share black (4)	Share reside (5)	Share jobs (6)
(Δ Imports from Japan to US)/worker	0.982	0.183***	-0.176	1.552***	-0.415	0.479
	(0.894)	(0.059)	(0.235)	(0.235)	(0.320)	(0.538)
Observations	358	358	167	167	167	167
1970 mean of DV	1386.6	12.3	38.9	21.2	37.5	45.6

Notes - Robust standard errors clustered at the state-level in parentheses. Left-hand side variable in column (1) is the change in log population of the commuting zone. Left-hand side variable in column (2) is the change in the share of population that is black in the commuting zone. Left-hand side variable in column (3) is the change in log population of the central cities within the commuting zone. Left-hand side variable in column (4) is the change in the share of population that is black in the central cities within the commuting zone. Left-hand side variable in column (5) is the change in the share of manufacturing workers living in central cities within the commuting zone. Left-hand side variable in column (6) is the change in the share of manufacturing jobs located in central cities within the commuting zone. Long difference in columns (1)-(5) is 1990-1970. Long difference in column (6) is 1987-1972. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960. $*p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 11: Heterogeneous Effect of Japanese Imports on Change in Manufacturing Employment/ Working Age Population in CZs by Unionization and Prejudice, 1990-1970 Long Difference: 2SLS Estimates

	Unionization		Prejudice	
	Resid	Resid	Nat	Div
	(1)	(2)	(3)	(4)
(Δ Imports from Japan to US)/worker	-0.299	-0.228	0.367**	0.617***
	(0.395)	(0.416)	(0.152)	(0.238)
(Δ Imports from Japan to US)/worker × Black	-0.764***	-0.838	-1.407***	-1.646***
	(0.178)	(0.666)	(0.255)	(0.495)
(Δ Imports from Japan to US)/worker × Union Residual	0.055**	0.044		
	(0.027)	(0.027)		
(Δ Imports from Japan to US)/worker × Union Res. × Black		0.017		
		(0.049)		
(ΔImports from Japan to US)/worker × Wallace			-0.258	-0.467**
			(0.177)	(0.219)
(Δ Imports from Japan to US)/worker × Wallace × Black			0.773***	0.879**
			(0.297)	(0.447)
Observations	708	708	688	688

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Each regression includes census division fixed effects; and commuting zone-level controls for black percentage of population, foreign-born percentage of population, percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, and percentage of employment in routine occupations in 1960. Columns (1) and (2) include the residual of a regression of 1967-1972 state-level unionization rates on 1970 state manufacturing share. Wallace indicator in column (3) equals one if the CZ was at or above the national median in Wallace vote share in 1968 presidential election. Wallace indicator in column (4) equals one if the CZ was at or above census division median in Wallace vote share in 1968 presidential election. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 12: Japanese Imports and Changes in Financial Well-being, 1990-1970 Long Difference: 2SLS Estimates

	Log Weekly Wage	Log Annual Earnings			Log Ann Inc	% Welf Recp
	Earners	Earners	All	HH	HH	HH
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ Imports from Japan to US)/worker	0.265	0.517	-0.108	-0.242	-0.121	0.137**
	(0.415)	(0.340)	(0.520)	(0.348)	(0.307)	(0.064)
(Δ Imports from Japan to US)/worker × Black	-0.067	-0.305	-3.570***	-2.607***	-1.861***	0.609***
	(0.263)	(0.431)	(0.830)	(0.491)	(0.394)	(0.106)
Observations	716	716	716	716	716	716

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Wage, earnings and income variables are measured as CZ medians. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 13: Japanese Imports and Change in Racial Disparities, 1990-1970: Back of the Envelope Calculations

	Realized Change	Counterfactual Change	
		All	Exog
	(1)	(2)	(3)
	Panel A: Males, 16-64		
Manufacturing Employment	-1.34	-0.19	-0.46
NILF Rate	3.50	2.71	2.90
Log Median Earnings, All Males	-11.38	-6.36	-7.54
	Panel B: Households		
Log Median Earnings	3.71	7.35	6.49
Welfare Recipiency Rate	1.73	0.90	1.09

Notes - Realized changes calculated from 1970 1% form 1 and form 2 metro and 1990 5% IPUMS samples of the United States Decennial Censuses, and include individuals living in commuting zones that were not used in regression analysis due to the sample size of black workers. Counterfactual change calculations in column (2) based on regressions results from Tables 5 and 12, given that from 1970-1990, the average black worker was exposed to a $1,413 increase in Japanese trade competition, while the average white worker was exposed to a $1,601 increase. Counterfactual change calculations in column (3) instead use vales of $1079.53 and $1,223.16, which reflects the exogenous trade increase per worker based on a partial R^2 of 0.764 in the first-stage regression.

A Data Appendix

A.1 Current Population Survey

We use the 1962-1999 Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS). To focus on black-white differences, we exclude non-white, non-black individuals. To be consistent across years, we include Hispanic whites, as the CPS did not ask for Hispanic ethnicity until the 1971 survey. We further restrict the sample to non-military men ages 16-64 who were not living in group quarters and were not full time students. We define full time, full year employment as having worked more than 48 weeks in the previous year, and at least 35 hours in the previous week.

Topcoding of income varies through the duration of the CPS. In real terms, the lowest top code is in 1981, at $101,100 1999 Dollars. Across all years, we replace every individual with a reported real income above $101,100 1999 Dollars with 1.5 times that amount ($151,650).

From 1968-1999, we classify workers as being in manufacturing based on 1990 Census occupation codes provided by the CPS. Prior to 1968, industry codes are only available in a small number of general categories. For 1963-1967 we classify codes 5-21 as manufacturing, and for 1962 we use codes 4-20.

A.2 Labor Market Variables

We omit individuals living in institutions and unpaid family workers throughout. Following Autor et al. (2013), we impute weeks worked last year for those who report wage income but not weeks. The imputed value is set equal to the mean value for those we observe with the same years of education and 1990 Census occupation code; if that value is not available, the imputed value is set equal to the mean value for those we observe with the same years of education. As the 1970 sample only provides intervalled weeks worked last year, we replace those intervals with the averages of weeks worked within those intervals in the 1980 sample.

To compute weekly wages, we first account for topcoding by replacing values of annual wage income above the 98th percentile to 1.5 times the 98th percentile value. We then divided by the number of weeks worked in the previous year. We replace any values that exceed 150 percent of the topcoded value of annual wage income divided by 50 to this value, and convert to 1999 Dollars using the CPI deflator.

We define annual earned income as the sum of wage income, business income, and farm income. Here we face the challenge that topcoding is both inconsistent across years and income categories. Prior to summing these three sources, we replace values above the 95th percentile of each by year with 1.5 times the 95th percentile value. For business and farm income, which can take on negative values, we replace values below the 3rd percentile of each year with 1.5 times the 3rd percentile value. We then adjust these values to reflect 1999 USD using the CPI deflator.

We define a household as in the 1970 Census, and the race of the household by the race of the household head. Earned household income is calculated analogously to individual level earned income. Total household income includes all income sources, for which we address topcoding by replacing (for each component) values above the 95th percentile of each by year with 1.5 times the 95th percentile value. All household-level income variables are averaged over the number of adults ages 16-64 in the household.

A.3 SITC to HS Crosswalk

We constructed a new, country-specific crosswalk from SITC to HS product codes in order to utilize the crosswalk provided in Autor et al. (2013) which maps HS product codes to SIC industries. We describe that crosswalk here.

We utilize Comtrade imports data for years in which both HS codes and SITC codes are available and connected them using the correspondence tables available from the UN (https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp). Since SITC Rev. 2 codes were not available for 1970, we use SITC Rev. 1 codes. We calculated the shares of Japanese import values of each detailed SITC code (5-digit when consistently available) that mapped to its corresponding 6-digit HS codes for each importer for each year from 1991 through 1994.

For each importer we then averaged the SITC-to-HS value of imports shares across these years. If an SITC code had positive Japanese imports values between 1970 and 1990, but did not have positive values for at least one of the years between 1991 and 1994, we instead calculated the shares from the importer's global imports from 1991 to 1994. The resulting shares are used as origin-destination specific weights to convert imports data between 1970 and 1990 from SITC to HS codes. An analagous crosswalk was made for exports for the net imports robustness exercise in Table 6.

A.4 CBP Imputation Procedure

In each county-industry cell, the CBP reports the total number of employees as well as a count of establishments by brackets of employment totals. As a precaution to avoid disclosing the operations of any individual employer, the CBP suppresses some total employment counts in some county-industry cells, while it always reports the number of establishments by firm size bracket. For these cases, we impute employment following a procedure analogous to that described in Autor et al. (2013), which multiplies the number of establishments in each bracket by the average firm size in that bracket that can be observed in the CBP. A minor difference between the 1970 CBP and the later series used by Autor et al. (2013) is that suppressed employment totals are also bracketed in the later series, while there is no additional information provided in 1970. In the 1970 CBP, 12 Kansas counties were omitted from the data. These counties are in three of our regression sample CZs. Robustness checks omitting these three CZs are available upon request.

A.5 1960 Census Industry Disaggregation

To construct our 1960 instrument, we rely on CZ industry composition calculated from the 1960 5% Census sample, since CBP data for 1960 does not exist. In order to utilize the Census data, we needed to disaggregate the fairly coarse 1960 Census industry codes into the SIC industries we use for the rest of our variables. To do this, we developed the following procedure.

We took the employed population in the 1960 5% Census sample and calculated each CZ industry composition based on 1990 Census industry codes. We connected this in a one-to-many mapping to CZ-level SIC-based industry employment data from the 1970 CBP, using the crosswalk available in Census Bureau Technical Paper #65. Because we use a slight aggregation of SIC industries, we had to combine two Census codes, 140 and 142, giving us 61 Census codes. 58 of these are trade exposed since the remaining 3 are "not specified" industries that do not connect to SIC codes in the Census crosswalk (122, 332, 392). This resulting mapping of 58 Census industry codes to 380 SIC codes allows us to calculate CZ-specific employment shares of each SIC code within each Census code.

This disaggregation relies on the assumption that within each Census code, a CZ's SIC-based employment composition is constant between 1960 and 1970. If the associated SIC industries were not present in the 1970 data for a particular CZ-Census industry cell, we use state-level (or, as a last resort, national-level) employment shares.

A.6 Routine- and Offshorability- Indices

We include as controls the share of employment in routine-intensive occupations and the average offshorability index of occupations in a CZ in 1970. Both of these measures use task data from Autor and Dorn (2013). To identify routine-intensive occupations, we follow Autor and Dorn (2013) to create a routine-intensive index for each occupation: log(routine score) - log(manual score) - log(abstract score). As they do, we recode the bottom 5 percent of the population in the base year for manual and abstract to be the 5th percentile. After ranking occupations by the routine-intensive index, those which take the top third of employment in the base year are classified as routine-intensive.

The offshorability index is derived from the variables *face-to-face contact* and *on-site job* by occupation in O*NET data; more details on its construction can be found in Autor and Dorn (2013). Our control is the mean index in the CZ according to its composition of occupations in 1970. In the regression sample, the CZ mean offshorability index is standardized to have a mean of 0 and standard deviation of 10 in 1970.

A.7 Import Competition in Final Goods

In column (6) of Table 6, we report the result for an alternative measure of import exposure that seeks to isolate the effect of final goods imports, rather than intermediates to be used as inputs by firms. In order to remove the share of imports that are used as intermediates, we follow the approach of Autor et al. (2013) by exploiting the 1972 input-output data provided by the BEA. We convert the codes used in the BEA's IO Data files to SIC 1972 via their crosswalk and then to the slightly aggregated set of SIC 1987 codes that are used in the rest of the analysis. Since these are not one-to-one mappings, we incorporate weights based on the NBER-CES Manufacturing Industry Database concordance.

Assuming that make and use values in domestic production also reflect the nature of imports, we use these tables to construct shares of each industry's make value that is then used as inputs in other manufacturing industries, and deduct this share from the change in imports value when constructing IPW. We likewise construct a modified instrument.

B Empirical Appendix

In this appendix we provide additional descriptive statistics and supplemental results to those presented in the main text.

B.1 Product Composition of Japanese Imports

Table B.1 shows the growth in imports for the SITC product categories that received the ten largest increases from 1970-1990. Values are listed in millions of 1999 U.S. Dollars.

B.2 Geographic Dispersion of Japanese Trade

In Figures B.1 and B.2 we show heat maps for the geographic dispersion of trade for all CZs in the continental United States and our regression sample, respectively. We see that the largest trade increases took place across the northern "Rust Belt" region, as well as into New England and southern California. In contrast, the heavily black regions of the Deep South were less exposed. Most of the regions we exclude due to sample size of black working age males are sparsely populated Western commuting zones. In general, these CZs were less exposed than those in our regression sample.

In Table B.2 we list the ten most and least affected commuting zones among the 40 largest CZs in our sample. The hardest hit areas were large Midwestern manufacturing cities like Detroit and Buffalo, though San Jose, California also makes the list. The smallest growth areas were primarily in the Sun Belt and West Coast; Pittsburgh, Pennsylvania is one notable exception.

B.3 Alternative Time Horizons

Due to concerns about the timing of the 1980 Census and the receding of Japanese trade in the late-1980s, we used the 1990-1970 long difference approach throughout the main text. In Table B.3 we explore different time horizons for our main results on manufacturing share. Column (1) repeats column (1) of Table 5. Column (2) and (3) look just at 1980-1970 and 1990-1980, respectively. From 1980-1970 we see a strong negative effect on black manufacturing employment without any evidence for the positive effect on white outcomes that we saw in our main results. In contrast from 1990-1980 we see strong positive effects on manufacturing employment overall, with little evidence for a differential effect. One interpretation of these results is that the initial influx of import competition in the late 1970s led to large layoffs of black manufacturing workers, and that it was not until the 1980s that firms adjusted and began re-employing (higher skill, white) workers. But, as we state in the main text, the 1990-1980 difference may be unreliable due to the 1980 recession and the decline in Japanese imports at the end of the 1990s. Column (4) presents the preferred specification from Autor et al. (2013), which stacks the 1980-1970 and 1990-1980 differences. These results are consistent with those from our preferred specification, but with less precision.

In column (5) we estimate a placebo regression of the increase in Japanese imports from 1970-1990 on the change in manufacturing employment from 1960-1970. Here we include as controls the 1960 CZ manufacturing share and census division fixed effects, as well as their interactions with the black indicator. We find little evidence of an effect of future imports on past manufacturing changes, providing support for the validity of our instrumental variable strategy. If anything, the pre-trends were towards black growth in manufacturing in areas that would receive higher Japanese import competition.

In column (6) we present an alternative specification of our preferred long differences strategy where we use as our left-hand side variable the change in the black-white manufacturing employment *gap*. The coefficient on our import exposure variable is thus analogous to the coefficient on the black interaction in the fully-interacted specification. The result is very similar.

B.4 Instrumental Variable Robustness Exercises

Denote $\overline{X_j}$ as the industry average of some CZ-level variable X_i weighted based on industry j's employment distribution across CZs. That is,

$$\overline{X_j} = \frac{\sum_i s_{ij} X_i}{\sum_i s_{ij}} \tag{4}$$

where s_{ij} is the share of CZ i's employment belonging to industry j. To provide conditions for the consistency of "shift-share" IV estimators, Borusyak et al. (2018) show that the CZ-level regression in the main text is equivalent to estimating the two-stage least squares regression

$$\overline{\Delta Y}^{\perp}_{jk,1990-1970} = \alpha_k + \beta_k \overline{\Delta IPW}^{\perp}_{uj,1990-1970} + \epsilon^{\perp}_{jk} \tag{5}$$

instrumented by $\frac{\Delta M_{oj,1990-1970}}{L_{i1960}}$, where k is race, and the superscript $\perp$ represents a variable that has been residualized over the set of controls. In other words, the CZ-level regressions we report in the main text are equivalent to a set of industry-level regressions where the variables are exposure-weighted averages of CZ characteristics and outcomes.

The industry-level approach provides several benefits, including an alternative set of standard errors (see Appendix B.6) and more transparency of how industries influence identification. We first plot the relationship between industry-level import exposure (as measured by our instrument) and changes in CZ-manufacturing share by race in Figure B.3. Industries are binned based on their percentile of import exposure, excluding automobiles and computers, which we highlight in red and green, respectively.[45] As we discussed in Section 3.2 these industries present unique concerns for identification.

The "as-if" random assignment framework of Borusyak et al. (2018) requires that, from the hypothetical distribution of shocks that led to the Japanese export boom, each industry was expected to receive the same shock. Consistent with the concerns raised in the main text, Figure B.3 shows that both automobiles and computers are far to the right of the shock distribution, suggesting the possibility their realized trade values were the result of a different underlying process. We also see an additional set of outlying industries that raise concerns.

In Table B.4 we use the industry-level approach to relax the assumption of mean independence of the shock distribution for these industries. First, column (1) repeats column (1) of Table 5 and verifies the approaches yield identical point estimates. Columns (2) and (3) exclude the computer and automobile industries, respectively. We also include industry-level controls for the exposure to these industries. While with automobiles in particular, we lose substantial precision, the estimates are consistent with our main results. In column (4) we exclude any outlying industries whose import exposure (as measured by the instrument) was more than $30,000 per worker (roughly three standard deviations above the mean), and include controls for exposure to each of these outlying industries.[46] Our results are essentially unchanged.

In columns (5) and (6), we include controls for exposure to 1- and 2-digit manufacturing clusters, respectively, which allows the mean of the shock generating process to differ at these levels.[47] The 2-digit cluster controls are especially demanding given that 1960 manufacturing sector data is imputed based on broader industry classifications (see Appendix A.5). Thus it is not surprising that their inclusion leads to a noticeably smaller coefficient on the black interaction term. Nonetheless, the result remains negative and statistically significant across both specifications.

In Table B.5 we implement an additional set of robustness exercises recommended by

[45]We follow Acemoglu et al. (2016) and classify computer industries as SIC87dd 3571, 3572, 3577, 3578, 3651, 3652, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3676, 3677, 3678, 3679, 3695, 3812, 3822, 3823, 3824, 3825, 3826, 3829, 3844, 3845, and 3873. For automobiles, we use SIC87dd 3-digit grouping 371.

[46]This affects four SIC87dd industries: 3751 (motorcycles, bicycles, and parts); 3827 (optical instruments and lenses); 3844 (X-ray apparatus and tubes); and 3845 (Electromedical equipment)

[47]Note that column (5) is equivalent to column (2) of Table 6.

Borusyak et al. (2018) within this industry-level framework. We use each individual developed country's imports as a separate instrument, which allows us to perform a test of overidentifying restrictions. We use three different estimation methods: two-stage least squares, limited information maximum likelihood, and generalized method of moments. The method chosen has little impact on our results and we fail to reject the overidentifying restrictions ($p = .62$).

B.5 Intraclass Correlations

As discussed in the Section 3.2, Borusyak et al. (2018) show that shift-share instruments are consistent provided the industry-level shocks are orthogonal to CZ-level unobservables, and are sufficiently dispersed across industries. They further show that the latter condition can be relaxed to allow for correlation within industry clusters, and to be conditional on observables. We test this assumption here.

Following the approach in Borusyak et al. (2018), we estimate the hierarchical random effects model

$$\hat{g}_n = a_{1,n} + b_{2,n} + c_{3,n} + e_n \tag{6}$$

where $\hat{g}_n$ is, for industry n, the residual of a regression of Japanese exports to other countries on a set of industry-level controls; and a, b, and c are random effects specific to industry n's 1-digit, 2-digit, and 3-digit classification, respectively.[48] Note that the residual e_n represents variation at the 4-digit industry level, the level at which the instrument is computed. For 1-digit classifications, we follow the system used by Autor et al. (2014); for 2- and 3-digit classifications, we follow the SIC system. To avoid distorting our estimates with variation caused by large outliers, we winsorize all values of $\hat{g}$ above \$30,000 per worker to be \$30,000 (roughly three standard deviations above the mean).[49] Following convention, we impose a normal distribution for the random effects, and estimate the model using maximum likelihood.

Table B.6 reports intraclass correlation coefficients from this exercise. We find a moderate amount of clustering at the 3-digit level, but given the large number of 3-digit industries in our data (135), this presents less of a concern for consistency. When estimating industry-

[48]For controls, we follow our main specification and use industry-level exposure to CZ-level percentage of employment in manufacturing, college percentage of population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and census divisions. See Appendix B.4 for more details of the industry-level approach.

[49]Because large outliers increase the variation within clusters, the winsorization produces larger and more conservative estimates of the amount of within cluster correlation.

level regressions in Appendices B.4 and B.6, we cluster our standard errors at the 3-digit level to account for this correlation. At the higher 2-digit and 1-digit levels, though larger than what Borusyak et al. (2018) find for China, the correlation is much more mild. This is consistent with similar industries receiving different levels of shock exposure, and the dispersion assumption necessary for the consistency of the IV.

B.6 Borusyak-Hull-Jaravel Standard Errors

In the main text, we report standard errors that are clustered at the state level to account for correlations within proximate geographies. As the identification from "shift-share" instruments is driven by shocks at the industry-level, Adão et al. (2018) note that correlated errors within industries across different geographies may be a larger concern, and derive an alternative set of standard errors to account for this. Borusyak et al. (2018) show that the standard errors produced by the industry-level regressions discussed in Appendix B.4 are asymptotically equivalent to those constructed by Adão et al. (2018). In Table B.7 we reproduce Table 5 using the industry-level approach, clustering at the 3-digit SIC-level, which is the level of clustering suggested by our intraclass correlation exercises in Appendix B.5. We find this approach produces universally smaller standard errors than state level clustering.

B.7 Mean Earnings

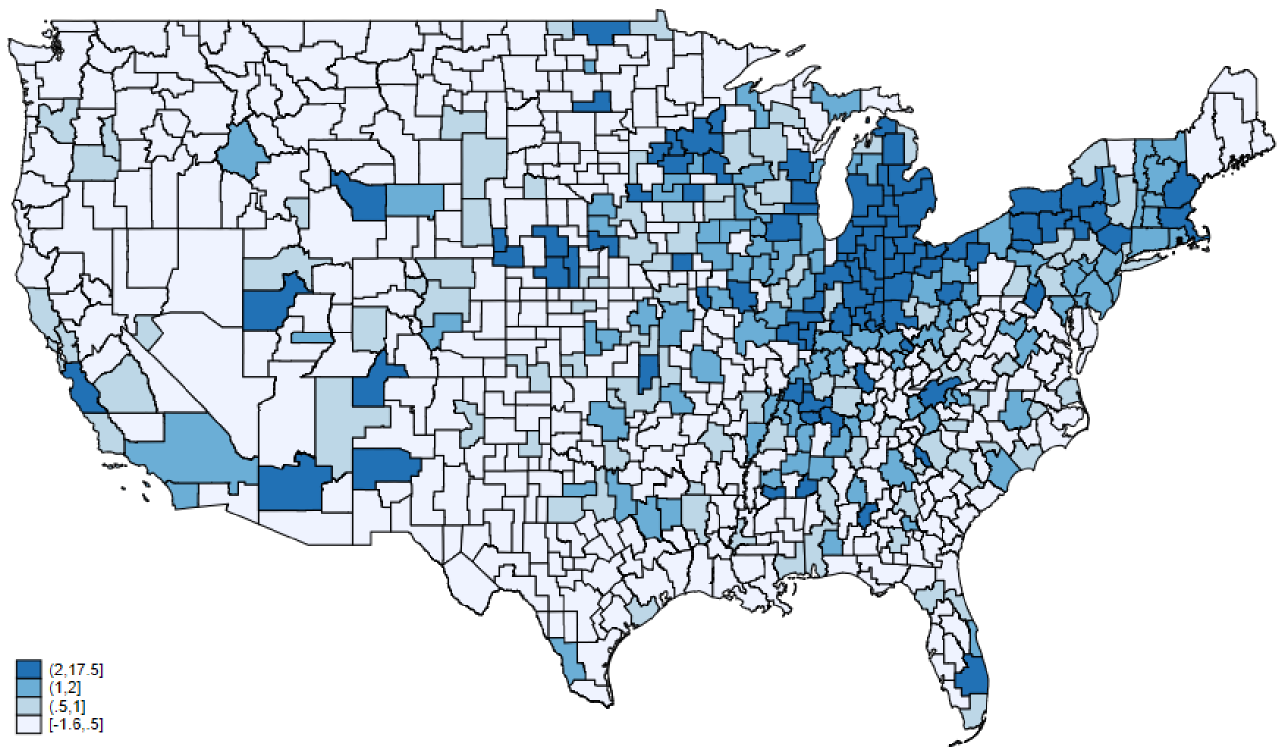
As we discuss in the main text, we prefer working with median income and earnings rather than means due to concerns about topcoding and the susceptibility to outliers in small samples. In Table B.8 we estimate the effects of import competition on disparities in mean log income and earnings for males and households. Note that we are unable to compute an analogue of the median log earnings of all working age males, since we cannot take the log of 0.

Just as in medians, we find little evidence for change in the wage or earnings gap among those with positive earnings. However, we do find negative and statistically significant effects on the household earnings gap, albeit smaller than that estimated in Table 12. We also find a smaller but non-trivial impact on the household income gap, although it is not statistically significant at conventional levels. Note that unlike for our mean male earnings regressions, mean household earnings is sensitive to changes in non-labor force participation for working age males.

B.8 Nationally Representative Descriptive Statistics

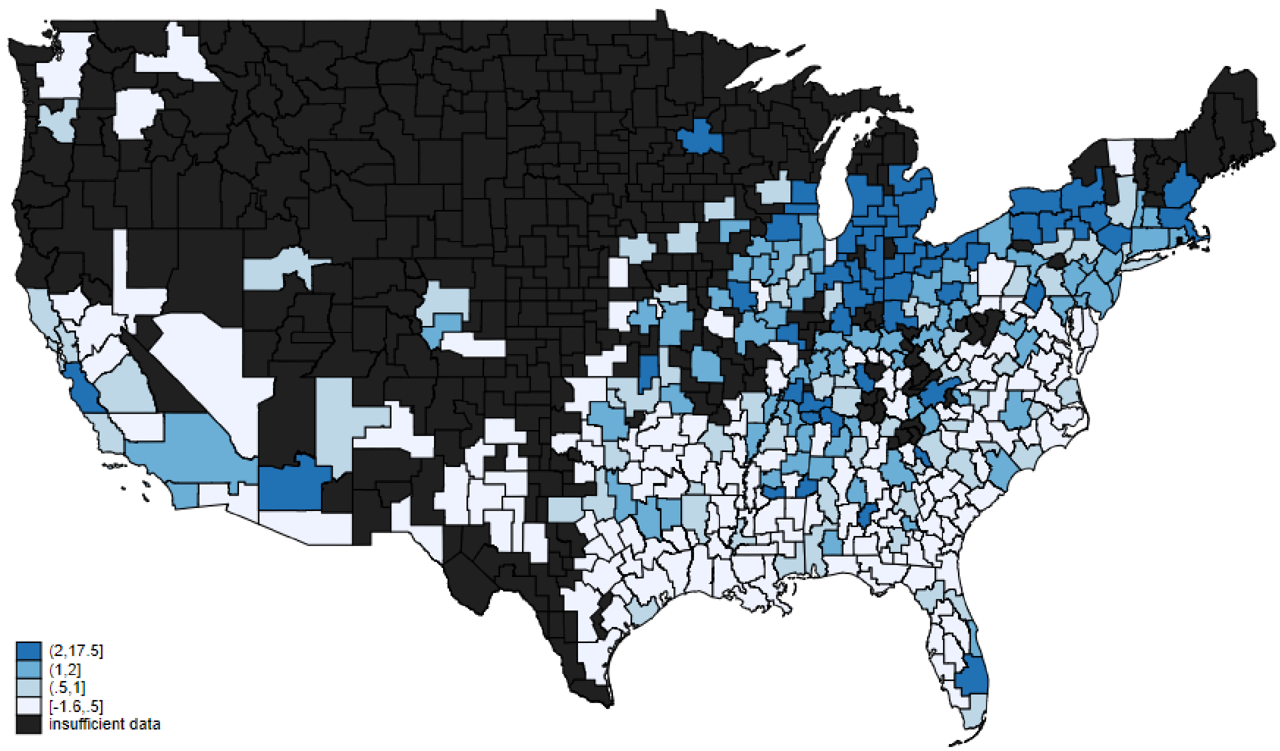
In section 4.4 we used nationally representative statistics for performing back of the envelope calculations. Table B.9 provides a full set of descriptive statistics for this sample.

Figure B.1: Change in Import Exposure Intensity, 1990-1970: All CZs



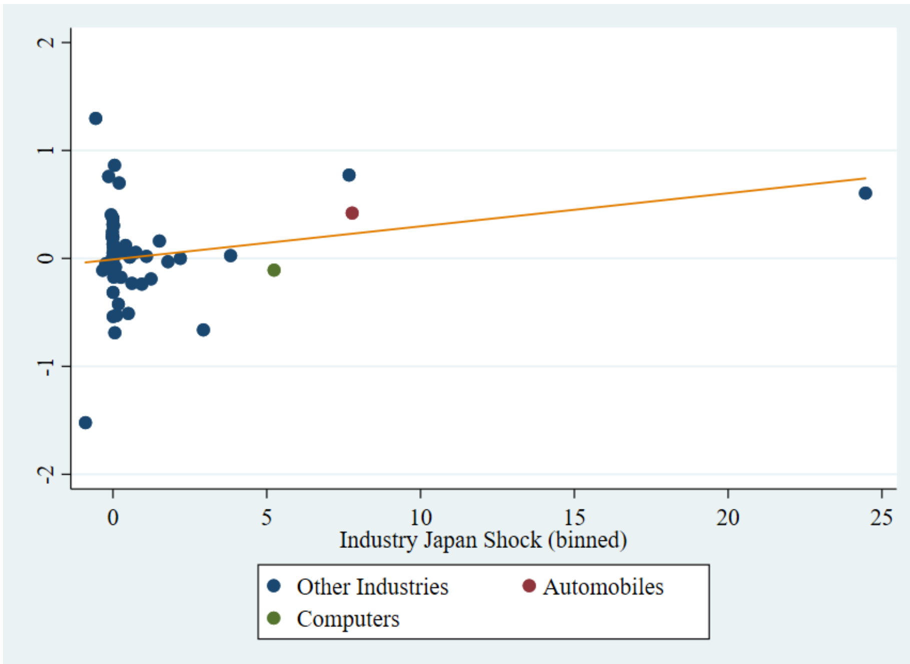
Notes - Change in IPW from 1970 to 1990 for each commuting zone in the continental United States.

Figure B.2: Change in Import Exposure Intensity, 1990-1970: Regression Sample

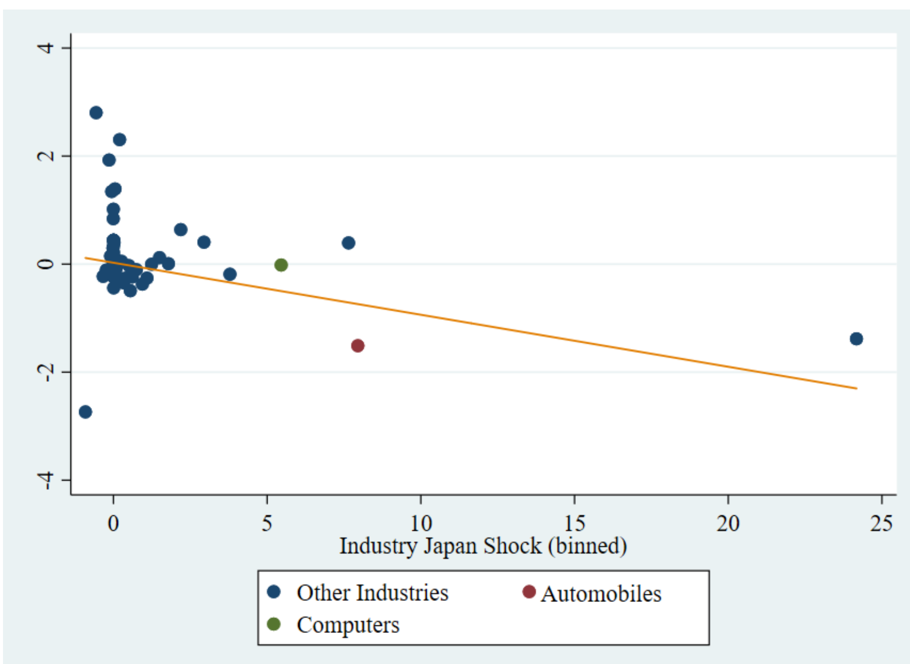


Notes - Change in IPW from 1970 to 1990 for commuting zones in the regression sample.

Figure B.3: Industry-level Japanese Import Exposure and Average Residualized Change in Manufacturing Employment by Race, 1990-1970



(a) White



(b) Black

Notes - Each non-automobile, non-computer industry bin represents 2% of industries. Y-axis is (for each bin) the average CZ-level change in manufacturing employment. Yellow line is weighted least squares best fit.

Table B.1: Growth of Japanese Imports to U.S. by Product, 1970-1990: Ten Largest

	SITC	1970	1990	Growth
	(1)	(2)	(3)	(4)
Passenger motor cars (excluding buses)	7321	2,123.13	26,644.29	24,521.17
Statistical machines cards or tapes	7143	5.98	7,718.19	7,712.21
Bodies & parts of motor vehicles (excluding motorcycles)	7328	142.37	7,431.99	7,289.62
Thermionic valves and tubes, transistors, etc.	7293	132.73	4,868.01	4,735.28
Other telecommunications equipment	72499	265.63	4,074.20	3,808.57
Parts of office machinery, n.e.s.	71492	56.96	3,647.93	3,590.96
Internal combustion engines, not for aircraft	7115	168.42	3,350.47	3,182.05
Equipment for indoor games	89424	29.93	2,977.28	2,947.36
Phonographs, tape & other sound recorders etc.	8911	1,437.22	4,295.48	2,858.26
Lorries and trucks, including ambulances, etc.	7222	134.92	1,960.21	1,825.29

Notes - In millions of 1999 U.S. Dollars

Source - UN Comtrade

Table B.2: Growth of Imports Exposure Per Worker Across CZs, 1990-1970: 40 Largest CZs (Regression Sample)

Ten Largest Increases		Ten Smallest Increases	
Detroit, MI	9.292	New Orleans, LA	0.097
San Jose, CA	5.952	Sacramento, CA	0.124
Buffalo, NY	5.692	San Antonio, TX	0.311
Minneapolis, MN	3.362	Tampa, FL	0.362
Cleveland, OH	3.203	Arlington, VA	0.397
Cincinnati, OH	2.829	Seattle, WA	0.412
Dayton, OH	2.516	Houston, TX	0.458
Syracuse, NY	2.308	Pittsburgh, PA	0.466
Indianapolis, IN	2.221	New York, NY	0.647
Boston, MA	2.197	Denver, CO	0.889

Table B.3: Japanese Imports on Change in Manufacturing Employment/ Working Age Population in CZs, Alternative Time Horizons: 2SLS Estimates

	Change in Manufacturing Employment					Chng in Man Gap
	1990-1970 LD (1)	1980-1970 FD (2)	1990-1980 FD (3)	1990-1970 Stacked (4)	1970-1960 LD (5)	1990-1970 LD (6)
(Δ Imports from Japan to US)/worker	0.193* (0.117)	-0.152 (0.173)	0.598*** (0.167)	0.310 (0.211)	0.110 (0.155)	-0.813*** (0.223)
(Δ Imports from Japan to US)/worker $\times$ Black	-0.785*** (0.173)	-1.605*** (0.226)	0.151 (0.218)	-0.554** (0.237)	0.331 (0.216)	
Observations	716	716	716	1432	716	358

Notes - Robust standard errors clustered at the state-level in parentheses. Columns (1)-(5) are weighted by race-specific 1970 population, while column (6) is weighted by 1970 population. Each regression includes census division fixed effects and commuting zone-level controls for percentage of employment in manufacturing. Columns (1)-(4) and (6) include additional controls for college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960. Columns (1)-(5) include a black indicator and interactions of the black indicator with all of control variables. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table B.4: Japanese Imports and Change in Manufacturing Employment / Working Population in CZs, Industry-Level Regressions, 1990-1970 Long Difference: 2SLS Estimates

	All	No Comp	No Autos	No Out	1-dig Shares	2-dig Shares
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ Imports from Japan to US)/worker	0.193**	0.225**	0.283	0.189**	0.268**	0.234*
	(0.081)	(0.108)	(0.461)	(0.083)	(0.128)	(0.127)
(Δ Imports from Japan to US)/worker × Black	-0.785***	-0.841***	-1.311*	-0.754***	-0.509***	-0.227**
	(0.104)	(0.135)	(0.757)	(0.073)	(0.140)	(0.106)
Observations	762	706	756	754	762	762

Notes - Robust standard errors clustered at the 3-digit SIC-level in parentheses. Models are weighted by race-specific CZ industry exposure. Each regression includes controls for census division exposure; exposure to commuting zone-level percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. Column (2) excludes computer industries and includes a control for CZ-level exposure to computer industries and its interaction with a black indicator. Column (3) excludes automobile industries and includes a control for CZ-level exposure to automobile industries and its interaction with a black indicator. Column (4) excludes industries with outlying trade IV and includes controls for CZ-level exposure to each of these industries and their interactions with a black indicator. Column (5) includes controls for CZ-level exposure to 1-digit manufacturing industries. Column (6) includes controls for CZ-level exposure to 2-digit SIC manufacturing industries. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table B.5: Japanese Imports and Change in Manufacturing Employment / Working Population in CZs, Industry-Level Regressions, 1990-1970 Long Difference: Overidentification Tests

	2SLS	LIML	GMM
	(1)	(2)	(3)
(Δ Imports from Japan to US)/worker	0.115*	0.113	0.128**
	(0.068)	(0.071)	(0.058)
(Δ Imports from Japan to US)/worker × Black	-0.759***	-0.758***	-0.718***
	(0.064)	(0.064)	(0.048)
Observations	762	762	762
J-statistic	8.057	8.051	8.057
p-value on J-test	0.623	0.624	0.623

Notes - Robust standard errors clustered at the 3-digit SIC-level in parentheses. Models are weighted by race-specific CZ industry exposure. Each regression includes controls for census division exposure; exposure to commuting zone-level percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. J-statistics are from Hansen test of instrument overidentifying restrictions.

Table B.6: Intraclass Correlations of Residualized Japanese Trade Shock

	ICC (1)	SE (2)
1-digit	0.044	(0.026)
2-digit	0.065	(0.041)
3-digit	0.160	(0.049)
4-digit Industries	380	380

Notes - Robust standard errors in parentheses. Intraclass correlation coefficients from hierarchical random effects model. Japanese trade shock residual computed from regression of industry-level exports to six other highly developed countries on industry-level exposure to CZ-level percentage of employment in manufacturing, college percentage of population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and census divisions. 1-digit industry classifications follow system from Autor et al. (2014). 2- and 3-digit industry classifications are SIC87.

Table B.7: Japanese Imports and Change in Racial Employment Status Gap, Industry-Level Regressions, 1990-1970 Long Difference: 2SLS Estimates

	Mfg emp	Non-mfg emp	Unemp	NILF
	(1)	(2)	(3)	(4)
(Δ Imports from Japan to US)/worker	0.193**	-0.097	-0.010	-0.086**
	(0.081)	(0.080)	(0.028)	(0.036)
(Δ Imports from Japan to US)/worker × Black	-0.785***	0.228**	-0.071	0.542***
	(0.104)	(0.108)	(0.081)	(0.078)
Observations	762	762	762	762

Notes - Robust standard errors clustered at the 3-digit SIC-level in parentheses. Models are weighted by race-specific CZ industry exposure. Each regression includes controls for census division exposure; exposure to commuting zone-level percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables

Table B.8: Japanese Imports and Changes in Mean Log Earnings, 1990-1970 Long Difference: 2SLS Estimates

	Working Age Males		Households	
	Weekly Wage	Annual Earnings	Annual Earnings	Annual Income
	(1)	(2)	(3)	(4)
(Δ Imports from Japan to US)/worker	-0.039	-0.104	-0.308	-0.074
	(0.405)	(0.397)	(0.333)	(0.307)
(Δ Imports from Japan to US)/worker × Black	0.204	0.024	-1.128**	-0.956
	(0.310)	(0.510)	(0.556)	(0.597)
Observations	716	716	716	716

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing, college percentage of the population, average offshorability index of occupations, percentage of employment in routine occupations, black percentage of population, and foreign-born percentage of population in 1960; a black indicator; and interactions of the black indicator with all of these variables. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table B.9: Descriptive Statistics: Nationally Representative Sample

	Black		White		ΔGap
	1970	1990	1970	1990	
	(1)	(2)	(3)	(4)	(5)
Percentage of population employed in manufacturing	19.412	12.857	22.970	17.756	-1.341
	(39.552)	(33.472)	(42.064)	(38.214)	
Percentage of population employed in non-manufacturing	51.607	49.588	59.396	63.242	-5.866
	(49.974)	(49.998)	(49.109)	(48.215)	
Unemployed share of population	4.379	9.575	2.858	4.351	3.703
	(20.464)	(29.425)	(16.663)	(20.400)	
Labor force non-participation rate	24.602	27.981	14.776	14.651	3.504
	(43.069)	(44.890)	(35.486)	(35.361)	
Median log weekly wage, male earners	612.317	614.253	654.631	647.104	9.464
	(82.554)	(83.535)	(79.295)	(84.943)	
Median log annual earned income, male earners	999.966	995.961	1044.223	1038.146	2.072
	(104.302)	(120.389)	(105.975)	(113.675)	
Median log annual earned income, all working-age males	979.440	955.478	1037.371	1024.793	-11.384
	(381.748)	(424.266)	(303.740)	(324.687)	
Median log HH earned income	935.678	950.599	989.468	1000.677	3.713
	(330.072)	(362.998)	(268.972)	(284.588)	
Median log HH total income	941.393	960.638	990.371	1008.681	0.934
	(205.765)	(198.622)	(181.279)	(153.246)	
HH welfare rate	14.351	17.682	2.892	4.491	1.732
	(35.059)	(38.152)	(16.758)	(20.711)	

Notes - Standard deviations in parentheses.