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

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Abstract

We assess the impact of a rapid rise in Japanese import competition on the growth in racial earnings and employment gaps during the 1970s and 80s. Using commuting zone level variation in exposure, we find Japanese competition led to a decrease in manufacturing employment and labor force participation for blacks. This was driven by a shift in demand for skill in manufacturing. The difference in effects between the 10th percentile most and least exposed commuting zone was equivalent to 36-46% of the relative rise in black non-labor force participation, and 78-96% of the relative decline in black median male earnings.

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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 male 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, 2021), after having surpassed whites in this sector during the 1960s (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 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 between 1970 and 1990. We adopt the approach introduced by Autor et al. (2013) in the "China shock" literature, exploiting geographic variation in exposure to industry-level changes in imports, to look at differences in changes in racial disparities across local labor markets. Our identifying assumption is that the exports of Japan to six other highly developed countries were as-good-as-randomly assigned to industries (Borusyak et al., 2022). We show our instrument performs well on several different tests of this assumption suggested by the literature. In contrast to studies of China, we find a

[1] These figures are constructed from the Current Population Survey (CPS). See Appendix A.1 for details of data construction. We see similar patterns when including women in Appendix B.1, although the reversal in the earnings gap is less severe. 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.

negligible effect of Japanese competition on manufacturing employment overall, but there is substantial heterogeneity by race. A $1,000 increase in Japanese imports per worker led to a 0.74 percentage point decrease in a commuting zone's black male manufacturing employment rate. We find no effect on the manufacturing employment share for white males.

Our results suggest that this disparate impact was a consequence of a trade-induced decrease in the relative demand for low skill workers. Manufacturing employment decreased across all workers without any college education, with black high-school dropouts seeing the largest losses. We find increases in professional occupations within manufacturing, particularly for engineers, and a shift to more educated production workers. These changes occurred within industries facing the most competition, rather than through the growth of new high skill industries. Imports exposure caused an increase in industry capital-labor ratio and worker productivity, while, if anything, the most exposed CZs saw a decrease in the share of their employment coming from high-capital or -productivity industries.

Black manufacturing workers in this time period were particularly vulnerable to changes in the 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% of manufacturing jobs overall).[4] Further, these education figures will understate true skill differences given racial disparities in school quality and home environment (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 0.5 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 restructuring of manufacturing had important consequences for labor market disparities. We find little evidence for increases in black employment outside of the manufacturing sector. Instead we observe a reduction in labor market attachment, with a 0.57 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, 2.5 log point widening of the household earnings gap, and 0.56 percentage point widening of the welfare recipiency gap. Given that the 10th percentile most exposed CZ received

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

[5]Figure is authors' calculation 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 review.

$2,991 more import competition than the 10th least exposed percentile, these magnitudes are substantial. By comparison, from 1970-1990 the national racial gap in median household earnings closed by 3.7 log points and the gap in household welfare recipiency grew by 1.7 percentage points.

We explore several alternative mechanisms for this disparate impact. While 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 to imports than whites, nor worked in industries that received a higher degree of import competition.[6] The disparate effects are due to black workers working in different jobs and having different skills within industries and CZs, rather than working in different industries or CZs.

Whites fared better in response to the economic shock due to their higher initial share of college educated workers, and stronger growth in college education during the era. Low skill white employment was also more able to transition into non-manufacturing. Still while smaller than for blacks, we find substantial negative effects on the earnings of white high school drop outs and an increase in the white poverty rate. We find suggestive evidence that the movement of low skill black workers into non-manufacturing was hampered by racial segregation.

Black families also experienced well-documented increases in instability beginning in the 1960s. From 1970 to 1988, the percent of black children living with a married couple fell from 58.5% to 38.6%, while the percent of black births out of wedlock rose from 37.6% to 61.2% (Ellwood and Crane, 1990). Several empirical papers have found that the declining economic opportunities for and increased incarceration of black men contributed to this phenomenon (e.g., Wood, 1995; Brien, 1997; Seitz, 2009). We find that Japanese import competition increased the rate of single parent and female headed households among whites. Though imprecise, our point estimates suggest an even larger effect for black households.

1.1 Related Literature

In this subsection we will briefly place our results in the context of three literatures. First, we will discuss the "China shock," and how the growth of Chinese imports in the 1990s and 2000s differed from Japan. We will then discuss the literature on rising inequality in the 1980s and skill-biased technical change. Finally we conclude with a review of the previous

[6]The average black worker in 1970 lived in a CZ which experienced an increase in imports per worker of $1,401 and worked in an industry that experienced a .009 increase in import penetration ratio. This compares to $1,672 and .011 for whites.

explanations for the reversal of black economic progress in the late 1970s and early 1980s.

A large literature has focused on the effects 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] The rise of China also led to technological change in manufacturing firms; specifically, changes in workforce composition and a reorientation towards services (Utar and Torres Ruiz, 2013; Utar, 2014; Bloom et al., 2016, 2019; Ding et al., 2020). However, we know little about whether the American economy's response to China is typical or atypical of trade shocks.[8] 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; used descriptive information and assumptions about the nature of trade's effects (Berman et al., 1994); or were 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.

As a country abundant in low-skill labor, China's export expansion fits well within a neoclassical framework.[9] Its initial growth came in labor-intensive goods such as apparel, footware, and textiles exported to capital-intensive markets such as the United States and Europe (e.g., Hanson, 2020). It is less clear that neoclassical models, which operate on differences between more and less developed countries, can be applied to Japanese import competition. While Japanese labor was also cheaper than the United States during our time period, Japan was already the world's 3rd largest economy by 1970, and had a higher share of college educated workers than West Germany and the United Kingdom (de la Fuente and Doménech, 2002). During the 70s and 80s, its export growth came through sophisticated products like automobiles, semiconductors, and televisions. Consistent with this, we find no evidence that Japanese import competition caused an expansion of capital-intensive or high value-added industries, typically thought of as the United States' comparative advantage when trading with less developed countries. However, several recent theoretical papers have emphasized that competitive pressures can lead to increases in the demand for skill *within*

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

[8] A smaller literature has studied the trade shock caused by the North American Free Trade Agreement (NAFTA). Hakobyan and McLaren (2016) find strong negative effects of NAFTA on wage growth for low skill workers in the most exposed industries and localities.

[9] See Bernard et al. (2007a) for an overview of old and new trade theory. Bernard et al. (2007b) show that even allowing for firm heterogeneity, in which highly productive firms in all industries export and less productive industries face creative destruction from import competition, the skill upgrading effects are stronger for comparative advantage industries.

industries when trade occurs between similarly endowed countries. For example, import competition 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 (Burstein and Vogel, 2017). Lu and Ng (2013) find that U.S. industries which faced more competition from developed countries became less intensive in their use of low skill occupations.[10] Our results lend support to these views.

China and Japan also rose under very different policy environments. The "China shock" occurred under a free trade consensus in the United States with only limited and temporary tariffs enacted until the the late 2010s. In contrast, the 1970s and 1980s were marked by rising protectionism. This began with voluntary export restraint agreements negotiated with Japan on several industries including steel, color televisions, and eventually automobiles, and culminated with a 100% tariff on computers, televisions, and power tools in 1987. To circumvent these restrictions, Japanese firms began opening manufacturing plants inside of the United States in the late 1980s (Irwin, 2017). We find some evidence that the negative effects of Japanese competition weakened towards the end of the 1980s, which may have been due to these developments.

Given the differences in skill endowments between China and the United States, it is unlikely that Chinese manufacturing practices were imported. In contrast, many American firms attempted to copy the management systems which were often cited as the source of Japanese success (Powell, 1995; Ichniowski and Shaw, 1999). These include lean manufacturing and just-in-time production systems, decentralized and non-hierarchical decision making, rapid implementation of new technology, long-term implicit guarantees of employment, and a high degree of compensation through profit sharing (e.g. Freeman and Weitzman, 1987; Itoh, 1987; Mansfield, 1988; Aoki, 1990). Branstetter (2006) finds direct evidence of knowledge spillovers, with American manufacturing plants becoming more likely to cite Japanese patents in industries that received Japanese direct investment. Our estimates on industry productivity are consistent with this prior evidence.

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 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 do not contradict this view. While

[10]See also Guadalupe (2007) who finds an increase in the return to skill in UK industries more exposed to continental competition after implementation of the European Single Market Program.

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 the routine-intensity 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 in the lowest tail of the skill distribution, any aggregate changes in inequality were small.

Most research on the decline in black outcomes in this era has focused on whether it was caused by decreases in black labor demand, for example due to the "de-industrialization" of the American economy, or changes in black labor supply due to factors like increased welfare generosity (e.g., Mead, 1986; Wilson, 1987). Consistent with demand-side explanataions, empirical studies have consistently found black workers were disproportionately affected by industry-level decreases in national employment (e.g, Acs and Danziger, 1993; Bound and Holzer, 1993, 2000). Gould (2021) shows that decreased manufacturing demand was especially damaging to the black community from 1960-2010. He finds not only effects on wages and employment, but also a wide range of social outcomes including single motherhood, life expectancy, and child mortality. These approaches differ from ours in that they do not attempt to disentangle the *causes* of demand decreases which can include increases in foreign competition as well as other factors of the time period, such as skill-biased technical change.[11] Murphy and Welch (1991) examine the susceptibility of various race, gender, and skill groups to trade deficits based on their employment in four broad 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.

A much smaller literature has tried to understand the mechanisms that led to a decrease in black labor demand. Kain (1968) proposed that the movement of jobs out of the central cities led to "spatial mismatch," making it more difficult for blacks to find and maintain employment. Consistent with this, several previous studies have found that black workers are harmed when employers move to suburbs, and perform worse in areas where jobs are less

[11]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 several studies have now documented that trade can increase the demand for skill within industry, as domestic firms adopt more competitive practices, close unproductive factories, and expand into different product spaces (e.g., Bernard et al., 2007b; Guadalupe, 2007; Bloom et al., 2019).

geographically centralized (e.g., Zax and Kain, 1996; Mouw, 2000; Weinberg, 2004). Using the construction of the interstate highway system as a natural experiment, Miller (forthcoming) estimates that half of the relative decline in black men's employment between 1970 and 2000 can be explained by job suburbanization. Black men also saw a massive increase in imprisonment during our time period, in part due to the emergence of crack cocaine markets (e.g., Neal and Rick, 2014; Evans et al., 2016). Accounting for both incarceration's impact on wage levels and subsequent wage growth, Western (2002) estimates the mass incarceration of blacks during the 1980s led to an 8 to 9 percent increase in wage inequality. Holzer et al. (2005) estimates incarceration can explain 2 to 5 percentage points of the relative decline in black unemployment between 1970 and 2000 among young men, and 3 to 6 percentage points of the relative decline in labor force participation.

Our estimates suggest that Japanese import competition had an impact at least as strong on racial inequality than these explanations. Relative to the the 10th percentile least exposed CZs, black workers living in the 10th most exposed percentile experienced a labor force participation decline equivalent to 36-46% of the national decline, and an earnings decline equivalent to 48-62%. Japanese import competition may have also been partially responsible for these other mechanisms. Although we do not find that jobs left central cities faster in more exposed CZs, we do find an increase in the concentration of black workers inside of central cities, making them more vulnerable to secular trends in job surburbunization. Likewise, while we we do not attempt to estimate the effect of import competition on mass incarceration or the course of the crack cocaine epidemic, given the relationship between criminality and labor market opportunities (e.g., Yang, 2017) it would be surprising if it did not contribute.

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 findings 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, 1980 5% state sample, and 1990 5% Integrated Public Use Microdata Series (IPUMS) samples of the United States Decennial Census (Ruggles et al., 2015). 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 1960 and 1990, and Census County Groups in 1970 and 1980 following crosswalks provided in Autor and Dorn (2013) and Rose (2018). Unless otherwise stated, we restrict attention to working age males. We find similar but smaller estimates when including women, which is not surprising given that more than 70% of manufacturing workers in 1970 were men (see Appendix B.1). To ensure an adequate sample for calculating race-specific statistics, we use only 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 the rural West (see Appendix B.2) and results in a sample of 358 CZs. Our results are robust to other selection criteria. We restrict to non-Hispanic whites when calculating white outcomes. 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 details on data construction.

We present descriptive statistics for our sample in Table 1.[12] Due to the continuation of long term pre-existing trends in agriculture (see Appendix B.3), we observe a 6.8 percentage point relative decrease in black non-manufacturing employment.[13] In the 1960s such workers were likely absorbed into manufacturing as discussed before. The 1970-1990 period instead saw a relative decline in black manufacturing employment, paired with relative increases in black unemployment (3.9 percentage points) and labor force non-participation (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 22.9 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 from UN Comtrade. This product-level data is reported using Standard International Trade Classification (SITC) Revision 1 codes. We construct a new crosswalk to match these products to the 1987 Standard Industry Classification (SIC87) industries that produce them which we describe in Appendix A.3.

Following Autor et al. (2013), we measure import competition through changes in imports

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

[13] Factors driving this include improvements in education, agricultural mechanization and industrialization in the South, and continued urbanization of the black population. See, for example, Cogan (1982) and Smith and Welch (1989).

per worker (IPW).[14] For each CZ i we calculate imports exposure over the period t as

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

L_{ijt} is the number of workers in CZ i in industry j at the beginning of t. L_{it} is the total number of workers in CZ i at the beginning of t. L_{ujt} is the total number of workers in industry j in the United States. ΔM_{ujt} is the change in imports from Japan to the United States in that industry's product space (in 1000s of 1999$) during the time period.[15] The u subscript on IPW_{uit} emphasizes exposure is measured using national import data from the United States. For our main results t will represent the 20 year time period between 1970 and 1990, but we explore different time periods in Appendix B.5.

We discuss the geographic dispersion of IPW in more depth in Appendix B.2. We find that, conditional on local manufacturing share, the most exposed areas were in the Midwest (especially the "Rust Belt"), Northeast, and Central Plains, while the least were the Pacific Northwest and South. In Appendix B.6 we show that our results are not driven by pre-existing economic trends that may have existed in these hardest hit regions, and are robust to excluding the Rust Belt directly.

We calculate 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 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). For our main IPW measure we use the 1970 wave, which is available from the National Archives and reported using SIC67 codes.[16] For our instrument, we use the 1962 wave which is reported using SIC57 codes and was recently digitized by Eckert et al. (2022). We convert these data to SIC87 as described in Appendix A.5. As a robustness exercise, we constructed an alternative set of imports data, commodities to industries crosswalk, and industry-level coding system derived from Feenstra et al. (2005) which we describe in Appendix A.6. We show in Appendix B.7 that our results are robust to this approach.

[14] Our results are robust to instead using import penetration ratio as is more common in papers studying industry-level effects (e.g., Acemoglu et al., 2016). See Appendix B.4.

[15] Following Autor et al. (2013), we restrict IPW to include only manufacturing imports.

[16] This version appears to have inadvertently excluded 12 counties in Kansas. We manually added data for these counties using scans of the original CBP tables published by the Census and available through HathiTrust.

3 Empirical Strategy

3.1 Specification

In our preferred specification, for outcome Y and race k in CZ 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 CZ characteristics measured in 1960.[17] Effects for blacks and whites are estimated from separate regressions. We also estimate a fully-interacted regression to compute a test statistic for whether the effect of $\Delta IPW_{ui,1990-1970}$ varies by race.

Note that $\Delta IPW_{ui,1990-1970}$ is computed based on the industry composition of CZ i, rather than the industry composition for workers for race k within CZ i. Thus, β_k should be thought of as the reduced form effect of the amount of import competition faced by the average worker in a CZ. This is influenced by both the direct effect of, for example, black workers' employers facing increased import competition, and the indirect effect of changes in aggregate labor demand due to the impact of import competition on white workers in industries that black workers are not large participants in. Ideally, we would be able to calculate import competition separately for black and white workers to disentangle these two effects. Unfortunately, the CBP does not measure employment by race, and the Census microsamples are insufficiently large to calculate the industry composition of black workers for fine geographies. In Appendix B.8 we provide estimates using race-specific state-level variation in import exposure in ten aggregated industries. We find stronger negative effects when measured this way, including for whites, and that indirect changes to labor demand caused by white exposure appears to drive the worsening of black employment outcomes. But we stress that at this level of aggregation, our identifying assumptions described below are unlikely to be satisfied, so this evidence is suggestive at best.

We prefer using the long difference approach over stacked first differences primarily due to the 1980 recession. The recession was caused by a sudden increase in interest rates, and was felt almost exclusively in consumer durables bought on credit, such as automobiles, which were also the largest exports from Japan. In Appendix B.5 we discuss this issue in more detail and explore whether our effects vary across decades. We find stronger negative effects on black manufacturing employment in the 1970s, and estimate positive effects for manufacturing employment in the 1980s. This however appears to be at least partly an artifact

[17] These controls include census division fixed effects; the percentage of CZ employment in manufacturing in 1962; and the percentage of the population which is black, foreign-born, and with at least some college, the average offshorability index of occupations, and the percentage of employment in routine occupations in 1960. For details on the latter two variables, see Appendix A.7.

of recession data. Census-based estimates for the effect on black labor force participation are stable across decades and state-level estimates using the CPS suggest that the negative impact of import competition on black manufacturing employment continued until at least 1983. We do note that Bloom et al. (2019) find a similar reversal for the effects of Chinese import competition after 2007.

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. Specifically, our instrument is defined as

$$\Delta IPW_{oi,1990-1970} = \sum_j \frac{L_{ij1962}}{L_{i,1962}} \frac{\Delta M_{oj,1990-1970}}{L_{uj1962}}, \tag{3}$$

where the subscript o indicates the sum across these other countries.[18] In words, our instrument is the change in import exposure faced by the average worker that would have been predicted from (1) the CZ's industrial composition in 1962 (i.e., before Japanese import competition began), and (2) the ability of Japan to penetrate these industries in other countries during our time period. The variation in 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.

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.

Our instrument is a "shift-share" instrument that combines local industry employment shares and national industry-level "shifts" (trade shocks; i.e., the exports by that Japanese industry to our six other countries). Following Borusyak et al. (2022), our main identifying

[18] 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.

assumption is that the trade shocks are as good as randomly assigned to industries.[19] Similar to Autor et al. (2013), by measuring our shocks as export quantities that are common across countries, we attempt to isolate changes in import competition due to factors that increased Japan's global competitiveness, rather than changes in the United States.

In Appendix B.9 we state the conditions for identification and consistency formally within the Borusyak et al. (2022) framework. We then proceed to test these assumptions. We first analyze the largest and smallest growth for product-level imports (Table B.11) and the industry-level imports shock based on our IV (Table B.12). Industries related to computers, optical equipment, and medicine received the largest shock, while there was a small negative shock to some industries related to ceramics, food products, and fabric mills.

We then test whether our shocks are correlated with industry characteristics and trends (Tables B.13 and B.14), CZ characteristics (Tables B.15 and B.16), and CZ pre-trends (Table B.17). In general, our instrument performs well. CZs which received a larger shock appear to have had better recent growth in black non-manufacturing, and trends towards lower black unemployment and non-labor force participation, which should bias us away from away from finding negative effects on black outcomes. Importantly, we find no relationship between pre-trends in either white or black manufacturing employment, the sector directly affected by import competition. We will later show that our results are robust to controlling for industry characteristics and CZ pre-trends. Finally, following Borusyak et al. (2022), we test whether our shocks are sufficiently dispersed by exploiting the hierarchical design of the SIC system, and estimate intraclass correlation coefficients for clusters of similar industries (Table B.18). We find little correlation in the trade shock within two-digit industry clusters, consistent with a high level of independence in the distribution of shocks.

While these results are reassuring, there is still the possibility the Japanese trade shock was correlated with other industry-level shocks that occurred between 1970 and 1990. In particular, we may be concerned about correlated product demand shocks. This should generally lead to upwardly biased (less negative) estimates for the impact of Japanese imports, because U.S. firms would have also benefited from this shock, but whether this bias would differ across race is unclear. Two industries deserve particular attention. First, the large increase in imports from Japan in computer technology likely reflects in part growing demand due to technological advancements in this sector. Second, while much of the growth in passenger automobile imports was due to improvements in Japanese manufacturing technology,

[19]Goldsmith-Pinkham et al. (2020) provide an alternative set of identifying conditions for shift-share instruments which instead rely on the CZ industry employment shares being orthogonal to CZ unobservables. This framework is difficult to justify in our setting as it is likely that industry-level changes, such as technology, market competition, or changes in union bargaining power, would directly impact CZ labor market outcomes.

the 1970s oil shocks caused a 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).[20] Note however, that some of these concerns are addressed directly by our IV strategy. Despite having the largest imported product, the automobile industry is not a top ten receiver of the shock, reflecting that these U.S.-specific demand influences were not as powerful in other countries. In addition, none of the countries we use in constructing 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.[21] We will show later that our results are robust to excluding these industries, as well as controlling for other economic shocks of the era.

4 Results

4.1 The Impact of Japanese Trade on Employment Disparities

In Table 3 we perform the 2SLS estimation of equation (2) on the manufacturing employment share of the male working age population.[22] 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 CZ 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 almost 0. Instead, we find strong evidence for a secular manufacturing decline in routine-intensive labor markets. This is consistent with evidence presented in, for example, Autor et al. (2003) and Autor et al. (2008), that skill-biased technical progress 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

[20] 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 in the 1980s (Feenstra, 1984, 1988).

[21] In 1970, Switzerland, the largest importer of U.S. automobiles used in our instrument, accounted for just over 1% of American automobile exports. The largest customer, Canada, accounted for almost 75%.

[22] We show our first-stage regression in Appendix B.10. Our instrument is strong, with an F-statistic over 40. Standard errors are clustered at the state level. Borusyak et al. (2022) derive an alternative set of standard errors which are asymptotically equivalent to those derived by Adão et al. (2019) 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.11.

competition had no impact on white manufacturing employment, it caused a .74 percentage point decrease in black manufacturing employment.

For our remaining results, we use the full set of CZ-level controls. Column (1) of Table 4 repeats the estimates from columns (4) and (5) of Table 3. Columns (2)-(4) provide the same estimation for non-manufacturing employment share, unemployed share, and non-labor force participation rate (NILF), respectively.[23] The Z-statistic is for a test of equality between the black and white effects. We find at best weak evidence that black employment shifted into non-manufacturing. We also see no increase in black unemployment. Instead nearly all of the decrease in black manufacturing is absorbed by an increase in non-labor force participation. In contrast, we find no evidence that any white employment outcome was affected by exposure to import competition.

To provide some context for these magnitudes, our estimates imply that black male manufacturing employment would have declined by between 1.74 and 2.22 percentage points more in the 10th percentile most exposed CZ than the 10th percentile least exposed, while black male labor force participation would have decreased by between 1.21 and 1.54 percentage points more.[24] For manufacturing, these values are equivalent to 27-34% of the absolute decrease blacks experienced over this time period, and are greater than their drop relative to whites. For non-labor force participation, they are equivalent to 36-46% of the absolute increase, and roughly the same for the increase relative to whites.

We provide a host of robustness exercises in Appendix B.13. We first test whether our results are influenced by different measurement choices for our controls and import penetration (Table B.22). When we make our controls race-specific rather than for the CZ population, we see a smaller and statistically insignificant effect of imports exposure on black non-labor force participation, although it remains economically meaningful and statistically larger than the effect for whites. Otherwise, we find similar results for this exercise, and when defining imports instead to be net of exports or inclusive of final goods only.

We then estimate our results excluding potentially problematic industries, such as the computer industry, automobile industry and industries which received outlying values of the import shock (Table B.23). While we lose substantial precision in some of these exercises, particularly when excluding the automobile industry, our estimates are qualitatively similar. Next, we re-estimate our main results using each of our non-U.S. countries' Japanese imports as a separate instrument, which allows us to perform an over-identification test (Table B.24).

[23] While by definition all individuals must at any given time be either employed in manufacturing, employed in non-manufacturing, unemployed, or out of the labor force, our coefficients do not add up exactly to 0 because of winsorization.

[24] The more conservative estimate uses the exogenous portion of import exposure that can be predicted by our instrument, rather than the realized value. See Appendix B.12 for details of these calculations.

Our results are robust to this exercise, and we strongly fail to reject the over-identifying restrictions.

We then estimate our results excluding CZs for whom automobiles represents a large share of local employment (Table B.25). While we again lose precision in this exercise, our estimates are consistent with Table 4 and remarkably stable, particularly for non-labor force participation. We next test the sensitivity of our results to pre-trends by including the 1970-1960 change in the left-hand side variable as a control (Table B.26).[25] Our results are substantively unchanged.

Finally, we include controls for potential simultaneous shocks that occurred during the 1970s and 1980s: oil price shocks, the growth of global imports, exposure to competition from the "Asian Tiger" economies and from Mexico, and increased Mexican immigration (Table B.27). Controlling for the growth of imports from non-Japanese countries is a particularly interesting specification. Imports that grew from all countries may have been due to U.S. demand increases rather than Japanese productivity shocks. Our estimates suggests that white manufacturing may have grown in response to Japanese import competition when controlling for local manufacturing industry characteristics, but otherwise these results are very similar.

4.2 Understanding the Mechanisms of the Disparate Impact

4.2.1 Changes in the Demand for Skill

The previous subsection established that Japanese import competition displaced black workers from the labor force, with little effect on aggregate for whites. We now analyze the mechanisms that caused this disparate impact.

We first explore heterogeneous effects by skill group in Table 5. We divide our sample by race and education: high school dropouts, high school graduates, and college educated.[26] 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. We use the same controls and weights as in Tables 4.[27]

First, in Panel A we find employment for high school dropouts shifted from manufacturing to non-manufacturing. Underlying this is substantial heterogeneity. We see a large decrease in manufacturing employment for black high school dropouts, slightly less than half of which manifests itself in higher non-labor force participation. The decrease in manufac-

[25] See also Appendix B.6 where we control for trends in manufacturing and black population growth.

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

[27] Estimates that are not race-specific are weighted by 1970 CZ working age population.

turing employment for white high school dropouts is substantially smaller and more than offset by an increase in non-manufacturing. We also find a surprising increase in labor force participation for white high school dropouts.

We see similar effects on the overall labor market outcomes of high school graduates in Panel B. In contrast to high school dropouts, we cannot reject that the decrease in manufacturing employment for high school graduates was identical across race. However, the decrease in black manufacturing employment was offset by an increase in non-labor force participation, while white employment appears to have instead shifted into non-manufacturing. We find only a small effect on white unemployment and no effect on white labor force participation. In contrast, in Panel C we find no impact on the labor market outcomes of college educated workers. If anything, college educated white workers appear to have shifted out of non-manufacturing and into manufacturing.

Our results show the important role of skills in the Japan shock. Import competition caused both black and white workers with less than a college education to leave manufacturing. The overall effects for whites are mitigated by their higher share with college education in 1970, and their stronger growth in college share between 1970 and 1990. In 1970, 28% of whites had more than twelve years of education compared to 11% of blacks. By 1990, more than 53% of whites were in this education category, compared to only 33% of blacks. These secular trends allowed manufacturing employment to remain more or less unchanged between 1970 to 1990 despite large losses among those with less than a college degree. In Appendix B.14 we find little evidence that import competition meaningfully changed educational attainment. If anything, the CZs that were more exposed to import competition saw an increase in their share of dropouts.[28] We find no racial differences in this effect and little change to the average education level.

Similar to recent findings by Bloom et al. (2019) for the China shock, we find non-trivial shifts of employment towards non-manufacturing for those with less than a college education of both races. White workers appear to have been better at making this adjustment than black workers, especially among high school dropouts. This does not mean low skill white workers were immune from import competition. We will see later that low skill whites saw sizable decreases in earnings.

One possibility for the stronger manufacturing losses and poorer non-manufacturing employment prospects for black high-school dropouts is the substantial racial differences in skills among workers with ostensibly the same quantity of education. First, black high

[28]This provides a potential explanation for the surprising estimated increase in labor force participation by low skill white workers, as an increase in the share of high school dropouts can change the composition and average skill level within this group.

school dropouts drop out sooner than whites. In 1970, working age black male high school dropouts had .6 years less education than white dropouts. In addition black students attend worse schools and have worse home environments (e.g., Card and Krueger, 1992; Todd and Wolpin, 2007).[29] In the National Longitudinal Survey of Youth (NLSY) 1979 cohort, white high school dropouts scored in higher percentiles of the Armed Forces Qualifying Test than black high school *graduates*. Because of their later birth year we would expect the NLSY cohort to have a lower school quality gap than the aggregate working age population in both 1970 and 1990.

In Table 6 we compare the effects of Japanese import competition on Southern born and Northern born blacks. From 1940 to 1970, as part of the "Great Migration" 4 million blacks moved out of the rural South. Due to both differences in parental resources and as a consequence of school segregation, we would expect these workers to have lower human capital than their Northern born counterparts.[30] We restrict attention to CZs which had a substantial population of Southern and non-Southern born blacks.[31] We then calculate employment outcomes in each CZ separately for these groups, and estimate an analogous set of regressions to Table 4.

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 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 out.

Remarkably, within this sample we see only mild evidence of negative effects for black workers born outside of the South, concentrated on labor force participation. In contrast, we

[29]For example, Thompson (2018) reports that among the Children of the NLSY, who were the children of mothers born between 1957-1964, black children were 26 percentage points less likely to have a parent read to them 3 times or more per week and 27 percentage points less likely to live in a home with 10 or more children's books.

[30]For example, in 1940 Southern blacks attended schools 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 low skill Southern migrants would hurt the reputation of the local black workforce (Grossman, 1991). In the NLSY79, blacks born in the South scored on average 6.3 percentiles lower than blacks born outside the South on the AFQT, a gap nearly 25% as large as the racial gap in AFQT scores. See Boustan (2009) for more discussion of skill differences between Great Migrants and Northern born blacks.

[31]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 yields a sample of 185 CZs.

see strong evidence for negative impacts on the Southern born. Our point estimates suggest Southern born blacks saw a nearly five times larger effect on manufacturing employment, though we cannot reject no differences across region of birth. Southern born blacks saw a 2.5 times larger impact on non-labor force participation, and also a relative increase in unemployment.

Part of these differences may be due to differences in characteristics between Northern and Southern born blacks. As we show in Appendix B.15, Southern born blacks had nearly one year lower education and were more likely to work in low skill occupations. Using inverse propensity weights to account for these differences, we find very similar results to Table 6. While there may be other explanations for the differences in outcomes between these two groups, they are consistent with effects being driven by differences in skill levels within education and occupation between Southern and Northern born blacks.

Our previous results suggest manufacturing employment became more high skill in response to Japanese competition. In Table 7 we look for direct evidence. The first two columns analyze the education composition of manufacturing jobs. We find a $1,000 increase in Japanese import competition led to .97 percentage point increase in the share of manufacturing jobs in a CZ 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 manufacturing's occupation composition. We find that a $1,000 import increase led to a .29 percentage point increase in the share of manufacturing employment held by managers and professionals (column 3), two-thirds 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 Skill Changes Within and Across Industries

In the previous section we presented evidence that Japanese import competition led to a shift in manufacturing demand away from low skill workers. There are two ways this could occur. Japanese imports could have caused the growth of new high-skill industries, as may be expected if trade liberalization increased specialization towards U.S. comparative advantage. Alternatively, Japanese expansion may have caused exposed industries to become more high-skill themselves. This could be due to skill-biased innovation in response to a new competitive threat (e.g., Neary, 2002; Thoenig and Verdier, 2003). It could also come through the learning and adoption of Japanese innovations by American firms (e.g., Powell, 1995; Ichniowski and

Shaw, 1999). In this section, we attempt to distinguish between these possibilities.

We first test these mechanisms using panel data from the NBER-CES on industry characteristics. In column (1) of Table 8 we estimate the impact of industry-level import exposure on the change in industry-level employment from 1970 to 1990. We control for industry employment, value added per worker, and capital labor ratio in 1970, as well as one-digit industry fixed effects.[32] Comparative advantage-based models predict a shift out of industries that face Japanese competition. Instead, we see a positive and statistically insignificant impact on industry employment. In column (2) we control for industry-level exports to Japan, instrumented by the exports to Japan from our six other highly developed countries. U.S.-Japan bilateral trade flows are correlated, and we would expect that exports should raise employment in the United States. In fact, adding this control generates the predicted negative sign on our import competition variable, but it remains statistically insignificant. In contrast, in column (3), we find that industries exposed to Japanese competition increased their capital-labor ratio, which suggests an increase in workforce skill level if capital and skill are complements (Goldin and Katz, 1998). We find a larger magnitude for our estimate after including the exports control in column (4) though the result loses statistical significance. In columns (5) and (6), we find that exposure to import competition caused an increase in value added per worker, a direct measure of productivity.

In Table 9 we look for changes in local industry composition in response to CZ import exposure, using the CBP. We use the full set of CZs in the continental United States for this exercise. Each column represents a different industry characteristic. Panel A estimates the impact of import exposure on the 1990-1970 change in the share of manufacturing employment belonging to industries in the top 25% of that characteristic in 1970, while Panel B does the same for the share of manufacturing in the bottom 25% of that characteristic. We find little evidence that the shifts in demand occurred across industries. First in column (1) we find that import competition caused a small increase in the share of employment in industries that had high employment growth in the prior decade, but no change in the share belonging to industries with low employment growth. In contrast, in columns (2) and (3) we find a decrease in the share of employment belonging to industries with high value added or high capital/labor ratios in 1970, and an increase in the share of employment to low value added and capital industries. This suggests an adjustment in the opposite direction; high skill workers who would have otherwise worked in skill-intensive industries could instead work in industries which faced import competition. Most importantly, in column (4) we find no impact on the share of employment in the most and least exposed industries to Japanese import competition.

[32]We use the pseudo one-digit manufacturing sectors constructed by Autor et al. (2014).

Our results are thus more supportive of models that focus on the disruptive effects of product market competition. While this provides evidence for the mechanism causing the skill-based disparities we observe in our local labor markets, we caution extrapolating these results to broader conclusions about the response to the Japanese trade shock. Our tests of comparative advantage are valid only if comparative advantage industries were expected to grow in CZs where comparative disadvantage industries were previously located, which need not be the case. The local labor markets approach would fail to capture growth of industries whose locations were orthogonal to the geographic dispersion of the shock. In addition, as discussed earlier Japanese firms responded to American protectionist policies by constructing plants in the United States. Our industry-level estimates cannot distinguish whether industry characteristics changed due to American-owned firms becoming more productive, or the introduction of these highly productive new Japanese firms.[33]

Taken together the evidence in Sections 4.2.1 and 4.2.2 suggest that industries responded to Japanese import competition by moving to a more capital-intensive and high skill production process. This meant replacing low skill workers with high skill workers and, given the skill disparities between blacks and whites, a displacement of black workers out of manufacturing and eventually out of the labor market. Secular increases in education enabled firms to increase their employment of high skill workers and lessened the impact of import competition on any aggregate employment statistics. At the local level, high capital and high value added industries grew more slowly in CZs faced with a high degree of Japanese competition. This allowed high skill workers to move into trade affected industries.

4.2.3 Other Explanations

In Table 10, we summarize the main results from several different exercises to test alternative explanations for the disparate impact of Japanese competition on black workers. We provide a full treatment in Appendix B.16. First, we test whether exposure exacerbated spatial mismatch. While we find that import competition increased the concentration of black families in central cities (column 1), we do not find any effect on the location of manufacturing jobs within cities (column 2). While we do not find evidence that segregation led to worse effects for black workers as a whole, we find suggestive evidence that the employment of black high school dropouts shifted more into non-manufacturing and less into non-labor force participation in less segregated CZs (columns 3 and 4).

We explore the impact of prejudice using variation in the voting share for George Wallace, an independent pro-segregation candidate in the 1968 presidential election (columns 5 and

[33]Our CZ-level identification strategy will be less likely to pick up the effects of Japanese manufacturing plants as they tended to locate in different areas than American firms (Head et al., 1995).

6). While our estimates are imprecise, we find no evidence that black workers fared better in less prejudiced areas. Likewise, we find no evidence that the effects of import competition were ameliorated by union coverage for either race (columns 7 and 8).

4.3 The Impact of Japanese Trade on Earnings and Families

In the previous sections we established that Japanese trade displaced low skill workers from manufacturing, especially among blacks. We now explore how these structural changes influenced financial outcomes.

In the first three columns of Table 11, we estimate the impact of Japanese competition on median male wages and earnings.[34] The results pertaining to earners must be taken with caution as they are sensitive to labor force selection. In particular, as seen in Table 5, imports exposure decreased the labor force participation of low skill black workers, which will mechanically increase the mean and median earnings for black workers, while increasing the labor force participation of low skill whites, which will have the opposite mechanical effect. It is therefore not surprising that we see no effect on black weekly wages in column (1) despite the evidence for a negative effect on black employment outcomes. In column (2), we find little impact, disparate or otherwise, on the annual earnings of these workers.

However, as is well-known in the literature (e.g., Brown, 1984; Chandra, 2003) and can be seen in Table 4, 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 black male labor force participation. In column (3), we estimate the impact on median male earnings inclusive of individuals who report zero income.[35] Once allowing for non-earners, we find that $1,000 in import competition reduced median black male earnings by 4.1 log points. Our estimates suggest the black-white median earnings gap grew by between 8.5 to 10.8 percentage points more in the 10th percentile most exposed CZ than the 10th percentile least, which is 75-95% of the increase in the black-white median male earnings gap during this time period.

In Appendix B.18 we provide breakdowns of the effects on earnings by race and skill group. Consistent with our employment effects, earnings losses are largest for those with the lowest education, while we find no impact on the college educated. Of particular note, white

[34]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-earners as in column (3) of Table 11 as the log of 0 is undefined. In Appendix B.17, we report results using means and generally find results which are less negative but consistent with those reported here.

[35]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 CZ in which the median worker of any race reported 0 earnings.

high school dropouts saw substantial decreases in earnings both inclusive and exclusive of non-earners. While still outperforming black high school dropouts on this metric, it verifies they were not fully insulated from the shock.

The final two columns of Table 11 look at household finances.[36] 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). Comparing columns (3) to columns (4) we see that black households were able to somewhat mitigate the drop in male earnings, but a substantial disparity remains. The median black-white family earnings gap rose by 2.5 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 suggests the social safety net had some alleviating effect.

In Table 12 we look at family outcomes more directly. In column (1), we find that import competition increased welfare take up for both races, but with a much larger effect for black households. In column (2), we look at the share of households living in poverty, a measure of extreme economic hardship. Despite our findings for welfare uptake, we do not find an increase in white poverty. In contrast, we see a stark increase in black poverty. A $1,000 increase in Japanese import competition led to a .72 percentage point increase in the black poverty rate. In column (3) we instead consider the share of children living in poverty and find similar effects.

In column (4) we look at the share households with children that are single parent. As discussed before, this time period saw a substantial increase in black single motherhood, which has been frequently tied to black men's economic downturn (e.g., Wilson, 1996). Consistent with Autor et al. (2019)'s findings for the China shock, we see an increase in the rate of single parent households among whites in CZs that were exposed to high levels of Japanese import competition. We also see a larger effect for black households, but our estimate is imprecise and we cannot reject an equal effect to white households, or zero. In column (5) we instead look at the share of households which are female-headed. We again find positive effects on both whites and blacks, both of which are now statistically significant. While we cannot reject equality of effects across race, our point estimate for blacks is nearly 3.5 times larger.

[36] 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 that of the household head.

5 Conclusion

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 Japanese import competition contributed sizably to these hardships. Every $1,000 increase in import exposure per worker resulted in a decrease in black manufacturing employment by 0.74 percentage points, a rise in labor force non-participation of 0.52 points, and a decline in median household earnings by 2.9 log points.

However, we do not see evidence of aggregate losses for the American manufacturing sector. Instead we find that industries responded to increased competition by shifting to a more skilled work force. While low education workers of all races were hurt by this restructuring, whites were able to dodge the worst effects due to strong secular gains in education, and a better ability to transition to non-manufacturing employment. This may have been due to whites' higher skill within education groupings. We also find suggestive evidence that blacks' transition out of manufacturing was hurt by racial segregation.

While we focus on the labor market consequences of Japanese competition, the effects may have reached far beyond. We find evidence that imports exposure exacerbated the already rising rates of single motherhood in the black community. Progress on education and test score gaps began to stall and reverse at the end of the 1980s, when the children of families experiencing this economic disruption came of age (Neal, 2006). It is conceivable that import competition may have also played a role in the rising youth incarceration and drug violence seen in the 1980s, either directly through the worsening labor market or indirectly through deteriorating home environments.

While, the post-1980s national declines in American manufacturing have been accompanied by a decrease in the demand for skill (e.g., Charles et al., 2018), the timing of the shock may have made it especially damaging for racial equality. Black workers had only recently made advances in manufacturing. The inability to sustain this success could play a role in the failure to close gaps for longer-term progress markers, such as home ownership (Collins and Margo, 2001). Had black economic progress continued in these decades, they may have been less vulnerable to skill-biased technical change and mechanization during the 1990s and 2000s.

Data Availability Statement The data and code underlying this research is available on Zenodo at https://dx.doi.org/10.5281/zenodo.7484407

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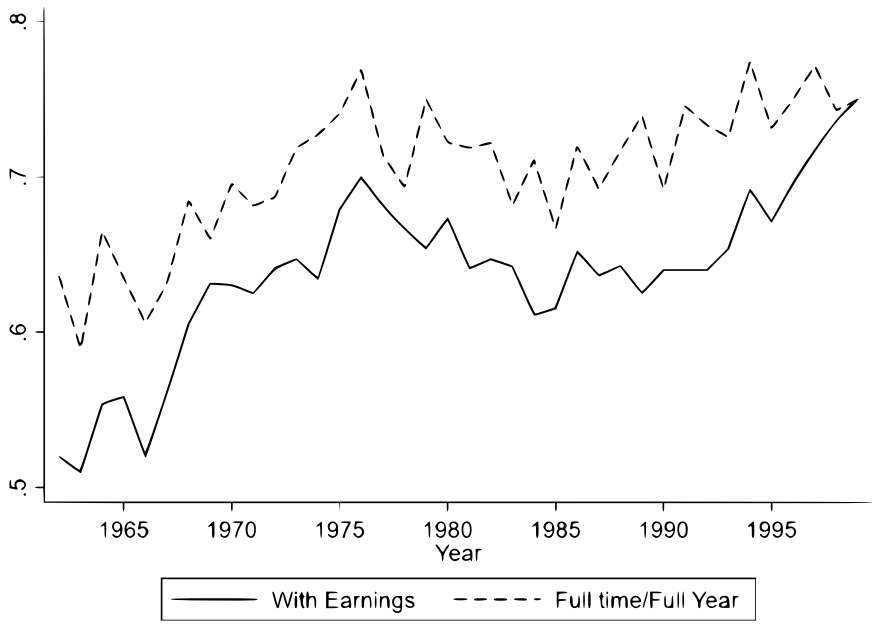
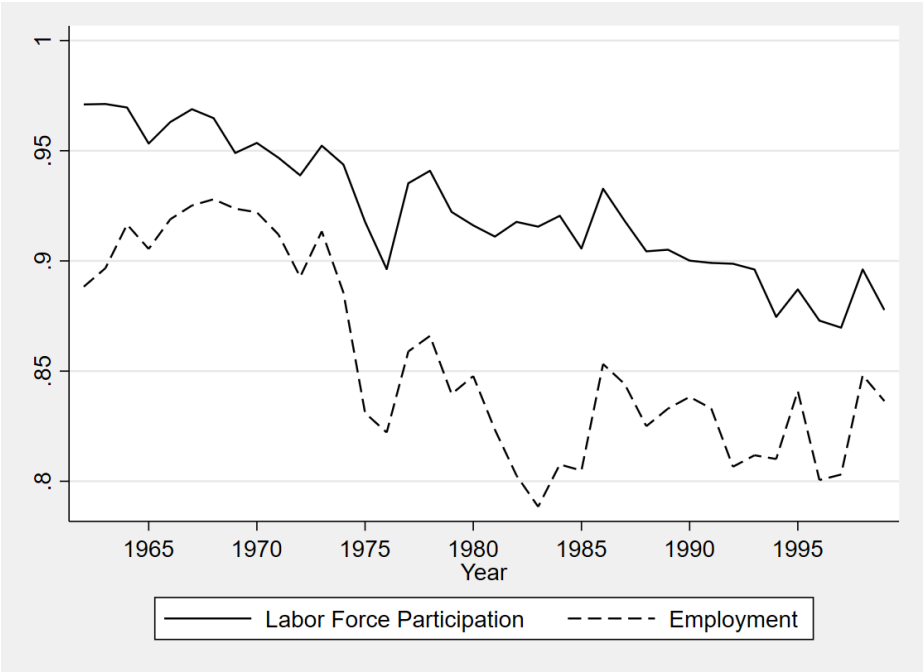
Figure 1: Ratio of Median Earnings for Working Age Population: Black Men/White Men, 1962-1999



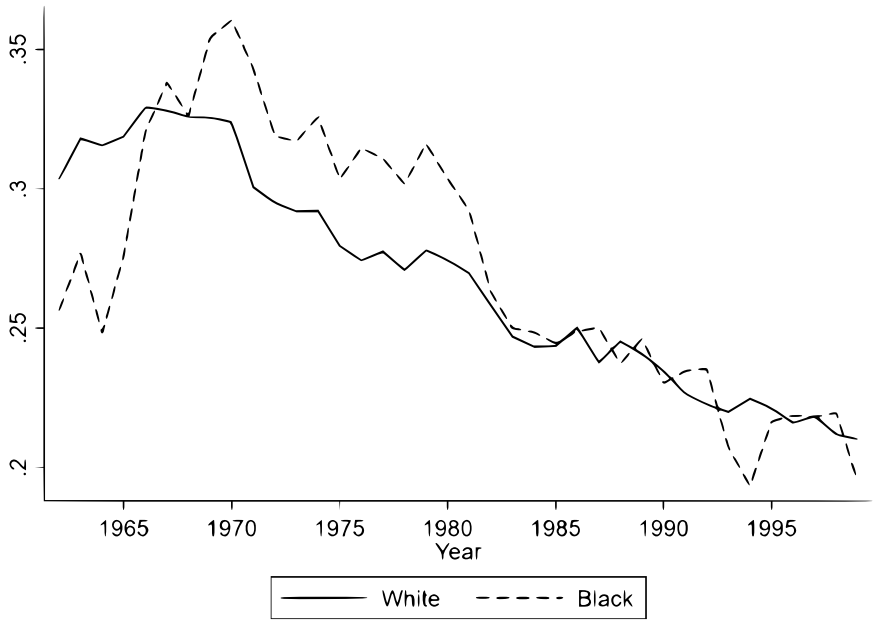
Source - Current Population Survey (1962-1999).

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



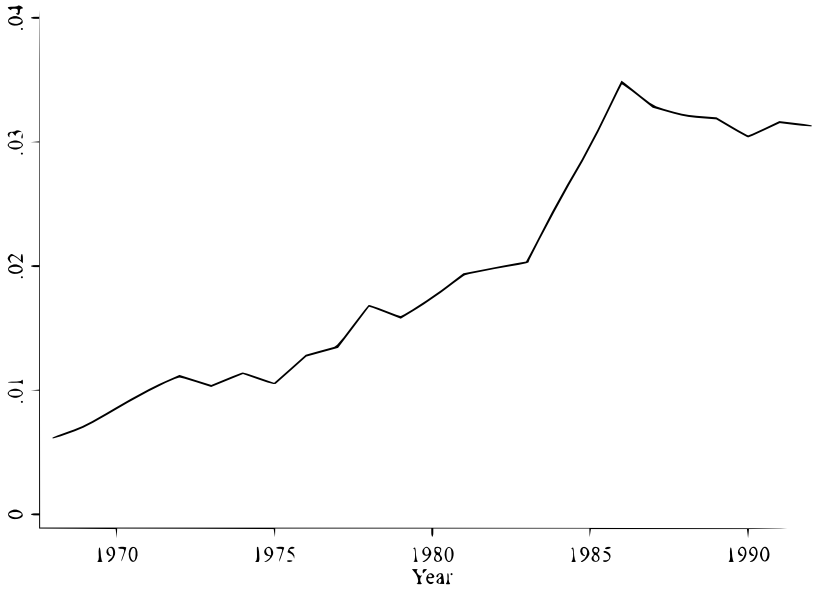
Source - Current Population Survey (1962-1999).

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



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 (1)	1990 (2)	1970 (3)	1990 (4)	(5)
Percentage of population employed in manufacturing	19.432 (8.68)	13.372 (6.27)	23.620 (8.73)	18.147 (6.29)	-0.587
Percentage of population employed in non-manufacturing	51.588 (10.18)	48.695 (9.69)	59.078 (8.34)	62.997 (7.20)	-6.811
Unemployed share of population	4.380 (1.85)	9.808 (2.83)	2.748 (0.99)	4.311 (1.14)	3.866
Labor force non-participation rate	24.531 (5.16)	28.084 (6.27)	14.530 (2.99)	14.447 (3.02)	3.637
Median log weekly wage, male earners	613.088 (27.25)	613.290 (18.38)	652.737 (14.86)	650.471 (16.06)	2.467
Median log annual earned income, male earners	996.847 (29.87)	995.625 (20.49)	1043.513 (16.15)	1040.489 (17.19)	1.803
Median log annual earned income, all working-age males	977.015 (38.49)	948.890 (38.22)	1035.449 (19.33)	1030.179 (22.81)	-22.855
Median log HH earned income	933.542 (37.27)	947.747 (30.98)	989.553 (16.15)	1003.265 (21.18)	0.493
Median log HH total income	939.089 (35.47)	958.054 (26.96)	990.343 (15.93)	1010.350 (19.35)	-1.041
HH welfare rate	14.142 (4.55)	18.064 (5.55)	2.842 (1.23)	4.372 (1.78)	2.393
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 on Change in Manufacturing Employment/ Working Age Population, 1990-1970 Long Difference: 2SLS Estimates

	All			White	Black
	(1)	(2)	(3)	(4)	(5)
(Δ Imports from Japan to US)/worker	-1.080***	-0.636**	-0.124	0.034	-0.743***
	(0.356)	(0.298)	(0.112)	(0.116)	(0.173)
Percentage of employment in manufacturing$_{1962}$		-0.158***	0.020	-0.003	0.074
		(0.039)	(0.033)	(0.033)	(0.059)
Black percentage of population$_{1960}$			-0.065**	-0.059**	-0.068*
			(0.026)	(0.028)	(0.036)
College percentage of population$_{1960}$			-0.064	-0.104	-0.044
			(0.084)	(0.084)	(0.128)
Foreign-born percentage of population$_{1960}$			0.111*	0.117*	0.162*
			(0.067)	(0.067)	(0.091)
Average offshorability index of occupations$_{1960}$			0.139***	0.130***	0.242***
			(0.046)	(0.048)	(0.066)
Percentage of employment in routine occupations$_{1960}$			-0.429***	-0.411***	-0.457***
			(0.058)	(0.060)	(0.080)
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. Left-hand side variable is 1990-1970 change in manufacturing share of the population. Models in columns (1)-(3) are weighted by 1970 commuting zone working age population. Models in columns (4) and (5) are weighted by race-specific 1970 commuting zone working age population. $*p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 4: Japanese Imports and Change in Employment Status, 1990-1970 Long Difference: 2SLS Estimates

	Mfg emp	Non-mfg emp	Unemp	NILF
	(1)	(2)	(3)	(4)
White Workers				
(Δ Imports from Japan	0.034	0.045	-0.018	-0.053
to US)/worker	(0.116)	(0.093)	(0.030)	(0.063)
Black Workers				
(Δ Imports from Japan	-0.743***	0.200	-0.059	0.515***
to US)/worker	(0.173)	(0.217)	(0.110)	(0.146)
Z-statistic	-4.351***	0.756	-0.327	4.428***
Observations	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Left-hand side variable in column (1) is 1990-1970 change in manufacturing share of the population. Left-hand side variable in column (2) is 1990-1970 change in non-manufacturing share of the population. Left-hand side variable in column (3) is 1990-1970 change in unemployed share of the population. Left-hand side variable in column (4) is 1990-1970 change in non-labor force participation share of the population. Models are weighted by race-specific 1970 commuting zone working age population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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. Z-statistic is for test of equality for effect of (ΔImports from Japan to US)/worker for black and white workers, and is computed from a fully-interacted stacked regression. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 5: 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	-0.423***	0.491***	0.025	-0.077
	(0.121)	(0.105)	(0.055)	(0.110)
Black Workers				
(Δ Imports from Japan to US)/worker	-1.075***	0.525**	0.091	0.395**
	(0.126)	(0.231)	(0.113)	(0.194)
White Workers				
(Δ Imports from Japan to US)/worker	-0.245*	0.496***	0.032	-0.255**
	(0.136)	(0.121)	(0.041)	(0.120)
		Panel B: HS Grads		
All Workers				
(Δ Imports from Japan to US)/worker	-0.433**	0.324*	0.053	0.065
	(0.177)	(0.172)	(0.038)	(0.043)
Black Workers				
(Δ Imports from Japan to US)/worker	-0.541	0.190	-0.210	0.433***
	(0.391)	(0.439)	(0.164)	(0.167)
White Workers				
(Δ Imports from Japan to US)/worker	-0.300*	0.244	0.084**	0.001
	(0.164)	(0.154)	(0.034)	(0.053)
		Panel C: College Educated		
All Workers				
(Δ Imports from Japan to US)/worker	0.085	-0.137	0.027	0.033
	(0.217)	(0.166)	(0.029)	(0.121)
White Workers				
(Δ Imports from Japan to US)/worker	0.131	-0.138	0.023	-0.006
	(0.204)	(0.158)	(0.029)	(0.124)
Observations	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Left-hand side variable in column (1) is 1990-1970 change in manufacturing share of the population. Left-hand side variable in column (2) is 1990-1970 change in non-manufacturing share of the population. Left-hand side variable in column (3) is 1990-1970 change in unemployed share of the population. Left-hand side variable in column (4) is 1990-1970 change in non-labor force participation share of the population. Models for all workers are weighted by 1970 commuting zone working age population. Models for racial subgroups are weighted by race-specific 1970 commuting zone working age population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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 6: 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)
Northern born Black Workers				
(Δ Imports from Japan	-0.137	0.100	-0.219*	0.236*
to US)/worker	(0.182)	(0.299)	(0.132)	(0.124)
Southern born Black Workers				
(Δ Imports from Japan	-0.649***	-0.147	0.100	0.597***
to US)/worker	(0.230)	(0.282)	(0.103)	(0.207)
Z-statistic	-1.434	-0.534	3.788***	1.778*
Observations	185	185	185	185

Notes - Robust standard errors clustered at the state-level in parentheses. Left-hand side variable in column (1) is 1990-1970 change in manufacturing share of the population. Left-hand side variable in column (2) is 1990-1970 change in non-manufacturing share of the population. Left-hand side variable in column (3) is 1990-1970 change in unemployed share of the population. Left-hand side variable in column (4) is 1990-1970 change in non-labor force participation share of the population. Models are weighted by group-specific 1970 commuting zone working age population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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. Z-statistic is for test of equality for effect of (ΔImports from Japan to US)/worker for southern and northern born black workers, and is computed from a fully-interacted stacked regression. 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 7: 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	0.968***	-0.182	0.287***	0.189***	-0.066	0.651***
	(0.195)	(0.225)	(0.056)	(0.025)	(0.078)	(0.152)
Observations	358	358	358	358	358	358
1970 mean of DV	23.1	42.1	16.4	4.8	66.7	6.0

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by 1970 commuting zone working age population. Left-hand side variable in column (1) is 1990-1970 change in share of manufacturing employment belonging to college educated workers. Left-hand side variable in column (2) is 1990-1970 change in share of manufacturing employment with less than a high school degree. Left-hand side variable in column (3) is 1990-1970 change in share of manufacturing employment in management and professional occupations. Left-hand side variable in column (4) is 1990-1970 change in of manufacturing employment in engineering occupations. Left-hand side variable in column (5) is 1990-1970 change in share of manufacturing employment in production occupations. Left-hand side variable in column (6) is 1990-1970 change in share of manufacturing employment belonging to college educated workers in production occupations. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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 8: Japanese Imports and Change in Industry Characteristics, 1990-1970 Long Difference: 2SLS Estimates

	Log Employment		K/L		Value added per wkr	
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ Imports from Japan to US)/worker	0.119	-0.131	0.071**	0.159	0.016*	0.039**
	(0.078)	(0.201)	(0.030)	(0.097)	(0.009)	(0.018)
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Export controls	No	Yes	No	Yes	No	Yes
Observations	379	379	379	379	379	379

Notes - Robust standard errors clustered at the 3-digit SIC level in parenthesis. Models are weighted by 1970 employment. Left-hand side variable in columns (1) and (2) is 1990-1970 change in log employment. Left-hand side variable in columns (3) and (4) is 1990-1970 percentage change in capital stock divided by employment. Left-hand side variable in columns (5) and (6) is 1990-1970 percentage change in value added per worker. Each regression includes controls for for 1-digit industry fixed effects; and industry log employment, value added per worker, and energy spending per work in 1970. Capital stock, value added, an energy spending measured in millions of 1999$. Columns (2), (4), and (6) additionally control for exports per worker to Japan from the Untied States instrumented by the exports to Japan from six highly developed countries. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

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

	Emp growth	Value added	K/L	IPW
	(1)	(2)	(3)	(4)
	Panel A: Share man. emp. in top 25%			
(Δ Imports from Japan	0.521**	-1.089***	-0.697***	-0.375
to US)/worker	(0.230)	(0.247)	(0.233)	(0.374)
1970 Mean of DV	7.70	0.21	-2.60	6.32
	Panel B: Share man. emp. in bottom 25%			
(Δ Imports from Japan	0.182	0.932***	0.883***	0.225
to US)/worker	(0.265)	(0.294)	(0.282)	(0.202)
1970 Mean of DV	-4.52	-3.56	0.52	-3.57
Observations	722	722	722	722

Notes - Robust standard errors clustered at the state-level in parentheses. Left-hand side variable in Panel A (Panel B) of column (1) is 1990-1970 change in share of manufacturing employment in the top (bottom) 25% manufacturing industries by 1960-1970 log employment growth. Left-hand side variable in Panel A (Panel B) of column (2) is 1990-1970 change in share of manufacturing employment in the top (bottom) 25% manufacturing industries by 1970 capital/labor ratio. Left-hand side variable in Panel A (Panel B) of column (3) is 1990-1970 change in share of manufacturing employment in the top (bottom) 25% manufacturing industries by 1970 value added per worker. Left-hand side variable in Panel A (Panel B) of column (4) is 1990-1970 change in share of manufacturing employment in the top (bottom) 25% manufacturing industries by 1990-1970 change in imports from Japan per worker. Models are weighted by 1970 commuting zone working age population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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 10: Japanese Imports, Local Population Geography, and Interaction Effects, 1990-1970 Long Difference: 2SLS Estimates

	Central City		Segregation		Wallace share		Unionization	
	Share black	Share mfg jobs	Low Mfg emp	Low NILF	All Mfg emp	All NILF emp	All Mfg	All NILF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Commuting Zone								
(ΔImports from Japan	1.684***	0.134						
to US)/worker	(0.190)	(0.576)						
White Workers								
(ΔImports from Japan			0.357**	0.046	0.020	0.061	0.044	-0.023*
to US)/worker Interaction			(0.151)	(0.286)	(0.178)	(0.095)	(0.040)	(0.014)
Black Workers								
(ΔImports from Japan			0.178	1.122*	0.876**	-0.642	0.025	-0.014
to US)/worker Interaction			(0.297)	(0.639)	(0.434)	(0.396)	(0.055)	(0.082)
Observations	167	167	358	358	344	344	354	354

Notes - Robust standard errors clustered at the state-level in parentheses. Models in column (1) and (2) weighted by 1970 commuting zone working age population. Models in columns (3)-(8) weighted by race-specific 1970 commuting zone working age population. Left-hand side variable in column (1) is the change in the share of the population that is black in the central cities within the commuting zone. Left-hand side variable in column (2) is the change in the share of manufacturing jobs located in central cities within the commuting zone. Left-hand side variable in column (3) is 1990-1970 change in manufacturing share of population for high school dropouts only. Left-hand side variable in column (4) is 1990-1970 change in non-labor force participation share of the population for high school dropouts only. Left-hand side variable in columns (5) and (7) is 1990-1970 change in manufacturing share of population for all working age males. Left-hand side variable in columns (6), and (8) is 1990-1970 change in non-labor force participation share of the population for all working age males. Interaction variable in columns (3) and (4) is commuting zone segregation, normalized to be mean 0 and standard deviation 1. Interaction variable in columns (5) and (6) is indicator for CZ being above the mean Wallace voting share in that census division. Interaction variable in columns (7) and (8) is 1967-1972 state-level unionization rate residualized of 1970 state-level manufacturing share of the population. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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: Japanese Imports and Change in Earnings, 1990-1970 Long Difference: 2SLS Estimates

	Log Weekly Wage	Log Annual Earnings			Log Ann Inc
	Earners	Earners	All	HH	HH
	(1)	(2)	(3)	(4)	(5)
White Workers					
(Δ Imports from Japan	0.130	0.290	-0.478	-0.372	-0.281
to US)/worker	(0.384)	(0.338)	(0.506)	(0.349)	(0.309)
Black Workers					
(Δ Imports from Japan	0.215	0.156	-4.083***	-2.888***	-1.961***
to US)/worker	(0.488)	(0.592)	(1.139)	(0.773)	(0.593)
Z-statistic	0.311	-0.300	-3.842***	-4.565***	-3.767***
Observations	358	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 commuting zone working age population. Left-hand side variable in column (1) is 1990-1970 change in median log weekly wage. Left-hand side variable in column (2) is 1990-1970 change in median male annual earnings for those with earnings. Left-hand side variable in column (3) is 1990-1970 change in median male annual earnings inclusive of non-earners. Left-hand side variable in column (4) is 1990-1970 change in median annual household earnings. Left-hand side variable in column (5) is 1990-1970 change in median annual household income. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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. Z-statistic is for test of equality for effect of (ΔImports from Japan to US)/worker for black and white workers, and is computed from a fully-interacted stacked regression. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$

Table 12: Japanese Imports and Change in Family Outcomes, 1990-1970 Long Difference: 2SLS Estimates

	% Welf Recpt	% in Poverty		% Single Parent	% Female Headed
	HH	HH	Kids	HH	HH
	(1)	(2)	(3)	(4)	(5)
White Households					
(Δ Imports from Japan	0.142**	0.082	0.124	0.147**	0.135**
to US)/worker	(0.061)	(0.076)	(0.144)	(0.072)	(0.064)
1970 mean of DV	2.8	9.6	9.7	7.5	6.1
Black Households					
(Δ Imports from Japan	0.702***	0.717***	0.692**	0.435	0.462*
to US)/worker	(0.109)	(0.227)	(0.323)	(0.275)	(0.268)
1970 mean of DV	14.1	32.0	42.0	21.3	19.3
Z-statistic	4.959***	2.855***	1.684*	1.360	1.505
Observations	358	358	358	358	358

Notes - Robust standard errors clustered at the state-level in parentheses. Models are weighted by race-specific 1970 commuting zone working age population. Left-hand side variable in column (1) is 1990-1970 change in share of households receiving welfare. Left-hand side variable in column (2) is 1990-1970 change in share of households living in poverty. Left-hand side variable in column (3) is 1990-1970 change in share of children living in poverty. Left-hand side variable in column (4) is 1990-1970 change in share of households with children living with only one adult over 18. Left-hand side variable in column (5) is 1990-1970 change in share of households with female head. Each regression includes census division fixed effects; commuting zone-level controls for percentage of employment in manufacturing in 1962; 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. Z-statistic is for test of equality for effect of (ΔImports from Japan to US)/worker for black and white households, and is computed from a fully-interacted stacked regression. $p \leq 0.10, **p \leq 0.05, ***p \leq 0.01$