

## Cover Sheet

**Paper Title:**

Inward Foreign Direct Investment and Racial Employment Patterns in U.S. Manufacturing

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# **Inward Foreign Direct Investment and Racial Employment Patterns in U.S. Manufacturing**

## **ABSTRACT**

By Abera Gelan, Kaye Husbands Fealing and James Peoples\*

*This study uses several data sources to predict the effect of foreign direct investment (FDI) activity on racial employment patterns. Findings indicate that FDI is associated with an improved probability of black employment in high-wage and mid-level wage jobs versus low wage jobs. FDI does not influence racial employment disparity for low-wage versus mid-level wage jobs. These findings are interpreted to suggest that enhanced competition for U.S. workers creates a business environment that can provide greater job opportunities for individuals from groups traditionally under-represented in high-paying occupations.*

## **I. Introduction**

In the latter quarter of the 20<sup>th</sup> century the U.S. became the largest host country to FDI with foreign owners investing primarily in capital intensive industries (Edward M. Graham and Paul R. Krugman, 1995). This recent increase in foreign ownership in the U.S. has the potential to significantly influence domestic occupational employment patterns. Investment in capital intensive industries requires the employment of high-skilled workers to operate high-technology machinery and to supervise and train a highly skilled work force. Empirical evidence supports the hypothesis that inward FDI in developed countries is more likely in industries with work forces comprising a large share of skilled workers (James R. Markusen and Anthony J. Venables, 1997; Karl Taylor and Nigel Driffield, 2005). Past research, however, does not examine whether racial minorities benefit from foreign owners' demand for high-wage high-skilled jobs. Such an examination is important, in part because of the non-trivial loss of jobs for racial minorities in

U.S. manufacturing industries during the current period of globalization. At question is whether FDI activity promotes employment opportunities for racial minorities in an increasingly competitive business environment.

This study addresses the dearth of research in this area by exploring whether foreign owners have an incentive to engage in non-discriminatory employment practices and whether stepped-up labor market competition from these owners can influence the employment decisions of their domestic rivals. Empirical analysis is provided to test whether FDI activity influences racial employment patterns in U.S. manufacturing. Initially a brief presentation of affirmative action and international competition's influence on racial disparities in U.S. manufacturing is presented to reveal whether these events created a labor market conducive to the employment of qualified blacks in skilled positions prior to the significant growth of FDI.

## II. Recent Racial Employment History in U.S. Manufacturing

Prior to the civil rights era employment discrimination toward blacks was a common business practice in U.S. manufacturing (Raymond Wolters, 1971). Blacks were disproportionately employed in low-skilled low-wage occupations. The automobile sector was a notable exception as Henry Ford supported the employment of blacks in well paying production jobs as early as 1921 (Wolters). The lack of such opportunities in other manufacturing sectors led to the enactment of equal employment policies in the 1960s. The enforcement of these policies contributed to non-trivial and uneven employment gains for blacks in manufacturing. Major gains occurred in auto and auto related manufacturing industries. For instance, blacks comprised 13.6 percent of the auto work force by 1966. Gains in steel and tire manufacturing increased from negligible numbers of blacks workers to these individuals comprising 8.3 percent and 12.8 percent of the work force, respectively. The momentum toward declining racial

employment in automobile, steel, and tire manufacturing is of added significance given that workers in these industries are now highly likely to be employed by foreign owners.<sup>1</sup>

Despite overall employment gains, by the early 1970s blacks remained heavily underrepresented in high-skilled high-paying jobs. Global market forces in the 1970s, though, presented an additional mechanism through which further economic racial disparity erosion could arise. For instance, stepped-up international competition increased the risk of profit losses arising from discriminatory employers exercising their employment preferences (Sandra Black and Elizabeth Brainerd, 2004). In an increasingly competitive product market discriminatory employers place themselves at a competitive disadvantage by forgoing productivity gains associated with the use of qualified individuals from non-preferred racial groups. Past findings suggest that international competition is associated with significant racial earnings disparity erosion for low- and medium skilled non-union workers in highly concentrated industries (Jacqueline Agesa and Richard Agesa, 2006). However, findings for this group of workers only represent 5 percent of the study's sample population.

Although past findings do not reveal declining racial earnings disparities for the overall work force in U.S. manufacturing, evidence of a racial wage effect does suggest the possibility that other international market forces could further contribute to declining economic disparities between black and white workers.

### III. Inward FDI's Influence on the Domestic Labor Market

Racial employment disparities may have persisted from the 1960s through the 1970s in part because domestic employers continued to possess oligopsonistic power in the labor market. Indeed, a few dominant domestic employers in manufacturing still control a substantial share of their respective industry's work force (William G. Shepherd, 1991). Such labor market power

presents employers with the latitude to exercise discriminatory preferences, since potential employees face limited employment choices in oligopsonistic labor markets (Alan Manning, 2003). An unintended labor market outcome associated with inward FDI activity is the weakening of this oligopsonistic market power resulting from the increased number of employers competing to hire skilled domestic workers. Employers who indulge in discriminatory employment practices are placed at a competitive disadvantage compared to their non-discriminatory rivals who base hiring decision and promotions on performance.

Past research observes that foreign rivals depict just the type of corporate owners that practice non-discriminatory employment. Compared to their domestic rivals, foreign owners possibly have greater incentive adhering to local antidiscrimination laws because they are more likely than their domestic counterparts to face greater scrutiny from local authorities. Such disparity in public opinion toward domestic and foreign owners arises in part because foreign owners are likely to share a shorter history with the local community and as a result may be seen as interlopers taking advantage of the local work force. Scrutiny of foreign owners' employment decision may be further enhanced if states or local governments use taxes to subsidize the location efforts of foreign owners (Paul J. Dimaggio and Walter W. Powell, 1983). Even in the absence of intense public scrutiny, discriminatory employment practices conflict with foreign owners' efforts to coordinate a consistent global strategy so as to be successful in the increasingly competitive world market. The cost of organizational adaptation usually is to create severe limits on foreign firms' power to develop a clear and well-integrated global strategy obstructing their capacity to take full advantage of their global resources and multinational position (Yves L. Doz, et al. 1981). Thus, foreign firms tend to choose the overriding economic

incentive of implementing a consistent strategy that ensures their worldwide competitive advantage over resorting to discriminatory local strategies.

FDI activity's influence on employment practices, however, faces significant limitations. For instance racial employment disparities may still persist in a competitive labor market given the high job search costs for workers from underrepresented groups (Dan Black, 1995). It is quite common for employers to use informal networks to fill job vacancies that tend to generate bias towards workers from under-represented groups because informal hiring practices use less objective criteria by which to judge applicants (Harry J. Holzer, 1987). Even if objective measures are used to judge applicants, members of under-representative groups may still face high job search costs because they are likely to receive information on job openings less frequently than members from a more widely represented group. This uneven distribution of information arises partly because social networks through which job information flows tend to be non-random and circulate within members of the same race or ethnic group (Peter V. Marsden, 1987).<sup>2</sup>

In sum, the expected effect of FDI activity on racial employment patterns is not obvious *a priori*. Hence, empirical analysis is required to further our understanding of this labor market issue.

#### IV. Data and Specification of Employment Equation

Information on individual workers and industries is used to empirically examine FDI's influence on racial employment patterns. Information on individual workers is taken from the 1991 Current Population Survey -Outgoing Rotation Group files (CPS-ORG). Files from this data source report information on worker characteristics, regional and local residence, and the individual worker's industry and occupation of employment. The population sample is limited to

individual male respondents who are 16 years of age or older and employed in the manufacturing sector. A sample population of 16,219 workers is compiled from satisfying these sample selection criteria.

Industry information is taken from two data sources. The 1991 Bureau of Economic Analysis (BEA) survey of foreign ownership of U.S. firms provide information on foreign-owned employment shares of the U.S. industry work force. Information on industry four-firm concentration ratios, average firm sizes, and industry capital/labor ratios are taken from the *Census of Manufactures*. Annual information on 63 manufacturing industries is compiled from using these industry data sources.

The industry data sources in this study use the four-digit Standard Industrial Classification (SIC) code to identify industries. In contrast, three-digit Census codes are used in the CPS-ORG files to identify individual workers' industry of employment. Industry information from these data sources are matched by using industry valued-added output weights to obtain industry measures at the three-digit SIC level and then recode data from these industry sources to correspond to the Census equivalent using the Bureau of Labor Statistics industry code conversion.

Descriptive statistics on manufacturing workers and industries derived from using this study's data sources are presented in Table-1. The data are partitioned by race and by FDI activity. Columns (1) and (2) present worker and industry information for low FDI activity industries, while columns (3) and (4) present information for high FDI activity industries. High and low FDI activity levels are depicted as one standard deviation above or below the industry mean, respectively. Industry information presented in Table-2 reveals higher capital/labor ratios and smaller firm sizes for high FDI activity industries compared to low FDI activity industries. Four-firm industry concentration ratios do not vary appreciable by FDI activity. For these industry

findings, capital/labor ratios are most notable given that they support the notion that foreign owners are likely to invest in high-technology content U.S. industries. Foreign owners' pattern of investing in such industries apparently influences occupational employment as the findings on individual workers reveal that compared to their counterparts in low FDI activity industries, black and white workers employed in high FDI activity industries are much more likely to be employed as technicians.

Black and white workers employed in high FDI activity industries are also more likely to be employed as professionals and managers compared to their racial counterparts in low FDI activity industries. Information on occupational employment patterns also reveals a reduction in racial employment disparity for the relatively high-wage craft occupation and the relatively low-wage service occupation. For instance, whites are 29.1 percent more likely to attain employment as a craft worker in industries with low FDI activity compared to a negligible racial craft employment differential in high FDI activity industries. Blacks are 72.77 percent more likely to attain employment as a service worker in industries with low FDI activity compared to nearly identical racial employment probabilities in high FDI activity industries. Consistent with this pattern of enhanced high-wage high-skill job opportunities in high FDI activity industries, information in Table-1 shows that these industries are also more likely to employ older workers with higher educational attainment levels than workers in low FDI activity industries. These personal traits are generally associated with high skill attainment.

While the descriptive statistics presented in Table-1 present supportive evidence of FDI activity contributing to a greater probability of black employment in high wage occupations this evidence only provides a snapshot of racial employment patterns for high and low FDI activity industries. A more complete analysis requires observing racial employment patterns across the



full range of FDI industry values. This study uses a random effects approach to estimate the following employment equation for manufacturing workers to examine FDI activity's influence on racial employment patterns for all FDI activity levels.<sup>3</sup>

$$\Pr(\text{lowest wage category}=1) = \Phi\{ \beta_1 + \beta_2\mathbf{Z} + \beta_3\mathbf{V} + \beta_4\text{Black} + \beta_5\text{FDI} + \beta_6(\text{Black} \times \text{FDI}) \} \quad (1)$$

where  $\Phi$  is a normal probability function, and the dependent variable *lowest wage category* is a binary variable with a value of one if the individual is employed in a low-wage occupation and zero if the individual is employed in a relatively higher wage occupation. Wage-occupational categories are partitioned into three groups: high-wage, mid-level-wage and low-wage.

Professionals, managers, and technicians comprise the high-wage category. Clerical, non-transportation operatives and craft workers comprise the mid-level-wage category; while laborers, service workers, and transportation operatives comprise the low-wage category. Sample populations comprising workers from a combination of two categories are used to estimate employment equations.

The matrix  $\mathbf{Z}$  consists of a set of worker residency and worker profile variables. These explanatory variables include residency dummy variables for U.S. geographic quadrant and urban residency status. The worker profile measures are dummy variables depicting a worker's union, marital, full-time, military veteran, and educational status, as well as the age of the individual worker. The matrix  $\mathbf{V}$  consists of a set of industry characteristic variables that measure industry capital/labor ratios, average firm size, and four-firm industry concentration ratios. The variable *Black* is a dummy variable equaling one if the individual is black and zero if he is white. The variable *FDI* is a continuous variable measuring the percentage of an industry's domestic U.S.

workforce that is employed in foreign owned establishments. The final variable presented in the employment equation is the interaction of the *Black* and *FDI* variables.

The coefficients of key interest are  $\beta_4$ ,  $\beta_5$ , and  $\beta_6$ . The estimated coefficient  $\beta_4$  measures the difference in the likelihood a black compared to a white worker is employed in a low-wage occupation if the industry does not consist of foreign owners. The estimated coefficient  $\beta_5$  measures the marginal effect of FDI activity on the likelihood that a white worker is employed in a low-wage occupational category. The estimated coefficient  $\beta_6$  measures the marginal effect of FDI activity on the difference in the likelihood a black compared to a white worker is employed in a low-wage occupation. This marginal effect can be interpreted as FDI activity's effect on black workers' relative employment in high-wage occupations.

## V. Racial Employment Findings

Employment probability results derived from estimating equation (1) are reported in Table-2. Findings on the control variables have signs that are consistent with theories on occupational employment. For example, individual workers who belong to a union, who work part-time, reside in the southern quadrant of the U.S., reside in rural areas, achieve low educational attainment levels, and who are single are more likely to work in low-wage occupations.<sup>4</sup>

The findings in Table-2 also suggest workers employed in capital intensive, highly concentrated industries and industries with large mean firm sizes are more likely to be employed in high-wage occupations. Significance varies depending on the occupation comparison groups. The lack of significance is due in large part to collinearity between these industry measures and with the FDI parameter.

Findings on the key occupational employment determinants reveal notable differences in FDI's influence on racial employment patterns. For instance, the estimated coefficient on the black-white race dummy in Column (1) suggests that compared to whites, blacks in industries having only domestic owners are 32.73 percent less likely to be employed in a high-wage rather than a low-wage job. The estimated coefficient on the FDI variable suggests that a one percentage point increase in FDI activity is associated with a 0.31 percent increase in the probability that a white worker is employed in a high wage rather than a low-wage job.<sup>5</sup> The estimated coefficient on the interaction of the FDI and "Black" parameter is positive and statistically significant suggesting that FDI activity is associated with a decreasing black-white employment differential in high wage jobs compared to low wage jobs.

The racial employment pattern for low- and mid-level-wage jobs reported in Column (2) resembles the findings in Column (1). The estimated coefficient on the black-white race dummy suggests that compared to whites, blacks in industries having only domestic owners are less likely to be employed in a mid-level-wage rather than a low-wage job. The estimated coefficient on the FDI variable suggests that a one percentage point increase in FDI activity is associated with a statistically significant 0.12 percent increase in the probability that a white worker is employed in a mid-level-wage rather than a low wage job. The estimated coefficient on the interaction of the FDI and "Black" parameter is positive and statistically significant suggesting that a one percentage point increase in FDI activity is associated with a 0.274 percent decrease in the black-white employment differential in mid-level-wage jobs compared to low-wage jobs.

The findings in Column (3) reveal that blacks employed in industries comprising only domestic owners are significantly more likely to be employed in mid-level-wage than low-wage

jobs as the estimated coefficient on the “Black” parameter suggests a 10.9 percent racial employment differential. The estimated coefficient on the “FDI” parameter indicates that FDI activity improves the probability of high-wage employment relative to mid-level-wage employment significantly for whites. The estimated coefficient on the interaction term is not significant and suggests that FDI activity is not associated with an erosion of the black-white probability differential for employment in high wage employment versus mid-level wage employment. Rather, blacks share with whites the same significant probability increase in high-wage employment.

## VI. Concluding Remarks

While inward FDI may pose a risk to domestically owned business, it can also create opportunities for domestic workers. Domestic owners risk market share erosion partly because foreign rivals’ employment of its highly skilled domestic workers helps eliminate a key source of competitive advantage that benefits their U.S. rivals. Opportunities for domestic workers arise because product market competition associated with stepped-up FDI should contribute to the relative growth of high-wage high-skilled domestic jobs. At issue in this study is whether black workers in the U.S. benefit more from better employment opportunities compared to white U.S. workers.

Findings suggest that inward FDI activity in manufacturing industries is associated with an erosion of the black-white employment disparity in high wage and mid-level wage jobs versus low wage jobs. FDI activity is not associated with a changing racial employment probability differential for low wage versus mid-level wage jobs. It should be noted that even though these results reveal beneficial racial employment outcomes, appreciable employment disparities still persist among black and white workers when controlling for differences in observable

characteristics. Given the findings from this study, continued emphasis on U.S. education that promotes high skill attainment should further enhance black employment gains in an increasingly competitive domestic labor market.

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**Table-1**  
Descriptive Statistics

Mean Male Worker Characteristic	Low FDI Activity		High FDI Activity	
	White	Black	White	Black
AGE (years)	38.2259562	37.705	40.791	40.995
MARRIED %	0.6780898	0.5162	0.7612	0.6203
UNION MEMBER %	0.1848331	0.2494	0.2603	0.3981
PARTIME WORKER %	0.0497457	0.0976	0.0228	0.0277
<u>OCCUPATION</u>				
TECHNICIAN %	0.0331638	0.0130	0.0733	0.0601
CLERICAL WORKER %	0.0508512	0.0651	0.0534	0.0412
CRAFT WORKER %	0.2723856	0.1930	0.2310	0.2315
NONTRANSPORTATION OPERATOR %	0.2799027	0.3666	0.2176	0.3379
TRANSPORTATION OPERATOR %	0.0565996	0.0867	0.0823	0.1157
SERVICE %	0.0183507	0.0672	0.0212	0.0185
PROFESSIONAL %	0.1010391	0.0325	0.1332	0.0416
MANAGER %	0.1136414	0.0173	0.1375	0.0463
LABORER %	0.0729604	0.1562	0.0474	0.1065
<u>RESIDENCE</u>				
METROPOLITAN AREA %	0.6405041	0.5987	0.7621	0.8287
SOUTH %	0.3064338	0.7202	0.3297	0.5555
NORTHEAST %	0.2252929	0.0954	0.2483	0.1852
MIDWEST %	0.2564669	0.1149	0.2991	0.2037
WEST %	0.2118063	0.0694	0.1228	0.0555
<u>EDUCATIONAL ATTAINMENT</u>				
HIGH SCHOOL DIPLOMA %	0.4172010	0.4880	0.4133	0.4305
SOME COLLEGE %	0.2040681	0.1974	0.2336	0.2685
BA %	0.1255804	0.0390	0.1642	0.1018
GRAD %	0.0382489	0.0065	0.0853	0.0277
<u>INDUSTRY CHARACTERISTICS</u>				
KL RATIO	3.4229100	3.1759	20.033	19.269
FIRM SIZE	200.9145570	126.75	160.30	168.57
4-FIRM CONCENTRATION RATIO	41.7976053	37.171	37.55	38.763



Table-2

Occupational Employment Probability Results  
 (Probit estimation of equation (1) using an industry random effects approach:  
 (Marginal effects presented in columns 1-3))

	(1)	(2)	(3)
parttime	-.1749 (-4.09)	-.0854 (-3.98)	-.0690 (-3.48)
union	-.4296 (-18.78)	-.0154 (-3.23)	-.2337 (-22.27)
diploma	.25814 (11.99)	.0691 (5.86)	.1849 (9.26)
college	.4092 (24.22)	.1098 (9.07)	.4767 (21.34)
ba	.5265 (30.18)	.1135 (6.44)	.76097 (34.28)
grad	.3945 (17.30)	.1475 (3.67)	.7966 (31.24)
married	.0968 (5.47)	.0323 (3.11)	.0413 (4.48)
age	.02526 (6.27)	.0127 (6.12)	.0074 (2.83)
age2	-.00023 (-5.08)	-.0001 (-6.10)	-.00004 (-1.38)
ne	.0661 (3.35)	.0221 (1.59)	.0291 (1.60)
nc	.01893 (1.01)	.02447 (0.36)	-.0055 (-.09)
west	.02439 (1.06)	.0015 (1.68)	.0209 (.61)
cmsa	.1488 (8.69)	.0399 (1.48)	.0686 (6.14)
fdi	<b>.00316</b> <b>(3.18)</b>	<b>.0012</b> <b>(2.28)</b>	<b>.0020</b> <b>(3.56)</b>
black	<b>-.3273</b>	<b>(-5.49)</b>	<b>(-3.60)</b>
fdiblack	<b>.0035</b> <b>(1.66)</b>	<b>.0027</b> <b>(2.38)</b>	<b>.00004</b> <b>(.07)</b>
lc4	.0655 (2.97)	.0240 (1.58)	.0547 (1.56)
lkl	.0065 (0.44)	.0120 (3.27)	.0331 (1.44)
lfsize	.07304 (1.74)	.0570 (2.89)	.0514 (1.79)
Number of Observations	6240	11808	13490
Log likelihood	-1911.0328	-5248.90	-5111.263
Prob > chi2	0.0000	0.0000	0.0000

Column (1) presents information on probability of employment in high versus low-wage occupation; Column (2) presents information on probability of employment in mid-level versus low-wage occupation; Column (3) presents information on probability of employment in high versus mid-level-wage occupation.

Appendix-A1  
Ranking of FDI industries

**Panel-1**

**Industries with largest share of workers employed by foreign owners**

Census Code	Industry	FDI share
210	Tires	51%
180	Plastics	40.5
181	Drugs	34.4
341	TV and communications eq.	71.6
342	Electronic eq. other than TC and comm..	36.9
251	Cement and concrete	65.5
280	Primary metals other than aluminum	61.5

**Panel-2**

**Industries with smallest share of workers employed by foreign owners**

Census Code	Industry	FDI share
100	meat products	3.2%
152	fabricated textiles (misc.)	3.6
171	Newspaper publishing	3.3
230	Logging	3.0
231	Saw Mills	2.2
300	fabricated metals (misc.)	3.0
352	Aircrafts	2.3
371	Scientific and controlling instr.	3.3
310	Engines and turbines	3.9

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<sup>1</sup> A list of industries with high FDI activity is reported in Appendix-A.

<sup>2</sup> Compared to domestic owners, foreign owners might face less of an impediment hiring minorities. This may be the case particularly if foreign direct investment is characterized as a “green field investment” as opposed to an acquisitions or joint venture. In contrast to acquisitions or joint venture which entails acquiring an existing company in the foreign market, greenfield investment requires setting up new plants and as such impedes the social network structure that allows well entrenched members of the same ethnic groups to control the job information flows (Lorenzen and Mahnke, 2000).

<sup>3</sup> The random effects technique takes into account the possibility that errors follow a systematic pattern across industries and adjusts for the tendency of industry coefficients to take on exaggerated significance in individual worker-level equations.

<sup>4</sup> While unions may have as an objective negotiating high-wages for their members these members are often employed as low-wage laborers and medium-wage blue-collar workers. In contrast, high wage white-collar occupations in manufacturing are not generally unionized.

<sup>5</sup> Even though a 0.31 percent employment probability increase might seem small, the range in FDI’s industry employment share suggests the potential for substantial high-wage low-wage employment probability differences. For instance, 71.6 percent of the workforce in television

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and communications equipment is employed by foreign owners, compared to a low of 2.2 percent in saw mills. Using the coefficient estimate on the FDI parameter to calculate FDI differentials between these two industries suggest an FDI high-wage employment advantage of 21.514 percent.