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THE EFFECT OF HOUSING SEGREGATION ON
BLACK-WHITE INCOME DIFFERENTIALS

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ABSTRACT

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This paper investigates the factors that are associated with differences in black-white income ratios across SMSA's, with special attention given to the hypothesis that housing segregation has an important negative effect. Subject to a few qualifications, this hypothesis is rejected. Kain's empirical work in support of the housing segregation hypothesis is criticized, while Harrison's results for individuals are consistent with the more aggressive results presented in this paper.

With regard to policy issues, there appears to be little reason to stress housing segregation as a means of increasing the employment opportunities of nonwhites. Alternatively, housing desegregation may still be a valid means towards a number of other important objectives.

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In the last few years there has been considerable discussion concerning the effect of housing segregation on the employment opportunities of urban blacks.¹ One of the first articles, and the one that has probably attracted the most attention, is by John Kain, who argues that:²

There are several reasons why housing market segregation may effect the distribution and level of Negro employment. The most obvious are: (1) The distance to and difficulty of reaching certain jobs from Negro residence areas may impose costs on Negroes high enough to discourage them from seeking employment there. (2) Negroes may have less information about and less opportunity to learn about jobs distant from their place of residence or those of their friends. (3) Employers located outside the ghetto may discriminate against Negroes out of real or imagined fears of retaliation from white customers for "bringing Negroes into all-white residential areas", or they may feel little pressure not to discriminate. (4) Similarly, employers in or near the ghetto may discriminate in favor of Negroes.

In addition, he maintains: 1) that the problem has become much more serious as a result of the "suburbanization of employment" since the end of World War II;³ and 2) that the situation can be expected to become more serious in the future, assuming that the trend toward greater suburbanization of jobs continues.⁴

Most of the studies in this area, including Kain's, are primarily empirical.⁵ In general, the authors appear to start from two key assumptions: 1) that residential segregation by race is pervasive; and 2) that there are important employment opportunities available in areas that are hard to reach from black neighborhoods. Studies of the racial distribution of housing do indicate pervasive segregation, both between the central cities and surrounding suburbs and within central cities.⁶ In addition, it is also clear that in recent years employment has been growing more rapidly in the suburbs than in central cities.⁷

As Noll⁸ points out, however, it is very important to know why these differential growth rates have occurred. Meyer, Kain and Wohl stress the following factors:

Containerization, the jet age, telecommunications, mechanized methods of materials handling, continuous processing, do-it-yourself deliveries, automation--all these connote recent technological changes that have had a decentralizing influence on the location of urban job opportunities.⁹

Alternatively, Noll argues that:

Business location decisions are also affected by labor-market conditions. The argument that ghetto unemployment is caused by shifts in employment distribution assumes that the metropolitan area is comprised of several somewhat independent labor markets. It further assumes that, because more employment growth is occurring in the suburbs, labor markets must, perforce, be tighter there. But such differences in labor-market conditions will affect firm-locations decisions. A disproportionately large share of the metropolitan labor force works in the city (the ratio of employment to population is fifty percent higher than in the suburbs). It is possible that a much larger number of suburbanites working in the central city would prefer suburban jobs than can be filled by suburban employment growth, and that firms are locating in suburbs in response to tighter central-city labor markets.¹⁰

Noll suggests that we can distinguish between these two hypotheses by looking at wages and unemployment. If his view is correct, then for workers of equal skill wage rates should be higher in the central city than in the suburbs and unemployment rates should be lower. The opposite should be true if changes in industrial technology are the main factors responsible for decentralization of employment. Noll does present some empirical analysis of this issue and concludes "that jobs, particularly for the less skilled, are easier to find in the central city."¹¹ Unfortunately, however, his results depend rather heavily on his assumption that skill levels are higher in the suburbs than in central cities. Therefore, his results should be considered as suggestive rather than conclusive.

In summary, the housing segregation assumption appears valid while the employment opportunities assumption remains open to at least some question. With this background in mind, let us look next at the two most important studies that seek to estimate the effect of housing segregation and the suburbanization of jobs on black employment. Kain attempts to test three hypotheses "that racial segregation in the housing market 1) affects the distribution of Negro employment and 2) reduces Negro job opportunities and that 3) postwar suburbanization of employment has seriously aggravated the problem."¹² The data are for geographic areas in Detroit (1957) and Chicago (1956), with 98 observations for each city. Regressions are run using the Negro percentage of total employment in the area as the dependent variable, w . The independent variables are R , the Negro percentage of (employed) residents in the area--used as a proxy for employers propensity to discriminate--and d , the air distance from the area to either the nearest Negro residence area (more than two percent Negro) or to the nearest point in the Negro ghetto--used as a proxy for transportation costs and effects of such costs on job information. The regression coefficients have the correct signs and are statistically significant. Seventy-five percent of the total variance is explained for Chicago and 35 percent for Detroit.

Our interest centers on Kain's estimates concerning the effect of housing segregation on the level of black employment.¹³ He obtains these estimates by assuming that with no housing segregation the proportion of nonwhite workers would be the same, \bar{R} , for each geographical area. Consequently, for each area $R=\bar{R}$ and $d=0$. Substituting these values into the regression equation

$$1) \quad w = aR + bd + c \text{ gives}$$

$$2) \quad \hat{w} = a\bar{R} + c, \text{ for all areas.}$$

If \hat{w} would be the black proportion of employment in the absence of segregation and if E is the total employment of the SMSA, then the expected level of black employment in the absence of housing segregation would be $\hat{w} \cdot E$, a level considerably higher than the actual nonwhite employment level.

To evaluate this conclusion note that a regression line goes through the point representing the mean values of its variables. Therefore,

$$3) \quad \bar{w} = a\bar{R} + b\bar{d} + c$$

where \bar{w} , \bar{R} , and \bar{d} are the mean values for w , R , and d . Substituting from

2) and rearranging terms, we obtain

$$4) \quad \hat{w} - \bar{w} = -b\bar{d}$$

Now $(\hat{w} - \bar{w})$ is Kain's measure of the effect of housing segregation on the relative job opportunities of blacks. Since $b < 0$ and $\bar{d} > 0$, we see that Kain's estimate will be larger, the larger the absolute values of b and \bar{d} . Now \bar{d} , the distance from the ghetto to the average area, will be larger the greater the extent of housing segregation and the absolute value of b will be larger the greater the costs of transportation and reduced job information per unit of distance. However, the values of b and \bar{d} do not depend on whether labor markets are tighter in suburban or central-city areas. In fact, b and \bar{d} could be quite large even if the central-city labor market were very tight relative to the suburban market. Consequently, Kain has demonstrated no more in the part of his analysis than he had already demonstrated in his first conclusion--namely that housing segregation and transportation costs probably affect the distribution of black employment. He has not demonstrated that housing segregation and transportation problems hurt the relative employment position of blacks. Moreover, while this difficulty is most obvious in assessing Kain's estimate of the effect of housing segregation on the level of black

employment,¹⁴ it also invalidates his test of the effect of increases in the suburbanization of employment over time since changes over time in the values R and d might only affect the geographical distribution and not the level of black employment.

More convincing empirical results have been presented by Mooney, using 1960 data for 25 large Standard Metropolitan Statistical Areas (SMSA's). For his dependent variable, Mooney uses the employment-population ratio of nonwhite males (or females) in low-income, nonwhite Census tracts. His independent variables are: (1) the unemployment rate for the SMSA; (2) the ratio of central-city jobs to total SMSA jobs for various industries; and (3) the proportion of nonwhite males (or females) living in the central-city and working in the SMSA who have jobs outside the central-city. The second variable is designed to measure the suburbanization of employment while the third is an attempt to measure the accessibility of suburban jobs for central-city blacks. For males, the coefficients all have the expected signs and are statistically significant although Mooney emphasizes that the employment variable has the greatest effect. For females, the same general pattern of results applies, but the statistical fit is not as good.

Mooney's analysis will be discussed further in connection with our own results which are presented in the next two sections.

I. Empirical Results Concerning the Effect of Housing Segregation on Black-White Income Ratios

In this section we use 1960 Census data for 65 large SMSA's¹⁶ to examine the relation between housing segregation and black-white income differentials for males. In contrast to the work of Kain and Mooney discussed in the introduction, these results provide a more direct test of the relationship between housing segregation and black job opportunities.

For a dependent variable we use the relative income (or earnings) of blacks rather than any employment measure since we want to concentrate on the quality of black jobs rather than to simply look at questions of labor force status. We use a ratio rather than just black income since many factors such as the balance of demand and supply, industrial mix, and location, should have a significant effect on both black and white incomes, while our interest is in factors related to discrimination.

Specifically, we would like to use the ratio of median earnings for all nonwhite males (or those aged 35-44) divided by the corresponding median for whites. Unfortunately, such data are not available from the published Census documents. Therefore, we shall use a combination of three dependent variables, each of which incorporates some (but not all) features of our preferred measure. These variables are: (1) the median earnings of nonwhite males divided by the median earnings of all males (NWE/TE); (2) the median income of nonwhite males, ages 35-44, divided by the median income of all males, ages 35-44 (NWI/TE) 35-44; and (3) the median income of nonwhite males divided by the median income of white males (NWI/WI). The first measure is used since the hypothesis relating housing segregation to employment opportunities predicts that such

segregation should affect earnings, but says nothing about effects on unearned income. The second measure is used for two reasons. First it provides a convenient way to standardize for age effects. Second, the combination of using this age-sex group and total income¹⁷ should minimize the problem that arises since the Census medians are calculated only for those who have income (or earnings) greater than zero. The third measure is used since we are interested in measuring the effects of housing segregation on the black-white income ratio. More specifically, we are concerned that the level of nonwhite income and the percent of the population who are nonwhite will affect the median income for the total population (and thereby) also affect variables that have the overall median in the denominator.¹⁸

We restrict the analysis to males since: (1) Mooney's results suggest that the suburbanization of jobs is more of a problem for nonwhite males than females; (2) there probably is a negative relationship between a group's male income and the amount of time females spend in the labor force;¹⁹ and (3) unearned income and cases of zero income probably are more important for females than for males.²⁰ We focus primarily on nonwhite rather than Negro income since there are more extensive data available for nonwhites. However, some regressions are run where the sample is limited to those SMSA's whose nonwhite population is overwhelmingly Negro.

Next, let us turn to our measures of housing segregation. First, we shall use the Taeubers' index (T_a),²¹ which measures "the minimum percentage on nonwhites who would have to change the block in which they live in order to produce an unsegregated distribution--one in which the percentage of nonwhites living in each block is the same throughout the city." This index has the advantage of being already calculated and widely known. For

our purposes, however, it has two major limitations. First, it has been calculated for cities but not for SMSA's which correspond more closely to the notion of a labor market.²² Second, the Taeubers' measure applies only to segregation within blocks. Especially with regard to transportation problems, however, we need to know whether the blocks that are predominately nonwhite are clustered in one large ghetto or whether they are spread out in a number of smaller clusters.

These problems can be largely overcome by calculating additional segregation indices. We will use the percentage of nonwhites living in "nonwhite" Census tracts (NWT),²³ defined as tracts that are at least 50 percent nonwhite,²⁴ and the average size²⁵ of the nonwhite "ghetto", where a ghetto is defined as a contiguous group of nonwhite tracts.

Actually we use two variables for ghetto size. One (GS/N) is basically a segregation measure since we divide the average ghetto size by the number of nonwhites living in nonwhite Census tracts, thus, giving us a measure of the relative extent of clustering. However, an absolute measure of ghetto size (GS) is also used since it appears to be the most appropriate variable for testing Kain's transportation and job information arguments. Alternatively, our three measures of (relative) segregation appear more appropriate for testing the arguments based on employer discrimination.

First, we present results for simple regressions, where there is only a single independent variable. The standardized²⁶ regression coefficients and t-values are presented in Table 1.

TABLE 1

Initial Results

Dependent Variables	Independent Variables			
	Ta	NWT	GS/N	GS
NWE/TE	-.443 (3.9)	-.260 (2.1)	.298 (2.5)	.138 (1.1)
(NWI/TI) 35-44	-.525 (4.9)	-.346 (2.9)	.262 (2.2)	.066 (0.5)
NWI/WI	-.442 (3.9)	-.308 (2.6)	.251 (2.1)	.122 (1.0)

We see that there is a statistically significant²⁷ negative relation between each of the dependent variables and both the Taeubers' segregation measure and the percentage of nonwhites living in nonwhite Census tracts. However, there is a positive relation for the ghetto-size variables (statistically significant only for GS/N). Since those who have argued that housing segregation affects black employment opportunities have also stressed the effects of ghetto size, it is somewhat surprising that these measures of segregation are the ones with positive coefficients. Alternatively, it is possible that differences in tastes for discrimination simultaneously affect black-white income ratios and housing segregation.²⁸ In this case, the differences in tastes might have the most effect on the Taeubers' measure and the least effect on ghetto size. Consequently, our results appear consistent with this view.

Next, let us consider the fact that other variables, in addition to housing segregation, are also likely to affect black-white income ratios. First, differences in the relative years of school of nonwhites and whites are likely to be important: (1) because they should reflect differences in relative productivities; and (2) because differences in relative years of school may reflect differences in white tastes for discrimination across SMSA's.²⁹ Therefore, we add a variable (YS) for the median years of school of nonwhite males divided by the median years of school for all males.³⁰

Since it is likely that discrimination is greater in the South than in the rest of the country, we add a dummy variable (S) for South-non-South (Census definition). In addition, we also run separate regressions for each region. The regression coefficients for YS and S are presented in Table 2. These results indicate that the coefficients all have the expected size and (with one exception) are all statistically significant at the 95 percent level.

Next, we run regressions where YS and S are included in addition to our segregation measures. The resulting coefficients for the segregation variables are presented in Table 3. (Note that separate regressions were run for each segregation variable. E.g., the first coefficient in Table 3 is the coefficient a from the following regression:

$$\text{NWE/TE} = a(\text{Ta}) + b(\text{YS}) + c\text{S} + k + u.)$$

TABLE 2
Results for Region and Years of School

<u>Dependent Variables</u> <u>and Regions</u>		<u>Independent Variables</u>	
		YS	S
National	N = 65		
NWE/TE		.520 (5.7)	-.400 (4.4)
(NWI/TE) 35-44		.347 (4.2)	-.600 (7.3)
NWI/WI		.470 (4.8)	-.422 (4.3)
Non-South	N = 38		
NWE/TE		.426 (2.8)	
(NWI/TE) 35-44		.283 (1.7)	
NWI/WI		.395 (2.5)	
South	N = 27		
NWE/TE		.713 (5.2)	
(NWI/TE) 35-44		.618 (4.0)	
NWI/WI		.588 (3.7)	

TABLE 3
Results Controlling For Education and Region

<u>Dependent Variables</u> <u>and Regions</u>		<u>Independent Variables</u>			
		Ta	NWT	GS/N	GS
National					
NWE/TE		.086 (1.0)	.178 (2.4)	.012 (0.2)	.068 (1.0)
(NWI/TI)	35-44	-.026 (0.3)	.082 (1.1)	-.008 (0.0)	.015 (0.2)
NWI/WI		.065 (0.7)	.105 (1.3)	-.028 (0.3)	.005 (0.1)
Non-South					
NWE/TE		.181 (1.1)	.381 (2.7)	.004 (0.0)	.053 (0.3)
(NWI/TI)	35-44	.011 (0.6)	.232 (1.4)	.022 (0.1)	.285 (1.7)
NWI/WI		.054 (0.3)	.293 (1.9)	.007 (0.0)	.006 (0.0)
South					
NWE/TE		-.037 (0.2)	-.035 (0.2)	.032 (0.2)	.219 (1.6)
(NWI/TI)	35-44	-.093 (0.5)	-.099 (0.6)	-.141 (0.8)	.144 (0.9)
NWI/WI		.157 (0.8)	-.109 (0.6)	-.098 (0.6)	.009 (0.1)

The results in Table 3 indicate that once we standardize for differences in region and relative years of school there is no significant relation between housing segregation and our relative income measures. Outside of the South most of the coefficients are positive and none of the negative coefficients (in any region) are statistically significant.³¹ Moreover, very similar results are obtained when we restrict the sample to the SMSA's where the nonwhite population is at least 90 percent Negro.³²

So far we have found no support for the hypothesis that housing segregation has an important effect on the relative employment opportunities of blacks. Before arguing too vigorously for this conclusion, however, we should look at some additional results relating black-white income ratios to the suburbanization of employment, transportation problems, and industrial structure. These results are presented in Section II. Then, in a concluding section, we shall discuss a number of important qualifications.

II. Additional Empirical Results

In this section we present some additional results that are relevant for evaluating the hypothesis that black employment opportunities are limited by a combination of housing segregation and transportation problems. First, we use variables similar to some of Mooney's: 1) the ratio of central-city jobs to all jobs in the SMSA, $(CC/SMSA)_{TJ}$, to measure the suburbanization of employment; and 2) the proportion of nonwhite males living in the central city and working in the SMSA who have jobs outside the central city, $(NCC/SMSA)_{CCNW}$, to measure the accessibility of suburban jobs for central-city blacks.³³ Under the Kain-Mooney hypothesis concerning the effect of housing segregation, both variables should have a positive effect on the relative income of blacks. When these variables are both included³⁴ in our regressions, along with the YS and S variables, we obtain the results that appear as the first two columns of Table 4.

TABLE 4
Results with Variables Similar to
Those Used by Mooney

<u>Dependent Variables and Regions</u>	<u>Independent Variables</u>			
	$(CC/SMSA)_{TJ}$	$(NCC/SMSA)_{CCNW}$	$(CC/SMSA)_{TJ/TP}$	$(NCC/SMSA)_{NW/T}$
National				
NWE/TE	.147 (1.3)	.081 (0.7)	-.002 (0.0)	-.062 (0.8)
(NWI/TE) 35-44	.150 (1.4)	.143 (1.3)	-.075 (1.1)	-.043 (0.6)
NWI/WI	.119 (1.0)	.138 (1.1)	-.006 (0.1)	-.051 (0.6)
Non-South				
NWE/TE	.310 (1.3)	.109 (0.4)	-.041 (0.3)	-.337 (2.3)
(NWI/TE) 35-44	.079 (0.5)	.124 (0.5)	-.027 (0.2)	-.250 (1.6)
NWI/WI	.341 (1.4)	.247 (1.0)	-.051 (0.3)	-.356 (2.4)
South				
NWE/TE	.209 (0.9)	.265 (1.1)	.030 (0.2)	.243 (1.8)
(NWI/TE) 35-44	.351 (1.3)	.321 (1.2)	-.160 (1.0)	.154 (1.0)
NWI/WI	.076 (0.3)	.248 (0.9)	.023 (0.1)	.227 (1.4)

All the coefficients are positive although none are statistically significant.

Although Mooney does not appear aware of the problem, it should be noted that the relative size of the central city should have an important positive effect on $(CC/SMSA)_{TJ}$ and a corresponding negative effect on $(NCC/SMSA)_{CCNW}$. If some central cities contain a much higher proportion of the population of their SMSA's due to historical and political rather than economic factors, then the relative size of the central city should have little effect on our dependent variables. In this case, we would expect relatively similar coefficients for $(CC/SMSA)_{CCNW}$ since, with similar coefficients, the positive effect of the size of the central city on $(CC/SMSA)_{TJ}$ and its negative effect on $(NCC/SMSA)_{CCNW}$ will tend to "cancel out" in terms of the effect on the predicted values of the dependent variable.

In an attempt to avoid this difficulty, Table 4 also includes results where Mooney's variables are standardized in the following manner: (1) $(CC/SMSA)_{TJ}$ is divided by the percentage of the total SMSA population that lives in the central city. This new variable $(CC/SMSA)_{TJ/TP}$ should provide a better indication of how tight the central city labor market is relative to suburban labor markets. (2) $(NCC/SMSA)_{CCNW}$ is replaced by $(NCC/SMSA)_{NW/T} = (NCC/SMSA)_{NW} (NCC/SMSA)_T$. First, we use the ratio of central-city jobs to total SMSA jobs for all nonwhites rather than just central-city nonwhites since we want our measure to reflect differences in the extent to which nonwhite residential choice is limited to central cities. Second, we divide by the corresponding ratio for all workers to get a better measure of how accessible suburban jobs are for nonwhites relative to the average worker. The results for $(CC/SMSA)_{TJ}$ and $(NCC/SMSA)_{TNW}$ (and all succeeding variables) are obtained from separate regressions similar to those of Table 3 (i.e., including control variables for YS and S).

Although the Kain-Mooney theory predicts that these variables should both have positive coefficients, we see that the coefficients are all negative except in the South. Moreover, in the non-South, some of the negative coefficients for $(NCC/SMSA)_{NW/T}$ are statistically significant.

To explain these negative results for $(NCC/SMSA)_{NW/T}$ we hypothesized that nonwhites may have ready access to some jobs outside the central city--namely low-paying agricultural jobs. To test this hypothesis, we ran regressions using the percentage of employed nonwhite males with jobs in agricultural (AG_{NW}) and the proportion of all male workers with agricultural jobs (AG_T). These results are presented in the first two columns of Table 5. The results indicate that (outside the South) the percentage of nonwhite workers in agriculture has a significant negative effect on all our regressions.³⁵

To interpret these results, we would like to know more about where these agricultural workers live. If they live in outlying rural parts of the SMSA, then we would like to exclude such people from the analysis.³⁶ On the other hand, if they live in the central city, then we would have evidence that nonwhites are able and willing to hold jobs even when the jobs are low-paying and the distance from home is considerable. Unfortunately, however, the Census data do not allow us to determine which of these cases is more applicable. Note, however, that when we include (AG_{NW}) and $(NCC/SMSA)_{NW/T}$ in the same regression, the coefficients for the latter variable become insignificant and generally positive.

Up to this point, none of our results provide any support for the hypothesis that black-white income ratios are reduced by a combination of housing segregation, the suburbanization of employment, and poor transportation

TABLE 5

Results for Industrial Structure

<u>Dependent Variables and Regions</u>		<u>Independent Variables</u>			
		AG _{NW}	AG _T	MA ₆₃	MA ₅₈
National					
NWE/TE		-.212(3.1)	-.113(1.6)	.140(1.7)	-.073(1.0)
(NWI/TE)	35-44	-.223(3.5)	-.130(1.9)	.225(2.9)	-.057(0.8)
NWI/WI		-.157(2.0)	-.102(1.4)	.140(1.6)	-.040(0.5)
Non-South					
NWE/TE		-.490(3.7)	-.217(1.4)	.487(3.7)	.395(2.8)
(NWI/TE)	35-44	-.403(2.7)	-.247(1.6)	.665(4.4)	.577(3.6)
NWI/WI		-.470(3.5)	-.247(1.6)	.588(4.8)	.520(4.0)
South					
NWE/TE		.004(0.0)	-.122(0.8)	-.251(1.8)	-.250(1.9)
(NWI/TE)	35-44	-.324(1.7)	-.380(2.5)	-.058(0.4)	-.234(1.6)
NWI/WI		.138(0.7)	.036(0.2)	-.288(1.8)	-.175(1.1)

facilities for blacks who wish to commute to suburban jobs. Let us turn next to some additional factors that might affect the level of black-white income differentials across SMSA's and thus might affect our results testing the effect of housing segregation.

First, we tested the effect of SMSA size, racial composition, and the tightness of the labor market, but none of these factors had any appreciable effect on our income ratios.³⁷ Next we examined the effect of differences in industrial structure across SMSA's. Franklin³⁸ had indicated that the black-white income ratio should be positively correlated with interurban variations in the capital-labor ratio. In his words:

Urban economies which are dominated by capital-intensive modes of production have large-scale enterprises guided by impersonally oriented managers who have little need to form "coalitions" with consumers for the purpose of discrimination. Capital-intensive modes of production generally separate the product and/or service from the worker. Moreover, the technical conditions of production, such as big assembly plants and/or machines which are operated by one person and involve a repetitive process, tend to require a minimum of personal interaction on equal terms or interaction on terms in which the Negro has jobs vested with authority over whites. Therefore, the employer in capital-intensive operations has less reason to be concerned with the product-color connection which is made by the consumer or the breakdown of the dominant-subordinate human relations pattern which tends to operate as a barrier to the Negro's occupational mobility.³⁹

While Franklin makes no attempt to test his hypothesis empirically, we can test it (at least to some extent) if we are willing to assume that the capital-labor ratio is higher in manufacturing than in most other industries. For our independent variables, we use the ratio of employment in manufacturing to total employment in 1963 (MA_{63}) and in 1958 (MA_{58}). These results are also presented in Table 5. The results for the non-South support Franklin, those for the South do not, and the national results are supporting for 1963 but not for 1958.⁴⁰

Next, we should consider whether there are any other hypotheses in addition to Franklin's that will explain the non-South results for the manufacturing variable--and perhaps also explain why the results are so different in the South.

One possibility is that manufacturing requires large firms and thus more formal personnel policies, including hiring and promotion policies. If so, then such formal procedures may have made racial discrimination relatively more difficult for such plants outside the South since, in these areas, race may seldom have been a formal criterion on which to base personnel decisions. Alternatively, formal rules discriminatory against nonwhites were frequent in the South prior to federal antidiscrimination activities of the early 1960's.⁴¹

A second possibility is that unions are responsible for these results since: 1) unions are relatively strong in manufacturing, especially outside the South; and 2) Ashenfelter's interstate analysis⁴² indicates that unionization has a positive effect on black-white income ratios--probably because of its influence in narrowing occupational skill differentials. Unfortunately, however, no data exist on the event of unionization by SMSA.

In this section we have found two factors that appear to have an important effect on black-white income ratios across SMSA's, at least outside the South: 1) the percentage of nonwhites employed in agriculture; and 2) the percentage of all workers employed in manufacturing. Therefore, to conclude this section, we should consider whether our results in Section I are affected by not controlling for differences in these variables. With regard to the importance of agriculture, we decided to eliminate those SMSA's from the sample where more than five percent of the nonwhites were employed in agriculture.⁴³ In addition, for the non-South regressions,

we added MA₆₃ to our set of control variables. These results are presented in Table 6. None of the coefficients in Table 6 are statistically significant at the 95 percent level, and the few that approach such significance are all positive. Moreover, although housing segregation is predicted to have a negative effect on black employment opportunities, positive coefficients are somewhat more frequent than negative ones. On the basis of these results, together with our earlier criticism of Kain's work, we conclude that there is little support for the hypothesis that housing segregation affects the relative money income of nonwhites. Various qualifications that must be added to this conclusion are discussed in the next section.

TABLE 6

Revised Version of Table 3

<u>Dependent Variables and Regions</u>	<u>Independent Variables</u>			
	Ta	NWT	GS/N	GS
National				
NWE/TE	.113(1.2)	.148(1.6)	.092(1.1)	.073(0.9)
(NWI/TE) 35-44	-.009(0.1)	.013(0.1)	.038(0.4)	-.007(0.1)
NWI/WI	.033(0.4)	.013(0.1)	.045(0.5)	-.016(0.2)
Non-South				
NWE/TE	.235(1.4)	.276(1.6)	.143(0.8)	.022(0.0)
(NWI/TE) 35-44	-.084(0.5)	.050(0.3)	.082(0.4)	-.137(0.8)
NWI/WI	-.037(0.2)	.012(0.1)	.131(0.8)	-.123(0.7)
South				
NWE/TE	-.186(0.9)	-.155(0.7)	.080(0.4)	.347(2.0)
(NWI/TE) 35-44	-.051(0.2)	-.180(0.7)	-.058(0.2)	.211(0.9)
NWI/WI	.062(0.3)	-.169(0.7)	.014(0.1)	.124(0.6)

III. Conclusion and Qualifications

Our basic conclusion is that we have found no support for the hypothesis that housing segregation, together with the suburbanization of jobs, has played a significant role in limiting the job opportunities of urban non-whites. This result is consistent with recent empirical findings of Harrison and Cohen concerning the relative economic status of central-city and suburban blacks. While we have not attempted to test alternative explanations, two obvious possibilities are: 1) Noll's hypothesis that central-city labor markets are tighter than suburban ones; and 2) the hypotheses that blacks can find suburban jobs without undue difficulty when such jobs are open for blacks.

Now let us examine what qualifications must be made with regard to our basic conclusion. Our discussion will be organized under three general headings: (1) qualifications that are necessary within the framework of our cross-sectional analysis; (2) qualifications relating to changes over time; and (3) a general discussion of some of the policy issues.

With regard to qualifications based on alternative cross-sectional approaches, several issues need to be discussed. First, housing segregation may have an indirect effect on relative black incomes as a result of its effect on the education of blacks. Since we don't know where a person attended school, there is no way to deal with the problem of education using our cross-section data. However, the results in the Coleman Report⁴⁴ suggest that racial, as opposed to economic, segregation has little effect on school performance.

Since housing segregation may affect years of school for blacks as well as achievement per year, it is not clear that our results should standardize for differences in years of school. However, we suspect that there is enough

migration so that the schooling of a SMSA's present population cannot be too closely related to previous (let alone current) housing segregation in that SMSA. Alternatively, since we cannot prove that the effects of our schooling and region variables are largely independent of the effect of housing segregation, we should give some emphasis to our results in Table 1 where there was no standardization. Recall from that table that, while two of our segregation measures did have significant negative coefficients, the two measures we consider more appropriate both had positive coefficients.⁴⁵

Second, selective migration may reduce, or even eliminate, differences in the ratio of black to white income that would otherwise exist.⁴⁶ Consequently, we run regressions with relative immigration rates as the dependent variable, but similar in all other respects to the regressions of Table 3. These regressions indicated that there is generally a negative, but insignificant, relation between our segregation measures and relative immigration rates by race. When we modified our measures of relative income to take account of the effects, by race, of migration from rural areas on the incomes of those in SMSA's (as estimated in a previous study),⁴⁷ there was virtually no effect on our results in Table 3. Therefore, we do not believe that selective migration has a significant effect on our results.

Next, recall that our dependent variables all represent the relative median income (or earnings) of nonwhite males. These measures were designed to test the effect of housing segregation on the relative earnings of primary workers. We concentrated on primary workers since they account for the largest share of total income and since the analysis is less complex

for this group.⁴⁸ Alternatively, if we had focused our analysis more heavily on secondary workers, we might have found housing segregation to be important.⁴⁹

In addition to measuring the relative quality of jobs, our relative income measures are also designed to give us some idea of the relative economic well-being of blacks and whites. As a result of housing segregation, however, our measures of relative money income may not be a good indication of differences in real income. For example, there is considerable evidence that blacks must pay more for housing as a result of discrimination.⁵⁰

One further limitation of our cross-sectional approach is the relatively small variation in our segregation measures. As the Appendix indicates, however, the standard deviation is more than .2 (for variables whose values range from 0.0 to 1.0) in all cases except the Taeubers' index. Therefore, while we obviously cannot estimate what would happen if there were no segregation, our results are probably relevant when considering the effect of any desegregation likely to occur in the next few years.

Up to this point we have considered qualifications that exist within the framework of our cross-sectional analysis using 1960 data. A more important set of qualifications relates to the question of changes over time. First, the results might be different if we did a similar analysis based on 1970 data. The author hopes to undertake such an analysis in the not too distant future. In the meanwhile, it should be noted that our data are at least as current as those used by Kain and Mooney to argue that housing segregation and related problems do have an important effect on other employment problems facing nonwhites.⁵¹

With regard to changes over time, it should be interesting to compare changes in the black-white income ratios for 1960 to 1970 across SMSA's with corresponding changes in the decentralization of employment.⁵² Such an analysis may be the most appropriate method for detecting (small) effects of the housing-segregation job-decentralization hypothesis. It must be understood, however, that even this combination of cross-section and time-series analysis cannot answer some of the important questions relating to changes over time. For example, it cannot indicate whether increases in the percent nonwhite in the average central city are likely to affect federal programs to aid the central cities and, if so, what effect this would have on black-white income differentials.

In conclusion, some policy issues should be mentioned. Kain and Persky⁵³ and other proponents of the view that housing segregation has a significant effect on black employment opportunities have put primary emphasis on the importance of reducing housing segregation. Our results indicate (subject to some of the qualifications discussed above) that there is little reason to stress housing desegregation as a means of increasing the employment opportunities of nonwhites.⁵⁴ Alternatively, we should emphasize that housing desegregation may still be a valid means towards a number of other important objectives such as improving social and other relations between the races (including reducing the change of riots?)⁵⁵ or perhaps reducing the cost of interurban transportation (e.g., the costs of building expressways and the daily transportation cost of many commuters--white and black).⁵⁶

NOTES

¹See John F. Kain, "Housing Segregation, Negro Employment and Metropolitan Decentralization," Quarterly Journal of Economics LXXXIII, (May 1968) and the Note on this article by Paul Offner and Daniel H. Saks, Quarterly Journal of Economics LXXXV, (February 1971); John F. Kain and Joseph J. Persky, "Alternatives to the Gilded Ghetto," The Public Interest XIV (Winter 1969); Edward Kalachek, "Ghetto Dwellers, Transportation and Employment," paper delivered at a Transportation and Poverty Conference of the American Academy of Arts and Sciences (June 1968); John R. Meyer, John F. Kain, and Martin Wohl, The Urban Transportation Problem (Cambridge: Harvard University Press, 1965); Joseph D. Mooney, "Housing Segregation, Negro Employment and Metropolitan Decentralization," Quarterly Journal of Economics LXXXIII (May 1969); Dorothy K. Newman, "The Decentralization of Jobs," Monthly Labor Review Vol. 90 (May 1967); Roger Noll, "Metropolitan Employment and Population Distribution and the Conditions of the Urban Poor" in Financing the Metropolis, The Urban Affairs Annual Review Vol. 4 edited by John P. Crecine (Beverly Hills: Sage Publications, Inc., 1970); Bennett Harrison, "Education and Underemployment in the Urban Ghetto," in Problems in Political Economy: An Urban Perspective edited by David M. Gordon (Lexington, Mass.: D.C. Heath, 1971); and Benjamin I. Cohen, "Trends in Negro Employment within Large Metropolitan Areas", Public Policy XIX (Fall 1971).

Much of the discussion has also centered on transportation problems. In fact, the McCone Commission study of the Watts riot in Los Angeles, which stressed the role of poor public transportation in handicapping Watts residents, was perhaps instrumental in opening up the question of the effect of housing segregation on black employment opportunities. For a discussion of some of these issues see John F. Kain, and John R. Meyer, "Transportation and Poverty," The Public Interest XVIII (Winter 1970).

²Kain, op. cit., (1968) pp. 179-80.

³For evidence of this suburbanization (including some discussion disaggregated by skill level) see Meyer, Kain, and Wohl, op. cit., Mooney op. cit., Newman op. cit., and John F. Kain, "The Distribution and Movement of Jobs and Industry" in The Metropolitan Enigma edited by James Q. Wilson (Cambridge: Harvard University Press, 1968).

⁴See Kain (in Wilson) op. cit., for a good discussion of probable future trends.

⁵See Kalachek op. cit., for a good theoretical discussion which utilizes both the traditional static theory of work effort and a dynamic analysis of the job-search process.

⁶For an extensive analysis of segregation, mainly within central cities, see Karl E. and Alma F. Taeuber, Negroes in Cities (Chicago: Aldine Publishing Co., 1965). For comparing central cities to suburbs, see Kain and Persky, op. cit.

⁷See the reference in Footnote 8.

⁸Noll, op. cit.

⁹Meyer, Kain, and Wohl, op. cit., p. 24.

¹⁰Noll, op. cit., p. 499. It should be noted that Meyer, Kain, and Wohl also indicate (p. 24) that "The ability of Americans to afford decentralized residential locations, private yards, and automobiles as their incomes have risen has of course strengthened the trend towards urban dispersal."

¹¹Noll, op. cit., p. 501. Note that Rees reports results on geographic wage differentials in the Chicago labor market that appear consistent with Noll's hypothesis. See Albert Rees, "Spatial Wage Differentials in a Large City Labor Market," Proceedings of the 21st Annual Winter Meeting of the Industrial Relations Research Convention, 1969. Also note the conclusion by Meadows that "as of 1960, the number of low skill, low income and blue collar jobs located in the central city was greater than the number of low skill, low income or blue collar workers residing there. On net, low income and low skill workers still commute to work in the central city," Richard Meadows, "Location of Residences and Employment in 1960" in Transportation and Central City Unemployment edited by Edward D. Kalachek and John M. Goering (St. Louis: Institute for Urban and Regional Studies, Washington University, 1970).

Of the authors arguing that blacks have been seriously hindered by the suburbanization of employment, Newman, (op. cit.) is the only one who presents any evidence on the relative tightness of central city and suburban labor markets. She writes (p. 9) "For every major industry and occupational group, whether involving relatively low paid repair services or higher paid professions, median family income in 1964 was lower among city than suburban residents." However, this evidence is very weak since the more highly paid city workers in any occupation may be more likely to move to the suburbs and commute to their city jobs. Therefore, it is necessary to look at relative earnings of those working in different areas rather than of those living in different areas.

¹²Kain, op. cit., p. 176.

¹³While his results are probably consistent with each of the following three interpretations: 1) housing segregation affects the distribution of employment; 2) employment segregation leads to housing segregation; or 3) tastes for discrimination lead simultaneously to segregation in employment and housing; we have no quarrel with Kain's choice of the first interpretation. Note that he obtains similar results when he disaggregates by occupation and industry, thus guarding against the possibility that his aggregate results occur mainly because of an increase in skill requirements for jobs as distance from the ghetto increases.

¹⁴Working within Kain's general framework, Offner and Saks (Quarterly Journal of Economics, (February 1971) argue that Kain should have included R^2 as well as R in his set of independent variables and that $\hat{w} = a\bar{R} + a_2\bar{R}^2 + c$ is less than the actual percentage of employment that is black--thus, indicating that segregation might not reduce black job opportunities. Note that $a\bar{R} + a_2\bar{R}^2 + c \neq \bar{w} - b\bar{d}$ since $\bar{R}^2 \neq (\bar{R})^2$ -- except in a very special case,

¹⁵ See Mooney, op. cit.

¹⁶ The sample consists of all SMSA's for which the necessary data are available. With a few exceptions all SMSA's with at least 250,000 total population and 25,000 nonwhites are included.

¹⁷ Note data on median earnings are not available by age.

¹⁸ See Appendix A for means and standard deviations of these variables and all others used in the study. All 3 dependent variables have moderate standard deviations (.10 to .08).

¹⁹ See Bowen and Finegan op. cit., and Glen G. Cain, Married Women in the Labor Force. (Chicago: The University of Chicago Press, 1966).

²⁰ For example, of urban females over 14 with income in 1959, over 25 percent did not work in 1959. Moreover, the median income of those who did not work was over a third of those who did. For males with income, over ninety percent worked while the median income of those who did not work was less than thirty percent of those who did work.

²¹ Taeuber and Taeuber, op. cit., p. 30.

²² When one of our SMSA's has more than one central city for which the Taeubers have calculated their segregation values, we use a weighted average of their results--with the weights based on total population.

²³ Since some SMSA's are not completely tracted, the denominator as well as the numerator is restricted to nonwhites living in tracted areas.

²⁴ Note that this measure is conceptually inferior to that of the Taeubers since it is affected by differences in the average percent black in the SMSA. In addition, the 50 percent cutoff point is essentially arbitrary. Despite these disadvantages, the measure is used since it is easy to calculate and ties in nicely with the ghetto-size variable. To deal with the arbitrariness of the 50 percent cutoff, results have been obtained using a 2/3 cutoff. In all cases, these results are very similar to the ones presented in the text.

²⁵ We define the size of an individual ghetto to be its nonwhite population. Then the average size of the ghettos in a SMSA is defined to be a weighted average of the size of each ghetto, with the relative nonwhite population as weights. In this way our "average size" is the expected value we would obtain if we picked a person at random (from the population of nonwhites living in nonwhite tracts) and then determined the size of the ghetto in which he lived. Admittedly this approach is more complicated than simply taking an unweighted average of ghetto sizes, a procedure which gives us the expected value we would obtain if we picked a ghetto at random instead of an individual. Since this study is concerned with the effect of segregation on the average nonwhite (rather than on the average ghetto), our weighted average approach appears appropriate.

²⁶ These standardized coefficients are the regression coefficients that would exist if both the dependent and independent variables were rescaled so that their standard deviations were unity. All the regression coefficients presented in this paper have been standardized.

²⁷ Throughout this paper, we use the 95 percent confidence level as our measure of statistical significance.

²⁸ Of course, differences in relative income can also lead to housing segregation. However, the Taeubers' results indicate that this effect is not likely to be very large.

²⁹ This second argument is based on the assumption that discrimination against blacks is greatest for those with the most schooling. (E.g., many studies, starting with Becker's Human Capital, have found that additional schooling yields a lower rate of return for blacks than for whites). If this assumption is correct, those blacks who don't migrate would have less of an incentive to continue their education if they live in a city where there is much discrimination. In addition, for blacks who do migrate, differences in discrimination across SMSA's would be a more important consideration for those with above average schooling.

³⁰ It is appropriate to use YS as a control variable since differences in relative productivities and in tastes for discrimination across SMSA's should be factors that affect black-white income ratios, independently of any effects caused by housing segregation. For a more extended discussion see the concluding section.

With regard to the specifics of the YS variable we note first that no data are available on the median schooling of whites. When the dependent variable is (NWE/TE) or (NWI/WI), we use medians for all men over 25. When it is (NWI/TI) 35-44, we use the medians for those 35-44.

³¹ The statistically significant positive coefficient for NWT in the national and non-south regressions will be at least partially explained by the effect of the agriculture variable discussed in the next section. Also note that the coefficients for YS and S always have the expected signs and are almost always statistically significant.

³² This restriction eliminates two SMSA's in the South (Tulsa and Oklahoma City) and eleven outside the South (primarily in California). In the rest of the discussion, we use black and nonwhite interchangeably, although it might be better to equate black to Negro. The analysis concentrates on nonwhites since there is much more extensive data available for nonwhites than for Negroes.

³³ Following the approach used by Barbara R. Bergman and Jerolyn R. Lyle: "The Occupational Standing of Negroes by Areas and Industries," The Journal of Human Resources Vol. VI. (Fall 1971) p. 436, we also tried a variable for the proportion of workers in a SMSA who commute by automobile. If poor public transportation is more of a hardship to the average nonwhite than the average white because of housing segregation combined with lower income and less car ownership, this variable should be negatively related to our income ratios. There is some support for this hypothesis in the South (although the coefficient is statistically significant only for NWI/TI 35-44), but there is no support whatever outside the South.

³⁴We include these two variables in the same regressions because of the problem discussed in the next paragraph.

³⁵It is interesting that the results for the importance of agricultural workers are stronger when measured for nonwhites than for the total population. Does this mean that, for a given availability of low-paying agricultural jobs, urban nonwhites are more likely to take these rural jobs the poorer their other opportunities? Or doesn't it mean that some agricultural areas have a greater demand for more skilled personnel? If the former is true, then our results would indicate that the proportion of nonwhites employed in agriculture is a measure of the handicaps facing the total nonwhite community in a SMSA. On the other hand, if the rural explanation holds, then it is difficult to see why, ceteris paribus, a greater demand for low skilled workers should hurt the nonwhite community. Perhaps the real income of the agricultural workers is higher than their money income due to greater income in kind or perhaps the greater demand for unskilled labor encourages the migration of rural workers. Unfortunately, we know of no way to test which of these views might be more accurate.

³⁶Since a SMSA consists of a central city (or cities) and surrounding counties whose economics are interconnected, a county may be included in a SMSA since it is partly suburban, but a considerable portion may still be rural. Ideally, our unit of analysis would not include those living in rural areas. However, Census data for "Urbanized areas" are much less complete than for SMSA's.

³⁷Other things being equal, the effect of housing segregation on transportation and job information problems should be greater the larger the population of the SMSA and the greater the proportion nonwhites. However, the coefficients for these variables were often positive and never statistically significant. Also note that our GS "segregation" measure does reflect differences in the size of the nonwhite population.

There is considerable evidence, based on national time-series data, indicating that the black-white income ratio improves when labor markets are tight and unemployment is low. (For example, see David W. Rasmussen, "A Note on the Relative Income of Nonwhite Men, 1948-64," Quarterly Journal of Economics (February 1970). Moreover, this result seems reasonable if we assume that blacks have fewer skills than whites and that firms want to hold workers with firm-specific skills during temporary slack periods so they will be available to the firms when demand increases. To test the effect of tight labor markets across SMSA's, we used independent variables for the male unemployment rate and the net migration into the total population. Neither variable had any effect on our income ratios, perhaps because differences in labor-market tightness across SMSA's tend to be relatively long-term differences.

³⁸Raymond S. Franklin, "A Framework for the Analysis of Interurban Negro-White Economic Differentials," The Industrial and Labor Relations Review Vol. 21 (April, 1968).

³⁹Ibid, p. 370.

⁴⁰We also used variables for MA x VA, where VA is the amount of value added in manufacturing that is not accounted for by payrolls (a proxy for the amount of physical capital) divided by production workers' manhours. However, the variable did not work quite as well as the percentage employed in manufacturing by itself.

⁴¹For example, see the discussion in Alfred W. Blumroses, Black Employment and the Law, (New Brunswick, N.J.: Rutgers University Press, 1971) pp. 166-69.

⁴²See Orley Ashenfelter, "Racial Discrimination and Trade Unions," Journal of Political Economy, forthcoming.

⁴³We made this restriction on the assumption that a large percentage of those working in agricultural areas were probably living outside the urban part of the SMSA. By imposing this condition, we eliminated eight SMSA's for the South and nine from the non-South, leaving us with a total of 48 observations, 29 in the non-South and 19 in the South.

⁴⁴James S. Coleman, et al., Equality of Educational Opportunity (Washington: U.S. Office of Education, 1966) p. 307.

⁴⁵The results are even less favorable to the housing segregation hypothesis if we standardize only for differences in region, but not for differences in years of school.

⁴⁶This argument assumes that SMSA's where segregation is relatively low (and where, ceteris paribus, blacks have fairly high incomes relative to whites) will attract the most migrants from the rural South and that these migrants will have much lower incomes than other blacks. For empirical evidence that such migrants are not much (if any) worse of economically than other urban blacks, see Stanley H. Masters "Are Black Migrants from the South to the Northern Cities Worse Off than Blacks Already There?" Journal of Human Resources, forthcoming.

⁴⁷See Ibid.

⁴⁸For example, we need not be very concerned with men withdrawing voluntarily from the labor force, especially for those 35-44.

⁴⁹Mooney's results, however, do indicate that the suburbanization of jobs and their accessibility to central-city nonwhites are more important determinants of nonwhite employment for males than for females.

⁵⁰For example see Luigi Laurenti, Property Values and Race: Studies in Seven Cities (Berkeley: University of California Press, 1960); Anthony Downs, "An Economic Analysis of Property Values and Race" Land Economics (May 1960), and Chester Rapkin, "Price Discrimination Against Negroes in the Rental Housing Market" in Essays in Urban Land Economics (Los Angeles: Real Estate Research Programs, University of California, 1968) also reprinted in Race and Poverty: The Economics of Discrimination edited by John F. Kain (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1969).

⁵¹When the 1970 data are analyzed, we shall be surprised if the results are very different from the findings reported here. Although the suburbanization of employment has undoubtedly increased between 1960 and 1970, it has been occurring at least since the end of World War II, /See Kain (in Wilson), op. cit./ and there is some evidence that this trend may have slowed during the 1960's (See Cohen, op. cit.) Therefore, if housing segregation were to have had an important effect on the relative employment opportunities of nonwhites in 1970, it should have had some effect in 1960.

⁵²It will be important to adjust for changes in SMSA boundaries between 1960 and 1970. This problem may be somewhat less difficult for comparing 1960 and 1970 than 1950 and 1960.

⁵³See Kain and Persky, op. cit.

⁵⁴A complete analysis would require a discussion of relative benefits and costs of alternative programs. The author suspects that payoffs may be higher, and political costs lower, for policies aimed at: 1) maintaining high aggregate demand; and 2) combating discrimination in employment. A reasonable defense of these propositions is beyond the scope of this paper, however.

⁵⁵For example, see the discussion in Anthony Downs, "Alternative Futures for the American Ghetto," Daedalus Vol. 97, (Fall 1968).

⁵⁶See Kain and Persky, op. cit.

APPENDIX

Variables used in the regressions, with mean and standard deviations for the full national sample (N=65)

<u>Variables</u>	<u>Mean</u>	<u>Standard Deviation</u>
NWE/TE	.662	.079
(NWI/TI) ₃₅₋₄₄	.633	.083
NWI/WI	.610	.097
Ta	.876	.069
NWT	.632	.200
GS/N	.656	.271
GS	65,055	106,840
YS	.784	.088
YS ₃₅₋₄₄	.781	.089
S	.431	.499
(CC/SMSA) _{TJ}	.636	.147
(NCC/SMSA) _{CCNW}	.132	.087
(CC/SMSA) _{TJ/TP}	1.272	.224
(NCC/SMSA) _{NW/T}	.685	.227
AG _{NW}	.044	.074
AG _T	.034	.060
MA ₆₃	.271	.103
MA ₅₈	.293	.340