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This article analyses trends in occupational segregation by race and ethnicity in the USA over the period 1983 to 2002. During this period, racial segregation markedly declined, while there was a fairly sizable increase in ethnic segregation. Almost all the changes in racial and ethnic segregation were due to the racial or ethnic composition effect. This finding is important since the composition effect truly measures the change in racial or ethnic segregation by eliminating the effect of changes in the size of occupations. During the period 1983–2002, the service, managerial, sales, operators and professional specialty occupations contributed the most to the decline in segregation between Blacks and NonBlacks, while the service, production and farming occupations contributed the most to the increase in segregation between Hispanics and NonHispanics.

I. Introduction

Occupational segregation by race and ethnicity in the USA is an important issue for economists as it impacts the economic status of minority groups. Job segregation negatively impacts the wages of Blacks and Hispanics in the US (Hirsch and Schumacher, 1992; Gyimah-Brempong and Fichtenbaum, 1997; Kmec, 2003). For example, Kmec (2003) shows that workers employed in predominantly Black jobs earn 18% less per hour than workers employed in comparable (e.g. educational level, skills) but predominantly White jobs.

Using broad-occupational categories, Queneau (2005) finds that over the period 1983 to 2002, segregation between Blacks and NonBlacks modestly declined, while segregation between Hispanics and NonHispanics markedly increased. Although segregation measures based on broad-occupational

categories are insightful for capturing macro-level patterns in segregation, it is well-documented that such measures are less accurate than those based on detailed occupational data (Anker, 1998). Using detailed data, the objective of the article is to provide new evidence on patterns of changes in occupational segregation by race and ethnicity in the USA over the period 1983 to 2002.

II. Data and Methods

The data used to analyse changes in racial and ethnic segregation in the USA come from the Current Population Survey (CPS hereafter) published by the Bureau of Labor Statistics (BLS hereafter). The analysis is based on 172 comparable occupations over the period 1983 to 2002. The choice of this

period primarily owes to data comparability considerations. Indeed, the CPS changed its occupational classification scheme in 1983 and 2003. As a result, the data that are directly comparable fall between the year 1983 and 2002. Nevertheless, the time frame 1983–2002 is long enough to capture changes in patterns of occupational segregation by race and ethnicity.

The analysis is limited to Blacks and Hispanics because the data for Asians are only available for 2003. In this article, race refers to Blacks and NonBlacks, while ethnicity refers to Hispanics and NonHispanics.[1] Hispanics may be of any race. As pointed out by Darity *et al.* (2002), Hispanics are unlikely to self-identify themselves as Black even if they are phenotypically Black. In other words, there may be Black Hispanics who are classified as NonBlacks. Therefore, the analysis here does not completely capture the effect of race on occupational segregation. Furthermore, since the dimensions of race and ethnicity intersect for Hispanics, one should be cautious when comparing segregation measures between Blacks and Hispanics.

The methodology used to analyse changes in racial and ethnic segregation over time can be described as follows. First, an inequality index, the index of dissimilarity, summarizes the tendency for two groups to be segregated into different jobs (Duncan and Duncan, 1955). Suppose that there are only two racial groups in the labour market: majority workers and minority workers. In such a case, the index of dissimilarity is defined as:

$$D = 1/2 \sum \left| \mathrm{maj}_i - \mathrm{min}_i \right| \qquad (1)$$

where maj_i is the percentage of majority workers in the labour force employed in occupation i and min_i is the percentage of minority workers in the labour force employed in occupation i. The index D can be interpreted as the percentage of majority workers (or minority workers), who would have to change occupations to have the same occupational distribution as minority workers (or majority workers). It can range from 0 to 100. If $D = 0$ majority workers and minority workers are evenly distributed across occupations. Conversely, if $D = 100$ all occupations are completely segregated by race.

Second, the segregation index can decrease (or increase) over time even if occupational segregation remains the same if, all else being equal, occupations that are predominantly comprised of minority workers increase (or decline) at a faster rate than occupations that are predominantly composed of majority workers. Therefore, I decompose the changes in racial and ethnic segregation for the periods 1983 to 1993 (period 1 hereafter) and 1993 to 2002 (period 2 hereafter) into changes due to variations in the racial and ethnic composition of occupations and changes due to variations in the size of occupations using the following technique developed by Das Gupta (1987):

$$D_{\mathrm{year2}} - D_{\mathrm{year1}}$$
$$= 50 \sum_i [|(P_i/P) - (Q_i/Q)| + |(p_i/p)$$
$$- (q_i/q)|]/2[(t_i/t) - (T_i/T)]$$
$$+ 50 \sum_i \{[(T_i/T) + (t_i/t_i)]/2\}[|(p_i/p) - (q_i/q)|$$
$$- |(P_i/P) - (Q_i/Q)|] \qquad (2)$$

The different symbols are defined as follows: $\mathrm{MAJ} = \Sigma_i \mathrm{MAJ}_i$, $\mathrm{MIN} = \Sigma_i \mathrm{MIN}_i$, $T_i = \mathrm{MAJ}_i + \mathrm{MIN}_i$, $T = \Sigma_i T_i$, $P_i = \mathrm{MAJ}_i/T_i$, $Q_i = \mathrm{MIN}_i/T_i$, $P = \mathrm{MAJ}/T$, $Q = \mathrm{MIN}/T$ where MAJ_i, MIN_i is the number of majority workers and minority workers in occupation i in year 1, $i = 1, 2, \ldots, n$. The corresponding symbols for year 2 are denoted by lower case letters maj, min, t, p and q. The first expression on the right side of Equation 2 is the occupational structure effect that measures the variation in the index D between years 2 and 1 attributable to the change in the size of occupations assuming the racial (or ethnic) composition of occupations constant. The second expression is the racial (or Ethnic) composition effect that measures the change in the index D between years 2 and 1 due to the change in the racial (or ethnic) composition of occupations, assuming the occupational structure remained the same. Finally, to identify the sources of the overall changes in racial and ethnic segregation over the period 1983 to 2002, I break down for periods 1 and 2 the contribution of major occupations to the racial (or ethnic) composition and occupational structure effects.

III. Findings

Over the period 1983 to 2002, segregation by race markedly declined, while there was a fairly sizable increase in segregation by ethnicity. The index of segregation for Blacks declined by 5.22% points during this period, going from 29.07% in 1983 to 23.85% in 2002. The decline in racial segregation was

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[1] Blacks or African–Americans refer to people who have origins in Black racial groups of Africa. Hispanics refer to people having ancestry from Spanish-speaking countries including Mexico, Puerto Rico, Cuba as well as countries with fewer representatives in the US.

greater in period 2 (−2.84) than in period 1 (−2.38). During the period 1983–2002, the index of segregation for Hispanics gained 4.83% points from 23.42% in 1983 to 28.25% in 2002. The segregation index by ethnicity increased more in period 2 (+2.97) than in period 1 (+1.86).

Table 1 also decomposes the changes in the segregation index in two components: changes in the racial or ethnic composition of occupations (race or ethnicity effect) and changes in the size of occupations (structure effect). Almost all the decrease in the segregation index for Blacks was due to the race effect; the structure effect decreased the segregation index only by 0.31% points. The race effect was stronger in period 2 (−2.96) than in period 1 (−1.95). While changes in the occupational structure decreased the segregation index in period 1 (−0.43), they had a modest segregative effect (+0.12) in period 2.

The increase in occupational segregation by ethnicity over the period 1983 to 2002 was entirely attributable to the ethnicity effect. The effect of changes in the ethnic composition of occupations on the segregation index was comparable in periods 1 and 2 (+2.80 and +3.13). Although the structure effect was negative in both periods, the magnitude of this effect was much greater in period 1 (−0.94) than in period 2 (−0.16).

Table 2 displays the contribution of each major occupation to the racial (and ethnic) composition and structure effects in periods 1 and 2. For both periods, most of the decline in the composition effect for Blacks was attributable to changes in the service, managerial, sales and professional specialty categories. Put differently, these major occupations became more racially integrated over the period 1983 to 2002. This finding is consistent with the fact that the representation of Blacks in managerial and professional occupations increased, while that of Blacks in the service jobs substantially decreased during this period (Queneau, 2005). The category 'Operators' contributed very little to the negative racial composition effect in period 1 (−0.08), whereas its contribution for period 2 was the largest (−0.94). During both periods, the administrative support and operators' categories were the largest contributors to the negative structure effect for Blacks.

Table 2 also shows that the effect of major occupations on the composition and structure effects for Hispanics was somewhat comparable in both periods. In period 1, the positive composition effect for Hispanics was attributable to the service, farming, operators, precision production and managerial categories. In period 2, all the major occupations, except managerial and farming, increased the ethnic composition effect and, therefore, became more ethnically segregated. Taken together, the service, production and farming occupations contributed the most to the increase in segregation between Hispanics and NonHispanics over the period 1983 to 2002. This finding is consistent with the fact that there was a sizable increase in the representation of Hispanics in low-skilled service and production occupations during the same period (Queneau, 2005). In periods 1 and 2, the largest contributors to the structure effect for Hispanics were managerial and professional occupations, while the service and production occupations negatively contributed to the structure effect.

Table 1. Indices of segregation by race and ethnicity, 1983–2002

	Level of segregation		
	1983	1993	2002
Blacks vs. Nonblacks	29.07	26.69	23.85
Hispanics vs. nonhispanics	23.42	25.28	28.25
	Changes in segregation		
	Actual change	Race or ethnicity effect	Structure effect
Blacks vs. Nonblacks			
(1) 1983–1993	−2.38	−1.95	−0.43
(2) 1993–2002	−2.84	−2.96	+0.12
(3) 1983–2002 [(1) + (2)]	−5.22	−4.91	−0.31
Hispanics vs. NonHispanics			
(1) 1983–1993	+1.86	+2.80	−0.94
(2) 1993–2002	+2.97	+3.13	−0.16
(3) 1983–2002 [(1) + (2)]	+4.83	+5.93	−1.10

Source: Current population survey, US Bureau of Labor Statistics.

Table 2. Breakdown of the contribution of major occupational categories to the race/ethnicity and structure effects

Occupational category	1983–1993		1993–2002	
	Blacks	Hispanics	Blacks	Hispanics
Race/ethnic composition effect	**−1.95**	**+2.80**	**−2.96**	**+3.13**
Managerial	−0.59	+0.42	−0.81	−0.05
Professional specialty	−0.29	−0.03	−0.27	+0.60
Technicians	−0.21	−0.13	+0.29	+0.05
Sales occupations	−0.45	−0.10	−0.51	+0.24
Administrative support	−0.11	−0.36	−0.02	+0.26
Service occupations	−0.76	+1.25	−0.80	+0.23
Precision production	+0.21	+0.51	+0.29	+1.21
Operators	−0.08	+0.57	−0.94	+0.67
Farming	+0.33	+0.67	−0.19	−0.08
Structure effect	**−0.43**	**−0.94**	**+0.12**	**−0.16**
Managerial	+0.54	+0.56	+0.48	+0.62
Professional specialty	+0.27	+0.41	+0.41	+0.53
Technicians	−0.03	+0.09	+0.03	−0.07
Sales occupations	+0.03	+0.04	−0.02	+0.03
Administrative support	−0.48	−0.08	−0.46	−0.35
Service occupations	+0.08	−0.26	+0.04	−0.20
Precision production	−0.11	−0.18	−0.03	−0.03
Operators	−0.42	−0.69	−0.25	−0.49
Farming	−0.31	−0.83	−0.08	−0.20

IV. Conclusion

This article analyses trends in occupational segregation by race and ethnicity in the USA over the period 1983 to 2002. During this period, segregation by race markedly declined, while there was a fairly sizable increase in segregation by ethnicity. Almost all the changes in racial and ethnic segregation were due to the racial (or ethnic) composition effect. This finding is of particular interest since the composition effect truly measures the change in racial (or ethnic) segregation by eliminating the effect of changes in the size of occupations. Both findings broadly match those in a similar study by Queneau (2005) that was based on 13 broad occupational categories. Taken together, the service, managerial, sales, operators and professional specialty occupations contributed the most to the decline in racial segregation while the service, production and farming occupations contributed the most to the increase in ethnic segregation over the period 1983 to 2002.

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