

A Household-level Decomposition of the Black-White Homeownership Gap Distribution

Eric Fesselmeier, Dept of Economics, NUS
Kien T. Le, Welden Cooper Center, UVA
Kiat Ying Seah, Dept of Real Estate, NUS

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Background

In the US blacks do worse than whites by a number of economic outcomes

- educational attainment, income, homeownership

Overall homeownership rate has increased from 64% in 1994 to 69% a decade later

- but black-white homeownership gap has remained high at about 25% points

Objective

Objective: decompose the US white-black homeownership gap into:

- *characteristics gap (CG)*: component attributable to observable socio-economic factors
 - due to differences in income and wealth, marital status, age, educational attainment
- *residual gap (RG)*: unobservable residual component
 - captures unmeasured factors such as discrimination, access to credit, credit history

Objective

Most studies decompose the gap at the conditional mean

Leaves the question of whether the CG and RG differ across the distribution for the different ethnic groups

Our paper decomposes the gap at each percentile of the unconditional homeownership propensity distribution

Preview of results:

Differences in household characteristics are important

- if blacks had similar characteristics as whites, total gap would decrease by 80% for median household

Residual (unobserved) factors are important for households unlikely to own

Literature Review

- Kain and Quigley (1972), Linneman and Wachter (1989), Wachter and Megbolugbe (1992), Duca and Rosenthal (1994), Yinger (1995), Munnell et al. (1996), Deng and Wachter (2003),
- Silberman and Ihlanfeldt (1982), Long and Caudill (1992), Bostic and Surette (2001)
- Carrillo and Yezer (2009)
 - use the Machada and Mata (2005) method to decompose the distribution
 - constrain their sample to aggregate data from highly segregated neighborhoods wherein the proportion of white households is either close to zero or close to 100%
 - unclear whether their results apply to disaggregated data and to less segregated neighborhoods

Methodology

Goal: decompose the difference in the *unconditional* distribution of household-level homeownership probabilities of the two races

For each household let $P \equiv \Pr(Y = 1)$ be the probability of ownership

If we observed the realized outcome p_i of each household, we could estimate each race's distribution of homeownership probabilities.

The difference between these two distributions, $\Delta = F_P^w(p) - F_P^b(p)$, is the *total* homeownership gap.

Decomposition of Δ by an Oaxaca-Blinder-like approach.

Problem: can't observe p_i , only the household's ownership decision

Methodology

Rewrite the homeownership distribution as:

$$F_P^r(p) = \int F_{P|X}^r(p | x) \cdot dF_X^r(x).$$

$F_{P|X}^r(p | x)$ is the conditional homeownership probability distribution

Our approach:

- estimate the conditional distribution with data on household homeownership decisions
- integrate out the explanatory variables to find the unconditional distribution

Methodology

Counterfactual homeownership prob. distribution if blacks had the same conditional distribution as whites:

$$F_P^{bw}(p) = \int F_{P|X}^w(p | x) \cdot dF_X^b(x)$$

Decomposition at the α -th percentile Δ_α :

$$\Delta_\alpha = [\alpha(F_P^w(p)) - \alpha(F_P^{bw}(p))] + [\alpha(F_P^{bw}(p)) - \alpha(F_P^b(p))]$$

Homeownership model

Latent utility: $Y^* = X\beta + \varepsilon$.

Household's ownership decision: $Y = 1 (Y^* \geq 0)$

Let the distribution of ε be denoted by $H(\cdot)$

The conditional probability of homeownership is then:

$$P(x) \equiv Pr(Y = 1|x) = H(x\beta)$$

β and $H(\cdot)$ differ by race

Estimate using Klein-Spady semiparametric estimation method

Estimation

With estimates of conditional homeownership probabilities, we can now find the unconditional distribution:

$$\begin{aligned}F_P(a) &= \Pr(P < a) \\&= \int \Pr(P(x_i) < a) dF_X(x) \\&= \sum_{i=1}^N w_i \Pr(P(x_i) < a) \\&= \sum_{i=1}^N w_i \mathbf{1}\{P(x_i) < a\}\end{aligned}$$

Data

2007 American Community Survey (ACS)

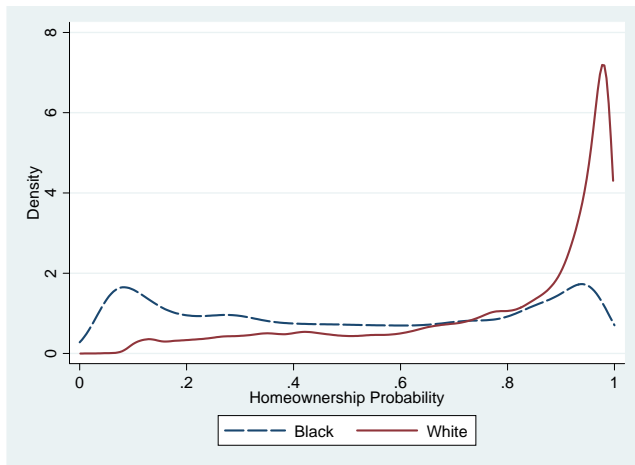
Include households headed by non-hispanic blacks or whites

695,038 white households and 85,454 black households

Some descriptive statistics:

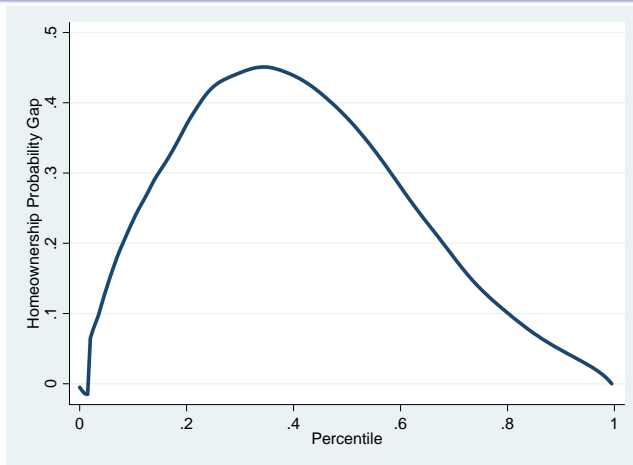
- Average household income is higher for white households
- White heads are more likely to be college educated, more likely to be male, more likely to be married.
- Black households are more likely to reside in metropolitan areas, a large proportion of blacks live in the south.

Homeownership Propensity Densities



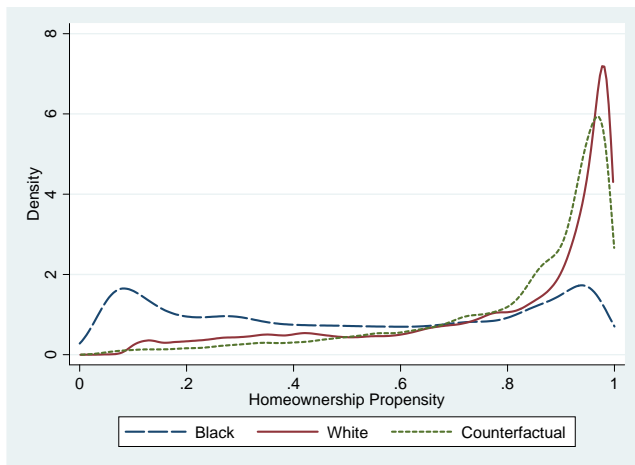
- large amount of mass at upper range of white distribution
- black density is uniform, nontrivial mass at lower range

Total Homeownership Gap



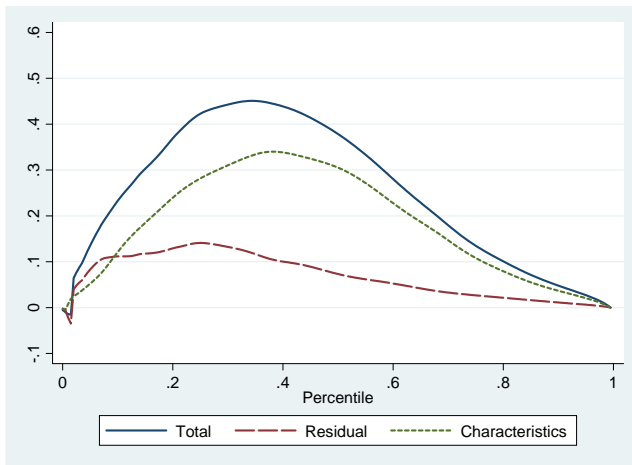
- gap increases at lower percentiles, peaks around the 35th percentile, and then decreases
- gap is less concentrated in lower percentiles, more concentrated in middle percentiles that for census-level analysis

Counterfactual Density



- blacks increase homeownership propensity greaterly after 70%
- lower end doesn't change much meaning that observables won't be a large component of total gap

Decomposition



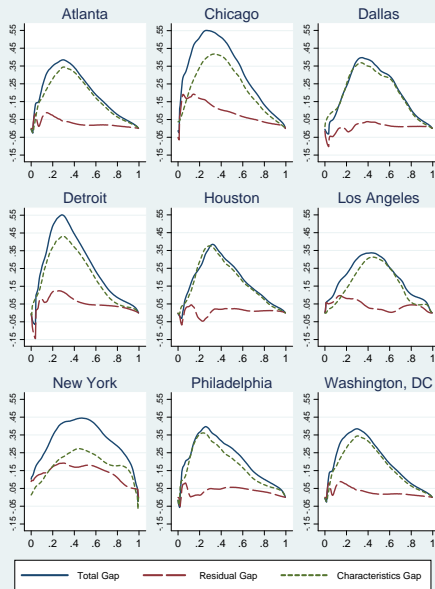
- total gap is explained mostly by characteristics overall
- but residual portion is substantial at lower percentiles

City-level summary statistics

Metro Area (PMSA)	Total Population	White Population %	Black Population %	White Ownership Rate	Black Ownership Rate	Mean Ownership Gap	Dissimilarity Index
Atlanta, GA	4,112,198	0.61	0.31	0.81	0.56	0.25	0.65
Chicago, IL	8,272,768	0.68	0.17	0.80	0.45	0.35	0.80
Dallas-Fort Worth, TX	3,519,176	0.72	0.15	0.71	0.45	0.26	0.59
Detroit, MI	4,441,551	0.74	0.21	0.84	0.52	0.32	0.85
Houston-Brazoria, TX	4,177,646	0.65	0.18	0.72	0.49	0.23	0.67
Los Angeles-Long Beach, CA	9,519,338	0.59	0.08	0.61	0.40	0.20	0.67
New York-Northeastern NJ	9,314,235	0.63	0.17	0.64	0.33	0.31	0.82
Philadelphia, PA/NJ	5,100,931	0.74	0.19	0.79	0.53	0.26	0.72
Washington, DC/MD/VA	4,923,153	0.60	0.27	0.78	0.54	0.24	0.63

- Decompose total gap of 9 large PMSAs
- Total gap is large in Chicago, Detroit, New York
- These are also the most highly segregated cities according to the Dissimilarity Index

City-level decompositions



Conclusion

We decompose the gap in the unconditional distributions of homeownership propensities of whites and blacks in the US

Differences in household characteristics were important

- if blacks had similar characteristics as whites, total gap would decrease by 80% at median

Residual (unobserved) factors were important at the lower percentiles

- residual gap explained 35% to 48% of the total gap at the lower percentiles

Decomposed gap at city-level

- future work could examine cross-sectional variation in residual gaps using proxies for racial discrimination