

Residential Segregation, Discrimination, and African-American Theater Entry during Jim Crow*

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Abstract

We examine the effect of residential segregation on the entry of movie theaters serving African-American customers in the 1950s, which provided an alternative to the segregated theaters of the Jim Crow era. Consistent with preference externalities in racial and ethnic enclaves, we find that greater residential segregation was associated with more African-American theater entry. Estimates from a model of firm entry indicate that residential segregation increased the variable profits of African-American movie theaters, reducing the market size required for theater entry by 13.3 percent for a one standard deviation increase in segregation. We also provide evidence that racial bias increased both variable profits and fixed costs, and on net reduced African-American theater entry. An interpretation consistent with this finding is that racial animus forced black customers toward segregated accommodations while also limiting access to key inputs for potential entrants.

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1 Introduction

Residential segregation and racial discrimination have potentially profound implications for minority enterprise and consumption opportunities, among many other outcomes. In this paper we consider these issues in the context of segregated movie theaters in the early 1950s. Prior to the Civil Rights Act of 1964, segregation in public accommodation persisted in many parts of the U.S. Access to business and culture was significantly affected both by Jim Crow laws mandating racial segregation, as well as by the practices of business owners that either explicitly or implicitly excluded blacks. Despite the prominence of public accommodation segregation in African-American life during this time, its effects on access to business and culture are little studied in the economics literature, possibly due to data limitations from the era.

Businesses catering to African-American customers often entered the marketplace to fill the void resulting from the lack of equal access. In this paper, we estimate the effect of residential segregation on the entry of such businesses in Southern cities and counties, where segregated accommodations were the norm, utilizing a comprehensive annual census of African-American movie theaters in the years immediately following World War II. While often smaller and without the full range of modern amenities, theaters serving African-American customers provided an alternative to theaters for white audiences, where black patrons were frequently segregated into inferior seating or more commonly denied admission entirely. The entry of African-American theaters may have therefore expanded consumption opportunities for black patrons facing public accommodation segregation.

The theoretical effects of residential segregation on African-American theater entry are not clear, and mirror closely the modern implications of residential segregation for minority enterprise. On one hand, residential segregation may reduce access to key inputs such as credit for minority entrepreneurs, adversely affecting entry. On the other hand, residential segregation may result in preference externalities, since the fixed costs of opening and operating a movie theater likely leads to increasing returns to scale, analogous to the case of radio stations studied by Waldfogel (2003). Furthermore, residential segregation could protect minority businesses from competition by white-owned firms, as suggested by Cutler and Glaeser (1997), Glazer and Moynihan (1963), and Aldrich et al (1985).

We begin by establishing the reduced form relationship between the number of African-American theaters in a location and the degree of residential segregation. We then estimate a structural model of theater entry to shed light on the mechanisms driving the reduced form relationships. Our main findings are that residential segregation lead to greater African-American

theater entry. At the MSA level, a one standard deviation increase in the index of segregation across census tracts is associated with an increase in the African-American theater share of 3.3 percentage points, an increase of 19.4 percent compared to the average MSA. The estimated effects of residential segregation extend to non-MSA counties as well. Using the segregation of African-Americans across wards within a county, we find that greater residential segregation is also associated with more African-American theater entry outside of metro areas.

We also provide evidence describing the effect of racial bias on African-American theater entry. This complements the residential segregation results since the effects of racial bias will operate through similar channels. Racial bias among the white population lowers entry by reducing access to key inputs, but could increase the viability of African-American theaters by increasing their relative attractiveness to black customers. Analogously, Becker (1957) suggests that white owners of capital would require a higher rate of return if used with black factors of production, or presumably if selling to black customers. In equilibrium, this raises the rate of return of capital held by blacks, who are not similarly biased.

We use two measures of racial bias to examine its effect on African-American theater entry. First, we form a direct measure of racial bias using survey responses to questions related to race in public opinion polls conducted in the late 1940s and 1950s. Respondent-level data containing state of residence allow us to form a measure of racial bias that varies across states. We find that an increase in measured racial bias is associated with fewer African-American theaters. This effect is of similar magnitude to that of residential segregation. A one standard deviation increase in racial bias reduces the African-American theater share by 22.4 percent. Second, we utilize data on historical lynchings, and we find that MSAs experiencing greater lynchings from 1880-1920 had fewer African-American theaters.

We then employ the methodology of Bresnahan and Reiss (1990, 1991a,b) to estimate a model of theater entry. This model allows us to separately identify the effect of covariates on the variable profits of theaters from their effect on the fixed costs of entry, as well as quantify their impact on the market size required for theater entry. Intuitively, this is accomplished by considering what market size is profitable for a single entrant, and then how further entry is induced by larger market sizes. These estimates can shed light on the mechanisms by which residential segregation and racial bias influence theater entry. We find that residential segregation leads to theater entry by increasing per-person variable profits, consistent with preference externalities. A one standard deviation increase in measured segregation from the average county reduces the size of the black population required to support one African-American theater by

1157 residents, or around 13.3 percent. We also find that greater racial bias by the white population has conflicting effects on entry by increasing both the fixed costs variable profits. A hypothesis consistent with this pattern of results is one where racial bias of whites forces black movie customers toward segregated accommodations, which increases variable profits for a market of a given size, while at the same time reducing potential entrants' access to key inputs, such as credit and access to building leases.

Our paper utilizes unique data to contribute to two broad areas of the literature. First, we provide new evidence on a largely unstudied aspect of economic history. Public accommodations segregation, and the businesses that entered in response to serve the excluded black populations, are important historical institutions that have received little attention in the economics literature. Second, we add to the literature on the effects of residential segregation, contributing empirical evidence to a dimension of this issue that has received relatively sparse attention, namely how residential segregation affects the entry of minority enterprise and consumption opportunities for minority residents. We draw on tools and insights from industrial organization, including the theoretical notion of preference externalities and empirical estimates from a structural entry model.

The prior literature on the effects of residential segregation points toward conflicting forces on minority outcomes.¹ Our results relate most closely to prior work considering the effects of residential segregation on minority entrepreneurship and consumption opportunities. The possibility that ethnic enclaves could foster minority enterprise has been cited as a factor that could countervail the negative impacts of residential segregation on minority access to quality jobs, mentors and peers, and public goods.² While we do not have information on the race of theater owners, it was not uncommon for African-American theaters to be black owned. As noted by Wright (2013), the exclusion of blacks from Southern businesses prior to the Civil Rights Act of 1964, combined with the residential segregation of the black population into urban clusters, were thought by some historians and black contemporaries to enhance business prospects for black entrepreneurs.

The relationship between segregation and minority entrepreneurship has been tested di-

¹The empirical literature regarding the effects of residential segregation is mixed across a wide range of settings and empirical approaches. Cutler and Glaeser (1997) and Ananat (2011) find that living in a segregated city has adverse effects on a range of outcomes for African-Americans, including lower incomes, reduced schooling, and increased incidence of single motherhood, while Collins and Margo (2000), Cutler, Glaeser, and Vigdor (2008), and Borjas (1995) find varying effects depending on the time frame and demographic or socioeconomic group.

²See for instance the protected market hypothesis of Aldrich et al (1985). In addition to the direct benefits that entrepreneurship opportunities provides, spatial mismatch (Kain, 1968) suggests that improving business ownership in minority neighborhoods could improve employment opportunities.

rectly in a handful of studies. Fairchild (2008) finds that the clustering of minority residents is associated with greater rates of self-employment, though more interaction between races (a reduction in “exposure” segregation) also increases the likelihood of business ownership. Fischer and Massey (2000) relate a commonly used index of segregation to business ownership rates in the 1990 census, finding that residential segregation reduces the likelihood of minority business ownership, at least for higher levels of segregation.

Residential segregation may benefit the consumption opportunities of minority residents when when differentiated businesses exhibit increasing returns and consumer transportation costs are high. A few studies have empirically considered preference externalities and product offerings, and the current paper contributes by adding an even starker empirical setting. In Waldfogel (2003) and Waldfogel (2008), race is correlated with preferences for radio stations and fast food restaurants, respectively, and geographic areas with more members of a race have more establishments serving their preferences. In our setting, preferences for attending an African-American theater was not merely correlated with race but rather dictated for blacks by segregation practices. This also stands in contrast to Neumark and Mazzolari (2012). They find that immigration leads to ethnic diversity in restaurants, which they explain by the comparative advantage of immigrants in producing ethnic foods.

As mentioned, a second contribution of our paper is in providing evidence regarding the historical institution of public accommodation segregation and the black businesses that entered in response. Wright (2013) details the history of segregation, and provides several pieces of suggestive evidence evaluating the effects of public accommodations segregation on the sales of white businesses and on the success of black entrepreneurs. Aside from this book, we are not aware of an economics literature providing systematic empirical evidence in this area.

A recent tangential literature studies the origins and effects of residential segregation. Troesken and Walsh (2017) examine how segregation ordinances arose in the early 1900s as a result of the breakdown of informal institutions that acted to discourage property transfer to other races. Boustan (2010) studies the role of post-war black migration played in the suburbanization and resulting segregation of northern cities. Cook, Logan, and Parman (2017) examine the hypothesis that residential segregation may contribute to ethnic fractionalization, and thereby violent crimes, by studying the historical pattern of residential segregation and how it correlates with racial violence. They point out that the impact of segregation is theoretically unclear. Segregation affects exposure to members of the opposite race, and exposure could either lead to increased tolerance or resentment. Using the detailed measures of residential segregation devel-

oped by Logan and Parman (2017), they find that segregation increases racial violence in the form of lynchings of African-Americans. This suggests a causal channel running from segregation to racial preferences and discrimination. Importantly, historical lynchings have lingering effects and are related to modern rates of racial violence and other measures of racial intolerance such as compliance with hate laws. (see Messner et al, 2005; King et al, 2009)

We are not able to observe the practices of general theaters with respect to segregated seating by race or the outright exclusion of African-American customers, though such practices may impact theater entry by driving black customers to African-American theaters. These practices could be related to either the discriminatory views of theater owners or their customers. A number of studies point to the existence of customer discrimination and the effects it has on firm decision making. Holzer and Ihlanfeldt (1998), Bar and Zussman (2017), Li et al (2015), and Graddy (1995) all study the effects of customer discrimination on firm decision making, and Leonard et al (2010) also find this has an impact on wages. In Gil and Marion (2018), we examine the profit response of desegregating movie theaters in Washington DC in 1953. We find that box office revenues fell post-desegregation, pointing toward significant customer discrimination.

The paper is structured as follows. Section 2 reviews the evolution of segregation and discrimination laws in the US from the early 20th century to 1950. This section also describes the US movie industry during those years. In Section 3, we describe the data used in this paper. Section 4 presents our reduced form results, while in Section 5 we describe the results of estimating the structural model of entry. Finally, Section 6 concludes.

2 Background and Institutional Details

2.1 Segregation and Jim Crow laws

Segregation in public accommodation was an important feature of African-American life for much of the 19th and 20th century. The separation of races in business, schools, and social services was the norm in many parts of the country, even prior to being codified into law as was eventually the case in much of the South (Wright, 2013). There was a substantial degree of variation in segregation-related laws over time and across jurisdictions, yet laws mandating segregation tended to be piecemeal and local.³ In many localities, or in many types of businesses

³For instance, one local statute may enact segregation in public transportation, while another may be later enacted that covers hospitals. An example cited by Woodward (1974) was a Birmingham law making illegal mixed race games of dominoes or checkers. The first statewide segregation laws were applied to seating in railroad cars (Wright 2013).

within those localities, there was no law mandating the separation of races. Rather, segregation was implemented by choice of businesses for fear of alienating their white customer base. In the North, segregation was not institutionalized, and many Northern states passed laws at various points in time banning segregation in public accommodation. However, these laws were often ignored, imperfectly enforced, or interpreted in such a way that allowed for the continued exclusion of blacks.

Despite several notable judicial victories for the civil rights movement, such as the 1954 Supreme Court judgment in *Brown v. Board of Education* ruling unconstitutional segregation in public schools, the practice of segregation remained entrenched in the South in the post-World War II years. The civil rights movement gained considerable momentum in the late 1950s and early 1960s, and voluntary desegregation began slowly as the attitudes among whites toward integration improved (Hyman and Sheatsley, 1964) and greater pressure was placed on segregated businesses. Nonviolent protests played a key role. A seminal event was a sit-in at a Greensboro, North Carolina lunch counter in February 1960, the first such sit-in to gain widespread attention. It prompted similar demonstrations in white-only establishments, many coordinated by activist groups such as the Student Nonviolent Coordinating Committee (Morris, 1984). A degree of voluntary desegregation by Southern businesses followed in the early 1960s. Owners feared business disruption arising directly from the protests, and Wright (2013) cites several news sources describing the loss in sales arising directly from protests. Weems (1998) documents the efforts of the African-American community to wield its growing economic clout, both in boycotting white businesses with racist or exclusionary practices or by rewarding black-owned businesses.

Many white businesses did not wish to be first to integrate, fearing that competitors would remain segregated. As Wright (2013) documents, the pace of voluntary desegregation had slowed by 1964, and notably desegregation in theaters lagged behind restaurants, hotels, and lunch counters. The Civil Rights Act was passed in July 1964 and included a ban on segregation in public accommodation. Compliance was tested by civil rights groups, who found that businesses followed the ban more quickly than expected despite initial protestations of owners. While progress was uneven between urban and rural areas, complaints brought for refusal of service had virtually disappeared by the end of the 1960s. (Wright, 2013)

2.2 Movie theaters

As the prior discussion suggests, segregation was widespread in Southern movie theaters in the early 1950s, the time period of our data. Movie theaters for white audiences often either completely barred admission to black customers, or would offer worse seating to only a portion of the screenings. Furthermore, theaters often barred entertainment featuring black performers.

Movie theaters specifically targeting African-Americans differed from theaters for white audiences in the quality of the movie-going experience and to a lesser extent the movies screened. African-American theaters were often smaller and lower quality. It was rarer, for instance, for an African-American theater to be air conditioned, and in the early years of cinema it was less likely for an African-American theater to have sound.⁴

The types of movies shown at African-American theaters differed from those shown in white theaters, but only to a limited extent. The economics of movie production significantly limited the extent to which content was targeted to black audiences. In the silent movie era, films could be produced more cheaply, and a relatively thriving African-American movie industry existed. The adoption of sound increased the fixed costs of movie production, necessitating a larger audience to cover those costs. Despite this, as late as the early 1950s, several independent studios produced so-called “race films” featuring partially or entirely black casts. In Gil and Marion (2018), we compile information from Klotman (1997) regarding films with black actors, and we study the box office performance of such films. Among the 92 movies with black actors produced by an independent studio, slightly more than half had black actors in leading roles. The 1950s saw a modest growth in the production of movies with African-American protagonists by major studios, though such major studio releases remained rare.⁵ Lastly, anecdotal evidence indicates that African-American theaters often refused to show movies depicting African-Americans in a negative light.⁶

⁴Some of the African-American theaters located in the suburbs of DC used to be older reconverted white theaters that projected second-run movies and therefore vertically differentiated with neighboring general theaters. Furthermore, the construction costs of white theaters tended to be higher, as evidenced by figures provided by Headley (2006).

⁵There were eight studios that produced the vast majority of films during this time. Fox, Loews, Paramount, RKO, and Warner Brothers were vertically integrated studios, owning not just production capabilities but also distribution and exhibition as well. The three other major studios, Columbia, Universal, and United Artists, owned both production and distribution capabilities, but not exhibition.

⁶As an example, the Regent Theater in Baltimore canceled showings of the 1941 movie *Belle Starr*, set in the post-Civil War south and containing negative racial depictions along with an animosity to integration. The theater had earlier refused to show the *Song of the South*, the controversial Disney movie accused of whitewashing slavery. (Headley, 2006)

3 Data

3.1 Movie theater location

We collected an original data set of movie theater information from yearly issues of the Film Daily Yearbook (FDY) between 1945 and 1955. This annual publication provides a *de facto* census of theaters in the U.S. The FDY contained a listing of all movie theaters by city and state, including a separate listing for theaters specifically designated for African-American customers.⁷

The focus in our paper will be on theaters in Southern states. This is driven by two primary considerations. First, focusing on the South ensures a consistent definition of what constitutes an African-American theater. Theaters are classified as “catering to Negro patronage” under two circumstances. In Southern states, where explicit segregation was practiced, theaters serving exclusively African-Americans appear in the FDY sample. Outside the South, where segregation was not explicit, the FDY sample would only count theatres for which the majority of their patrons were African-American (see Maltby et al, 2011). This raises the concern that outside the South, the categorization of theaters could be endogenous to the degree of residential segregation. The second consideration for focusing on the South is the relevance of segregated accommodation in Southern states. In the early 1950s, a majority of African-Americans lived in the South, and the practice of excluding African-Americans from white movie theaters was widespread.

A major change in the movie industry during this time was the Paramount antitrust case and the resulting forced divestiture of movie theaters owned by the major studios. Prior to this case, five of the major film studios – Fox, Loews, Paramount, RKO, and Warner Brothers – were vertically integrated, owning production, distribution, and exhibition. A significant portion of the exhibition capacity in the US was held by these studios, particularly in the major cities. (Gil, 2015) The Justice Department ruled that this represented a restraint of trade, as three other smaller studios owned only production and distribution capabilities, but did not own theaters. The major studios, after unsuccessfully challenging the ruling in the federal courts (including a ruling by the U.S. Supreme Court), eventually signed onto the Justice Department’s consent decree between 1948 and 1952.

The change to the movie theater landscape resulting from the divestiture does not affect our analysis, since our sample is after most of the theaters had already been divested, and because African-American theaters were much less likely to be owned by a major studio. We are able to observe theater ownership for some years of the FDY. We see that in 1946, the studios Fox,

⁷Some towns in the data either no longer exist or have been absorbed by larger municipalities. To match theaters with counties and MSAs, we complemented the data with information from www.cinematreasures.com.

Loews, Paramount, RKO, and Warner Brothers together owned 13 percent of the theaters in the data, excluding portable theaters. The major studio ownership rates of African-American theaters was much lower – we calculate it to be 5 percent in 1946. Furthermore, of the African-American theaters owned by major studios, 68 percent were held by RKO or Paramount, which signed the Justice Department’s decree in 1948 and 1949, respectively. Both had divested their theater holdings by 1950, and in our estimation, we focus attention to theaters listed in the FDY between 1950-1955.

To check the completeness of the FDY, we compared the listing of African-American theaters in this data set to those detailed for Baltimore and Washington, DC by Headley (1999 and 2006), which was based on historical archives and press. Our data set contains 83% of the potentially existing African-American movie theaters in Baltimore (25 out of 30) and 82% in Washington, DC (23 out of 28). Overall, Maltby et al (2011) find the growth in “Negro” theaters reported by the FDY to capture the trend in African-American film exhibition.

3.2 County and MSA characteristics

We combine theater location with county-level information from the 1950 and 1960 decennial U.S. censuses. We utilize demographic information on median income and education, and employment information including labor force participation, unemployment, and agricultural employment. Since theaters located in less densely populated areas might enjoy lower profits per resident due to travel cost, we also utilize information on county area in square miles. The introduction of television represents competition for movie theaters, and its importance likely differs for theaters catering to black customers. To measure the importance of television, the utilization of which was growing rapidly, we use county level data on the household TV penetration from Gentzkow (2006).

Financial frictions may inhibit firm entry, particularly if potential entrants faced discrimination in obtaining credit. We compile information contained in Ammon (1996), who compiles a history of the establishment of black-owned banks from 1888-1992. We use these data to form a count of the number of black-owned banks by city established in 1951 or earlier. The interpretation of this measure comes with a major caveat, however. While black-owned banks may ease financial frictions for potential entrants who could not otherwise obtain credit, their entry could respond directly to credit market discrimination by other financial institutions.

To form MSA-level data, we aggregate the county-level data based on 1950 MSA definitions. For count variables such as population and area, we sum across counties within the MSA. For

measures such as median county income and education, we take a population weighted average of counties comprising the MSA.

Finally, we use the 5% sample from the 1960 census to calculate race-specific covariates for metro areas. We measure the poverty rate, the fraction of the population age 25 and over with at least a high school education, and the fraction of the male population between 18 and 60 years of age that are employed weighted using sample line weights. For those metro areas too small to be identified in the 5 percent sample, we measure characteristics for non-metro areas in the state.

3.3 Segregation

In our empirical analysis, a key variable of interest is the degree of residential segregation by race. As documented by Massey and Denton (1988), there exist a number of measures of segregation capturing different geographic patterns of residential location. A commonly used measure in the economics literature is the dissimilarity index.⁸ It intuitively captures the portion of black residents who would need to move to a different neighborhood in order to achieve racial balance across neighborhoods (usually defined as census tracts). Logan and Parman (2017) make a recent contribution to the measurement of segregation by calculating segregation at a very fine level of geography, namely the racial composition of one's next door neighbors. We favor the dissimilarity index over a geographically finer measure of segregation since it more closely aligns with the preference externality hypothesis. In our setting, this hypothesis maintains that a more concentrated black population will be easier to reach by African-American theaters, which is more appropriately tested by measuring neighborhood-level segregation.

One criticism of the dissimilarity index as mentioned by Cutler, Glaeser, and Vigdor (1999) is that it does not adequately measure the exposure of blacks to non-blacks. For instance, a city where the minority population resides exclusively in one neighborhood, yet forms a small share of that neighborhood, would still receive a high value for the dissimilarity index despite being regularly exposed to the majority population.⁹ In our setting, this is actually a desirable feature of the dissimilarity index, as the preference externality hypothesis does not depend on exposure of one race to another.

⁸The dissimilarity index is the measure of choice in Ananat (2011), Collins and Margo (2000), Cutler and Glaeser (1997), Shertzer and Walsh (2017) among others.

⁹The isolation index, another commonly used segregation measure, lacks this feature. As a robustness check, we estimate our base specifications at the MSA level using the isolation index and we obtain similar results. Even though the coefficient estimates are smaller than when using the dissimilarity index, they have a similar interpretation since the standard deviation of the isolation index across MSAs is around twice as high.

We use measures of segregation at the MSA-level as well as for counties located outside of MSAs. For MSAs, we utilize the segregation measures provided by Cutler, Glaeser, and Vigdor (1999). These authors calculate a dissimilarity index for MSA i

$$d_i = \sum_{j=1}^N \frac{1}{2} \left| \frac{b_j}{b_i} - \frac{w_j}{w_i} \right| \quad (1)$$

where b_j is the size of the black population in census tract j and w_j is the size of the white population. Due to data constraints, segregation can be calculated for a relatively small number of MSAs in 1950, including just 16 MSAs in Southern states. Hence, in the empirical work we instead use segregation measures for 1960 MSAs.

For counties outside of MSAs, census tract-level population is not available, and we instead use population by ward. We observe 914 non-MSA counties with more than one ward, and for these counties we are able to calculate a residential segregation measure using the same method as in equation (1). Of the counties with more than one ward, both the median and modal county has five wards, however the number of wards varies substantially across counties. Eight counties have only two wards, while 47 counties have ten or more. This leads to two sources of measurement error. First, the distribution of the population across a coarse geography understates the degree of residential segregation, since it masks segregation within ward. We anticipate that this will lead to attenuation of the estimated effect of segregation. Second, more densely populated counties will have more wards, a problem we solve by controlling for county population and area. In our empirical specifications, we also control for the number of wards in a county to account for the possibility that the number of wards is correlated with both the number of theaters as well as measured residential segregation.

3.4 Discrimination measures

Our empirical work places two requirements on the measure of discrimination. First, it must be timely, in that it reflects racial views held by whites during the relevant time period. Second, it must contain sufficient geographic variation to correlate with theater location.

We utilize two measures of racial discrimination that meets these criteria. First, we form a measure of racial bias from public opinion polls conducted in the 1940s and 1950s using respondent-level answers to questions related to race.¹⁰ The respondent-level data provides state of residence and race, allowing us to construct a measure of racial bias at the state-level

¹⁰The source of the polling data is the Roper Center for Public Opinion Research.

for only white residents. The scale of the potential responses varies across questions, so we take an approach similar to Charles and Guryan (2008). First, we order the possible responses to each question from what we judge to be most racially tolerant (which we assign a low score) to the least racially tolerant (which receives a high score). Call this rescaled score r_{iqjs} , where i , q , j , and s respectively index the individual, question, poll, and state. The rescaled scores are then standardized using the within-survey mean and standard deviation for a question: $\tilde{r}_{iqjs} = (r_{iqjs} - \bar{r}_{qjs})/\sigma_{qjs}$. Since the number of respondents varies across surveys, we average the standardized responses by survey and state, so that no one survey receives undue weight in the racial bias measure. We then average across surveys by state to obtain the index of racial bias: $Z_s = \sum_j (\sum_{i,q} \tilde{r}_{iqjs} / (I_{js} * Q_j)) / J$, where I_{js} and Q_j represent the number of state s respondents and race-related questions in survey j .

The specific questions, and possible responses, are described in greater detail in Appendix section A.2. We also present evidence that this measure provides a reasonable measure of racial bias. The index is highest in Southern states, and lowest in the Northeast and West. We also find a strong relationship between the racial bias index and the share of the 1948 presidential election vote in the state received by Strom Thurmond, who ran on a platform of racial segregation. In the states where Thurmond received votes, the racial bias index is able to explain 59 percent of the variation in the log vote share of Thurmond.

Our second measure is the number of lynchings occurring between 1880 and 1930 within the MSA or county. These data were collected by the Tuskegee Institute in collaboration with the Historical American Lynching project, and document the location of each lynching recorded in press reports and other accounts. These data have been used previously by a number of authors to estimate the relationship between lynchings and a variety of socioeconomic outcomes. Fryer and Levitt (2012) use these data to examine whether the Ku Klux Klan engaged in hate crimes. Cook et al (2017) also use the same data to establish that residential segregation in 1880 substantially increased the number of subsequent lynchings. These authors also provide a useful summary of the literature in both economics and sociology characterizing the motivation behind lynchings. One hypothesized motivation is driven by economic competition, where lynching is a response to perceived threats by African-Americans to economic and political opportunity. Racial violence is meant to prevent the participation of African-Americans in economic sectors that may threaten whites or to limit their participation in political activity. Lynchings can therefore affect African-American theater entry more directly than via their reflection of racial bias. Under these theories, lynchings can reduce African-American theater entry directly by

disfranchising African-American businesses and customers and by limiting access to political institutions that ease business entry.

3.5 Summary statistics

The location of African-American theaters was naturally driven by the spatial distribution of the African-American population. Figures 1 and 2 provide evidence of the empirical relationship between theater entry and the black population at the MSA level. As we discussed, we will restrict attention to Southern states in our empirical work, but in these figures we also show the number of theaters and black population for Northern states. Figure 1 plots the share of black theaters against the share of black population at the MSA level for both Southern and non-Southern metropolitan areas. There is a linear relationship between the black theater and black population share. Furthermore, while African-American theaters are less prevalent outside the South, it is apparent from the figure that there is substantial overlap in the South and non-South distribution of the black theater share conditional on black population share.

To better visualize the relationship between black population and African-American theaters in cities with a small black population, Figure 2 plots the relationship between the number of black theaters and the log of the total black population in 1950. Virtually no theater entry occurs for MSAs with less than three thousand black residents. Metro areas with less than 20,000 black residents rarely see more than one African-American theater. This fact is consistent with the model of entry that will be estimated, where a minimum market size is required for entry due to fixed costs.

Finally, in Figure 3, we provide graphical evidence of how the relationship between the number of theaters and the black population differs between areas of high- and low-segregation in Southern MSAs. In this figure, we display a scatter plot of the log number of theaters against the log black population, fitted with a local linear smoother.¹¹ Conditional on log black population, the log number of theaters is higher in high segregation MSAs, and this is true across the support of the black population distribution.

Next we provide summary statistics for both MSAs as well as non-MSA counties. We start with Table 1 where we provide summary statistics of all MSAs in our sample separately by whether they are located in the South. While the average MSA had 3.3 black theaters in 1950, the Southern MSAs had an average of 4.1 and non-South MSAs 2.8. The share of black theaters was six times as large in the South (16.8 percent versus 2.8 percent). The black population

¹¹Two MSAs have no African-American theaters and are not included. The bandwidth of the local linear smoother is 0.75

was overwhelmingly located in the South in 1950. Blacks comprised 21.4 percent of the average Southern MSA and 4.8 percent of the average non-Southern MSA. The average non-Southern MSA, however, experience much faster growth in the 1950s in black population. The average value for the residential segregation index was 0.74 across all MSAs. This indicates that for the average MSA, 74 percent of the black population would need to move census tracts to achieve an even population distribution. Despite the much larger level of black population in the South, the degree of residential segregation experienced by blacks in the Southern MSAs was similar to the rest of the country. Television penetration was growing rapidly during this time. In the average MSA, 8.4 percent of households owned a television in 1950, which had grown to 83.3 percent in 1955. Throughout the period, TV ownership rates were higher outside the South. Among the other demographic variables, the South was characterized in 1950 by lower education attainment levels and lower levels of income. Similarly, African-American socioeconomic characteristics also varied substantially by region. In the average Southern MSA, 17.8 percent of blacks aged 25 and older had a high school education or greater in 1960 and 64 percent of households were below the poverty line, compared to 25.9 percent and 42 percent for MSAs outside the South.

Table 2 provides the same set of summary statistics for non-MSA counties. As with metro areas, Southern counties have a larger number and share of black theaters than non-South counties, larger black population share, lower black population growth, lower TV penetration, lower educational attainment and median income and larger agricultural employment share than non-South counties.

In Table 3 we present the distribution of the number of African-American theaters for both MSAs and non-MSA counties. The sample is restricted to observations for which no variables used in the structural estimation are missing. This information is important to understand the variation used to identify the model of theater entry.

Panel A of Table 3 shows the African-American theater distribution across MSAs. Of the 57 Southern MSAs, most have at least one theater. Only five have no theaters. This provides a challenge for the structural estimation at the MSA-level, which requires variation in theaters across markets on both the extensive and intensive margin to separately identify fixed costs from variable profits.

Examining the non-MSA county distribution, we see that it is far more common to observe no African-American theaters. Panel B shows that of the 922 counties outside of MSAs, 792 have no theaters. As with MSAs, this is particularly pronounced outside the South, where only ten of 623 non-MSA counties have one or more theaters compared to 179 of 299 Southern

counties. Only three non-South rural counties have more than one theater, while 33 Southern rural counties have more than one theater. The geographic distribution of theaters further supports our choice to focus on Southern theaters, and in particular the variation on both the extensive and intensive margins favors the non-MSA county sample in the structural estimation.

4 Reduced Form Results

In this section, we describe the reduced form relationship between the share of African-American theaters in Southern MSAs and non-MSA counties and our primary variables of interest, the index of residential segregation and measures of racial discrimination. The structural analysis that follows will identify the channels by which these variables operate, specifically the extent to which the variables are associated with per-person variable profits or fixed costs.

We begin by estimating the reduced form relationship

$$y_i = \alpha + \beta_1 d_i + \beta_2 Z_i + BX_i + \epsilon_i \quad (2)$$

where y_i is the market share of black theaters in location i (MSA or county), i.e. the number of African-American theaters normalized by the total number of theaters in location i . Our motivation for this normalization is that unobserved local preferences or entertainment alternatives affect the prevalence of theaters of all types. As an alternative, we will also consider the log number of theaters, with the log size of the black and white populations included in the set of controls.

The primary variables of interest are the degree of residential segregation, d_i , and the measures of racial bias, Z_i , including the racial bias index and the number of lynchings. The vector X_i contains covariates such as the share of the number of black-owned banks, the black population share, the log of the population, and the log area in square miles. We also include race-specific measures of income, education, employment, and household TV ownership.

While we estimate (2) using OLS, some prior studies have employed an instrumental variables approach to estimate a causal effect of segregation. Doing so is meant to address potential concerns surrounding omitted variables (unmeasured city attributes may influence both the degree of segregation and the economic outcomes of interest) and endogenous migration between cities (individuals could respond to segregation or its effects in making location choices). Cutler and Glaeser (1997) instrument for segregation using the number of rivers and streams in an MSA. Ananat (2011) employs the placement of railroad tracks in the 19th century. Neither of

these instruments are effective in our setting. We have found that the number of rivers is not able to predict segregation levels in 1950 or 1960, particularly once measures of city size are included in the specification. Furthermore, Ananat (2011) focuses on Northern cities, where the rapid growth of the African-American population during the Great Migration amplified the effects of neighborhood barriers such as railroads, while our paper focuses on Southern states. Finally, the endogeneity of segregation may not be as significant of a concern in our setting. Residential location seems unlikely to respond directly to the presence of a movie theater, thereby mitigating some of the need for instrumental variables.

A related concern is that the variable d_i is correlated with other unobserved characteristics of the city or county, such as the economic well-being of the black population. This is a difficult problem to fully solve without satisfactory instruments for segregation. We partially address it by examining the sensitivity of our results to including in X_i controls for the socioeconomic characteristics of the black population. As we will show, including these controls does not lessen the estimated impact of residential segregation.

4.1 MSA-level results

The results of estimating equation (2) for African-American theaters in Southern metro areas is shown in Table 4. The dependent variable in the specification is the share of theaters that are African-American. We first describe the results related to residential segregation, and then the estimated effect of racial bias.

Across specifications, we see that the index of residential segregation is positively related to the share and number of African-American theaters. In the specification shown in column (1), which includes only a sparse set of covariates, we estimate a statistically significant coefficient on the 1960 residential segregation index of 0.29. This estimate is little changed as further covariates are included. In the column (2) specification, we include the size of the metro area, the employment composition, the degree of household television penetration, the rate of growth in the black population during the 1950s, and socioeconomic characteristics of the white population. The inclusion of these additional covariates has little effect on our point estimate of the effect of residential segregation. The inclusion of more detailed region dummies also has little effect on the estimated effect of residential segregation, as shown in column (3). In this specification, the estimated coefficient is 0.34, slightly from the sparser specification in column (1). Similarly, the inclusion of state fixed effects has little impact on the estimated coefficient, as shown in specification (6). To give a sense of the magnitude of the estimated coefficient in the fullest

specification, consider a one standard deviation increase in the segregation index. This would be associated with an increase of 0.033 in the black theater share, a 19.4 percent increase for the average Southern MSA.

While residential segregation is positively correlated with the number of African-American theaters, we find evidence that racial discrimination inhibits African-American theater entry. As discussed, we employ two measures of racial bias: the average response at the state level to race-related questions in public opinion polls conducted in the late 1940s and early 1950s and the number of lynchings of African-Americans between 1880 and 1920 at the MSA level. The former has the advantage of being concurrent with the time period studies in this paper, while the latter has the advantage of a finer level of geographic detail allowing for the inclusion of state fixed effects.

In specifications (1)-(3) of Table 4, we present the results of including the racial bias measures together, then in subsequent specifications the two measures are introduced on their own. The point estimate of the coefficients for both racial bias measures is negative and, in most cases, statistically significant. The coefficient on the racial bias index is estimated to be -0.23 in the sparsest specification. In the fullest specification where it is possible to identify the effect of the racial bias index, the coefficient estimate is -0.21. This implies that a one standard deviation increase in racial bias reduces the black theater share by 2.2 percentage points, similar in magnitude to a one standard deviation increase in residential segregation. Finally, when only the racial bias index is included, and not the number of lynchings, its estimated effect is larger at -0.28, not surprising in light of the positive correlation between racial bias and lynchings.

The estimated effect of the number of lynchings is similarly negative. In the sparsest specification, an additional lynching is associated with a theater share 0.35 percentage points lower. In the fullest specification, which includes state effects, the estimated lynchings coefficient is -0.0028 and statistically significant. An MSA with one standard deviation more historical lynchings has an African-American theater share that is lower by 3.1 percentage points.

Taken together, we find that racial bias reduces theater entry. We have argued that the effect of racial bias could reflect several conflicting forces. In particular, racial bias by whites could reduce the utility of attending white theaters in those areas where doing so is possible for minority patrons, thereby increasing the relative attractiveness of African-American theaters to black customers. This would facilitate theater entry. Alternatively, racial discrimination could instead constrain entry by restricting access to needed inputs by potential entrants. The reduced form estimates suggest that the latter effect dominates, though it is possible that both are at

work.

Other covariates are not successful at predicting African-American theater share. One variable of particular interest is the number of black-owned banks. The point estimates are generally negative, and only in the fullest specification with state fixed effects is the coefficient statistically significant ($p=0.019$). This is consistent with the hypothesis that black-owned banks enter locations where credit market discrimination is greater.

An alternative approach to examining theater entry is to examine the log theaters in the market. In Table 5 we present the results of doing so, and we consider separately the log number of African-American theaters and the log number of white theaters.¹² One potential criticism of the market share measure is that residential segregation should have a much smaller effect on the number of white theaters, and it would be troubling if the estimated relationship between segregation and black theaters' market share is driven by a correlation between measured segregation and white theaters. By examining white and black theaters separately, we can check whether the variables of interest are merely correlated with unobserved demand or supply factors that may affect business entry more broadly.

The results shown in Table 5 indicate as before that increases in residential segregation are positively correlated with the number of African-American theaters located within an MSA. In the sparsest specification shown in column (1), which includes only the log white and black populations and the measures of racial bias, the coefficient on the dissimilarity index is estimated at 1.75 and statistically significant. This estimate would imply that a one standard deviation increase in measured segregation would increase the number of African-American theaters by 0.18 log points. As additional covariates are included (socioeconomic characteristics of the black population in specification (2) and similar measures for the white population in specification (3)), the magnitude of the segregation coefficient remains similar in magnitude and statistically significant.

In specification (4), we also include the log number of white theaters as a covariate. This variable may be relevant for two reasons. First, it could capture the substitutability of white and black theaters. If the two types of theaters are viewed as substitutes by blacks, then African-American theaters may find entry difficult when there are many white theaters. Second, there may be unobserved local demand or supply factors affecting entry of both white and black theaters similarly. On the demand side, a taste for movies may be shared by the local black and

¹²Two metro areas have no African-American theaters, and these MSAs are consequently dropped from the analysis. A far greater share of non-MSA counties have no African-American theaters, so we only perform this exercise at the MSA level.

white populations. On the supply side, movie distribution networks could be better established in some areas than others, or regulations may affect the ease of entry of theaters of any type. The results shown in column (4) reveal a positive estimated coefficient on the log number of white theaters, indicating that the second explanation is more likely.

In columns (5)-(7) of Table 5, we present the estimates of a similar set of specifications with the log of the number of white theaters as the dependent variable. In contrast to African-American theaters, the number of white theaters in an MSA is unrelated to the degree of residential segregation. In the full specification, the coefficient on the segregation index is -0.56, which is smaller in magnitude, statistically insignificant, and is of the opposite sign of the analogous coefficient in the African-American theater specification.

4.2 Results for non-MSA counties

We next provide evidence regarding the relationship between residential segregation, racial bias, and African-American theater entry for counties outside of metro areas. Examining non-MSA counties could be instructive for several reasons. Racial views could have different effects in rural areas. The lower population density may lead to fewer day-to-day interactions with individuals of other races. On the other hand, the historical economic ties between the agriculture sector and the African-American population, particularly in the South due to the legacy of slavery, may complicate race relations. Furthermore, the entry decision in rural areas is likely to differ from urban areas, since fixed costs are lower in less dense areas yet the relevant market is more difficult to reach.

In Table 6, we present the results of estimating (2) for non-MSA counties.¹³ Consistent with the specifications estimated at the MSA level, the county-level results point toward a statistically significant positive effect of residential segregation. As expected, the magnitude of the estimated coefficient of residential segregation is smaller than that obtained for metro areas. In the fullest specification shown in column (6), which includes state effects as well as county covariates, the point estimate of the residential segregation measure is 0.11 and statistically significant.¹⁴ This coefficient estimate is little affected by the inclusion of covariates, as the point estimate is 0.14 in the sparsest specification.

¹³Because we are only able to generate segregation dissimilarity index values for non-MSA counties that are large enough to contain more than one ward, our full sample with all controls includes 294 of 1314 non-MSA Southern counties.

¹⁴Each specification controls for the number of wards in a county, as was described in the discussion of forming the segregation measure. This control has almost no impact on the estimated effect of segregation. If the number of wards is excluded from specification (3), the residential segregation coefficient is 0.100 ($p=0.034$) rather than 0.106 ($p=0.029$) as shown here.

As with our estimates for metro areas, the effect of the racial bias index on the number of theaters at the county level is negative across each specification. In the fullest specification where the racial bias index can be identified (specification 3), the coefficient estimate is -0.50. This is statistically significant, and larger than in the MSA case. Lynchings at the county level do not have a detectable effect on the African-American theater share across all specifications. As mentioned earlier, the estimated effect of racial bias in the OLS estimates conceivably masks conflicting forces, which may have different relative importance. The structural entry estimates will aim to provide evidence helping distinguish between these mechanisms.

5 Empirical Model of Entry

To quantify the impact of segregation and discrimination on firm entry, we employ the entry model of a static game with complete information by Bresnahan and Reiss (1990, 1991a,b) (BR hereafter). We estimate this model separately for Southern metropolitan areas and Southern counties outside of metropolitan areas. BR show that the combination of observed market structure and a reduced-form profit function with an entry game is informative about firms' profitability. As in BR, we model African-American movie theaters in the 1950s as a homogeneous-good industry with identical potential entrants.¹⁵ Greater detail regarding the entry model is provided in Section A.3.

Suppose we observe a discrete number of firms, N , in a given market, m , with the parameterized profit function for a firm in this market given by

$$\Pi_{N,m} = V_N(\mathbf{X}_m; \alpha, \beta)S(\mathbf{Y}_m; \lambda) - F_N(\mathbf{W}_m; \gamma) + \epsilon_m,$$

where V_N is a function describing the variable profits per consumer in a market with N entrants, S is the market size function capturing the number of customers in the market, and F_N is the entrant's fixed costs of entry. Each of V_N , F_N , and S are a linear function of covariates. The term ϵ_m is a zero-mean iid normally distributed error term assumed to capture the factors that affect profits and are unobserved by the econometrician.

In equilibrium, if we observe N theaters in market m , it must be that $\Pi_N \geq 0$ and $\Pi_{N+1} < 0$. Assuming average profits decrease with firm entry in equilibrium, the probability of observing N in equilibrium is $\Pr(\Pi_N \geq 0 \text{ and } \Pi_{N+1} < 0)$. Along with the assumption of normally distributed

¹⁵The entry literature has extended this baseline BR framework in several dimensions. Berry (1992) introduces firm heterogeneity, and Mazzeo (2002) and Seim (2006) do so with product differentiation. We choose the original BR methodology because we do not observe theater-level attributes affecting profitability.

errors, this allows for the separate identification of the parameters of the fixed cost, variable profit, and market size equations.¹⁶

The minimum market size, or entry threshold, required to support exactly N firms is given by $S_N = \frac{F_N}{V_N}$, which we obtain by equating Π_N to zero and solving for S . S_N can increase for a given number of theaters either due to a fall in variable profits per customer (V_N) or an increase in the fixed costs (F_N). We calculate the population entry thresholds substituting the predicted values from the estimates of the fixed cost and variable profit equations, \hat{F}_N and \hat{V}_N , evaluated at the sample means of the variables in each equation.

5.1 Results

Table 7 shows the estimated structural parameters that correspond to the profit model above using data at the MSA level. One challenge is that few Southern MSAs have no theaters, and the separate identification of variable profits from fixed costs requires variation on the extensive margin (i.e. no theaters versus positive number of theaters). We will therefore also present the results from estimating the model at the county level.¹⁷ To discern the impact of residential segregation and racial bias on variable profits and fixed costs, we present estimates from three versions of the entry model. In specification (1), we allow these variables to enter only the variable profits equation. In specification (2), we allow these variables to enter only the fixed cost equation. Finally, in specification (3), they enter both equations. By allowing these variables to enter both the variable profit and fixed cost equation, we can conduct an encompassing test for competing empirical predictions regarding the effects of the variables of interest.

In specification (1) estimated at the MSA-level, residential segregation is estimated to exert a positive impact on variable profits. This positive effect is consistent with the hypothesis that residential segregation leads to greater entry of theaters via preference externalities. Under this hypothesis, African-American theaters are better able to locate near the black customer base, which increases the profits that theaters can earn per resident. In contrast, the racial bias index enters the variable profit equation negatively, as does the coefficient on the number of lynchings (though statistically insignificant). While this runs counter to the hypothesis that racial bias among the white population would increase the relative appeal of African-American theaters, by including the bias index in the profit equation only, we cannot rule out the possibility that

¹⁶We estimate the profits of markets with three or more theaters in a market by setting $\Pr(\Pi_3 \geq 0) = \Phi(\bar{\Pi}_3)$.

¹⁷We restrict attention to MSAs with fewer than 100,000 black residents and to counties with less than 25,000 black residents. Making market size restrictions is commonly done in the estimation of entry models, since in the largest markets firms will not necessarily compete against one another but rather will serve distinct clientele.

racial bias is instead reducing entry by increasing the fixed costs of theaters. Consistent with this notion, we see that in specification (2), where these variables are only allowed to enter the fixed cost equation, they have the opposite estimated effect. We see that residential segregation is estimated to reduce fixed costs while the racial bias index enters positively into the fixed cost equation. Again, the coefficient on the number of lynchings has the same sign as the racial bias coefficient, but is statistically insignificant. In specification (3), we allow these variables to enter into both the fixed cost and variable profit equation. In this case, residential segregation is not distinguishable from zero in either equation. The index of racial bias enters the fixed cost equation positively and is statistically significant.

More broadly, few variables in any of the equations (market size, variable profits, and fixed costs) whose estimates are shown in Table 7 are statistically significant, which may not be surprising in light of the scarcity of MSAs with no African-American theaters. Two coefficients worth noting are α_2 and α_3 , which describe how variable profits decline with further entry of theaters. These are of primary interest in the literature estimating structural models of entry. Consistent with expectations, the second theater to enter a market reduces variable profits. The effect of the third entrant is also negative, though the effect dissipates.

Since sufficient variation on the extensive margin is required to separately identify fixed costs from variable profits, we therefore now turn to the estimates for the sample of non-MSA counties. Table 8 presents the results, which are consistent with the MSA-level estimates shown in Table 7. When allowed to enter only the variable profits equation, both residential segregation and racial bias are estimated to increase per-person variable profits.¹⁸ When only allowed to enter the fixed-cost equation, the segregation index is positive and statistically significant. This pattern of results is not surprising. A variable that is associated with a greater number of theaters would likely enter positively in the variable-profits equation and negatively in the fixed cost equation if estimated separately. We therefore allow the two main variables of interest to enter both equations. In column (3) we present the results. Interestingly, we see that residential segregation affects only per-person variable profits while having no distinguishable impact on fixed costs. Meanwhile, racial bias affects the number of theaters through two conflicting mechanisms. First, racial bias is associated with greater theater profitability. Both the coefficients on the racial bias index and the number of lynchings are positive and statistically significant in the variable

¹⁸As in the reduced form specifications, we include here the number of wards in a county as a covariate in response to the concern that some counties had more wards than others for calculating the residential segregation measure. We include this control in any equation containing the residential segregation measure. This has only a modest effect on the estimated coefficients of interest, as the sign of the estimated effect of the segregation index remains the same when this variable is excluded.

profits equation. On the other hand, both variables are also associated with an increased fixed cost.¹⁹ We hypothesized that racial bias could potentially affect theater entry along multiple dimensions. African-American theaters could be relatively more desirable to blacks living in racially biased areas, while access to land, credit, and other fixed inputs could be more difficult for African-American theaters due to racial discrimination. Our results are consistent with both mechanisms.

In the market size equation, the coefficient on the change in the black population from 1950-1960 is greater than one in each of the three specifications. Theater entry therefore responds strongly to anticipated future changes in market size, in fact more strongly than to current market size. A potential explanation is that population growth or decline occurs in response to changing economic opportunity for blacks, and that this is anticipated by theater owners. Black population in neighborhood counties has no estimated impact on the relevant market size, suggesting that travel costs are prohibitive at this geographic level. As with the estimates from the MSA-level, additional entry reduces theater profits, though at a decreasing rate. This is evidenced by the estimated coefficients α_2 and α_3 , which are positive with the former larger than the latter. We also see that the number of white theaters enters negatively into the fixed cost equation, which is consistent with the anecdotal evidence that African-American theaters often occupy theaters formerly for white audiences. The sign of the coefficient on white theaters could also reflect other factors that ease theater entry more broadly.

5.2 Entry thresholds

With the estimated structural parameters above, we can calculate the entry threshold S_N , which is the African-American population in thousands required to support N African-American theaters. Similarly, we can find the per-firm entry thresholds, which are obtained by dividing the market size thresholds, S_N , by the number of firms: $s_N = \frac{S_N}{N}$. If movie theaters are homogenous, then the per-firm entry threshold should increase as the number of firms rises since greater competition drives down the per-person variable profits that a theater can earn. While these size thresholds are of primary interest in this paper, they provide a check on the sensibility of our structural estimates.

¹⁹The racial bias index in this specification is marginally insignificant, while the number of lynchings is marginally significant, though both coefficients have virtually identical p-values (0.105 versus 0.098). The number of lynchings and the racial bias index are strongly positively correlated. When each of these measures of racial bias is allowed to enter the estimation on its own, each variable is easily statistically significant. The p-values of the racial bias index and the number of lynchings are respectively 0.001 and 0.003 in the variable profits equation and 0.008 and 0.003 in the fixed costs equation if the estimation is conducted only including that measure.

In Table 9, we present the estimated entry thresholds separately for the MSA-level sample (Panel A) and the non-MSA county sample (Panel B) that corresponds to the structural estimates in Tables 7 and 8, respectively. At the MSA level, approximately 8.5 thousand black residents were required to support the entry of the first movie theater. Consistent with expectations, the per-firm market size required to support an additional firm increases in the number of entrants. Between 28 thousand and 30 thousand black residents were needed to support two theaters, which translates to between 14 thousand and 15 thousand residents per-firm. Lastly, the per-firm threshold is even higher for three firms.

This pattern of results is similar in non-metro areas as seen in Panel B of Table 9, where the increase in the per-firm entry threshold is highly non-linear in the number of firms. Between 8.7 thousand and 9.5 thousand black residents are needed to support the first African-American theater, and between 26 thousand and 32 thousand black residents are required to support the second. Potentially over 100 thousand are needed for a third. This results in per-firm market size entry thresholds to increase nonlinearly in the number of firms.

The effect of residential segregation can be put into further context by considering its impact on the estimated market size required for firm entry. The market size thresholds are evaluated at the average county, which has a residential segregation measure of 0.247. Consider a one standard deviation increase in this variable of 0.181. Using the estimates from specification (3), this would reduce the market size required for entry of the first theater by 1157 black residents from 8.67 thousand to 7.51 thousand.

6 Conclusion

In this paper we study African-American movie theaters in the early 1950s, presenting facts about theater location, and how theater location is influenced by residential segregation and racial bias. Little systematic empirical evidence exists regarding this important historical institution, and studying this setting allows for drawing broader lessons regarding the effects of residential segregation. To the extent that the movie theater industry is representative, the results in the paper shed light on the impacts of public accommodation segregation on African-American life in the post-war era.

We find that residential segregation led to more African-American theaters than one would expect given the size of the black population and the socio-economic characteristics of the area. Results from a structural model of theater entry are consistent with the hypothesis that residential segregation leads to preference externalities. Our results also suggest that racial

bias negatively effects the entry of African-American theaters, which is informative since the predicted theoretical effect is ambiguous. While discrimination by white customers or theater owners may induce black patrons to attend segregated theaters, thereby facilitating entry, discrimination may also work in the opposite direction by restricting access to key inputs by black theater owners. The estimated entry model supports both mechanisms, as racial bias increases variable profits while at the same time increasing the fixed costs of entry.

A modern implication of the results for the post-Jim Crow era relate to the impact of residential segregation on African-American consumption opportunities. The results provide support for the possibility that residential segregation, via preference externalities, may improve consumption when goods are horizontally differentiated. Furthermore, the results have potential implications for understanding the forces that may impede business formation in minority neighborhoods.

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Figure 1: Black theater share in MSAs

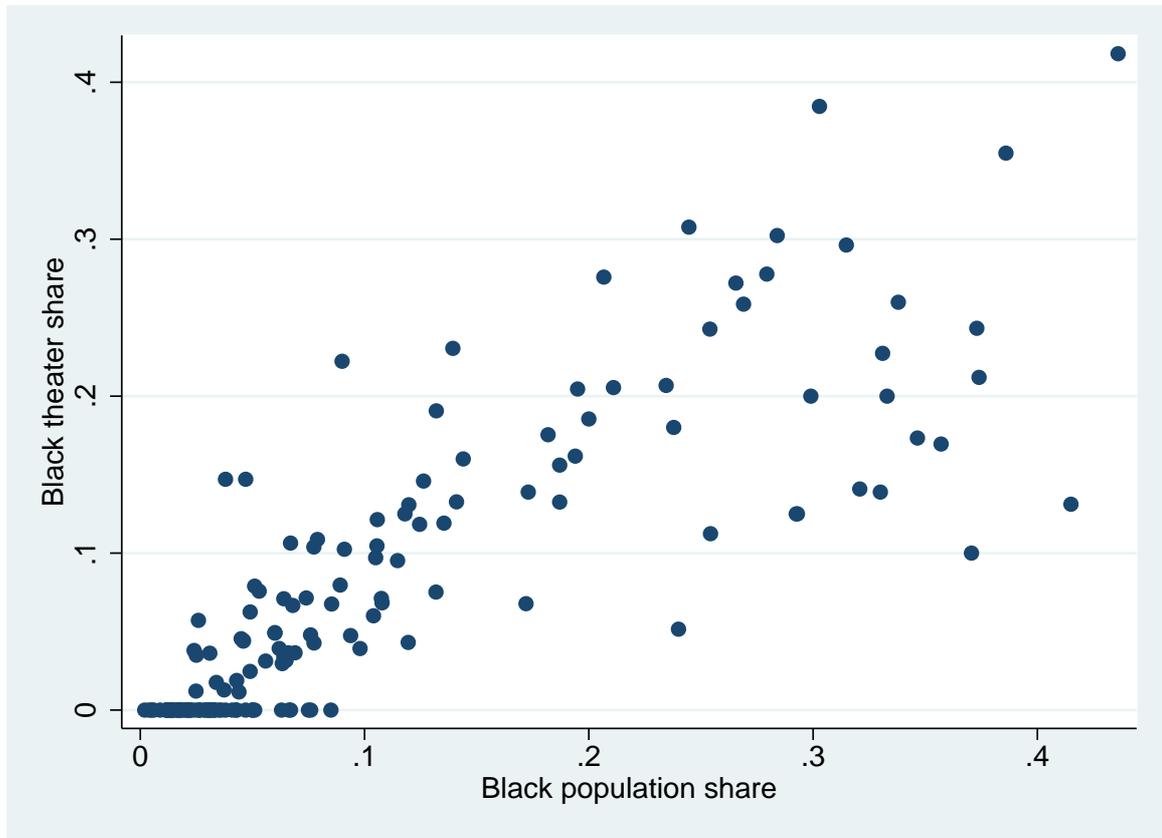


Figure 2: Number of black theaters in MSAs

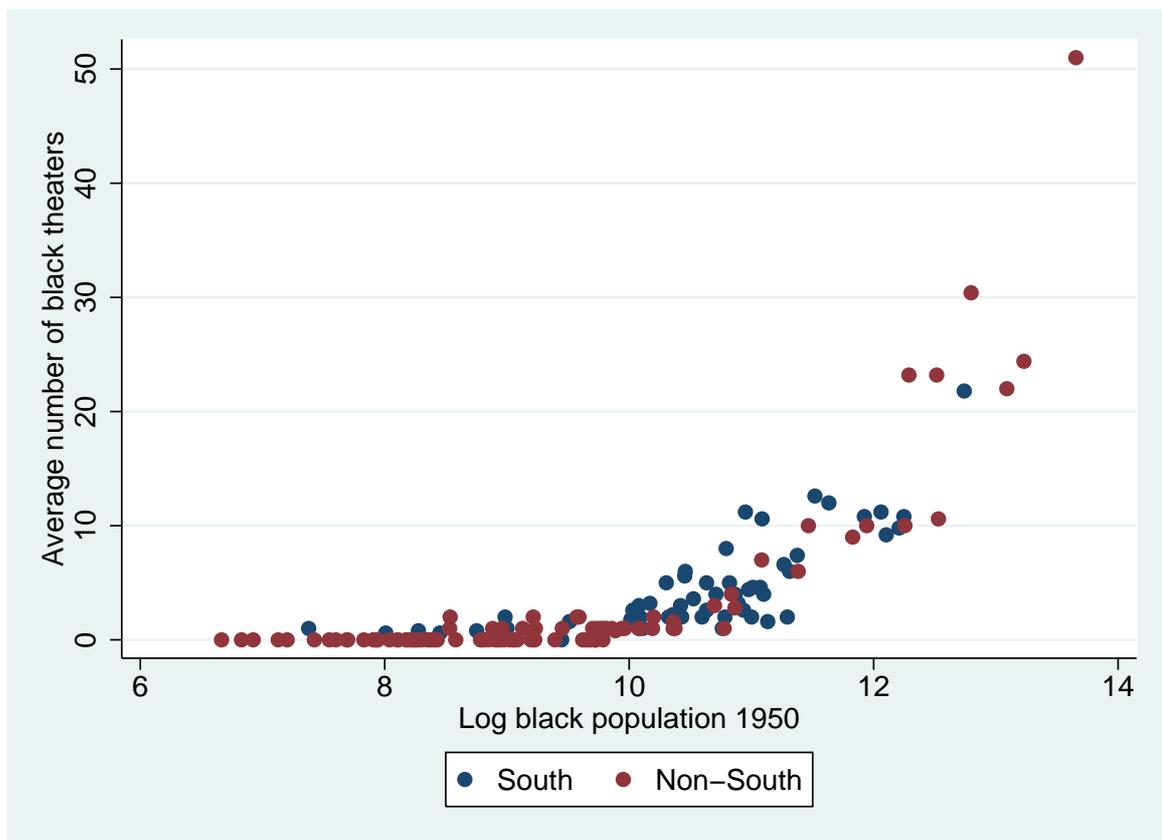


Figure 3: Log black theaters in MSAs, above vs below median segregation

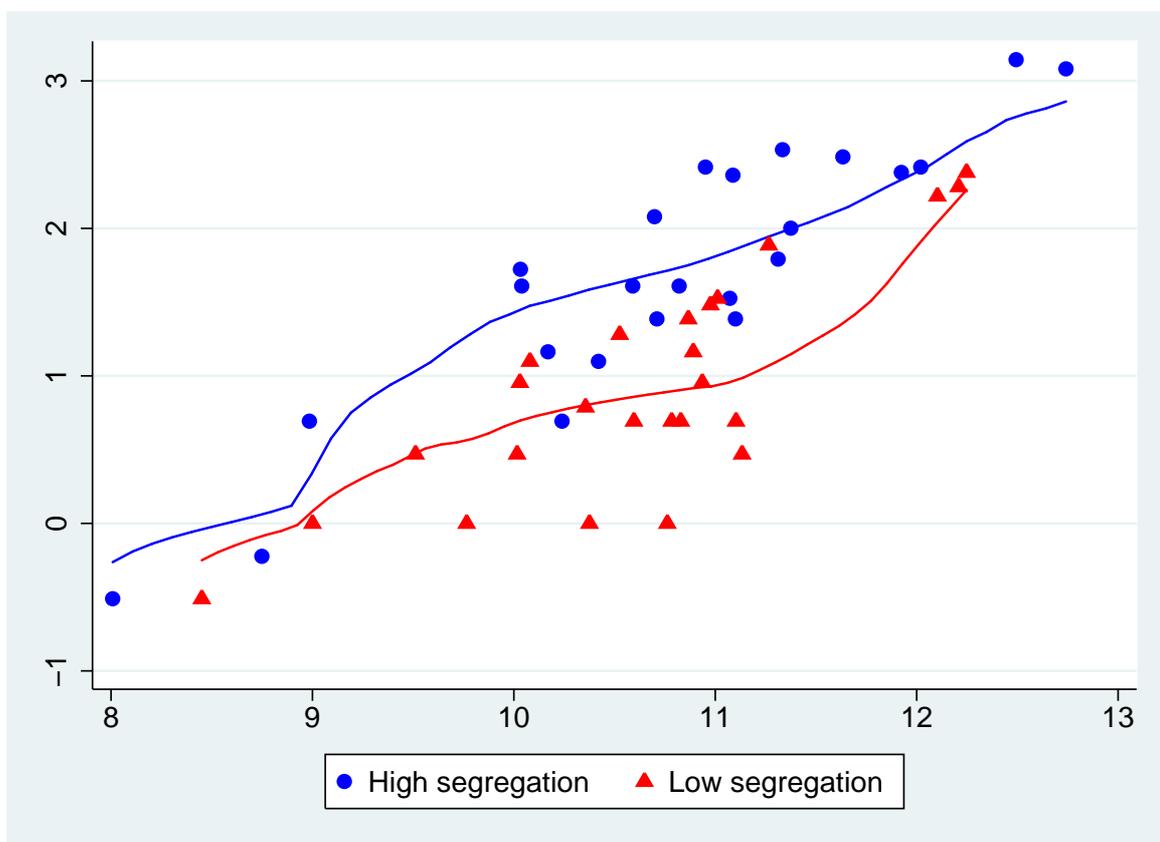


Table 1: MSA Summary Statistics

	Non-South	South	All MSAs
Number of 1950 black theaters	2.778 (7.564)	4.070 (3.904)	3.250 (6.486)
Black theater share	0.0277 (0.0440)	0.168 (0.0928)	0.0790 (0.0946)
Seg. Dissim. Index, 1960	0.754 (0.0923)	0.726 (0.105)	0.744 (0.0977)
Index of racial bias	-0.0396 (0.0955)	0.123 (0.0964)	0.0199 (0.124)
Number of lynchings		4.193 (8.340)	1.532 (5.407)
Number of black-owned banks	0.131 (0.665)	0.421 (0.801)	0.237 (0.728)
Black pop. share, 1950	0.0481 (0.0366)	0.214 (0.114)	0.109 (0.109)
Total population, 1950 (000s)	652.6 (1235.4)	275.3 (247.1)	514.8 (1010.1)
Log area in sq mi	7.020 (0.801)	6.846 (0.592)	6.956 (0.735)
% Black pop. growth, 1950-60	0.749 (0.503)	0.327 (0.343)	0.595 (0.494)
% HH TV penetration, 1950	0.113 (0.103)	0.0321 (0.0511)	0.0836 (0.0962)
% HH TV penetration, 1955	0.874 (0.0833)	0.761 (0.127)	0.833 (0.115)
Median education level, 1950	10.33 (1.011)	9.591 (0.905)	10.06 (1.034)
Median income, 1950	3471.3 (285.2)	2859.0 (422.8)	3247.6 (451.1)
Ag share of emp., 1950	0.0482 (0.0420)	0.0582 (0.0404)	0.0519 (0.0416)
Black HS+ education	0.259 (0.0939)	0.178 (0.0583)	0.229 (0.0911)
Black poverty rate	0.420 (0.0932)	0.640 (0.106)	0.501 (0.144)
Black employment rate	0.766 (0.0952)	0.794 (0.0468)	0.776 (0.0819)
Observations	99	57	156

Table 2: Summary Statistics, Non-MSA Counties

	Non-South	South	All Counties
Number of 1950 black theaters	0.0225 (0.195)	0.566 (0.899)	0.198 (0.592)
Black theater share	0.00251 (0.0216)	0.0991 (0.130)	0.0338 (0.0883)
Seg. Dissim. Index, 1950	0.403 (0.258)	0.247 (0.181)	0.352 (0.247)
Index of racial bias	-0.0179 (0.115)	0.131 (0.0957)	0.0303 (0.129)
Number of lynchings		2.455 (3.900)	0.796 (2.499)
Number of black-owned banks	0 (0)	0.0502 (0.308)	0.0163 (0.177)
Black pop. share, 1950	0.0171 (0.0354)	0.214 (0.171)	0.0809 (0.137)
Total population, 1950 (000s)	37.26 (29.32)	36.93 (20.84)	37.15 (26.86)
Log area in sq mi	6.646 (0.692)	6.227 (1.022)	6.510 (0.836)
% Black pop. growth, 1950-60	0.419 (0.865)	0.00869 (0.229)	0.280 (0.741)
% HH TV penetration, 1950	0.0297 (0.0467)	0.0156 (0.0241)	0.0251 (0.0413)
% HH TV penetration, 1955	0.664 (0.218)	0.590 (0.203)	0.640 (0.216)
Median education level, 1950	9.497 (1.000)	8.217 (1.011)	9.082 (1.169)
Median income, 1950	2792.8 (473.8)	1914.1 (566.1)	2507.8 (651.7)
Ag share of emp., 1950	0.241 (0.134)	0.269 (0.153)	0.250 (0.141)
Observations	623	299	922

Table 3: Distribution of Theaters

<i>Panel A: African-American Theaters, MSA-level</i>			
# Theaters:	Region:		
	Non-South	South	All MSAs
None	57	5	62
One	21	11	32
Two	5	13	18
Three or more	16	28	44
# of MSAs	99	57	156

<i>Panel B: African-American Theaters, Non-MSA Counties</i>			
# Theaters:	Region:		
	Non-South	South	All Counties
None	613	179	792
One	7	87	94
Two	2	20	22
Three or more	1	13	14
# of Counties	623	299	922

The sample is restricted to observations where no variables used in the estimation are missing.

Table 4: African-American theater share by MSA

	(1)	(2)	(3)	(4)	(5)	(6)
Seg. Dissim. Index, 1960	0.29** (0.11)	0.35** (0.14)	0.34** (0.13)	0.32** (0.14)	0.38*** (0.099)	0.31** (0.13)
Index of racial bias	-0.23** (0.076)	-0.22** (0.097)	-0.21* (0.10)	-0.28** (0.12)		
Number of lynchings	-0.0038*** (0.00095)	-0.0028*** (0.00057)	-0.0026*** (0.00078)		-0.0033*** (0.0010)	-0.0028** (0.0011)
Number of black-owned banks		-0.011 (0.0089)	-0.010 (0.0067)	-0.0081 (0.0071)	-0.0076 (0.0084)	-0.019** (0.0063)
Black pop. share, 1950	0.85*** (0.12)	0.91*** (0.23)	0.86*** (0.23)	0.80*** (0.23)	0.85*** (0.22)	0.56** (0.23)
Log population, 1950		-0.0024 (0.015)	-0.0070 (0.016)	-0.014 (0.018)	-0.0098 (0.017)	0.0082 (0.013)
Log area in sq mi		-0.029 (0.017)	-0.024 (0.018)	-0.030* (0.015)	-0.017 (0.023)	-0.046** (0.019)
Black TV ownership rate	-0.30*** (0.090)	-0.34*** (0.070)	-0.33*** (0.071)	-0.29*** (0.063)	-0.38*** (0.084)	-0.21** (0.071)
Black HS+ education	-0.39** (0.17)	-0.22 (0.19)	-0.14 (0.21)	-0.053 (0.22)	0.026 (0.19)	0.050 (0.16)
Black poverty rate	-0.43*** (0.088)	-0.57** (0.21)	-0.51** (0.21)	-0.58** (0.25)	-0.44** (0.19)	-0.028 (0.27)
Black employment rate	0.089 (0.13)	0.058 (0.23)	0.10 (0.22)	-0.033 (0.28)	0.38 (0.22)	0.11 (0.33)
White HS+ education		-0.13 (0.20)	-0.12 (0.20)	-0.13 (0.19)	-0.24 (0.20)	-0.047 (0.18)
White poverty rate		0.12 (0.23)	0.11 (0.23)	0.21 (0.30)	0.0046 (0.23)	-0.16 (0.23)
White employment rate		0.17 (0.28)	0.17 (0.25)	0.24 (0.30)	-0.0047 (0.26)	0.068 (0.38)
Detailed regions	No	No	Yes	Yes	Yes	No
State effects	No	No	No	No	No	Yes
Observations	57	57	57	57	57	57
R-Squared	0.72	0.77	0.78	0.75	0.76	0.86

The dependent variable is the African-American theater share in the MSA, averaged across the years 1950, 1951, 1952, 1954, and 1955. The sample is restricted to Southern MSAs.

Robust standard errors clustered by state are in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

The index of racial bias is the mean of standardized responses from racial attitude questions in public opinion polling in the late 1940's and 1950's.

Table 5: African-American and white theaters by MSA

	Log Black Theaters				Log White Theaters		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Seg. Dissim. Index, 1960	1.75** (0.71)	1.58** (0.56)	1.48** (0.65)	1.76** (0.65)	-0.063 (0.30)	-0.21 (0.39)	-0.56 (0.38)
Index of racial bias	-1.41* (0.67)	-1.62** (0.66)	-1.52* (0.70)	-1.13 (0.70)	-0.096 (0.70)	-0.080 (0.78)	-0.51 (0.44)
Number of lynchings	-0.014* (0.0069)	-0.014** (0.0053)	-0.010 (0.0073)	-0.012* (0.0067)	0.0050** (0.0018)	0.0057* (0.0027)	0.0031 (0.0024)
Log black population	0.73*** (0.072)	0.74*** (0.071)	0.86*** (0.11)	0.85*** (0.085)	-0.074 (0.084)	-0.077 (0.084)	-0.0040 (0.097)
Log white population	0.080 (0.15)	-0.019 (0.10)	-0.20 (0.16)	-0.55* (0.25)	0.91*** (0.13)	0.90*** (0.13)	0.85*** (0.18)
Black HS+ education		-3.20*** (1.00)	-2.49 (1.54)	-1.67 (1.65)		0.10 (0.83)	-1.83* (0.94)
Black poverty rate		-3.57*** (0.65)	-4.38*** (1.26)	-3.98*** (1.20)		0.057 (0.61)	-0.74 (0.50)
Black employment rate		0.93 (1.19)	1.26 (1.68)	2.09 (1.72)		-0.0019 (1.24)	-1.57* (0.81)
Black TV ownership rate		-1.71*** (0.46)	-2.00** (0.81)	-2.29*** (0.71)		0.44 (0.45)	0.55* (0.26)
White HS+ education			-0.81 (1.15)	-1.32 (1.20)			1.02* (0.52)
White poverty rate			0.93 (1.41)	0.65 (1.29)			0.60 (0.76)
White employment rate			0.37 (1.84)	0.13 (1.80)			0.41 (0.85)
% HH TV penetration, 1960			3.26 (3.63)	2.57 (3.11)			1.65 (2.46)
Log white theaters				0.43* (0.21)			
Region effects	No	No	Yes	Yes	No	No	Yes
Observations	55	55	55	55	57	57	57
R-Squared	0.80	0.87	0.88	0.89	0.85	0.85	0.90

The dependent variable is the log number of theaters of the stated type in the MSA. The sample is restricted to Southern MSAs.

Robust standard errors clustered by state are in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

The index of racial bias is the mean of standardized responses from racial attitude questions in public opinion polling in the late 1940's and 1950's.

Table 6: African-American theaters by county

	(1)	(2)	(3)	(4)	(5)	(6)
Seg. Dissim. Index, 1950	0.14*** (0.043)	0.10** (0.047)	0.11** (0.043)	0.11** (0.043)	0.10** (0.046)	0.11** (0.044)
Index of racial bias	-0.19 (0.12)	-0.31*** (0.092)	-0.50*** (0.11)	-0.50*** (0.10)		
Number of lynchings	0.0012 (0.0016)	-0.000086 (0.0014)	0.000089 (0.0017)		-0.00041 (0.0015)	0.00014 (0.0018)
Number of black-owned banks		0.024 (0.018)	0.022 (0.017)	0.022 (0.017)	0.024 (0.018)	0.019 (0.017)
Black pop. share, 1950	0.46*** (0.066)	0.43*** (0.063)	0.45*** (0.057)	0.45*** (0.054)	0.44*** (0.058)	0.46*** (0.058)
Black HS+ education	-0.46 (0.47)	-1.07*** (0.31)	-0.75** (0.35)	-0.76** (0.34)	-0.56 (0.53)	
Black poverty rate	-0.20 (0.22)	-0.36* (0.17)	0.17 (0.37)	0.17 (0.37)	-0.59 (0.36)	
Black employment rate	0.13 (0.52)	-0.15 (0.26)	1.14* (0.54)	1.14* (0.55)	0.17 (0.86)	
Log population		0.028** (0.0096)	0.037*** (0.010)	0.037*** (0.011)	0.029** (0.011)	0.034*** (0.011)
Log area in sq. mi.		-0.0058 (0.0062)	-0.016* (0.0082)	-0.016* (0.0079)	-0.0032 (0.0075)	-0.013 (0.015)
% Black pop. growth, 1950-60		0.082** (0.029)	0.070** (0.026)	0.070** (0.026)	0.081** (0.031)	0.051* (0.024)
White HS+ education		0.67*** (0.20)	-0.11 (0.25)	-0.11 (0.24)	0.36 (0.42)	
White poverty rate		0.23 (0.17)	-0.98** (0.37)	-0.98** (0.37)	0.021 (0.59)	
White employment rate		-0.097 (0.36)	-1.98** (0.85)	-1.99** (0.90)	0.23 (1.07)	
Number of wards in county	-0.0029 (0.0021)	-0.0055** (0.0023)	-0.0041** (0.0018)	-0.0041** (0.0019)	-0.0042* (0.0021)	-0.0032 (0.0019)
Detailed regions	No	No	Yes	Yes	Yes	No
State effects	No	No	No	No	No	Yes
Observations	299	296	296	296	296	296
R-Squared	0.32	0.39	0.40	0.40	0.38	0.42

The sample includes non-MSA counties in the South. The dependent variable is the African-American theater share in the county, averaged across the years 1950, 1951, 1952, 1954, and 1955.

The index of racial bias is the mean of standardized responses from racial attitude questions in public opinion polling in the late 1940's and 1950's.

Robust standard errors clustered by state are in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 7: Entry Model Estimates, MSA level

		(1)	(2)	(3)	
<i>Market size</i>	Change in Black population, 1950-60 (000s)	0.39 (0.42)	0.26 (0.51)	0.22 (0.42)	
	Black pop., neighbor counties	0.099 (0.13)	0.11 (0.11)	0.041 (0.087)	
<i>Variable profit</i>	Seg. Dissim. Index, 1960	0.22* (0.13)		0.24 (0.28)	
	Index of racial bias	-0.15 (0.092)		0.43 (0.31)	
	Number of lynchings	0.00084 (0.00077)		-0.0051* (0.0029)	
	White HS+ education	-0.029 (0.17)	-0.051 (0.17)	-0.094 (0.21)	
	White poverty rate	0.30 (0.20)	0.34 (0.28)	0.34 (0.29)	
	Black HS+ education	0.15 (0.23)	0.24 (0.25)	0.14 (0.29)	
	Black poverty rate	-0.72** (0.31)	-0.76* (0.40)	-0.91* (0.47)	
	Black TV ownership rate	-0.21 (0.16)	-0.23 (0.19)	-0.35 (0.27)	
	α_1	0.96** (0.40)	1.26** (0.59)	1.35** (0.65)	
	α_2	0.40** (0.17)	0.50** (0.24)	0.52* (0.27)	
	α_3	0.066*** (0.025)	0.072*** (0.027)	0.087*** (0.033)	
	<i>Fixed cost</i>	γ_1	-7.18 (6.82)	-6.70 (9.03)	-17.3 (12.6)
		Has black-owned bank	-1.17 (1.28)	-0.90 (1.55)	-0.38 (1.69)
1950 White theaters		0.034 (0.066)	0.0050 (0.077)	-0.028 (0.078)	
Log area in sq. mi.		0.27 (0.69)	1.36 (0.87)	1.93* (1.11)	
Log total population, 1950		1.89 (1.41)	1.85 (1.87)	2.24 (1.80)	
Seg. Dissim. Index, 1960			-9.93** (4.56)	-4.58 (6.47)	
Index of racial bias			13.5** (5.73)	39.7** (18.9)	
Number of lynchings			-0.11 (0.087)	-0.50** (0.21)	
Observations		52	52	52	
Log Likelihood	-20.1	-18.1	-16.4		

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table presents estimates of an ordered probit model of entry. A unit of observation is the MSA. The sample is restricted to Southern MSAs. The categories for the ordered probit likelihood function are 0, 1, 2, and 3 or more firms in an MSA. The sample is restricted to cities with fewer than 100 thousand black residents. Each column represents a separate specification, with a different set of included covariates. Within each column, coefficients are grouped according to the equation in which they appear.

Standard errors are in parenthesis. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8: Entry model estimates, non-MSA county level

		(1)	(2)	(3)
<i>Market size</i>	Change in Black population, 1950-60 (000s)	1.78*** (0.42)	1.90*** (0.39)	1.83*** (0.39)
	Black pop., neighbor counties	-0.0069 (0.020)	0.010 (0.022)	0.0040 (0.019)
<i>Variable profit</i>	Seg. Dissim. Index, 1950	0.19** (0.086)		0.19* (0.11)
	Index of racial bias	0.21* (0.12)		0.43** (0.18)
	Number of lynchings	0.0014 (0.0017)		0.0074* (0.0044)
	Median education 1950	0.019* (0.010)	0.015* (0.0089)	0.023** (0.0100)
	Log median income	0.0091 (0.036)	-0.0029 (0.032)	-0.012 (0.036)
	% HH TV penetration 1950	1.63** (0.77)	1.32* (0.71)	1.76** (0.76)
	Number of wards in county	-0.023*** (0.0065)		-0.034*** (0.0098)
	α_1	0.029 (0.24)	0.11 (0.23)	0.19 (0.25)
	α_2	0.16*** (0.021)	0.14*** (0.019)	0.16*** (0.021)
	α_3	0.055*** (0.013)	0.047*** (0.011)	0.060*** (0.015)
	<i>Fixed cost</i>	γ_1	1.70 (1.06)	0.65 (1.04)
Has black-owned bank		-0.61 (0.44)	-0.51 (0.43)	-0.50 (0.45)
1950 White theaters		-0.062* (0.036)	-0.062* (0.036)	-0.033 (0.038)
Log area in sq. mi.		-0.13 (0.11)	-0.086 (0.11)	-0.084 (0.11)
Log total population, 1950		0.38 (0.32)	0.53* (0.32)	0.37 (0.33)
Seg. Dissim. Index, 1950			-1.24** (0.55)	-0.083 (0.77)
Index of racial bias			0.56 (1.17)	3.32 (2.05)
Number of lynchings			-0.0077 (0.026)	0.12* (0.075)
Number of wards in county			0.12* (0.069)	-0.14 (0.11)
Observations		273	273	273
Log Likelihood		-192.6	-198.8	-185.5

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table presents estimates of an ordered probit model of entry. A unit of observation is the county. The sample is restricted to Southern counties with fewer than 25 thousand black residents. The categories for the ordered probit likelihood function are 0, 1, 2, and 3 or more firms in a county.

Standard errors are in parenthesis.

Table 9: Entry Thresholds

	Market size thresholds			Per-firm thresholds		
	S_1	S_2	S_3	s_1	s_2	s_3
<i>Panel A: MSA-level thresholds</i>						
Specification (1)	8.53	28.36	45.97	8.53	14.18	15.32
Specification (2)	8.52	30.38	48.27	8.52	15.19	16.09
Specification (3)	8.65	27.96	44.38	8.65	13.98	14.79
<i>Panel B: County thresholds</i>						
Specification (1)	8.68	31.57	344.27	8.68	15.79	114.76
Specification (2)	9.55	26.53	64.50	9.55	13.27	21.50
Specification (3)	8.67	28.70	184.23	8.67	14.35	61.41

This table displays the estimated required black population in thousands required to support the stated number of firms. These figures are obtained from the baseline model estimates displayed in Table 7.

A Appendix

A.1 Alternative segregation measure

Table A1: MSA-level black theater share, Isolation index

	(1)	(2)	(3)	(4)	(5)	(6)
Isolation Index, 1960	0.13*** (0.046)	0.12* (0.059)	0.079* (0.044)	0.069 (0.043)	0.10 (0.061)	0.12** (0.056)
Index of racial bias	-0.20* (0.11)	-0.24** (0.11)	-0.26** (0.11)	-0.30*** (0.10)		
Number of lynchings	-0.0031*** (0.00096)	-0.0021** (0.00098)	-0.0014 (0.0011)		-0.0023** (0.0011)	-0.0018** (0.00083)
Detailed regions	No	No	Yes	Yes	Yes	No
State effects	No	No	No	No	No	Yes
Observations	57	57	57	57	57	57
R-Squared	0.58	0.64	0.69	0.68	0.65	0.84

The dependent variable is the African-American theater share in the MSA, averaged across the years 1950, 1951, 1952, 1954, and 1955. The sample is restricted to Southern MSAs.

Robust standard errors are in parentheses.

*, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

A.2 Polling questions used to construct racial bias measures

We calculated our racial bias index using Gallup poll data from different surveys conducted in different years. While we summarize in the data section how the index is calculated, we describe in this data appendix in more detail the questions that we use for our racial bias index. In what follows, we include for each variable the survey date and number, the text of the question, and the possible responses.

The values of the racial bias index are intuitive and correlate strongly with other measures of racial bias. In Table A2, we show the states with the ten highest and lowest values of the index. States with strong racial animus are generally located in the South, while whites in the Northeast and West are more racially tolerant. The values of the racial bias index strongly predict the support for Strom Thurmond in the 1948 presidential election. Thurmond, at the time the governor of South Carolina, ran for president specifically predicated on preserving segregation. In Figure A4, we plot the log vote share for Thurmond by state against the state racial bias index for the sixteen states where Thurmond received votes. The racial bias index is able to explain 59 percent of the variation in the log Thurmond vote share.

Table A2: Racial bias scores by state

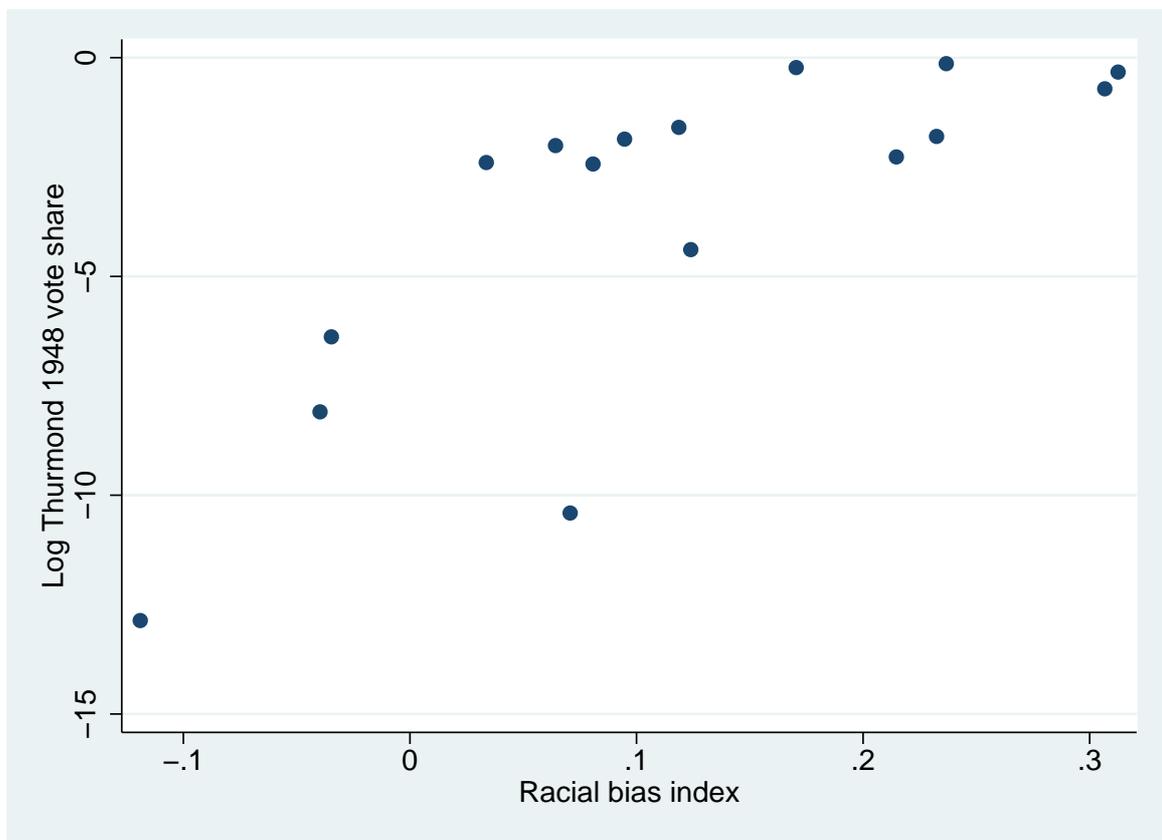
Highest ten		Lowest ten	
South Carolina	0.313	Massachusetts	-0.154
Louisiana	0.307	Rhode Island	-0.168
Mississippi	0.237	Oregon	-0.187
Arkansas	0.232	Arizona	-0.195
Virginia	0.215	Nevada	-0.199
Kansas	0.171	Delaware	-0.210
Alabama	0.170	Maine	-0.232
South Dakota	0.158	New Mexico	-0.233
Missouri	0.145	Colorado	-0.263
Kentucky	0.124	Idaho	-0.274

(1) Views of segregation in schooling

Gallup Poll 531 in May 1954, Gallup Poll 532 in June 1954, Gallup Poll 541 in January 1955, Gallup Poll 546 in April 1955, and Gallup Poll 556 in November 1955: “The U.S. Supreme Court has ruled that racial segregation in all public schools is illegal. This means that all children, no matter what their race, must be allowed to go to the same schools. Do you approve or disapprove of this decision? 1. Approve; 2. Disapprove; 3. No opinion; 4. Both; 0. No code or no data.”

Gallup American Institute of Public Opinion (AIPO) Poll 538 conducted in October 1954: “What are your views regarding the plan of US Supreme Court to allow Negro and white

Figure A4: Racial bias and Thurmond's 1948 presidential vote share by state



children to attend same school? 1. Carry out court order but gradually; 2. Integrate schools immediately; 3. Find a way to preserve segregation where it is common practice.”

Gallup Poll 560 from February 1956: “Have you heard or read about the debate in Congress over the Bill about Federal Aid to education for building public schools? Would you like to see the Bill passed if some money is given to communities in the South where White and Negro children are segregated, or kept apart? 1. Yes, Would; 2. No, Would not; 3. No opinion; 0. No code or no data.”

(2) Views of segregation in transportation

Gallup Poll 414 in March 1948, Gallup Poll 439 in March 1949, and Gallup Poll 450 in November 1949: “Another of Truman’s proposals concerns inter-state travel. Do you think Negroes should or should not be required to occupy a separate part of a train or bus when traveling from one state to another? 1. Should; 2. Should not; 3. No opinion; 0. No code or no data.”

(3) Views of equal employment opportunity

Gallup Poll 414 in March 1948, Gallup Poll 439 in March 1949, and Gallup Poll 450 in November 1949: “One of Truman’s proposals concerns employment practices. How far do you yourself think the Federal Government should go in requiring employers to hire people without regard to their race, religion, color, or nationality? 1. All the way – employers should be impartial, fair, we all have to live, government should see that that right is guaranteed; 2. None of the way – such matters are not within the province of the government – it is up to employer, each man – he should not be dictated to, keep his freedom; 3. Part of the way – not in all cases, depends on type of work, not wholehearted approval; 4. States, province – it is not a matter for the Federal Government, should be left up the states; 5. Qualified as to race, religion, color: Not Russians, not Negroes, etc; 6. Creed shouldn’t enter into it, but color is another thing; 7. It doesn’t matter how far they go - there are all kinds of tricky ways of evading the law; 8. Don’t know, no answer; 0. No code or no data.

(4) Opinion on an African-American president Gallup Poll AIPO 604 from September 1958: “Between now and 1960, there will be much discussion about the qualifications of presidential candidates – their education, age, religion, race and the like ... if your party nominated a generally well-qualified man for president and he happened to be a negro, would you vote for him?”

Gallup Poll AIPO 622 from December 1959: “Between now and the time of conventions in 1960, there will be much discussion about the qualifications of presidential candidates – their

education, age, religion, race, and the like ... if your party nominated a generally well-qualified man for president and he happened to be a negro, would you vote for him?." The answers are "1. Yes; 2. No; 3. No opinion; 0. No code or no data."

(7) Integration of troops

Gallup Poll 419 conducted in May 1948: "Would you favor or oppose having Negro and white troops throughout the U.S. Armed Services live and work together – or should they be separate as they are now? 1. Together; 2. Separated; 3 Depends on the colored fellows; 4. Separated if they are treated the same; 5. Leave it up to soldiers; 6. Work together but live separately; 7. This should be a very slow gradual mixing; 8. Depends on class of people; 9. Together if they can get along; 10. Miscellaneous; 11. No opinion; 0. No code or no data; 99. Inapplicable."

Gallup Poll 419 conducted in May 1948: "It has been suggested that white and colored men serve together throughout the U.S. Armed Services – that is, live and work in the same units. Do you think this is a good idea or a poor idea? 1. Good; 2. Fair; 3. Poor; 4. Poor for Negroes – No chance for advancement; 5. Good if Negro same as white, they can work together; 6. Depends on individual; 7. Not Southern troops; 8. Fair, if handled right; 9. Theoretically, yes, practically no; 10. Miscellaneous; 11. No opinion; 0. No code or no data; 99. Inapplicable."

(9) Racial equality.

Roosevelt Survey 52 conducted in 1946: "Now, I'd like you to pick out from the statements on this card the one that best describes the way you feel about Negroes: 1. I believe Negroes should have more opportunities than they do now; 2. Because Negroes are so different from white people as a race, I believe they should not be allowed to mix with whites in any way; 3. Although Negroes should not be mistreated by whites, the white race should always keep its superior position; 4. I believe Negroes should have the same privileges and opportunities as white people; 5. Don't know; 0. No code or no data."

(10) Racial attitudes in schooling.

Gallup Poll AIPO 546 conducted in April 1955: "Would you object to having your children attend a school where the majority of pupils are Negroes? 1. Yes; 2. No; 3. No opinion; 9. No answer, inapplicable."

Gallup Poll AIPO 414 conducted in September 1958: "Would you, yourself, have any objection to sending your children to a school where a few of the children are colored? 1. Yes; 2. No; 3. No opinion; 9. Inapplicable." If respondent answered No, then ask "what if half of the children are colored? 1. Yes; 2. No; 3. No opinion; 9. Inapplicable." If respondent answered

No, then ask “What if more than half the children are colored? 1. Yes; 2. No; 3. No opinion; 9. Inapplicable.”

A.3 Details of Bresnahan-Reiss entry estimation

As described in the text, theater profits are decomposed into the per-consumer variable profits, market size, and fixed costs:

$$\Pi_{N,m} = V_N(\mathbf{X}_m; \alpha, \beta)S(\mathbf{Y}_m; \lambda) - F_N(\mathbf{W}_m; \gamma) + \epsilon_m,$$

where V_N is a function describing the variable profits per consumer in a market with N entrants, S is the market size function capturing the number of customers in the market, and F_N is the entrant’s fixed costs of entry. The first term, $V_N * S$, represents the total variable profits for a firm. The parameters α , β , λ , and γ are to be estimated, and \mathbf{X}_m , \mathbf{Y}_m , and \mathbf{W}_m are the market-level demand shifters, market-size shifters, and cost shifters. The term ϵ_m is a zero-mean iid normally distributed error term assumed to capture the factors that affect profits and are unobserved by the econometrician. Because the variance of the error term is not separately identified from the scale of the parameters, we normalize the variance to one.

We model the market size function $S(\mathbf{Y}_m; \lambda)$ as

$$S(\mathbf{Y}_m; \lambda) = B_m + \lambda_1 \Delta B_m + \lambda_2 B_{-m}.$$

where B_m is the black population in 1950, ΔB_m is its change in levels from 1950-60, and B_{-m} is the black population in counties neighboring market m . To normalize the market size in units of current town population, we set the coefficient of B_m to one.

The variable profits per consumer in the market, $V_N(\mathbf{X}_m; \alpha, \beta)$, are given by

$$V_N = \alpha_1 + \mathbf{X}_m \beta - \sum_{n=2}^N \alpha_n, \quad (3)$$

where $\alpha_1 + \mathbf{X}_m \beta$ stands for monopoly profits and α_n is the degree to which variable profits decrease with the number of entrants. The vector \mathbf{X}_m contains variables that affect profits per customer.

Finally, we specify fixed costs $F_N(\mathbf{W}_m; \gamma)$ as

$$F_N = \gamma + \mathbf{W}_m \gamma_L, \quad (4)$$

where the vector \mathbf{W}_m contains variables affecting fixed costs.

The BR model relies on an equilibrium condition: if we observe N theaters in market m , it

must be that in equilibrium $\Pi_N \geq 0$ and $\Pi_{N+1} < 0$ for market m . For instance, the probability of observing markets with no firms equals

$$\Pr(\Pi_1 < 0) = 1 - \Phi(\bar{\Pi}_1),$$

where $\Phi(\cdot)$ is the cumulative normal distribution function and $\Pi_1 = \bar{\Pi}_1 + \epsilon_m$. We estimate the profits of markets with three or more theaters in a market by setting $\Pr(\Pi_3 \geq 0) = \Phi(\bar{\Pi}_3)$. Assuming average profits decrease with firm entry in equilibrium ($\bar{\Pi}_1 \geq \bar{\Pi}_2 \geq \bar{\Pi}_3 \geq \dots$), the probability of observing N in equilibrium is

$$\Pr(\Pi_N \geq 0 \text{ and } \Pi_{N+1} < 0) = \Phi(\bar{\Pi}_N) - \Phi(\bar{\Pi}_{N+1}).$$

By assuming ϵ_m is an iid draw across markets, an ordered probit yields the model parameter estimates.²⁰

BR defines the “entry threshold,” the minimum market size required to support exactly N firms:

$$S_N = \frac{F_N}{V_N}, \quad (5)$$

which we obtain by equating Π_N to zero and solving for S . S_N can increase for a given number of theaters either due to a fall in variable profits per customer (V_N) or an increase in the fixed costs (F_N). We calculate the population entry thresholds by plugging in for the estimated elements of equation (5)

$$\hat{S}_N = \frac{\hat{F}_N}{\hat{V}_N} = \frac{\hat{\gamma}_1 + \bar{W}\hat{\gamma}_L + \sum_{n=2}^N \hat{\gamma}_n}{\hat{\alpha}_1 + \bar{X}\hat{\beta} - \sum_{n=2}^N \hat{\alpha}_n},$$

where the bar over each variable stands for the sample mean of the variable. The estimated per-theater entry thresholds are $\hat{s}_N = \hat{S}_N/N$.

The separate identification of fixed costs from variable profits is based on two strong assumptions. First, we assume the \mathbf{X}_m variables we choose only impact variable profits but not fixed costs, whereas the \mathbf{W}_m variables affect only fixed costs. In reality, however, some variables may affect both, and in our specifications several variables are common to both \mathbf{X}_m and \mathbf{W}_m .

The second assumption is the functional form of the profit function: the determinants of variable-profits enter the profit function as an interaction with the market size, whereas the fixed-costs determinants \mathbf{W}_m enter the profit function in such a way that those determinants

²⁰We assume each market is isolated both in demand and costs so we can treat each observation as an equilibrium outcome from the game. This approximation may not be appropriate in some local markets, however for MSAs the assumption is a weak one.

will impact the fixed costs regardless of the population in the market. Although we believe the functional form represents a good approximation of the profit function, this form is to some extent an arbitrary one, and we cannot rule out the possibility that the model is misspecified.