BLACK UNEMPLOYMENT AND INFOTAINMENT

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Why has the black unemployment rate in the United States been more than twice that of whites over the past three decades? This article builds on earlier efforts to explain this conundrum using a discrimination framework, but it refocuses the explanation onto indirect cultural factors that motivate discriminatory behavior. Consistent with a call for using social phenomena to explain economic outcomes, the article reveals that "infotainment" (information and entertainment) contributes to increases in the black-white unemployment rate gap and to higher black unemployment. (*JEL* J164, J71, Z10)

I. INTRODUCTION

Why has the black unemployment rate in the United States been more than twice that of whites over the past three decades? From 1972 to 2002, the average black unemployment rate was 12.4%, while the average unemployment rate for whites was 5.5% (Figure 1). Gilman (1965), Arrow (1972a, 1972b), Shulman (1987), and Darity and Mason (1998) represent just a few scholars who have sought to explain this conundrum using a discrimination framework. This article builds on those earlier efforts, but refocuses the explanation onto indirect cultural/social phenomena that motivate discrimination. It is hypothesized that media forms that reflect information and entertainment ("infotainment") and highly visible social phenomena interact to produce negative consumption externalities and decreased demand for black labor. This hypothesis is consistent with Loury's (1998) call for the use of social phenomena to explain economic outcomes. The underlying demand-side hypothesis is tested using single equation regression models to determine whether variables representing infotainment and social phenomena explain the black-white unem-

ployment rate gap and the black unemployment rate. In addition, the statistical analysis includes tests for causal and cointegration relationships and simultaneous equation systems to identify the path by which these social phenomena affect economic outcomes.

Section II of this article establishes a theoretical framework as a prelude to the analysis and defines the infotainment and social phenomena that are hypothesized to contribute significantly to black employment outcomes. Sections III and IV present variable consistent analytical models and the results, respectively. Section V provides conclusions.

II. THEORETICAL FRAMEWORK

Loury (1998) called on economists to "look beyond what happens within markets" (p. 117) when examining the topic of racial or gender discrimination. This article's key thrust is consistent with Darity, Mason, and Stewart (2006) in that nonblacks may justify their decision to operate as "racialists" when they observe blacks through infotainment in stereotypical and antisocial roles. Further, Darity, Mason, and Stewart (2006) argue that nonblacks may justify the "us" versus "them" mentality that is intrinsic to acts of employment
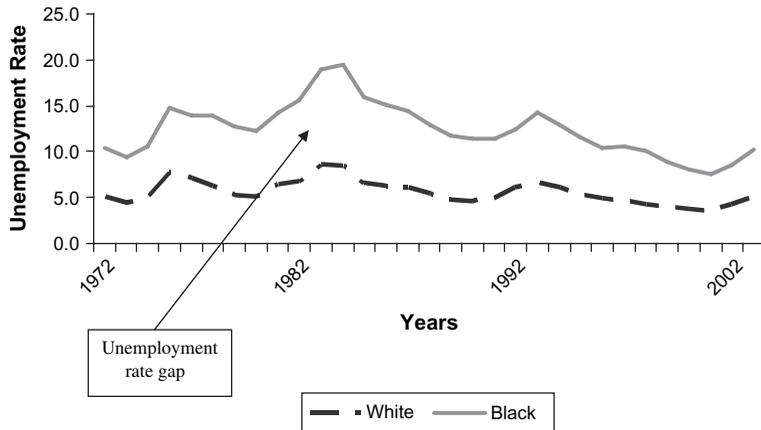
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ABBREVIATIONS

AIDS: Acquired Immunodeficiency Syndrome
GDP: Gross Domestic Product
HIV: Human Immunodeficiency Virus

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FIGURE 1
Overall Black-White Unemployment Rate Gap, 1972–2002

Source: Bureau of Labor Statistics, U.S. Department of Labor.

discrimination in a "split labor market" paradigm (Darity 1989). The latter, of course, increases the black-white unemployment rate gap and the black unemployment rate.

The black-white unemployment rate gap and the black unemployment rate could be viewed through one or all three discrimination theory lenses that Loury (1998) discussed: taste, statistics, and market. In effect, this article has implications for all three theories because the econometric models that are presented permit a discriminator to be interpreted as discriminating based on one or all three motivations. An employer who decides to engage in employment discrimination against a black applicant may be motivated by a taste derived from infotainment, by a statistical framework based on signals observed through infotainment, or by broad market conditions learned while consuming infotainment. Similarly, a discriminator's decision could be based on knowledge or perception of blacks' involvement in crime (especially drug-related crimes), human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS), hip-hop culture, or on perceived differences between blacks and unauthorized immigrants; this knowledge is likely to be obtained through consumption of infotainment.

Television, movies, newspaper, popular periodicals, and the Internet are the primary media genres that embody the information and entertainment characteristics that consti-

tute infotainment. How can infotainment sources contribute to black unemployment? This can be accomplished by imprinting adverse images of blacks on the minds of hiring officials. The imprinting process can occur at almost any point in the hiring official's life; admittedly, given decay effects, more recent imprinting experiences are likely to have a more pronounced effect on hiring decisions. The focus here is on television infotainment because it is the most pervasive form, and the remaining forms are generally subsumed within it.[1]

DeFleur and DeFleur (1967) determined nearly 40 yr ago that perceptions are affected by television, particularly when an observer (consumer) has limited real-life experience concerning a topic.[2] In addition, Gerbner and Gross (1976) found three decades ago that exposure to television is correlated with perceiving the world more in accordance with the way it is portrayed in television dramas.

1. The *Statistical Abstract of the United States: 2006* from the U.S. Department of Commerce, Bureau of the Census (2005a), reported that persons in the United States spent an average of 1,745 h consuming television during 2003, 1,002 h listening to the radio, 184 h listening to recorded music, 171 h reading daily newspapers, 121 h reading consumer magazines, and 108 h reading consumer books (see table 1116 in Media Usage and Consumer Spending: 2000–2008).

2. Although DeFleur and DeFleur's study featured television as a transmitter of knowledge about occupations, it is appropriate to extrapolate their findings to cases where television is used to transmit knowledge about social groups.

Kang (2005) discusses current research that reaches into the subconscious and reveals how racial schemas, which are promulgated through infotainment, produce adverse responses on the part of whites toward blacks. Kang (2005) exposes the prevalence of these (unconscious) adverse responses to blacks in key social and economic interactions, including in employment and hiring processes.[3]

Add to these research findings the fact that infotainment industries accounted for 4.5% of U.S. gross domestic product (GDP) for 2005, with value added amounting to $555.2 billion and it becomes clear that infotainment's power to persuade creates demand for these industries' services and is responsible for their size.[4]

To further buttress this theoretical framework, note the following circumstances concerning the absence of countervailing real-life experiences to counteract the effects of adverse images in infotainment.

- Reporting for the U.S. Census Bureau, Iceland, Weinberg, and Steinmetz (2002) indicate that from 1980 to 2000, an index of racial housing spatial proximity decreased only 4.3% implying little change in the extent to which blacks continue to reside disproportionately in contiguous areas or segregated enclaves, which remain quite apart from whites.
- Tatum (2003) discusses continued patterns of voluntary segregation in public schools in her recent book, *Why Are All the Black Kids Sitting Together in the Cafeteria? And Other Conversations About Race*. In addition, Duhon (2002) describes how black elementary and secondary public school students are often "tracked" into highly segregated classes.

- Although their study focuses on a predominantly white university in the Midwest, Radloff and Evans (2003) findings concerning continued social distancing between blacks and whites is apparent on college campuses across the nation.
- Klagge (2003), a professor at Virginia Tech University, concludes that "few multiracial churches are successful" (p. 6), and therewith echoes Martin Luther King's oft-quoted statement that "the most segregated hour of Christian America is eleven o'clock on Sunday morning."

These findings suggest that infotainment imprinting experiences are simultaneously substantiated and reinforced by the above-described segregation; that is, whites may not experience sufficient opportunities to disconfirm and correct adverse infotainment images of blacks.

Following Loury's (1998) advice, in addition to infotainment, the roles of four social phenomena—black drug-related arrests, black HIV/AIDS cases, hip-hop culture, and perceived differences between blacks and unauthorized immigrants—are examined as possible factors in the black unemployment problem. Infotainment, especially television, is widely recognized as presenting a preponderance of comical images of blacks as explained by Bogles (1989, 2001) and Cosby (1994). These images make blacks appear as unfocused personalities incapable of making a serious and positive contribution in the work environment to augment a firm's bottom line. In fact, for the period 1972–2002, of 778 black prime-time television programs analyzed as part of this study, 378 or 48.6% were classified as comedies.[5] Blacks are presented as simply too busy being funny to be busy producing, which constitutes a signal that they should not be hired. In the econometric models presented in this article, the number of prime-time television programs featuring blacks in primary or secondary roles (credited cast members) serves as a proxy for infotainment.

There are several key social phenomena that could engender adverse notions about blacks among whites; the aforementioned four highly visible social phenomena are incorporated into the statistical models. First, crime

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3. Kang (2005) discusses cognition studies that incorporate Implicit Association Tests and other studies that test for racial discriminatory responses: for example, a test that identified stronger expressions of anger/frustration when a black versus a white face was flashed to a subject on a computer screen immediately before a computer crashes during processing; a test that indicated a significantly stronger tendency for subjects to shoot blacks versus whites who were unarmed during computerized simulations; and a test showing that prospective employers responded at a 50% higher rate to identical resumes that reflected fictitious "white" versus "African American" names.

4. Infotainment industries are industries in the 1997 North American Industry Classification System major industry group 51, including publishing, motion pictures and sound recording, broadcasting and telecommunications, and information and data processing. The statistics are presented in Howells, Barefoot, and Lindberg (2006).

5. A database that reflects a variety of information about each of these programs is available from the author upon request.

is considered; however, a more focused and potentially damaging subset of the crime spectrum is the abuse of illegal drugs.[6] The idea that blacks generally abuse drugs could justify in the minds of employers that blacks would not be good employees and, hence, cause employers to engage in hiring discrimination against blacks. The annual number of black arrests for drug offenses serves as the variable for the models based on *Uniform Crime Report* data from the U.S. Department of Justice, Federal Bureau of Investigation (1972–2003). In a modern society, incarceration is a primary tool for removing undesirables. Much has been written about the disproportionate level of black arrests historically; Blumstein (2002) shows that black arrests and the related disparity in sentencing can only be adequately explained using race variables. Thus, one can view arrests as an iconic variable that captures cultural sentiments on an in-groups (whites) versus out-groups (blacks) basis.

Second, the role of sexually transmitted diseases among blacks is examined as a possible reason for hiring discrimination and a higher black unemployment rate. Employees with HIV/AIDS impose a cost on employers that is not imposed by healthy employees. Employers may attempt to avoid this cost by not hiring employees that they suspect have HIV/AIDS. Furthermore, puritanical perspectives may motivate adverse opinions of blacks who contract AIDS and contribute to employers' decision to not hire blacks. Data on the annual number of black HIV/AIDS cases from the Health Statistics, Centers for Disease Control (2005) are used in the models.

Third, after 400 yr as the dominant culture in the United States and with other ethnicities mimicking, to some degree, white culture, it may be somewhat unsettling for whites to experience blacks developing a strong, new, and independent hip-hop culture, which is primarily based on African and African Diaspora cultures. Whites who view hip-hop and Rap music and culture as alien and nonconformist might respond to this culture by rejecting as employees blacks who are aligned with that culture. The annual number of Billboard Rap (hip-hop) Top 25 Singles from Billboard Research Services (2005b) that appear on the Billboard Top

100 Chart from Billboard Research Services (2005a) proxies for the penetration of this new culture into mainstream American culture.

Fourth, over the past three decades, increasing numbers of immigrants have entered the United States. What impact have these immigrants had on black unemployment? Steinberg (2005) seeks to answer this question by surveying key contributions to the literature on this topic. For example, Ogbu (1991) and Lim (2001) account for the employment success of immigrants vis-à-vis blacks by citing differences in social capital between the two groups. That is, immigrants are portrayed as possessing higher levels of motivation and interest in working than blacks. Simon (1991) argues that, overall, immigrants do not exacerbate unemployment. On the other hand, Moss and Tilly (2001) conclude that many employers simply prefer immigrants over blacks; such preferences should result in higher black unemployment. In a very recent study, Borjas, Grogger, and Hanson (2006) conclude that the flow of immigrants is correlated with reductions in employment for black males and with increases in the black male incarceration rate. Moreover, immigrants themselves likely contribute to the black-white unemployment rate gap and black unemployment. Chang and Diaz-Veizades (1999) provide clear evidence that black stereotypical media images reach international audiences and contribute to the formation of adverse opinions of black Americans among future emigrants to the United States. Logically, these opinions contribute to immigrants' decisions to not hire blacks after they arrive in the country. Because unauthorized immigrants have filled many jobs formerly occupied by blacks, the effect of immigration on black unemployment is tested using data on unauthorized immigrant flows that were obtained from the *2000 Decennial Census* from the U.S. Department of Commerce, Bureau of the Census (2003) and the *2004 American Community Survey* from the U.S. Department of Commerce, Bureau of the Census (2005b).[7]

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6. Later in this article, a broader measure of crime—total black arrests (TBA)—is used in simultaneous equation models.

7. A time series for the flow of unauthorized immigrants was constructed for the period 1970–2004 by linking *2000 Decennial Census* from the U.S. Department of Commerce, Bureau of the Census (2003) and *2004 American Community Survey* data on the reported "year of entry" for foreign-born immigrants who subsequently became "citizen by naturalization" or were "not citizen" at the time of reporting.

Because infotainment, particularly television, serves as the great communicating medium that transmits information about social phenomena, it is important to test the impact of infotainment, black drug-related arrests, black AIDS cases, hip-hop culture, and unauthorized immigration variables in the models that have been selected to examine the black-white unemployment rate gap. Note that because the four aforementioned social phenomena are not completely independent of television (i.e., they appear often in television programming), it may be difficult to parse precisely all the effects of the social phenomena variables when they appear in models that also contain the infotainment variable.

III. MODELS

As a starting point, Figures 1–3 provide graphical representations of the statistical relationships that are analyzed in this article. Figure 1 shows the overall black-white unemployment rate gap for the study period; the black unemployment rate is persistently at least twice that of the white unemployment rate, with the gap peaking during the 1982 U.S. economic recession. Figure 2 shows the relationship between the first differences in our featured infotainment measure (black prime-time television programs) and the overall black-white unemployment rate gap and the gap by gender. Figure 3 presents the relationship between the first differences in our featured infotainment measure and the overall black unemployment rate and the rate by gender. While the companion series shown in Figures 2 and 3 do not reflect identical variation, the variation appears to be closely correlated. Hence, we use the econometric models discussed below to explore the nature of these relationships.

A. Single Equation Models

Two primary econometric model specifications were developed to test the hypothesis that infotainment—in this case television—and the aforementioned social phenomena help explain black unemployment. First, drawing on Gilman (1965), the black-white unemployment rate gap is modeled using both market and social phenomena as covariates.

$$(1) \quad \Delta(\text{BUR}_{it} - \text{WUR}_{it})$$
$$= \beta_1 + \beta_2 \Delta \text{GDP}_t + \beta_3 \Delta T_t$$
$$+ \beta_4 \Delta(\text{BEXP}_{it} - \text{WEXP}_{it})$$
$$+ \beta_5 \Delta(\text{BAYS}_{it} - \text{WAYS}_{it})$$
$$+ \sum_{m=1}^{4} \beta_{6-9} \Delta \text{SP}_{mt} + \beta_{10} \Delta(T_t \times \text{GDP}_t)$$
$$+ \beta_{11} \text{TR}_t + \varepsilon.$$

where Δ represents first difference; the βs are the coefficients; the W and B prefixes on the unemployment rate (UR) variable from the U.S. Department of Labor, Bureau of Labor Statistics (1972–2003), and the work experience (EXP) and average years of schooling (AYS) variables from the U.S. Department of Commerce, Bureau of the Census (1972–2003) stand for white and black, respectively; $i = 1, 2,$ and 3 (1 for all whites or blacks, 2 for males, and 3 for females); t counts time over the years 1972–2002; GDP is for real gross domestic product from the U.S. Department of Commerce, Bureau of Economic Analysis (2005); T is for the number of prime-time television programs on the major networks that featured blacks in primary or secondary roles (credited cast members); SP is for the aforementioned social phenomena such that $m = 1$ (black drug arrests), 2 (black HIV/AIDS cases), 3 (the number of Billboard Top 25 Rap Singles), and 4 (unauthorized immigrant flows); and $T \times$ GDP is an interaction term that accounts for the multiplicative effects of the two previously described constituent variables on the dependent variable. This interaction term is included because the black-white unemployment rate gap and black unemployment rate are affected by not only overall economic activity as reflected in the GDP measure and by the number of black prime-time television programs but also by the joint interaction of these two variables. Excluding the interaction term would result in misspecification of the models and would lead to a biased interpretation of the relationship between the two constituent variables and the models' dependent variables. Finally, TR is a time trend and ε is assumed to meet the classic assumptions associated with error terms in linear regression models. Equation (1) is applied to the full sample and to subsamples of only men and only women.

To aid our interpretation of the results of Equation (1), we also estimate a separate set

FIGURE 2
(a) First Differences in the Overall Black-White Unemployment Rate Gap and Black Television Programs, (b) First Differences in the Black-White Male Unemployment Rate Gap and Black Television Programs, (c) First Differences in the Black-White Female Unemployment Rate Gap and Black Television Programs
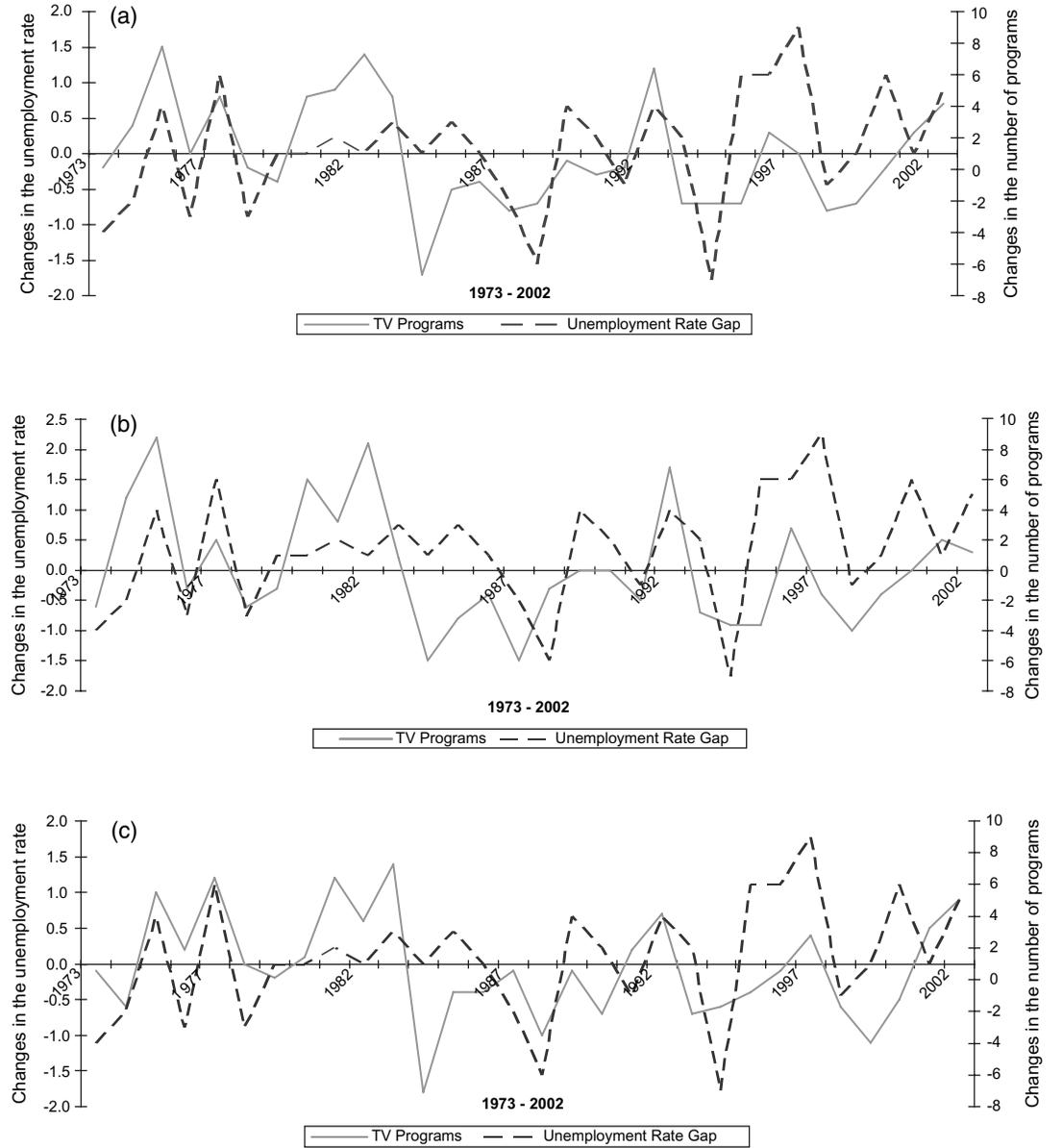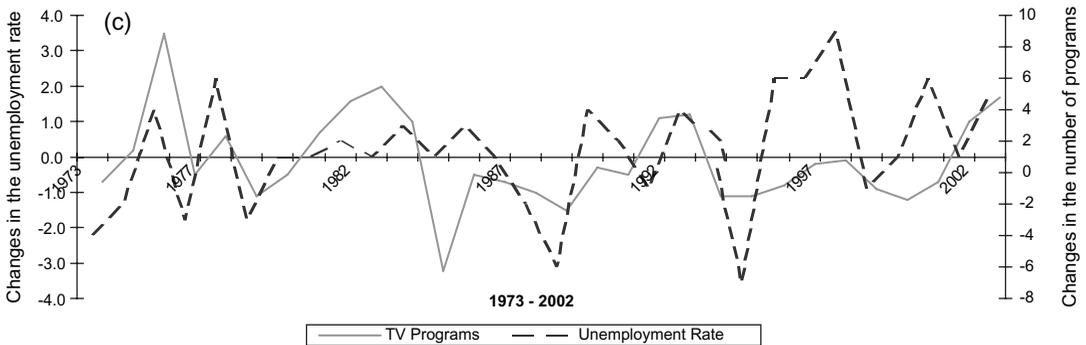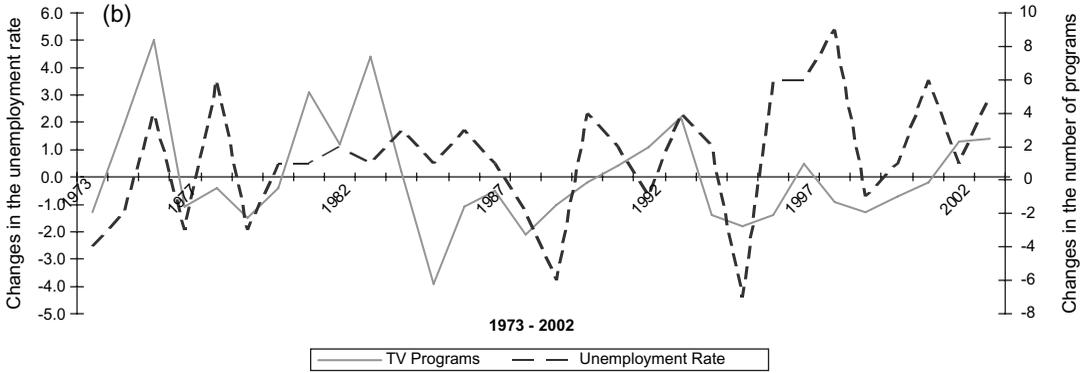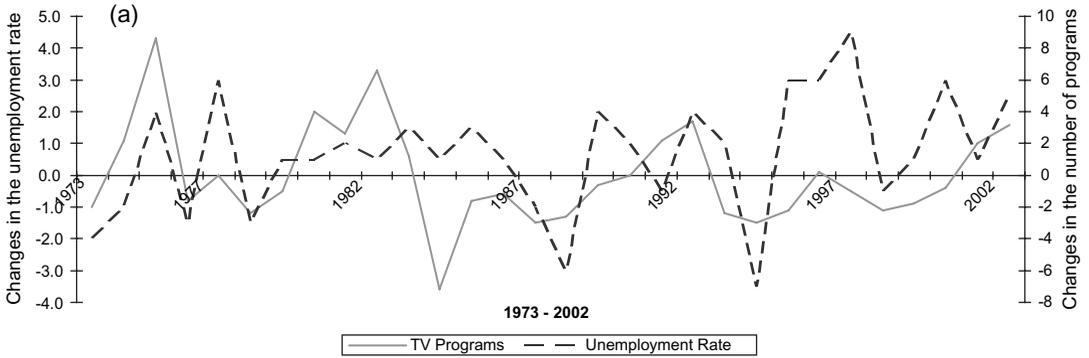
FIGURE 3

(a) First Differences in the Overall Black Unemployment Rate and Black Television Programs,
(b) First Differences in the Black Male Unemployment Rate and Black Television Programs,
(c) First Differences in the Black Female Unemployment Rate and Black Television Programs

of equations for the overall, male, and female black unemployment rates (Equation (2)).

$$(2) \quad \Delta BUR_{it} = \beta_1 + \beta_2 \Delta GDP_t + \beta_3 \Delta T_t$$
$$+ \beta_4 \Delta BEXP_{it} + \beta_5 \Delta BAYS_{it}$$
$$+ \sum_{m=1}^{4} \beta_{6-9} \Delta SP_{mt} + \beta_{10} \Delta (T_t$$
$$\times \; GDP_t) + \beta_{11} TR_t + \varepsilon.$$

Table 1 provides a complete list of variables that are used in Models 1–6.[8] Table 2 provides a summary of the anticipated signs on the coefficients in each model. Generally, positive signs are expected on all coefficients, with the following exceptions:

• For all models, the coefficients on the GDP variable are expected to reflect negative signs, which is consistent with a stylized fact about the inverse relationship between growth in output and unemployment.

• The coefficients on the black-white work experience gap and black work experience variables are expected to reflect negative signs because increases in the black-white work experience gap and increases in black work experience generally increase job opportunities and therefore are expected to reduce the unemployment rate gap and lower the black unemployment rate, respectively.

• The coefficients on the black-white average years of schooling gap and the black average years of schooling variables are expected to show negative signs. This is consistent with the theory that higher levels of knowledge and training make job candidates more suitable for hiring, thereby reducing the black-white unemployment rate gap and lowering the black unemployment rate.

After estimating the single equation regression models just described, it appeared logical to test the structure of the relationship between the key variables under study: the black-white unemployment rate gap and black prime-time television programs (infotainment). First, we use Granger's (1969) method to test the variables for causality and the Engle and Granger (1987) method to tests the variables for cointegration. Finally, we examine a simultaneous equation system where employment, total black arrests, and an index of black adverse images that appear in television programs are the dependent variables.

The following systems of structural equations were posited for Models 1–3:

$$(3A) \quad \Delta(BUR_{it} - WUR_{it})$$
$$= \beta_1 + \beta_2 \Delta GDP_t$$
$$+ \beta_3 \Delta(BEXP_{it} - WEXP_{it})$$
$$+ \beta_4 \Delta(BAYS_{it} - WAYS_{it})$$
$$+ \beta_5 \Delta TBA_{it} + \beta_6 \Delta(T_t \; \times \; GDP_t)$$
$$+ \beta_7 TR_t + u_{1t}.$$

$$(3B) \quad \Delta TBA_{it} = \gamma_1 + \gamma_2 \Delta TIND_t + \gamma_3 \Delta BDA_{it}$$
$$+ \gamma_4 \Delta BAC_t + \gamma_5 \Delta HH_t + \gamma_6 \Delta M_t$$
$$+ \gamma_7 \Delta TR_t + u_{2t}.$$

$$(3C) \quad \Delta TIND_t = \alpha_1 + \alpha_2 \Delta T_t + \alpha_3 \Delta(BI_t - WI_t)$$
$$+ \alpha_4 \Delta(T_t \times GDP_t)$$
$$+ \alpha_5 TR_t + u_{3t}.$$

We also estimate this system of equations with changes in the total, male, and female black unemployment rate as the dependent variables, Models 4–6, respectively. Equation (3C) tests the relationship between a "television index (TIND) of adverse images of blacks" and the number of black prime-time television programs (T), the black-white income gap based on data from the U.S. Department of Commerce, Bureau of the Census (2006), the $T \times GDP$ interaction term, and a time trend.[9,10] This specification is based on the idea that the adverse image content of black prime-time television programs is a function of (1) the number/quantity of such

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8. The data used in the analysis are available from the author upon request.

9. See Appendix A for information about the purpose, design, and computation of the TIND index.

10. The black-white income gap variable in Equation (3C) accounts for networks' motivation to broadcast programs that feature blacks as credited cast members. The ultimate economic rationale for television broadcasts is to attract viewers who are exposed to advertisements and who are expected to purchase the advertised products. A closing of the black-white income gap should motivate advertisers to seek more black viewers with which to pitch their products; that is, we expect a negative sign on the estimated parameter for this variable. A testable hypothesis is that blacks would prefer fewer adverse black images on programs that they view than would whites and that advertisers are cognizant of, and respond to, such preferences. The assumption is that the blend of programs desired by advertisers, as reflected in the TIND variable, is directly related to advertisers' perceptions of the blend of programs that will optimize program/advertisement viewership. To avoid multicolinearity, the GDP variable is excluded from the model. However, given the joint roles of the number of black prime-time television program and economic growth on the TIND variable, we include the $T \times GDP$ interaction term in the equation. The TR variable is included in the model to account for overall trends in the TIND variable.

TABLE 1
Variable Definitions

No.	Variables	Codes	Definitions
1	Black unemployment rate	BUR	Annual unemployment rate for all blacks from the BLS
2	Black male unemployment rate	BUM	Annual unemployment rate for all blacks from the BLS—black males
3	Black female	BUF	Annual unemployment rate for all blacks from the BLS—black females
4	White unemployment rate	WUR	Annual unemployment rate for all whites from BLS
5	White male unemployment rate	WUM	Annual unemployment rate for all whites from BLS—white males
6	White female unemployment rate	WUF	Annual unemployment rate for all whites from BLS—white females
7	Black television programs	T	Prime-time television programs that feature blacks in primary or secondary roles (credited cast); the programs are listed in Brooks and Marsh (2003)
8	Black drug-related arrests	BDA	Black drug-related arrests from the FBI's Uniform Crime Reports
9	Black male drug-related arrests	BDAM	Black drug-related arrests from the FBI's Uniform Crime Reports—black males
10	Black female drug-related arrests	BDAF	Black drug-related arrests from the FBI's Uniform Crime Reports—black females
11	Black HIV/AIDS cases	BAC	Black HIV/AIDS cases from the Center for Disease Control
12	Top 25 Rap Singles on Billboard's Top 100	HH	The number of Billboard's Top 25 Rap Singles that are in Billboard's Top 100
13	Unauthorized immigrant flows into the United States	M	Arrivals of unauthorized immigrants into the United States estimated from Census Bureau data
14	Real GDP	GDP	Real GDP from the Bureau of Economic Analysis
15	Black work experience indicator	BEXP	Percent of black population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey
16	Black male work experience indicator	BEXPM	Percent of black population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey—black males
17	Black female work experience indicator	BEXPF	Percent of black population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey—black females
18	White work experience indicator	WEXP	Percent of white population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey
19	White male work experience indicator	WEXPM	Percent of white population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey—white males
20	White female work experience indicator	WEXPF	Percent of white population more than 15 yr that exceed 25 yr from the Census Bureau's Current Population Survey—white females
21	Black average years of schooling	BAYS	Black average years of schooling from the Census Bureau's Current Population Survey
22	Black male average years of schooling	BAYSM	Black average years of schooling from the Census Bureau's Current Population Survey—black males
23	Black female average years of schooling	BAYSF	Black average years of schooling from the Census Bureau's Current Population Survey—black females
24	White average years of schooling	WAYS	White average years of schooling from the Census Bureau's Current Population Survey

TABLE 1
Continued

No.	Variables	Codes	Definitions
25	White male average years of schooling	WAYSM	White average years of schooling from the Census Bureau's Current Population Survey—white males
26	White female average years of schooling	WAYSF	White average years of schooling from the Census Bureau's Current Population Survey—white females
27	Interaction term (black television programs × real GDP)	$T \times GDP$	Derived from Variables 7 and 14
28	Time trend	TR	A variable that assumes the value from 1 to 31
29	Total black arrests	TBA	Total black arrests from the FBI's Uniform Crime Reports
30	Total black male arrests	TBAM	Total black arrests from the FBI's Uniform Crime Reports—black males
31	Total black female arrests	TBAF	Total black arrests from the FBI's Uniform Crime Reports—black females
32	Television index of adverse images of blacks	TIND	See Appendix A
33	White annual average income	WI	Average income for white families from Census Bureau Historical Tables
34	Black annual average income	BI	Average income for black families from Census Bureau Historical Tables

Notes: BLS = Bureau of Labor Statistics; FBI = Federal Bureau of Investigation.

programs and (2) differences in the relative incomes of the two primary groups that view the programs; and the interaction of the number of programs and GDP growth (see Footnote 10). Equation (3B) tests the relationship between the aforementioned index and the previously discussed cultural variables with the total number of black arrests (ΔTBA)—a key cultural variable.[11] Importantly, Equation (3B) presents a decomposition of the effects of the four-component SP vector on total black arrests and, ultimately, on the black-white unemployment rate gap and on black unemployment.

Finally, Equation (3A) tests the relationship between the total black arrests (ΔTBA) cultural variable and the $T \times$ GDP interaction term and the black-white unemployment rate gap (Δ(BUR − WUR) and ΔBUR)—the economic variables of interest. The estimated parameter for the black arrest variable reflects the potential of culture to influence economic outcomes; given the variable interrelations in the system of equations, it also yields information about the effect of black television programs and the $T \times$ GDP interaction term on that economic outcome.

The above structural model was recast using the following matrix notation:

$$
(4) \quad
\begin{bmatrix}
1-\beta_5 & 0 & 0 \\
0 & 1 & -\gamma_2 \\
0 & 0 & 1
\end{bmatrix}
\begin{bmatrix}
\Delta(BUR_t - WUR_t) \\
\Delta TBA_t \\
\Delta TIND_t
\end{bmatrix}
$$

$$
+
\begin{bmatrix}
-\beta_1 & -\beta_2 & -\beta_3 & -\beta_4 & -\beta_6 & -\beta_7 & 0 & 0 & 0 & 0 & 0 & 0 \\
-\gamma_1 & 0 & 0 & 0 & 0 & -\gamma_7 & -\gamma_3 & -\gamma_4 & -\gamma_5 & -\gamma_6 & 0 & 0 \\
-\alpha_1 & 0 & 0 & 0 & -\alpha_4 & -\alpha_5 & 0 & 0 & 0 & 0 & -\alpha_2 & -\alpha_3
\end{bmatrix}
$$

$$
\times
\begin{bmatrix}
1 \\
\Delta GDP_t \\
\Delta(BEXP_t - WEXP_t) \\
\Delta(BAYS_t - WAYS_t) \\
\Delta(T_t \times GDP_t) \\
TR_t \\
\Delta BDA_t \\
\Delta BAC_t \\
\Delta HH_t \\
\Delta M_t \\
\Delta T_t \\
\Delta(BI_t - WI_t)
\end{bmatrix}
=
\begin{bmatrix}
u_{1t} \\
u_{2t} \\
u_{3t}
\end{bmatrix}.
$$

11. The total black arrest variable serves as an endogenous variable, as opposed to black drug arrests, because the former is a broader cultural/social indicator. Note that black drug arrests is included as an explanatory variable in the equation system.

The reduced form of the above system of structural equations may be written as follows:

obtained and are presented in Tables 3 and 4.[14] Generally, the results are as antici-

(5)

$$
\begin{bmatrix} \Delta(\mathrm{BUR}_t - \mathrm{WUR}_t) \\ \Delta\mathrm{TBA}_t \\ \Delta\mathrm{TIND}_t \end{bmatrix}
$$

$$
= \frac{1}{\delta} \begin{bmatrix} \beta_1 + \beta_5\gamma_1 + \beta_5\gamma_2\alpha_1 & \beta_2 & \beta_3 & \beta_4 & \beta_6 + \beta_5\gamma_2\alpha_4 & \beta_7 + \beta_5\gamma_7 + \beta_5\gamma_2\alpha_5 & \beta_5\gamma_3 & \beta_5\gamma_4 & \beta_5\gamma_5 & \beta_5\gamma_6 & \beta_5\gamma_2\alpha_2 & \beta_5\gamma_2\alpha_3 \\ \gamma_1 + \gamma_2\alpha_1 & 0 & 0 & 0 & \gamma_2\alpha_4 & \gamma_7 + \gamma_2\alpha_5 & \gamma_3 & \gamma_4 & \gamma_5 & \gamma_6 & \gamma_2\alpha_2 & \gamma_2\alpha_3 \\ \alpha_1 & 0 & 0 & 0 & \alpha_4 & \alpha_5 & 0 & 0 & 0 & 0 & \alpha_2 & \alpha_3 \end{bmatrix}
$$

$$
\times \begin{bmatrix} 1 \\ \Delta\mathrm{GDP}_t \\ \Delta(\mathrm{GDP}_t - \mathrm{WEXP}_t) \\ \Delta(\mathrm{BAYS}_t - \mathrm{WAYS}_t) \\ \Delta(T_t \times \mathrm{GDP}_t) \\ \mathrm{TR}_t \\ \Delta\mathrm{BDA}_t \\ \Delta\mathrm{BAC}_t \\ \Delta\mathrm{HH}_t \\ \Delta M_t \\ \Delta T_t \\ \Delta(\mathrm{BI}_t - \mathrm{WI}_t) \end{bmatrix} + \frac{1}{\delta} \begin{bmatrix} 1 & \beta_5 & \beta_5\gamma_2 \\ 0 & 1 & \gamma_2 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} u_{1t} \\ u_{2t} \\ u_{3t} \end{bmatrix} {}^{12}
$$

The reduced form of the system reveals that the effect of black prime-time television programs on the black-white unemployment rate gap and the black unemployment rate can be identified from the cells at the intersection of row 1, columns 5 and 11 of the first matrix to the right of the equal sign in Equation (5); that is, the values of the $(\beta_6 + \beta_5\gamma_2\alpha_4) + \beta_5\gamma_2\alpha_2$ estimated parameters.[13]

IV. RESULTS

A. Single Equation Models

Applying ordinary least squares, the results for Equations (1) and (2) were

pated (Table 2); however, there are a few unexpected outcomes. As hypothesized, all coefficients for the black television program variable reflect positive signs. Most of the coefficients are significant at the 1% level. These results imply that increases in the number of black prime-time television programs are associated with increases in the black unemployment rate (Models 4–6 of Table 4) and with an increase in the black-white unemployment rate gap (Models 1–3 of Table 3). These findings are consistent with the idea that blacks experience adverse economic effects when prospective employers consume certain types of infotainment. Depending on the model specification, the results indicate that a one-unit change in the number of black television programs is associated with up to a 0.15 percentage point concomitant change in the black-white unemployment rate gap and with up to a 0.20 percentage point change in the black unemployment rate.

Notably, coefficients for the black drug-related arrest variable are small and positive. The only statistically significant coefficient is in the black-white unemployment rate gap models (Models 1–3). Consequently, one cannot completely reject the idea that widespread

12. The value of δ is 1.

13. Normally, when the economic literature reflects structural equations with interaction terms, both constituent variables also appear in equations that include the interaction term. The simultaneous equation models presented in this article deviate from this practice by reflecting the interaction term and only one of the related constituent variables in structural equations. This approach proves to be acceptable as long as the constituent variables that are included in the structural equations are appropriately aligned to produce reduced form estimated parameters that are sufficient to address research questions under study. It is left to the reader to show that the inclusion of both constituent variables in structural equations in simultaneous equation models result in the estimation of "surplus" reduced form parameter estimates; that is, parameter estimates that are not required to determine the relationship between a dependent variable and the constituent variable under study.

14. Each model was corrected for first-order serial correlation using the Cochrane-Orcutt method.

TABLE 2
Variables and Expected Signs for Related Coefficients

No.	Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
1	Δ Black television programs	+	+	+	+	+	+
2	Δ Black drug-related arrests	+			+		
3	Δ Black drug-related arrests (males)		+			+	
4	Δ Black drug-related arrests (females)			+			+
5	Δ Drug-related HIV/AIDS cases	+	+	+	+	+	+
6	Δ Top 25 Rap Singles on Billboard's Top 100	+	+	+	+	+	+
7	Δ Unauthorized immigrant flows into the United States	+	+	+	+	+	+
8	Δ Real GDP	−	−	−	−	−	−
9	$\Delta T \times$ GDP	+	+	+	+	+	+
10	Time trend (TR)	−	−	−	−	−	−
11	Δ Black-white gap: work experience	−					
12	Δ Black-white gap: average years of schooling	−					
13	Δ Black-white gap: work experience (males)		−				
14	Δ Black-white gap: average years of schooling (males)		−				
15	Δ Black-white gap: work experience (females)			−			
16	Δ Black-white gap: average years of schooling (females)			−			
17	Δ Black work experience indicator				−		
18	Δ Black average years of schooling				−		
19	Δ Black work experience indicator (males)					−	
20	Δ Black average years of schooling (males)					−	
21	Δ Black work experience indicator (females)						−
22	Δ Black average years of schooling (females)						−

information concerning black drug-related arrests could influence decisions to not hire blacks. However, the lack of statistically significant coefficients in a wider range of models, particularly in the black unemployment rate models, does not permit strong statements about the impact of this variable on black unemployment.

Coefficients on the black HIV/AIDS case variable are small, fluctuate between positive and negative, and are not statistically significant. These results imply that although HIV/AIDS may be an important social phenomenon, it may not be viewed as a problem that is unique to blacks and may not engender adverse perceptions of blacks. Because HIV/AIDS can be contracted through sexual contact and by sharing needles that are used for injecting illegal drugs, it may be the case that the black drug-related arrest variable could be accounting for some of the impact on black unemployment that might otherwise be accounted for by the black HIV/AIDS case variable.

It was hypothesized that the hip-hop culture might be viewed as alien and nonconformist, making blacks who participate in that culture appear to be unsuitable for employment in the eyes of prospective employers. It turns out that the coefficients on the hip-hop culture variable are small, fluctuate between positive and negative, and are only statistically significant in the black unemployment rate models (Models 4–6). A priori, the implication of these results is that greater penetration of hip-hop culture into mainstream culture is not associated with a reduction in employment opportunities for blacks.

It was hypothesized that increased flows of unauthorized immigrants would be associated with higher black unemployment and therefore a larger black-white unemployment rate gap. The variable reflects coefficients that are small, primarily negative, and that only indicate a statistically significant relationship for three of the six models. The sign on the coefficient for this variable is inconsistent with the initially stated hypothesis; however, the size of the coefficients is consistent with Simon's (1991) conclusion that immigrants have an innocuous effect on black unemployment. The statistical significance of the coefficient on the unauthorized immigrant variables in the

TABLE 3

Black Unemployment, Infotainment, and Cultural Phenomena: Models 1–3

Variables	Model 1 Dependent Variable: $\Delta(BU - WU)$	Model 2 Dependent Variable: $\Delta(BUM - WUM)$	Model 3 Dependent Variable: $\Delta(BUF - WUF)$
Δ Black television programs	0.13915 (.000)**	0.15235 (.000)**	0.11191 (.002)*
Δ Black drug-related arrests$_{t,m,f}$[a]	0.000005 (.025)*	0.000007 (.051)***	0.000032 (.065)***
Δ Black HIV/AIDS cases	−0.000001 (.963)	−0.00004 (.289)	−0.000026 (.589)
Δ Top 25 Rap Singles on BillBoard's Top 100	−0.00944 (.655)	−0.039522 (.250)	0.02913 (.340)
Δ Unauthorized immigrant flows	−0.0000009 (.046)*	0.0000004 (.519)	−0.000002 (.006)*
Δ Real GDP	−0.4035 (.000)**	−0.6756 (.000)**	−0.13647 (.154)*
Δ Black-white gap: work experience$_{t,m,f}$[a]	−1.1858 (.002)*	−0.90142 (.056)***	−0.5574 (.315)
Δ Black-white gap: average years of schooling$_{t,m,f}$[a]	2.9479 (.001)**	1.2088 (.181)	1.6602 (.116)
Time trend (TR)	−0.00840 (.285)	−0.00196 (.867)	−0.0202 (.143)
Constant	0.56855 (.001)**	1.0950 (.000)**	0.33848 (.204)
Adjusted R^2	.7360	.6239	.5137
Durbin-Watson	2.2458	1.8039	1.9812
Estimated standard error	0.38939	0.59768	0.52260
N	30	30	30

Notes: Data given are linear regression model coefficients and *p* values.

[a]The t, m, and f subscripts are for "total," "male," and "female," respectively.

*Statistically significant at the 5% level, **statistically significant at the 1% level; ***statistically significant at the 10% level.

black-white female unemployment gap and black female unemployment models may imply a certain economic complementarity between unauthorized immigrants and employment for women.

Two of the three remaining variables that are included in the models were selected to build on Gilman's (1965) earlier study on black unemployment: work experience (EXP) and average years of schooling (AYS). The third variable, GDP, is included due to the well-understood relationship between the growth in output and the unemployment. The GDP variable's coefficients are statistically significant throughout and carry negative signs, reflecting the expected inverse relationship between the economic growth and the black-white unemployment rate gap.[15] The coefficients on the work experience variables show the expected results; they are negative in the black-white unemployment rate gap models and negative in the black unemployment models. One of the six coefficients is statistically sig-

nificant at the 5% level and three are significant at the 10% level. These results imply that greater work experience is generally associated with improved employment opportunities for blacks.

The average years of schooling indicator provides unexpected results. For the overall black-white unemployment rate gap and black female unemployment rate models, the coefficients on the AYS variable are positive and statistically significant for only two of the six models. These results imply that a closing of the black-white educational attainment gap is associated with increases in the overall black-white unemployment rate gap and with increases in the unemployment rate for black females. This finding may appear anomalous. However, over 20 yr ago, Hirschman (1988) argued that although the educational attainment gap between black and white workers had narrowed considerably over the previous 25 yr, the unemployment rate gap between the two groups had widened.[16] He noted that while education is generally associated with lower unemployment, black unemployment

15. Blacks are often the "last hired and first fired," meaning that the black-white unemployment rate gap shrinks during an economic expansion but expands during an economic slowdown.

16. Hirschman's analysis covered the years 1959–1984; the ending period was well beyond the trough of the 1982 economic recession.

TABLE 4
Black Unemployment, Infotainment, and Cultural Phenomena: Models 4–6

Variables	Model 4 Dependent Variable: Δ (BU)	Model 5 Dependent Variable: Δ (BUM)	Model 6 Dependent Variable: Δ (BUF)
Δ Black television programs	0.17255 (.002)*	0.20008 (.003)*	0.16001 (.001)**
Δ Black drug-related arrests$_{t,m,f}$[a]	0.000005 (.279)	0.000007 (.260)	0.00003 (.155)
Δ Black HIV/AIDS cases	−0.00004 (.554)	−0.00008 (.299)	−0.00002 (.763)
Δ Top 25 Rap Singles on BillBoard's Top 100	−0.08796 (.051)***	−0.13526 (.014)*	−0.0233 (.540)
Δ Unauthorized immigrant flows	−0.0000002 (.814)	0.0000009 (.441)	−0.0000016 (.067)***
Δ Real GDP	−1.0799 (.000)**	−1.610 (.000)**	−0.77635 (.000)**
Δ Black work experience$_{t,m,f}$[a]	−0.50284 (.091)***	−0.4905 (.135)	−0.59202 (.054)***
Δ Black average years of schooling$_{t,m,f}$[a]	2.8807 (.126)	0.64334 (.694)	3.8983 (.020)*
Time trend (TR)	0.03190 (.080)***	0.04296 (.042)*	0.01018 (.530)
Constant	1.6356 (.001)**	2.4570 (.000)**	1.0017 (.017)*
Adjusted R^2	.7107	.7062	.7124
Durbin-Watson	2.0565	1.9971	1.9435
Estimated standard error	0.8531	1.0388	0.70230
N	30	30	30

Notes: Data given are linear regression model coefficients and *p* values.

[a]The t, m, and f subscripts are for "total," "male," and "female," respectively.

*Statistically significant at the 5% level; **statistically significant at the 1% level; ***statistically significant at the 10% level.

rates are higher at every educational level. Moreover, Donahoe and Tienda (1999) cite numerous authors in cataloging the skills deficit that plagues minority youth, in particular, who enter labor markets that reflect persistent structural shifts as the economy evolves technologically. In other words, the positive and statistically significant relationship between the AYS quantity measure of educational attainment and the black-white unemployment rate gap and black female unemployment rate may be pointing to a quality gap between black and white educational attainment. Unfortunately, to the author's knowledge, historical measures of educational attainment on a quality-adjusted basis are not yet available by race/ethnicity and gender.[17]

Inclusion of the final interaction ($T \times$ GDP) term in the models that are based on Equations (1) and (2) created severe multicolinearity with its constituent variables and distorted the estimation results and did not add significantly to the

explanatory power of the models. Consequently, the interaction term was excluded from the single equation models. However, it was retained in the simultaneous equation models, which will be discussed below.

The negative parameter estimates that were derived for the TR variable for the black-white unemployment rate gap models are consistent with expectations but are not statistically significant. However, for the black unemployment rate models, the estimated parameters are small, positive, and generally reflect statistical significance. These results indicate a very slight uptrend in black unemployment—particularly, for the overall model and for black males.

B. Tests for Causality and Cointegration

Using Granger's (1969) method and up to four lag periods, bivariate causality tests were performed on two sets of key variables under study: (1) the black-white unemployment rate gap and black prime-time television programs and (2) the black unemployment rate and black prime-time television programs.[18] The

17. Jorgenson and Fraumeni (1996) were the first to develop national estimates of the stock of human capital on a quality-adjusted basis, and national economic accounting measures of the quality-adjusted output of education are currently under development (Fraumeni et al. 2004). However, historical measures of the quality of the stock of human capital and of education output by race/ethnicity and gender are some distance away.

18. A decision to conclude causality tests after testing four lag periods was made based on values from autocorrelation functions, *t* statistics (5% level of significance) and adjusted R^2 (increasing vs. decreasing values) statistics.

tests resulted in decisions to fail to reject dual, null hypotheses that the black television program variable does not Granger cause the black-white unemployment rate gap or the black unemployment rate and vice versa. However, long-term statistical relationships were identified between the two sets of variables based on Cointegrating Regressions' Durbin-Watson Statistics as suggested by Engle and Granger (1987).[19] The latter results indicated that further statistical analyses were required to determine the specific nature of relationships between the black-white unemployment rate gap and the black television program variables and between the black unemployment rate and the black television program variables.

C. Simultaneous Equation Model

In an effort to specify more completely the nature of the relationship between the black-white unemployment rate gap and the black prime-time television programs, estimates were prepared for the simultaneous systems of equations that were described in Equations (3) using three stage least squares. As noted, the estimated parameters in the cell at the intersection of row 1, columns 5 and 11 of the first matrix to the right of the equal sign in Equation (5) provide the answer to how the two variables are related. Values for these parameters, $\beta_5 \gamma_2 \alpha_2 + (\beta_6 + \beta_5 \gamma_2 \alpha_4)$, were estimated as part of the entire equation system and are presented, along with complete results, in Tables 5 and 6.

The statistically significant results indicate that the key combination of estimated parameters—$\beta_5 \gamma_2 \alpha_2 + (\beta_6 + \beta_5 \gamma_2 \alpha_4)$—range from 0.0588 to 0.1016. The parameter values can be interpreted to mean that a one-unit change in the number of black prime-time television programs, conditioned on the related point

19. The two sets of series were tested for unit roots. After rejecting the null hypothesis of unit roots, cointegrating regressions with a constant term were run. They produced Durbin-Watson statistics of 0.3331 and 0.4952, respectively, which permits weak (10% level of significance) rejection of the null hypothesis of no cointegration between the black-white unemployment rate gap and black prime-time television program variables and a strong rejection (5% level of significance) of the null hypothesis of no cointegration relationship between the black unemployment rate and black prime-time television program variables. The asymptotic critical value is 0.385 at the 5% level of significance (see table II in Engle and Granger 1987, p. 269).

value of the change in real GDP, is associated with a 0.0588–0.1016 percentage point change in the black unemployment rate and the black-white unemployment rate gap. These results are consistent with the idea that black prime-time television programs (α_2) embody adverse images of blacks on television as captured in an index of black television programs (γ_2); that those adverse images are correlated with the total number of black arrests (β_5); and that those arrests, by sending a signal of criminal or deviant behavior to the broader society, are positively correlated with the black-white unemployment rate gap. As noted, the latter outcome, is conditioned on the associated value of the change in real GDP as reflected by the parameter estimates for the interaction term—$\beta_6 + \beta_5 \gamma_2 \alpha_4$. It is worth noting that the arithmetic signs associated with the estimated parameters in the system of equations are consistent with those for the estimated parameters in the single equations models already discussed (Tables 3 and 4). Given the size of the black labor force and median weekly earnings for 2002 from the U.S. Department of Labor, Bureau of Labor Statistics (2003), these results imply that a one-unit reduction in the number of black prime-time television programs would be associated with an increase in black employment of up to 10,000 and up to nearly $0.3 billion in related earnings for the year. Over the 30 yr under study, the models' results imply that the number of unemployed black workers was increased by hundreds of thousands and that earnings over the period were reduced by between $5 and $10 billion in (2002) dollars as a result of marginal broadcasts of black prime-time television programs. These findings must be tempered somewhat because of the restricted data set that underlies this analysis.

Further results from the simultaneous system of equations model reveal that the number of black prime-time television programs is inversely related to the index of adverse images of blacks (Equation (3C)). This may be explained by the fact that period-to-period increases in the number of black prime-time television programs is quite often associated with the addition of programs that presents blacks in fewer adverse stereotypical roles. On the other hand, period-to-period decreases in the number of black prime-time programs are often associated with a return to a core

TABLE 5
Simultaneous Equation System Results: Models 1–3

Variables	Model 1_t[a]	Model 2_m[a]	Model 3_f[a]
Equation A: Dependent variable—$\Delta(BU - WU)_{t,m,f}$[a]			
(β_1) constant	0.4462 (.020)*	0.79173 (.009)*	0.40985 (.109)
(β_2) ΔGDP	−0.38795 (.000)**	−0.48018 (.000)**	−0.22697 (.004)*
(β_3) $\Delta(BEXP - WEXP)_{t,m,f}$[a]	−0.88069 (.004)*	−0.25518 (.525)	−0.4342 (.345)
(β_4) $\Delta(BAYS - WAYS)_{t,m,f}$[a]	2.4836 (.001)**	1.9727 (.081)***	0.01528 (.990)
(β_5) $\Delta TBA_{t,m,f}$[a]	0.000001 (.000)**	0.0000006 (.417)	0.000008 (.001)**
(β_6) $\Delta(T \times GDP)$	0.00116 (.000)**	0.00109 (.011)*	0.00095 (.012)*
(β_7) TR	−0.00335 (.744)	−0.0089 (.577)	−0.01339 (.317)
Equation R^2	.7382	.6007	.5054
Equation B: Dependent variable—$\Delta TBA_{t,m,f}$[a]			
(γ_1) constant	47914 (.532)	42510 (.491)	12973 (.308)
(γ_2) $\Delta TIND$	−813390 (.007)*	−681080 (.006)*	−101030 (.057)***
(γ_3) ΔM	−0.07467 (.639)	−0.06120 (.656)	−0.0260 (.389)
(γ_4) $\Delta BDA_{t,m,f}$[a]	4.1690 (.000)**	3.7228 (.000)**	4.2019 (.000)**
(γ_5) ΔBAC	23.609 (.108)	18.048 (.164)	5.0077 (.074)
(γ_6) ΔHH	5333.4 (.523)	3252.8 (.660)	1473.5 (.361)
(γ_7) TR	−4557.6 (.262)	−3983.3 (.219)	−764.25 (.256)
Equation R^2	.5333	.5327	.6060
Equation C: Dependent variable—$\Delta TIND$			
(α_1) constant	0.01372 (.795)	0.020496 (.693)	0.02668 (.606)
(α_2) ΔT	−0.076401 (.000)**	−0.07741 (.000)**	−0.077623 (.000)**
(α_3) $\Delta(BI - WI)$	0.000008 (.689)	0.00002 (.358)	0.00004 (.081)
(α_4) $\Delta(T \times GDP)$	0.00078 (.003)*	0.00082 (.004)*	0.000834 (.003)*
(α_5) TR	−0.00232 (.494)	−0.0030 (.389)	−0.0033 (.333)
Equation R^2	.3252	.3501	.3606
System R^2	.9078	.8615	.8235
N	30	30	30
Tests of overall significance: chi square with 16 df (p)	71.509 (.0000)	59.307 (.0000)	52.027 (.0000)

Notes: Data given are estimated parameter and p values.

[a]The t, m, and f subscripts are for "total," "male," and "female," respectively.

*Statistically significant at the 5% level; **statistically significant at the 1% level; ***statistically significant at the 10% level.

program set that reflects the most salient adverse images of blacks.

The television index of adverse images is inversely related to total black arrests (Equation (3B)). This is an intuitively sound result because program content that features blacks in police or crime-related activities may actually serve as a deterrent to crime. On television, crimes are usually solved by program's end, which sends a message that crime does not pay. The total black arrest variable is positively correlated with the black-white unemployment rate gap and the black unemployment rate. Clearly, the more the media reflects a proclivity on the part of blacks to participate in criminal activities, the greater the likelihood that hiring officials will choose

to not hire blacks—thereby expanding the unemployment rate gap between blacks and whites and increasing the black unemployment rate.

Finally, the coefficient on the $T \times GDP$ interaction term is positive and statistically significant throughout, indicating that the interplay of the growth in GDP with the types of black prime-time television programs that are broadcast and vice versa must be accounted for in order to fully explain the effect of these television programs on the black-white unemployment rate gap and the black unemployment rate. It is noteworthy that the combination of the estimated parameters for the interaction term from the reduced form equations generally moderate the impact of black prime

TABLE 6
Simultaneous Equation System Results: Models 4–6

Variables	Model 4_t[a]	Model 5_m[a]	Model 6_f[a]
Equation A: Dependent variable—$\Delta(BU)_{t,m,f}$[a]			
(β_1) constant	1.2610 (.005)*	1.7048 (.002)*	1.1389 (.001)**
(β_2) ΔGDP	−1.0414 (.000)**	−1.2285 (.000)**	−0.8552 (.000)**
(β_3) $\Delta BEXP_{t,m,f}$[a]	−0.39739 (.125)	−0.16982 (.530)	−0.9030 (.000)**
(β_4) $\Delta BAYS_{t,m,f}$[a]	3.3817 (.043)*	2.3274 (.219)	3.2429 (.006)*
(β_5) $\Delta TBA_{t,m,f}$[a]	0.000001 (.081)***	0.0000005 (.625)	0.000009 (.000)**
(β_6) $\Delta(T \times GDP)$	0.00153 (.003)*	0.001563 (.025)*	0.001685 (.000)**
(β_7) TR	0.0226 (.263)	0.0225 (.391)	0.01028 (.539)
Equation R^2	.7697	.7225	.7312
Equation B: Dependent variable—$\Delta TBA_{t,m,f}$[a]			
(γ_1) constant	56824 (.437)	44343 (.465)	13423 (.297)
(γ_2) $\Delta TIND$	−762400 (.003)*	−617450 (.004)*	−130120 (.006)*
(γ_3) ΔM	−0.09645 (.561)	−0.07958 (.562)	−0.0279 (.353)
(γ_4) $\Delta BDA_{t,m,f}$[a]	3.7633 (.000)**	3.679 (.000)**	4.1183 (.000)**
(γ_5) ΔBAC	23.265 (.131)	18.627 (.143)	4.5043 (.104)
(γ_6) ΔHH	5640 (.522)	4169.5 (.566)	1254.2 (.433)
(γ_7) TR	−4831 (.209)	−4107.6 (.198)	−744.11 (.272)
Equation R^2	.5573	.5527	.5820
Equation C: Dependent variable—$\Delta TIND$			
(α_1) constant	0.0209 (.687)	0.02154 (.678)	0.0294 (.569)
(α_2) ΔT	−0.07714 (.000)**	−0.07775 (.000)**	−0.08509 (.000)**
(α_3) $\Delta(BI - WI)$	0.00002 (.327)	0.00002 (.310)	0.00003 (.096)***
(α_4) $\Delta(T \times GDP)$	0.00082 (.004)*	0.000825 (.004)*	0.00094 (.001)**
(α_5) TR	−0.00297 (.389)	−0.00305 (.378)	−0.0039 (.253)
Equation R^2	.3519	.3529	.3552
System R^2	.9257	.9096	.9325
N	30	30	30
Tests of overall significance: chi square with 16 df (p)	77.986 (.0000)	72.099 (.0000)	80.877 (.0000)

Notes: Data given are estimated parameter and p values.

[a]The t, m, and f subscripts are for "total," "male," and "female," respectively.

*Statistically significant at the 5% level; **statistically significant at the 1% level; ***statistically significant at the 10% level.

television programs on the dependent variables in the models.

Interestingly, while simultaneous equation Models 1, 3, 4, and 6 reflect statistically significant coefficients for the total black arrest variables, no such statistical significance is identified in the models that feature the black-white male unemployment rate gap and the black male unemployment rate as dependent variables (Models 2 and 5). The lack of a strong correlation between total arrests of black males and their unemployment may reflect the pervasive, commonplace nature, and the cultural embeddedness of these arrests. Consequently, black male arrests may have submerged into a complex of factors that, together, explain the black-white male

unemployment rate gap and the black male unemployment rate.

V. CONCLUSIONS

Loury's (1998) call for greater use of social phenomena to explain economic outcomes was insightful. Seeking greater clarification of his arguments, this article established a theoretical framework for testing the effects of social phenomena on economic outcomes. Single equation econometric analysis revealed that increased broadcasts of black prime-time infotainment that quite often present adverse stereotypical images of blacks are associated with increases in black unemployment and

with related increases in the black-white unemployment rate gap. This result is consistent with the idea that blacks experience negative consumption externalities when whites view adverse images of blacks through infotainment, then exhibit negative behavior toward blacks—in this case, failing to hire blacks.

In addition, single equation econometric results revealed that increases in black drug-related arrests are correlated with increases in the black-white unemployment rate gap. There appears to be a negative correlation between black hip-hop culture and the unemployment rate for blacks—particularly for black males. Due to multicolinearity, it was difficult to isolate the relationships between the black-white unemployment rate gap and the black unemployment rate and black HIV/AIDS cases. Multicolinearity between the interaction ($T \times$ GDP) term and its two constituent variables were also problematic; consequently, we excluded the interaction term from these models. However, the analysis confirmed earlier research that unauthorized immigration into the United States appears to have innocuous effects on the black unemployment rate in general—at least in an aggregate economic context.[20] Finally, the coefficient on the time trend variable (TR) indicated a slight uptrend in black unemployment—particularly for black males. The key point that stands out from this analysis is that black prime-time television programs appear to affect adversely the demand for black labor. Given model specifications, however, it would be inappropriate to draw strong policy conclusions from the results produced by these single equation models.

Tests for cointegration revealed that there are long-term statistical relationships between the black-white unemployment rate gap and the black television programs and between the black unemployment rate and black television programs.

The nature of those relationships—that is, the transmission mechanism—was clarified by systems of simultaneous equations. These models confirmed that there is a positive relationship between the black-white unemployment rate gap and the black unemployment rate and the black prime-time television program variables. These programs affect the overall perception of blacks as indicated by a television index of adverse images of blacks. The latter index is correlated with the number of total black arrests, which, in turn, influences hiring officials' decisions. Given the inclusion of an interaction term in the models, the just-mentioned impact of black prime-time television programs on the black-white unemployment rate gap and black unemployment is conditioned on the related point value of GDP growth.

Admittedly, the statistically significant parameter estimates for the effect of infotainment on the black-white unemployment rate gap and the black unemployment rate [β_3 in Equations (1) and (2) vs. $\beta_5\gamma_2\alpha_2 + (\beta_6 + \beta_5\gamma_2\alpha_4)$ in Equation (5)] are somewhat different—from 0.1112 to 0.2001 versus from 0.0588 to 0.1016 percentage points, respectively. However, these estimates are consistent in sign and reveal a possible range of effects. Taking the latter set of results as conservative estimates, we estimate that the number of unemployed black workers was increased by hundreds of thousands as a result of marginal increases in the number of black prime-time television programs over the 1973–2002 period and that blacks lost between $5 and $10 billion in (2002) dollars in related earnings over the period under study—1973–2002.

While the models, the data, and the results discussed above may not end the debate concerning the effects of black prime-time television programs on the black-white unemployment rate gap and on the black unemployment rate, the analysis does usher up the following analogy: "Winds are blowing that affect the White-Black unemployment rate gap and the Black unemployment rate; we have learned that these winds are blowing in a significant way through Black prime-time television programs."

Further testing, replication, confirmation, and extension of these results may justify efforts to modify infotainment images so that they become balanced and accurate. As a corrective action, blacks may consider discontinuing their participation in the promulgation of adverse stereotypical images of themselves; they could also advocate for the expansion of infotainment that features nonstereotypical images of blacks. Blacks might benefit significantly from efforts to educate themselves

20. See Borjas, Grogger, and Hanson (2006) and Shulman and Smith (2005) for reasons why unauthorized immigrant flows may not have innocuous effects.

concerning the deleterious effects of stereotypes on television and how they affect the ability of black Americans to obtain employment. Notwithstanding the right to freedom of speech, it may be appropriate for those injured by infotainment to seek reasonable protection from its harm. To develop an effective response to the adverse effects of black prime-time television programs on the demand for black labor, it may be necessary for blacks to mount rent-seeking efforts to modify infotainment that is transmitted through television, the Internet, and other popular media forms that may appear on the horizon.

APPENDIX A TELEVISION INDEX OF ADVERSE IMAGES OF BLACKS

The television index (TIND) of adverse images of blacks was constructed using the average annual number of black prime-time television programs (T), which were assigned weights and evaluative values based on their class and type, respectively. For the period 1972–2002, 778 black prime-time television programs were assigned to ten program classes (Action, Comedy, Drama, Espionage, Fantasy, Human Interest, Musical, New, Science Fiction, and Western) and to 33 program types (Adventure, Buddy, Business, Cartoon, Community, Crime, Detective, Domestic, Educational, Espionage, Family, Fantasy, Football, Frontier, Human Interest, Horror, Legal, Magazine, Medical, Military, News, Paranormal, Police, Political, Quiz, Religious, Social, Space, Sports, Travel, Variety, Western, and Work life).

The drama and news classes of programs were assigned a class weight (CW) of 2 because they constitute the most realistic ("credible") programs. The class of comedies, which often present blacks in buffoonish roles, was assigned a CW of 1.5. All other program classes were assigned a CW of 1.

Because crime is the most deviant form of behavior that can be presented on prime-time television, all black prime-time programs that were of the Crime, Detective, Legal, or Police type were assigned an evaluative value (TEV) of 2; the remaining program types were assigned a TEV of 1.

Period t values of the TIND were calculated using the following equation:

$$\text{TIND}_t = \left(\sum_{h=1}^{10} \sum_{i=1}^{33} \text{CW}_{ht} \times \text{TEV}_{it} \right) \Big/ \sum T_t.$$

Over the period 1972–2002, the TIND assumed values ranging from 1.813 to 2.615. The TIND represents a measure that captures the concentration of programs that feature blacks in criminal or related roles under the most credible of circumstances (dramas and news programs) and that feature blacks in the most buffoonish roles (comedies). The class weighting scheme places more weight on the most credible programs because it is believed that it is more damaging for blacks to be viewed as criminal when undertaking efforts to obtain employment than to be viewed as simply buffoonish.

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