

Crime and Punishment: And Skin Hue Too?

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Conditional on being black, there is evidence that skin hue matters for a wide array of socioeconomic outcomes. For example, there is evidence that blacks with a dark skin hue fare worse in terms of wages (Arthur H. Goldsmith et al., 2005), occupational prestige (Mark E. Hill, 2000), unemployment (Margaret Hunter et al., 2001), access to health resources (Howard Bodenhorn, 2002), and intergenerational wealth accumulation (Bodenhorn, 2003) than blacks with light-skin hue. Such findings suggest that the distribution of advantage and disadvantage in American life is conditioned not just on being black, but on skin hue as well.

That skin hue affects economic outcomes for blacks suggests that profit-maximizing firms and utility-maximizing individuals have a preference for blacks with light skin hues (Goldsmith et al., 2005). If so, the distribution of disadvantage among blacks will fall along gradations in skin hue, with disadvantage increasing for those with darker skin hue. One possible manifestation of disadvantage is crime. In the canonical economic model of crime of Gary S. Becker (1968), and as extended by Isaac Ehrlich (1973), disadvantaged individuals can be viewed as those with limited opportunities for engaging in legitimate activities. To the extent that conditional on being black, opportunities for engaging in legitimate activities are inversely proportional to the darkness of skin hue, the probability of participating in illegitimate activities—crime—may also be conditioned on skin hue.

Despite the apparent importance of skin hue in the distribution of advantage and disadvantage, the economics of crime literature tends to view blacks as one homogeneous group.¹ To the

extent that skin hue matters, aggregating across black Americans in this manner could lead to biased estimates of the effects of being black on participation in criminal activity and to inferences that being black is associated with higher stocks of “criminal capital” relative to non-blacks. Given that race and skin hue determine the distribution of disadvantage among black Americans, however, the effects of being black on criminal activity may instead reflect the disadvantages that accrue to being black, conditional on skin hue.

In this paper, we consider the effects of skin hue on the likelihood of participation in criminal activities and on sentencing for black Americans conditional on being convicted of a crime. To the extent that individuals, firms, and social institutions have a preference for blacks with a light skin hue, it is plausible that blacks with a dark skin hue face limited opportunities for legitimate activities that motivate illegitimate activities, and once arrested, are punished more severely than black offenders with a light skin hue.²

I. Theory, Empirical Approach, and Data

We adopt a continuous-time hazard approach to participation in criminal activity, where it is posited that over their lives individuals are presented with opportunities for criminal activity and engage in it if it is in their best interest. We modify and extend the labor market search-theoretic hazard framework of Nicholas M. Kiefer (1988) to answer the following question: given that a black American is engaged in or searching for legitimate activities at age t , what impact does skin hue have on the probability of a transition to criminal activities? The individual's

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¹ See, for example, Ehrlich (1973) and Gyimah-Brempong (1997).

² The only evidence that we are aware of linking skin hue of blacks with criminal justice issues is that provided by James H. Johnson et al. (2000). They found that among black men in Los Angeles with prior criminal records, the jobless rate for those with a dark skin hue was 54 percent—in contrast to 41.7 for those with a light skin hue.

transition from legitimate activities—whether actually engaged in or being searched for—can be viewed as a hazard that consists of the product of two probabilities, or $\lambda(t) = \eta\pi$, where η is the probability that an individual faces an opportunity for crime and π is the probability that the opportunity for crime is acceptable.

The potential significance of skin hue enters through a plausible specification under which a crime opportunity is acceptable to an individual. To the extent that the availability of legitimate activities for blacks is decreasing as the darkness of skin hue increases, a sensible specification for the probability that a crime opportunity is acceptable is $\pi = \int_{y^*(\phi)}^{\infty} f(y) dy$, where $f(y)$ is the probability of earning y from criminal activity, ϕ is a monotonic continuous measure of the darkness of an individual's skin hue, and $y^*(\phi)$ is an individual's reservation level of earnings from crime—the minimum level of earnings from crime at which he would engage in criminal activity. If legitimate opportunities are decreasing with respect to the darkness of skin hue, the reservation level of earnings from crime could also decrease as a result of dark skin hue, reducing possibilities for legitimate activities. As $\partial y^*(\phi)/\partial \phi < 0$, the earnings from criminal activity are more likely to exceed the reservation earnings from criminal activity for blacks with a dark skin hue, which increases the crime hazard.

Empirically, the significance of skin hue in explaining the transition to criminal activity can be determined in a proportional hazards framework, where the crime hazard is a function of some baseline hazard common to all individuals and explanatory variables: $\lambda(t) = \lambda(o)\exp(\sum \beta_k X_k)$, where $\lambda(o)$ is a baseline crime hazard, and β_k measures the impact of explanatory variable X_k on the transition to criminal activity.³ We examine the effects of skin hue on the crime hazard and prison sentence with data—available upon request from the authors—on black offenders with last names starting with the letter

“A” incarcerated in the state of Mississippi as of August 20, 2005. The variables of interest are described in Table 1, which for sake of brevity are not included in the paper. Table 1, along with parameter estimates reported in Tables 2 and 3, can be found at www.aeaweb.org/annual_mtg_papers/2006papers.html.

Table 1 provides definitions and summary statistics on constructed variables for the 403 observations we were able to obtain. The major variables of interest are several measures of skin hue across two broad classifications (TONE1 through TONE6 and COLOR1 through COLOR3). Other variables of interest are the age at which the offender was convicted for the current crime—which measures the duration of an offender's time engaged in or pursuing legitimate activities, and the length of his prison term. Other variables, incorporated as controls, include those that measure the type of crime convicted for, gender, and two measures designed to capture socioeconomic factors that may condition the transition into criminal activity: the “scrabble value” of an offender's first name and the ratio of median to mean income in the county where the offender was convicted.⁴

There are potentially many factors that matter for the transition into criminal activity that our data simply do not and/or cannot measure. The omission of variables—beyond those included as controls—measuring these factors in a crime hazard specification introduces an omitted variable bias to parameter estimates.⁵ We control for these possible biases by estimating the parameters of the crime hazard specification within an unobserved frailty framework. Frailty is an unobservable and random risk factor—heterogeneous across different groups—that

⁴ David N. Figlio (2005) shows that individuals with low socioeconomic status have a tendency to have first names with a high scrabble value. Gerhard Gloom (2004) argues that the ratio of median to mean income is a good approximation of the extent of income equality.

⁵ For example, we don't have any data on human capital for each offender—which is important in standard economic models of crime, where the probability of participating in crime is decreasing in individual human capital stocks. Our unobserved/frailty framework preserves this feature of economic models of crime by allowing for unobserved heterogeneity in individual human capital stocks and by conditioning on the darkness of skin hue, which also seems to matter for the acquisition of human capital (Hill, 2000).

³ The hazard or duration approach to the transition from legitimate to criminal activity, either for the first time or recidivism, dates back to at least the effort of Peter Schmidt and Ann Dryden Witte (1989), with more recent applications provided by Christopher Uggen (2000), and Cuellar et al. (2004).

modifies the hazard function of individuals and conditions the parameter estimates on the unobserved frailty/heterogeneity.⁶ For $j = 1 \dots J$ groups of individuals, let the unobserved Gamma-distributed random frailty be α_j ; then, for a vector of explanatory variables \mathbf{X} , a Cox proportional hazard specification with unobserved frailty/heterogeneity is

$$(1) \quad \lambda(t|\mathbf{X}, \alpha_j) = \lambda(o) \exp(\sum \beta_k X_k + v_j)$$

where, $E(\alpha_j) = 1$, $Var(\alpha_j) = \theta$, and $v_j = \log \alpha_j$.

If there is fairness in the punishment of crime, then, conditional on a conviction, the sentencing for blacks should not be a function of skin hue. If, on the other hand, penal institutions also optimize across preferences for blacks with a light skin hue, blacks with a dark skin hue could receive more severe punishment relative to blacks with a light skin hue. We use length of sentence data from our sample to test whether, given conviction for a similar offense, blacks with a dark skin hue receive more severe punishment relative to blacks with a light skin hue.

II. The Effects of Skin Hue on Crime and Punishment

Does being black and having a dark skin hue engender disadvantages that induce a transition into criminal activity? Table 2 reports parameter estimates of equation (1) across six specifications on two classifications of skin hue, with a baseline standard Cox specification (columns 1, 4) and frailty defined over an individual's membership in one of seven skin-hue categories, the year he was jailed (columns 2, 5), and year he was born (columns 3, 6).⁷ The depen-

dent variable for all specifications is the age at which the offender was incarcerated—which we assume measures the duration of time spent engaged in or searching for legitimate, noncriminal opportunities.

For both categorizations of skin hue, the effects of having a dark skin hue on the crime hazard are positive but insignificant for the basic Cox specification (columns 1, 4) and when frailty is defined over year-jailed/skin-hue groupings (columns 2, 5). Skin hue has a positive and significant effect on the crime hazard when the frailty and unobserved heterogeneity are defined over year-born/skin-hue groupings (columns 3, 6). For the six skin-hue classification schemes in column 3, all but the light-brown skin hue is significant, suggesting that being black and having a skin hue that is at least medium or medium brown is associated with a disadvantage that induces a transition into criminal activity. The results in column 6 suggest that relative to blacks with a fair or light skin hue, blacks with a darker skin hue face disadvantages that induce a transition into criminal activity. In both cases, the model diagnostics are supportive of the Cox specifications with unobserved frailty/heterogeneity and year-born/skin-hue groupings.⁸ Our results suggest the need to account for differences in skin hue when estimating the effects of race on crime.

That the darkness of skin hue matters for the transition into criminal activity suggests that dark-hued blacks face disadvantages in obtaining legitimate opportunities, which drives them to criminal activities. This raises the possibility that given a conviction for an offense, blacks with a dark skin hue receive different treatment in sentencing. In Table 3, we report the results of Ordinary Least Squares regression, where the dependent variable is the log of the sentence in years received. We control for the type of crime conviction. To approximate the Cox unobserved frailty/heterogeneity regressions in Table 2, we cluster the standard errors on the relevant frailty groupings and add, as a regressor in four of the

⁶ For an overview of frailty in hazard/duration models, see Mario A. Cleves et al. (2004, chap. 9), and Andreas Wienke (2003).

⁷ All coefficients are reported in unexponentiated form and measure the impact a particular variable has on the crime hazard—or the age-specific probability of making a transition into criminal activity. The frailty groupings are motivated by evidence that the significance and effects of skin hue among blacks may be sensitive to time—particularly the year in which an individual is born (Michael Hughes and Bradley R. Hertel, 1990). The seven skin hue groups, based on what was reported in the convict data, are fair, light, light brown, medium, medium brown, dark brown, and dark.

⁸ For all the estimated specifications, the Cox specification cannot be rejected only for the results in columns 3 and 6—as indicated by the value of the Wilcoxon Test Statistic—and the negative log-likelihood achieves larger values in these specifications as well.

specifications, an estimate of the baseline cumulative hazard for each individual from the relevant specification in Table 2.⁹ For all six specifications, and with the exception of having a light-brown skin hue, a dark skin hue has a large, positive, and significant effect on an individual offender's prison sentence. Apparently, convicted black offenders with a dark skin hue face discriminatory treatment in sentencing, as the prison sentence increases with the darkness of skin hue.

III. Conclusions

This paper considered whether the disadvantages that accrue to dark skin hue also induce a transition into criminal activity—an outcome consistent with standard economic models of crime. We also examined whether prison terms are conditioned by the skin hue of black convicted offenders. Our results show that crime and punishment for black Americans—at least in Mississippi—are a function of skin hue. Having a dark skin hue, all things equal, induces a transition into criminal activity—presumably as a result of dark skin hue constraining the set of legitimate noncriminal activities. In our theoretical framework, being black and having a dark skin hue induces a transition into criminal activity by increasing π —the probability that an opportunity for criminal activity is acceptable—as having a dark skin hue decreases the reservation level of income from criminal activity. Being black and having a dark skin hue is also associated with a longer prison sentence—suggesting that punishment for crime is an increasing function of the darkness of skin hue for black Americans.

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⁹The baseline cumulative hazard measures the total amount of crime risk up to the time of entry into criminal activity for an individual. As in Kiefer (1988), it is measured as $\Lambda(o) = \int \lambda(o) dt$ and is retrievable in STATA 8.0.

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