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TWO NOTES ON THE ECONOMICS OF CRIME:
THE CHOICE OF CRIMINAL VICTIMS
AND FACTORS IN URBAN CRIME: COMMENT

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TWO NOTES ON THE ECONOMICS OF CRIME: THE CHOICE OF CRIMINAL VICTIMS AND FACTORS IN URBAN CRIME: COMMENT

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ABSTRACT

This discussion paper presents two empirical studies concerning urban crime rates. "The Choice of Criminal Victims" focuses on crime within New York City precincts and estimates a model in which criminals are assumed to choose their victims so as to maximize expected gains from illegal activity. Wealthy individuals are more likely to be victims, but they can lower their probability of victimization by forming homogeneous neighborhoods. "Factors in Urban Crime: Comment" applies a framework in which the distribution of income is an important determinant of the level of criminal activity. A previous paper failed to analyze urban crime rates within an economic framework, and as a result, overstated the propensity of blacks to commit crime.

THE CHOICE OF CRIMINAL VICTIMS

Economists have recently extended the utility maximization framework of microeconomics to the analysis of crime. According to this framework, potential criminals calculate the returns from all possible activities, legal as well as illegal, and allocate their time to the combination that maximizes expected utility. Potential victims calculate the losses from remaining unprotected or from purchasing protective services (either public services like police expenditures or private services like burglar alarms) and choose the level of expenditure that minimizes expected losses.

This note applies the economics of crime to one aspect of the criminal choice--the choice of victims. A model of the choice of victims is derived in Section II and estimated in Section III using a data set on crime in New York City precincts. It is found that criminals choose their victims so as to maximize expected gains from crime. Within any neighborhood, wealthy individuals are more likely, and the poor less likely, to be victims. However, individuals living in wealthy neighborhoods are less likely to be victims than those living in lower-income neighborhoods.

I. Criminals and Victims

Crime results from the utility maximization of "rational economic men" who are responsive to incentives that alter the relative costs and benefits of legal and illegal activities. Several studies have modeled a supply function for criminal offenses of the following general form:

$$C = f(W_L, W_I, D, Z)$$

where

C = the crime rate,

W_L = the expected returns from legal activity,

W_I = the expected returns from illegal activity,

D = the level of deterrence,

Z = a vector of characteristics that identifies potential criminals.

Economic incentives are transmitted to the individual through both the level and the distribution of income. In areas with higher income levels, the average "take" per crime will be larger. This raises expected illegal returns and results in higher crime rates. With a constant income level, a more unequal distribution of income implies a greater difference between the incomes earned legally by the poor and the wealthy. If utility functions are interdependent (that is, if the incomes of the wealthy affect the utility of the poor), a greater degree of inequality will increase relative deprivation and crime rates will rise. Crime rates will be lower where deterrence is more severe. In this model, deterrence is measured by the probability of being sent to prison and the expected sentence length. The vector Z captures regional, racial, or educational differences in the propensity to commit crime.

Supply of criminal offenses functions have been estimated based on data for metropolitan areas (Pogue, 1975), states (Ehrlich, 1973), and the entire U.S. (Danziger and Wheeler, 1975). The analysis, however, has not been applied to the distribution of crime rates within a metropolitan area. In fact, such an extension focuses on the characteristics of victims rather than the costs and benefits facing the potential criminal, since the independent variables from the cross-section

or time-series supply of offenses function are equalized across the metropolitan area.

Ozenne (1974) has shown that under competitive conditions--many criminals, noncollusion, mobility, free entry, and so forth--the average (net) illegal return per crime will be equalized across all targets and each criminal will be indifferent between targets. A more lucrative target will either be more heavily protected, and hence riskier, or will be "hit" a greater number of times. Legal returns will also be constant across the metropolitan area if the labor market operates competitively.

In addition to the equalization of legal and illegal returns, deterrence will also be uniform across the area. Since there is one police force and one judicial system, the probability of being captured and sent to prison and the expected sentence length for a given crime with a given victim will not vary with the location of the crime. Deterrence will vary according to the socioeconomic characteristics of the offender, the victim, or the area itself, but this variation is not a function of location per se.

The components of the vector Z will also be invariant across the metropolitan area. In a cross-section or time series, one might expect blacks or youths or those with little education to have a lower opportunity wage, and thus, to find crime more attractive. However, since criminals are mobile within the city, the amount of crime in any district depends not on the number of potential criminals living within that district but on the total supply in the metropolitan area.

This invariance across districts of legal and illegal returns, deterrence, and the socioeconomic characteristics that generate criminal activity is represented in Figure 1 by the horizontal supply

curve, S. The supply of criminals to any district is horizontal because the net return per crime is constant across the area (at r*). The net return curve for crime in any district, D1 or D2, is downward sloping. As more crimes are committed against a given stock of wealth in any district, the net return per crime falls, and individuals within the district are more willing to accept this greater number of "cheaper" crimes.

The equilibrium rate of return, the "price" at which expected losses and expected net returns per crime are equalized, is "socially determined through the aggregate behavior of all protectors and thieves" (Ozenne, p. 27). Since there are many districts within the area, a district can alter its own desirability as a target but cannot affect the equilibrium rate of return. The height of the net return curve represents the desirability of the district and determines the number of crimes that will be committed there. At r* in Figure 1, a wealthier (or less risky) district, D2, will be victimized C2 times, while only C1 crimes will be committed in a poorer (or riskier) district, D1.

The supply and demand curves of Figure 1 can be represented as:

$$C_D = f(L,V)$$

$$C_S = g(G,Z)$$

where

L = expected losses from being victimized,

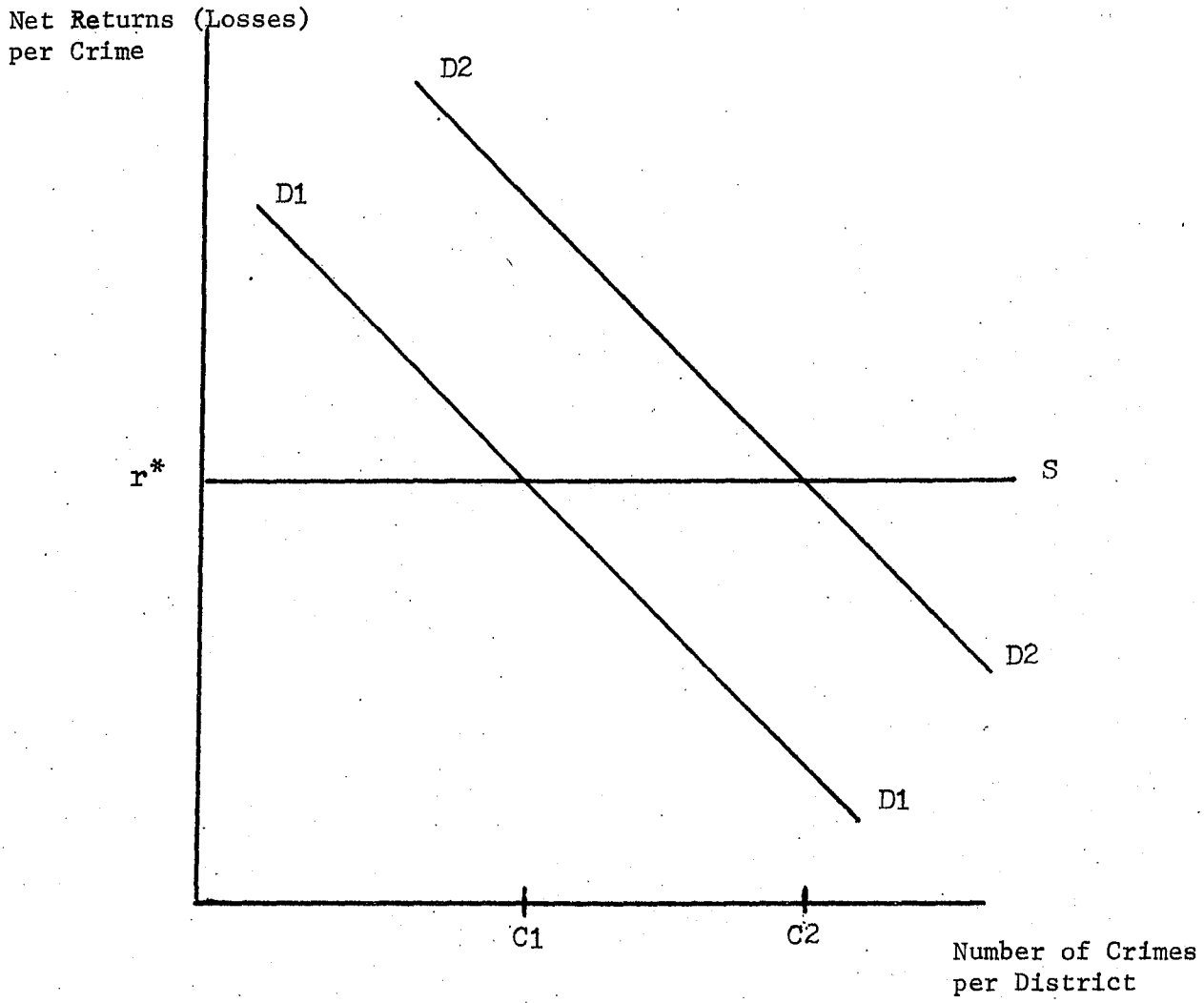
V = a vector of characteristics that identified potential victims,

G = expected gains from committing a crime,

Z = a vector of characteristics that identified potential criminals.

The expected gains from committing a crime and the expected losses from being victimized will be equal to r* for all districts. The characteristics of potential criminals generate a supply of criminals that is mobile across

FIGURE 1.


Net Returns (Losses)
per Crime
D2
D1
r*
S
D2
D1
C1
C2
Number of Crimes
per District

districts. Thus, the reduced form of the supply and demand curves, the number of crimes in any district, depends only on the characteristics of potential victims. This assumes that criminals operate throughout the metropolitan area but that victims are attacked in the districts in which they reside.[1]

II. Empirical Results

In this section, we estimate the model of the choice of criminal victims. Table 1 displays descriptive statistics for data gathered by the New York Times (1973) for each of New York City's seventy-one police precincts. The data represent 1972 crime rates and 1970 socioeconomic characteristics. Crime rates vary widely across precincts. The robbery rate ranges from less than 1 robbery per thousand population to more than 90, while the burglary rate ranges from about 7 to 176 per thousand. The income level, income distribution, racial composition, and age composition of the population also vary significantly. While the data set is limited (socioeconomic data by police precinct are not generally available), it can be used to explain the interdistrict variation in crime rates in New York City.[2]

The median income of the precinct and its racial and age composition serve as proxies for the risks of crime. Where median incomes are high, expenditures on self-protection will also be high. In addition, the police provide better protection to higher-income areas because these residents have greater influence in demanding public services. Increased self-protection and police services increase the risk of failure or apprehension and thus raise the costs paid by criminals. Precincts with higher risks are less desirable targets.

TABLE 1. Descriptive Statistics, Seventy-one New York City Precincts

	Mean	Standard Deviation	Minimum	Maximum
Robbery rate (per 1000)	12.8	14.4	0.9	93.5
Burglary rate (per 1000)	24.1	26.4	6.7	175.7
% Black and Hispanic	36.0	31.1	1.3	98.2
Median family income	9738	3127	4950	20,865
% of families with income $\leq$ \$4000	16.9	8.8	4.9	39.5
% of families with income $\geq$ \$25,000	6.6	7.9	0.4	40.8
% of population aged 14-21 years	12.3	2.5	4.0	17.4

Holding constant the income level, the greater the proportion of the precinct that is Black or Spanish-speaking and the greater the percent that is young, the lower will be the costs. This assumes that the police are less likely to solve cases for minorities and young people who lack political influence, or that the police enforce a different standard of behavior in minority neighborhoods or when dealing with young people.

The quality of the victim stock is proxied by the income composition of the precinct. Higher-income individuals provide more lucrative targets and are more likely to be victims.

Table 2 presents regression results for robbery and burglary rates. In both cases, the model is verified. While percent Black and Hispanic and percent ages fourteen through twenty-one are insignificant, the other variables are significant and have the expected signs. Crime rates are higher where the percent with income over $25,000 is larger and where the median income of the precinct and the percent poor are lower.

As in the Tiebout model, wealthy individuals have an incentive to cluster into homogeneous neighborhoods. Individually they are desirable victims, but this desirability can be offset in wealthy neighborhoods, which increase the risks to the criminal. Since criminals are likely to be poor, and thus more noticeable in a homogeneous neighborhood of wealthy individuals, segregation by income class can be viewed as an attempt by the wealthy to lower the costs of crime detection. This neighborhood effect in both regressions is large.[3] Thus, attempts to establish heterogeneous neighborhoods are not likely to be successful unless crime rates are lowered.

TABLE 2. Regression Results

	Robbery Rate	Burglary Rate
Constant	107.16	199.3
% Black and Hispanic	0.12 (1.46)	-0.11 (0.71)
Median family income (in thousands of dollars)	-8.38 (5.13)*	-16.97 (5.34)*
% of families with income $\leq$ \$4,000	-1.26 (2.76)*	-2.37 (2.68)*
% of families with income $\geq$ \$25,000	2.22 (5.01)*	4.97 (5.77)*
% Aged 14-21	-0.86 (1.06)	0.10 (0.06)
R^2	.478	.418
F	11.91*	9.31*

Notes: t-statistics appear in parentheses below the regression coefficients; *denotes significance at the 5 percent level (two-tailed test).

This note has applied the economics of crime to the choice of criminal victims. It has shown that criminals rationally choose their victims and that wealthy victims can reduce their probability of being victimized by forming homogeneous neighborhoods.

NOTES

[1]This assumption is valid for crimes against residences or firms, which have fixed locations; less valid for crimes against the person.

[2]Other data were presented by the Times but were not useful in the estimation. Murder rates were available but are not analyzed here. The framework discussed in this note seems less relevant for a crime like murder, in which offenders generally are acquainted with their victims.

[3]A 1 percent increase in the median income of the precinct results in a 6.4 percent decrease in the robbery rate and a 6.9 percent decrease in the burglary rate.

REFERENCES

Danziger, S., and Wheeler, D. 1975. "The Economics of Crime: Punishment or Income Redistribution." Review of Social Economy 33, no. 2 (forthcoming).

Ehrlich, I. 1973. "Participation in Illegitimate Activities: A Theoretical and Empirical Investigation." Journal of Political Economy 80, no. 3 (May/June).

New York Times. 1973. "Precinct Crime Compared with People's Age, Wealth." July 30.

Ozenne, T. 1974. "The Economics of Bank Robbery." Journal of Legal Studies 3, no. 1 (January).

Pogue, T. 1975. "Effect of Police Expenditures on Crime Rates: Some Evidence." Public Finance Quarterly 3, no. 1 (January).

FACTORS IN URBAN CRIME: COMMENT

I. Introduction

In a recent article in the Journal of Urban Economics, Irving Hoch (1974) presents an extensive analysis of urban crime rates. While his central focus is the relationship of urban scale--population size and density--and crime rates, he also concludes that "a number of demographic, ethnic and regional factors are significantly related to crime rates" (p.185). Hoch, however, does not posit a behavioral model of the supply of criminal offenses, and his work proceeds by "econometric rules-of-thumb."[1] This note demonstrates that the absence of an economic model of crime puts too much emphasis on race per se as a policy-relevant variable.

First, Hoch's results are briefly reviewed. Second, a standard economic model of criminal activity is presented and estimated. Finally, the empirical results obtained from the "economic" model are compared to Hoch's results, and the implications for public policy are discussed.

II. Hoch's Results Reviewed

Hoch analyzes Standard Metropolitan Statistical Area crime rates for 1960 and 1970 using crime rates for all seven major crimes of the FBI Index as the dependent variables.[2] The independent variables are categorized as measures of the scale, ethnicity, location-climate, and demography-economy of the metropolitan area. Surprisingly, data relating to the criminal justice system and to the educational and income levels of the SMSAs are not considered.

Hoch's two major conclusions refer to a scale effect and a regional-racial effect on crime rates:

> Results here considerably erode support for the proposition that urban scale, per se, is cause or catalyst in the commission of crime. This conclusion bears directly on the policy proposal that redirection of population away from large urban areas would have substantial pay-offs in terms of the reduction of crime. Such reduction should be considerably less than anticipated. (p.221)

Second,

> there are marked and persistent differences in crime rate by group, with rates lowest for the non-Black, "North" group, followed by considerably higher rates for the non-Black, Confederacy group, and then by rates somewhat higher again for the Black, Confederacy group, and, finally, by substantially higher rates for the Black, "North" group.[3] (p.220)

This note is in substantial agreement with Hoch concerning the scale effect, but questions his results for regional and racial subgroups. In Table 14 (pp.222-223), Hoch estimates crime rates for a two-region classification of urban areas based upon the pooled (1960 and 1970 data) regressions he presents in Table 11 (pp.212-215). For example, he estimates that the robbery rate by Blacks in urban areas outside of the Confederacy is 1318.646, while the robbery rate by non-Blacks in these same urban areas is 42.194.[4] Thus, Blacks are over thirty times as likely to commit robbery as non-Blacks in urban areas outside of the Confederacy. While this ratio is one of the largest Hoch finds, the general pattern that emerges is that "the Northern Black crime rates are exceedingly high, especially in crimes of violence " (p.225).

There are several reasons to question these results. The first concerns forecast error. As the distance between the chosen value of an independent variable and its sample mean increases, the variance of the forecast error increases. For the variable, percent Black, the sample mean is 10.514 percent (p.194), yet

> estimated Black rates were obtained by setting percent Black equal to 100, and all other groups equal to zero. (p.220)

Since 100 percent Black is substantially greater than the sample mean,

large forecast errors (which are not reported) must be associated with Hoch's estimates in Table 14. A second problem results from the aggregation of all urban areas into a two-region classification even though the regressions of Hoch's Table 11 show regional coefficients for the Northcentral and Western regions that differ significantly from those of the Northeastern region.

Two additional problems relate to specification bias, both in the regressions of Table 11 and in the estimation procedure used to derive Table 14. As mentioned above, Hoch omitted several variables relating to the judicial system and to socioeconomic characteristics of the urban area that are usually included in the estimation of a supply of criminal offenses function.[5] For example, if income inequality is positively related to both crime rates and percent Black, and income inequality is an omitted variable, then the estimated racial effect will be biased upward. As the next section emphasizes, such a bias is present in Hoch's regressions.

The final specification problem occurs because the procedure used to estimate crime rates by Blacks and non-Blacks does not produce a measure of a purely racial effect: It does not specify what the crime rate would be if the population of the area were 100 percent Black and all other characteristics of the area were unchanged. For example, in estimating the Black crime rate for a region, an estimated Black unemployment rate rather than the actual regional unemployment rate is used as an explanatory variable.[6] Thus, the racial effect of Table 14 is really an aggregate of a racial effect, an unemployment effect, and a similar effect for each of the other independent variables.

Taken together, these four problems put the reliability of Hoch's estimated crime rates by region and race into question.

III. An Economic Model of the Supply of Criminal Offenses

Recent studies in the economics of crime have proposed an extension of the principles of utility maximization to the analysis of illegal activity.[7] According to this view, crime is committed not by deranged or mentally deficient individuals, but by "rational economic men" who calculate the returns from all activities, illegal as well as legal, choose those that maximize expected utility, and respond to incentives that alter the relative costs and benefits of these activities. One such model[8] posits the following supply function for criminal offenses:

$$C = f(G,Y,D,Z)$$

where

C = the crime rate

G = the degree of inequality in the distribution of income

Y = the income level

D = the level of deterrence

Z = a vector of socioeconomic characteristics.

Economic incentives are transmitted to the individual through both the level and the distribution of income. In areas with higher income levels, the average "take" per crime will be larger. This raises expected illegal returns and results in higher crime rates. With a constant income level, a more unequal distribution of income implies a greater difference between the incomes earned legally by the poor and the wealthy. If utility functions are interdependent (that is, if the incomes of the wealthy affect the utility of the poor), a greater degree of inequality will increase relative

deprivation, and crime rates will rise. Crime rates will be lower where deterrence—in this model, the probability of being sent to prison—is more severe. The composite variable, Z, contains many of the variables that are included in Hoch's regressions: racial composition, scale effects, and region, plus educational levels.

This model stresses the importance of economic opportunities in explaining crime rates. If Blacks are discriminated against in the labor market--earn lower wages and have higher unemployment rates than non-Blacks--then illegal opportunities will be relatively more attractive to them. Blacks commit more crimes, in this case, because they face a different tradeoff between legal and illegal activities, not because they are more prone to violence.

Table 1 presents estimates of this economic model of crime and Table 2 defines the variables. While Hoch examined all seven major index crimes, this analysis is confined to robbery, as a representative violent crime, and to burglary, as a representative property crime.[9] The regressions are based on all of the SMSAs for which the FBI reported crime rates for 1970.[10]

The regressions generally support the model. For both the robbery and the burglary regressions, the signs for the income level, income distribution, and male unemployment rate are all positive and five of the six coefficients are significant.[11] Deterrence is not significant for robbery, but greater punishment probabilities do lower the burglary rate.

The scale effects, as evidenced by the population size class dummies, density, and change in population, are similar to those in Hoch's paper. Both burglary and robbery rates generally increase with city size; robbery increases as density increases; burglary is higher in cities that have

TABLE 1

Regression Results for Crime Rates in 222 SMSAs

	Robbery Rate	Burglary Rate
CONSTANT[1]	-323.42	-1658.13
POP2	- 0.50 (0.05)	144.67 * (2.59)
POP3	23.20 * (1.74)	161.49 * (2.24)
POP4	60.00 * (3.72)	181.31 * (2.08)
Δ POP	0.30 (0.95)	4.75 * (2.75)
DENSITY	.02 * (8.66)	-0.001 (0.15)
GINI	461.3 * (2.08)	4930.5 * (4.10)
MEDIAN	.02 * (3.88)	0.11 * (3.84)
UNEMMEN	6.57 (1.54)	85.92 * (3.71)
PUNISH	2.55 (0.33)	-74.71 * (1.80)
NORTHEAST	-52.74 * (2.67)	-163.46 (1.53)
NORTHCENT	-2.69 (0.15)	-128.46 (1.33)
SOUTH	2.98 (0.13)	85.88 (0.69)
NO HIGH SC	-0.12 (0.15)	-7.26 (1.63)

TABLE 1 (cont.)

Regression Results for Urban Crime Rates in 222 SMSAs

	Robbery Rate	Burglary Rate
COLLEGE	-3.42 * (3.00)	-10.88 * (1.76)
BLACK	3.23 * (4.77)	7.88 * (2.14)
R^2	.656	.467
Mean of dependent variable	125.02	1157.12

[1]The constant refers to an SMSA in the Western region with a population of less than 250,000.

*Denotes significance at the 5 percent level; t-statistics appear in parentheses below the regression coefficients.

TABLE 2

Variable Definitions and Sources

Population size class dummies:
- POP1 - less than 250,000
- POP2 - 250,000 - 500,000
- POP3 - 500,000 - 1,000,000
- POP4 - greater than 1,000,000

Regional dummies:
- WEST - the Pacific and Mountain States
- NORTHEAST - the New England and Mid Atlantic States
- NORTHCENT - the East North Central and West North Central States
- SOUTH - the South Atlantic, East South Central and West South Central States

GINI - the Gini coefficient of family incomes

MEDIAN - the median family income in dollars

PUNISH - the probability of being sent to prison; the number of prisoners jailed/the number offenses reported; available only for states

ΔPOP - population growth rate, 1960-1970

DENSITY - central-city population per square mile

UNNEMMEN - the male unemployment rate

NO HIGH SC - the percent of the population over twenty-five years of age with eight or fewer years of education

COLLEGE - the percent of the population over twenty-five years of age with at least a college diploma

BLACK - the percent of the population that is Black

Sources:

For all variables, except PUNISH, the 1970 Census of Population.

For PUNISH, the Law Enforcement Assistance Administration, Sourcebook on Criminal Statistics. Washington: U.S. Government Printing Office, 1973.

For the crime rates, the Federal Bureau of Investigation, Uniform Crime Reports. Washington: U.S. Government Printing Office, annually.

experienced faster population growth rates. The total scale effect for robbery is substantially larger than the effect found by Hoch. The robbery rate in SMSAs with populations greater than one million is higher by sixty crimes per 100,000 population than that of cities with populations under one-quarter of a million; the robbery rate in an area with a central-city density of 1000 more persons per square mile than the average density is higher by sixteen crimes per 100,000 population than the rate in an area of average density.

The Northeastern and Northcentral regions have lower crime rates than the Western region, suggesting that the three regions should not be aggregated. This is quite important, because when Hoch mentions higher non-Confederate crime rates he refers to the heroin problems of the urban Northeast. In fact, the higher rates, which Hoch associates with the "North," occur in the West, where the heroin problem is less serious. Since Hoch based his analysis on a two-region classification of urban areas, his suggestions for interregional migration policies to deal with higher "Northern" crime rates are misdirected.

Higher educational levels are expected to reduce crime, and, as the percent of college graduates in an area increases, crime falls. The only counter-intuitive result is the negative, but not significant, effect of the percent of the population with less than one year of high school.

While significant for both crimes, the coefficients on percent Black are much smaller in the economic model than in Hoch's model. Hoch's 1970 regressions (1974, Table 6) result in the following elasticities of the crime rate with respect to percent Black: .603 for robbery and .178 for burglary.[12] The similar elasticities derived from the regressions of our Table I are .255 for robbery and .067 for burglary. The inclusion of the variables specified in the economic model significantly reduces the pure racial

effect (by about 60 percent for each crime). In addition, the elasticity of the crime rate with respect to the degree of income inequality is 1.26 for robbery and 1.45 for burglary; with respect to the male unemployment rate, .199 for robbery and .282 for burglary. A reduction in either the degree of income inequality or the male unemployment rate would lower crime rates by more than a similar reduction in the percent Black.

Table 3 provides estimates for Black and non-Black crime rates for various population and regional groupings. While these estimates are still subject to a large forecast error (the sample mean for percent Black is 9.85), they do address the other problems that occur in Hoch's paper. They provide a disaggregation by both region and population size class, are derived from the regressions specified by the economic model, and estimate an unbiased racial differential (since the independent variables are evaluated at their actual means for the respective region and size classes, and percent Black is evaluated at either 0 or 100).

Black robbery rates are about two and one-half times non-Black rates for the largest class of metropolitan areas, and about four times non-Black rates for areas with populations of 500,000 to 1,000,000. Black burglary rates are about one and one-half to two times non-Black rates for both size classes. These racial differentials are much smaller than those Hoch estimated, and are fairly constant across regions.

IV. Summary

This note has demonstrated that the racial effect in crime rates is very sensitive to the specification of a model crime. No presumption should be made that the elasticities estimated in this note are indeed the true elasticities. Other variables (such as sentence length or gun

TABLE 3

Actual and Estimated Crime Rates for
Regional and Racial Subgroups

	Non-Black*	Actual**	Black*	Black/Non-Black
Population: > 1,000,000 (POP 4)				
A. Robbery rate				
West	226.2	247.6	549.5	2.43
Northeast	224.6	253.3	547.8	2.44
Northcentral	233.1	266.9	556.4	2.39
South	209.5	281.5	532.8	2.54
B. Burglary rate				
West	1679.7	1731.7	2468.1	1.47
Northeast	1148.5	1218.6	1936.9	1.69
Northcentral	1182.0	1264.6	1970.4	1.67
South	1325.3	1500.9	2113.8	1.60
Population: 500,000 - 1,000,000 (POP 3)				
A. Robbery rate				
West	112.9	125.42	436.2	3.86
Northeast	111.3	131.15	434.6	3.91
Northcentral	119.8	144.79	443.1	3.70
South	96.3	159.3	419.6	4.36
B. Burglary rate				
West	1513.3	1543.7	2301.7	1.52
Northeast	982.1	1030.6	1770.6	1.80
Northcentral	1015.6	1076.6	1804.0	1.78
South	1158.9	1312.9	1947.4	1.68

*Non-Black rates are evaluated for Black = 0; Black rates for Black = 100.

**Actual rates are the sample means for the respective regional-size groups.

regulations) have been excluded from this analysis because of data unavailability, and their inclusion could alter the results presented here.

While Hoch suggests redirection of racial migration streams as a policy alternative, he notes that "it would make considerably more sense to work on the underlying problems causing higher rates for some groups" (p. 225). Since the racial effect on crime rates is sensitive to the specification of a regression model, Hoch's last point is the appropriate one for public policy. Any policy that restricts location or migration decisions will generate welfare losses, even if it does reduce crime. However, changes in economic conditions, in addition to reducing crime, produce positive externalities by improving economic welfare.

NOTES

[1]These "rules-of-thumb" are detailed by Hoch on p. 196 and in the Appendix, and relate to retention of significant variables, avoidance of multicollinearity, and maximization of adjusted R^2.

[2]The FBI index is divided into two major parts: the violent crimes of murder, forcible rape, robbery, and aggravated assault; and the property crimes of burglary, larceny of over $50, and auto theft.

[3]Hoch refers to all non-Confederacy states as part of the "North."

[4]All crime rates refer to the number of reported offenses per 100,000 population.

[5]This point is expanded upon in the next section.

[6]". . . other explanatory variables were set at values specific to group, based both on regressions using the sample data, and outside information" (Hoch, 1974, p. 220).

[7]Since Becker's now-classic 1968 article, the literature on the economics of crime has grown exponentially. See the bibliography compiled by the Correctional Economics Center of the American Bar Association (1974).

[8]This model is detailed in Danziger and Wheeler (1975).

[9]Robbery rates comprise over 40 percent of all violent crimes and burglary rates over 45 percent of all property crimes (Hoch, 1974, Table I, p. 188). In addition, these crimes are clearly economically motivated and thus consistent with the behavioral model.

[10]While Hoch uses the crime rate for 1970 as the dependent variable, a three-year average of the crime rates for 1970, 1971, and 1972 is used here in an attempt to "average-over" some of the well-documented reporting errors. In actuality, this is of minor empirical importance. Also, Hoch restricted his analysis to 137 SMSAs, while the sample used here contains 222.

[11]For over 200 degrees of freedom and a two-tailed test, a t statistic of 1.645 is significant at the 10 percent level; a t statistic of 1.960 at the 5 percent level. Tests of significance referred to in the text were performed at the 10 percent level.

[12]Where the regression coefficient on variable Xi is $\partial Y/\partial Xi$, the elasticity is $(\partial Y/\partial X_i) \cdot (\bar{X}_i/\bar{Y})$, where $\bar{X}i$ and $\bar{Y}$ are the sample means for the independent and dependent variables.

REFERENCES

American Bar Association. Correctional Economics Center. 1974. The Economics of Crime and Corrections: Bibliography. Washington, September.

Becker, Gary. 1968. "Crime and Punishment: An Economic Approach." Journal of Political Economy 76, no. 2 (March/April).

Danziger, Sheldon, and David Wheeler. 1975. "The Economics of Crime: Punishment or Income Redistribution." Review of Social Economy 33, no. 2 (October).

Hoch, Irving. 1974. "Factors in Urban Crime." Journal of Urban Economics 1, no. 2 (April).