MIDSIZE CITIES AND THEIR CORRELATES WITH CRIME: AN EMPIRICAL INVESTIGATION

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I. INTRODUCTION

The topic of crime has generated a substantial volume of literature. Since the path breaking work of Becker (1968) nearly thirty years ago, economists have examined crime using the analytical tools of their discipline. Their theoretical and empirical research has provided a richer understanding of the topic once primarily viewed through the lenses of sociologists (e.g., Emile Durkheim and Max Weber). Much has been learned about this critical topic but many questions remain unanswered. Indeed, in a recent article John DiIulio (1996) observed that crime is "America's number one domestic policy concern" and boldly stated that, "criminal justice is a field that needs to be conquered by economists."

This paper addresses the social and economic subject of crime by developing an empirical model that analyzes correlates of crime for midsize cities using cross sectional (1990 census) data. Reasons for restricting the analysis to comparably sized cities is to reduce the observed correlation between per capita crime and city size as well as the crime reporting bias associated with city size as documented by Edward Glaeser and Bruce Sacerdote (1996). The population range used in this study is from 119,363 (Plano, TX) to 304,011 (Wichita, KS).

II. OVERVIEW OF EMPIRICAL LITERATURE

Influenced by Gary Becker's pioneering work, empirical crime models have generally assumed criminals are rational, utility maximizing individuals so that decisions to commit a crime are based on cost benefit considerations. The costs and benefits are evaluated on individual utility functions which of course diverge across criminals. However, there exist certain factors that tend to influence criminal behavior generally by raising or lowering the costs (or benefits) of crime. For example, it is argued by Glaeser and Sacerdote (1996, p.11) that larger cities tend to promote crime because "the costs of transport for crime are extremely high, and that criminals perform crimes within a specific geographical area." Similarly, it is hypothesized that the costs of crime are reduced by greater population density because the probability of capture and arrest are diminished in larger cities. Many socioeconomic variables are also assumed to influence criminal behavior by affecting the costs and benefits of committing a crime.

[1] Funding for this research was provided by a Martin Nelson Summer Research Award provided by the University of Puget Sound. I would also like to acknowledge the support of my colleagues in the department of economics. A special thanks is due to Professor Bruce Mann for his input during the innumerable conversations we had regarding this paper.

Crime Deterrence

All else remaining constant, as the probability of capture and incarceration rise the cost of committing a crime increases so fewer crimes would be expected. Thus, factors that raise the likelihood of arrest or capture would be considered crime deterrents. Crime deterrence measures in economic crime studies can be proxied by police expenditures or the number of police officers. Using police resources has been criticized by Benson, Kim and Rasmussen (1994). They suggest that a public choice perspective would reveal bureaucratic behavior with "considerable discretion in allocating their resources among a wide array of activities." This behavior suggests that greater police resources need not increase arrests and thereby affect crime by increasing the cost of criminal activity. Research performed by Tauchen, Witte and Griesinger (1994) did "find robust evidence of a general deterrent effect flowing from criminal justice, particularly police resources." Their model used representative panel data for young men in US urban areas.

In a review of literature on crime deterrence, Samuel Cameron (1988) notes that models traditionally enlist equations related to crime, arrest and police officers. Seen as a simultaneous system, per capita crime is specified to be a function of arrests, average sentence and a vector of socioeconomic variables. Arrests are related to the level of crime, police officers and a vector of socioeconomic variables. Police officers are hypothesized to be related to the volume of crime and a vector of socioeconomic variables. The vector socioeconomic variables used in each equation is not identical in all three equations.

A particularly troubling and recurring result found in the empirical crime literature is the persistence of an insignificant, if not positive correlation between crime and the number of police. A common explanation for this unanticipated finding is the endogeneity of police and crime. Thus, higher crime begets more police so a larger crime deterrent -- police -- is associated with greater crime rates. As Cameron (1988 p. 308) notes; "If more police means a higher fraction of crime is recorded then a spurious positive correlation is induced between crime and arrest rates and a spurious negative one between POL(ice) and arrest rates." Simultaneous equation models (or a recursive set of equations) designed to address the endogeneity problems have met with little success, as most empirical studies continue to find the number police officers having a positive impact on the level of crime.

The inability to empirically validate a negative impact of police on crime has led Gottfredson and Hirschi (1990, p.270) to suggest that "no evidence exists that augmentation of police forces or equipment, differential patrol strategies, or differential intensities of surveillance have an effect on crime rates." The paucity of evidence supporting an inverse relationship between crime and police is not surprising to some. Even though he does not endorse it, Sherman (1992, p.167) observes:

> "The theoretical argument against police controlling crime is that the causes of routine "street" crime -- interpersonal violence, property offenses, and illegal vices -- are far too complex for an agency like the police to address. More basic institutions of social bonding, such as the economy, family, schools, and churches, are the primary crime-control forces in society. The effects of police on crime are only marginal in relation to these master institutions, the argument suggests."

Steven Levitt's (1997) recent article used a novel approach to address the simultaneity problem between crime and police. He incorporated an electoral cycle as an instrumental variable to isolate a data series "that affects the size of the police force, but does not belong directly in the crime production function." He found that the number of police officers is significantly affected by mayoral and gubernatorial election years, independent of other factors. Levitt's findings demonstrate that police officers impart a negative impact on crime using his specification.

Economic Variables

There is an impressive quantity of empirical literature (for reviews, see Cameron [1988], Pyle [1983] and Freeman [1983]) relating factors that influence costs and benefits of criminal activity. Economic crime predictors have included many labor market variables. The unemployment rate, employment, size of labor force, earnings and poverty are among the proxies used. Theoretically, labor market conditions should help govern the incentives for crime, but, care must be given to the specification because a specific labor market variable can exhibit both positive and negative incentives. Ehrlich (1996) illustrates this point by noting that as the average earnings of a geographical area rise, the incentive to engage in criminal activity should decline because of legitimate earning opportunities. However, to the extent earnings correlate with average community wealth, the returns to criminal activity may rise providing greater incentive for illegal activity.

A similar argument can be made with respect to the unemployment rate. Higher unemployment rates suggests more economic distress and would be expected to positively influence crime (e.g., Devine, Sheley and Smith[1988], Cantor and Land [1985], Osborne, Trickett, and Elder[1992]). On the other hand, with more unemployment, the likelihood of finding a vacant house to burglarize is reduced and the prospect of being observed by otherwise employed individuals is increased, negatively influencing criminal activity. Both of these examples illustrate that labor market variables can induce conflicting incentives.

Other economic variables assumed to influence crime are poverty and income inequality. Patterson (1991) reviewed the empirical crime literature for these variables. The concern is whether absolute poverty or relative poverty (income inequality), or both contribute to crime. He concluded that "absolute poverty is more strongly associated with neighborhood crime rates, although the relationship is conditional on the type of crime considered." He also observed that there are numerous ways that absolute poverty has been proxied due to the subjective nature of the concept.

Social and Demographic Variables

Sociologists and criminologists have developed a long list of social and demographic variables presumed to be causal crime variables. The general theme of many sociologists is that the urban setting provides a social structure that is conducive to abnormal or deviant or criminal behavior. Family structure, ethnicity, education, social status, severity of sanctions and welfare spending are broad classes of social variables suspected of influencing crime. Population, age distribution, geographical location and weather make up an incomplete list of demographic variables considered in some empirical studies.

Social disorganization is believed to manifest itself through higher crime rates. Sampson and Groves (1989) provided evidence that indicated crime increased in areas distinguished by "sparse friendship networks, unsupervised teenage peer groups, and low organizational participation." Following this line of reasoning, authors (e.g., Sampson and Groves [1989], Osborn, Trickett and Elder [1992], Glaeser and Sacerdote [1996]) have used variables reflecting family dysfunction as explanatory variables. Single parent or female headed households have been used successfully in their empirical research. Glaeser and Sacerdote found that the inclusion of female headed households dominated other demographic variables. They believe that the female headed household variable may be endogenous and embodies the effects of other exogenous, demographic factors that lie at the root of a "substantial share" of crime in cities.

For similar reasons, other social or environmental variables have been employed in empirical crime research. The presence or intensity of such a variable may reflect an underlying social structure conducive to crime. For example, Spelman (1993) examined data from a low-income Austin, Texas neighborhood and found that the crime rate on blocks with abandoned buildings was twice the rate found in blocks without abandoned buildings. His thesis was that social decay "is accompanied by physical deterioration, as homeowners and small business people put less time and money into maintaining their buildings." The abandoned buildings do not cause crime directly, they are merely indicators of the underlying social decay. Likewise, the presence of legalized gambling (see Buck, Deutsch, Hakim, Spiegel, and Weinblatt [1991]) appears to positively

influence crime. Finally, there appears to be some correlation between weather and crime as well as days of the week and holidays and crime (Cheatwood, 1995).

The effect of age on crime has been the focus of many studies (e.g., Freeman [1996], Gottfredson and Hirschi [1986], Votey [1991], Tittle and Ward [1993]) because of the observed inverted "J-curve" relating crime (Y axis) and age (X axis). Do youth simply mature out of criminal activity or are there economic forces at work? Votey found that reduction in crime participation after age 18 is linked to economic (i.e., labor market) opportunities and the deterrence effect of more severe sanctions resulting from the transition from juvenile to adult status. He also concludes that race and crime participation are not significantly related after controlling for education, employment opportunities and age.

Ethnicity, typically proxied by the percent non-white (or its complement, white) has been used as a measure of cultural homogeneity across geographic communities. Social status is correlated with education and earnings, both expected to reduce crime on the margin. Public relief and welfare programs in general provide disincentives for crime. The sanctions for criminal activity are directly related to the cost of committing a crime because it is a deterrent; higher (more severe) sanctions reduce crime by increasing its cost. By the same token, imprisonment sanctions further reduce crime by incapacitating criminals.

III. THE DATA

Data were gathered for nearly 100 midsize cities. The sample was drawn so the median size city had a population approximating of 180,000 based on 1990 census data. The *County and City Data Book* (1994) was the primary source of data for each city. Crime and police officer data were extracted from the *Uniform Crime Reports* (1991) issued by the Federal Bureau of Investigation. The crime variable is the total crime index which includes violent (murder and non-negligent man-slaughter, forcible rape, robbery and aggravated assault) and nonviolent (burglary larceny-theft and motor vehicle theft) crime. The crime index is expressed in incidents reported per 100,000 population. Table 1 provides summary statistics for these data.

TABLE 1
SUMMARY STATISTICS OF VARIABLES

Variable	Mean	Standard Deviation	Minimum	Maximum
Crime per 100,000 population:				
CRIME	8,926	2,849	3,679	17,115
City population (1990):				
POP	181,190	4,8491	119,363	304,011
Number of police officers:				
POL	356.55	175.38	139.0	1,070
Percent of population 5-17 years:				
YOUNG	17.55	2.65	12.40	26.00
Percent of total households headed by females: FEMHH	13.99	4.61	5.82	28.29
Number of high school dropouts:				
DROP	1410.40	812.78	373.0	7,091
Median family income:				
INC	34,282	7,489	19,910	59,509
Police officers per 10,000 people:				
POLPOP	19.39	6.88	9.77	40.08
Police officers pr square mile:				
POLDEN	8.39	9.57	0.14	61.48
Fraction of population that is white:				
WFRAC	71.18	15.20	28.62	97.33
Percent vacant housing:				
VACANT	8.34	3.42	2.80	23.20
Civilian labor force:				
LABOR	95,159	28,221	45,456	89,340
Unemployment Rate:				
URATE	6.8	2.47	2.3	16.7

Note: For a complete city list and data corresponding with each city, see the Appendix.

IV. THE MODEL

The crime model in this paper uses many explanatory variables common in other regression models but also introduces some new correlates that appear to enhance the explanation of crime in midsize cities. Additionally, the estimated model is specified as a reduced form, single equation model rather than a system of simultaneous equations. As a result, police officers are entered directly into the list of regressors. The implicit form of the model takes on the following basic form:

CRIME = f(POL, POP, SIZE, INC, LABOR, URATE, YOUNG, FEMHH VACANT, WFRAC, PAV, MILD, RD)

where CRIME = crime per 100,000 population
POL = number of police officers, per 10,000 population
POP = population of city
SIZE = size of city in square miles
INC = median family income
LABOR = size of the civilian labor force
URATE = unemployment rate
YOUNG = percent of population age 5-17
FEMHH = female headed household

VACANT = percent vacant housing
WFRAC = percent of population that is white
PAV = dummy variable, agencies allowing police officers to drive marked vehicle for off-duty private use
MILD = dummy variable, presence of large military population
RD = dummy variable, regional location variable

Discussion of Variables

Unlike many earlier studies this analysis includes the number of police officers per 10,000 (POL) directly into the crime regression equation. The reason for this specification hinges on the fact that the number of police officers in a city for a given year can be considered a predetermined (exogenous) variable. In every city, revenue and expenditure decisions demand a great deal of deliberation, requiring much of the budgetary decision-making to be completed prior to a calendar year. Thus, city expenditures for police protection in 1990 were substantially determined by economic and political considerations in 1989. To argue that the number of police officers and level of crime are exclusively and simultaneously determined in the same year denies the function of a city's revenue department.

The number of police officers in a city enters this estimated equation in more than one form. First, as a composite variable that interacts with a city's population, POLPOP. This variable is defined as the number of police officers per 10,000 inhabitants. POLPOP is expected to rise with CRIME to reflect the general finding (Glaeser and Sacerdote, 1996) that per capita crime increases with city size and that the number police per capita also rises with the general population. In part, this relationship may reflect the greater crime reporting that is possible with larger police forces.

Once this relationship is controlled for, it is hypothesized that the number of police officers (POL) will have an independent and negative influence on crime owing to its deterrence effect. Holding all else constant, the marginal effect of adding police reduces crime by raising the probability of being apprehended. Similarly, the number of police per square mile (POLDEN) is also expected to negatively influence crime. As the density of police officers present in a given land area increases, crime is expected to decline.

Median family income (INC) is one of three economic variables included in the regression model to capture the economic conditions of a city. It is presumed that as incomes rise the cost of committing crime would increase as well because non-criminal activity is more lucrative. Economically depressed cities with low household incomes are expected to experience more crime than affluent cities. A related variable is the size of the labor force (LABOR). This variable indirectly captures the influence of population to the extent that cities with greater populations are expected to have a larger pool in its work force. The unemployment rate (URATE) is another labor market variable considered. Like INC, the unemployment rate proxies economic well being, with lower unemployment rates associated with a more vibrant economy with less economic stress.

Most of the remaining regressors are social or demographic variables. The first is the percent of population ranging from age 5 through 17 (YOUNG). As argued above, this age group is particularly prone to crime, perhaps because the sanctions for juveniles are less severe (thereby lower the cost of crime) than for adults and because the labor market conditions are less favorable for young, unskilled workers. The number of high school dropouts (DROP) is also tested in this model. This variable is an indicator of labor skills or motivation. A positive correlation is expected between crime and the explanatory variables YOUNG and DROP.

The percent of total households headed by females (FEMHH) is another factor hypothesized to be directly related to crime. The discussion above has already indicated that the female headed household variable may be endogenous and capture the effects of other underlying exogenous, demographic factors. In a similar vein, the percent of vacant housing (VACANT) was included in the estimated regression. The vacant buildings do not cause crime directly, they reflect the underlying physical and social decay in a city. Finally, the fraction

the population that is white (WFRAC) is included as a proxy for cultural homogeneity. Other studies have used the proportion of African-Americans in their empirical models with moderate success.

A unique contribution of this paper is to explicitly consider one other deterrence variable, personally assigned vehicles (PAV). This qualitative variable indicates the presence of cities where police officers are allowed to drive marked vehicles for off-duty private use (not just for commuting purposes). PAVs are complementary capital goods that enhance the "production" of police services in a number of ways. They increase the effective time that officers are able to patrol by avoiding time spent driving to and from the motor pool or transferring gear from private autos to patrol vehicles at the beginning and ending of shifts. PAVs also have a deterrent "billboard" effect by virtue of being parked in neighborhoods around the city. The added visibility of off-duty officers in marked police vehicles suppresses some criminal activity. For a more complete discussion of this variable see Baarsma, Goodman and Mann (1997). Table 2 below was constructed to provide some preliminary evidence of the relationship between crime and other key variables after adjusting for the presence of PAVs.

TABLE 2
COMPARISON OF SAMPLE AVERAGES FOR KEY VARIABLES
ACCOUNTING FOR PAVS

Sample Characteristics	n	CRIME	POLPOP	POL	POP
Total Sample	92	8926	19.4	356.6	181,900
Sample with only PAVs	17	7981	18.7	357.5	190,400
Sample with out PAVs	75	9140	19.5	356.3	179,890

This table presents information for the entire sample and two subsets; one containing only those cities with PAVs, the other consisting of those of cities without PAVs. It is evident from these data that, on average, crime is smaller in those cities having PAVs. Interestingly, the number of police officers is nearly identical for both subsets of data but the population (POP) tends to be greater for those cities with PAVs resulting in the number of police per 10,000 people (POLPOP) to be marginally lower.

Two additional dummy variables were incorporated in the regression model. A regional dummy variable (RD) was constructed using the US census divisions and regions to discern if the geographical location of cities influences crime. The second dummy variable was designed to account for a large military influence (MILD) on a city. There is a significant military presence in two of the cities analyzed; Tacoma, WA and Norfolk, VA. The military population in or near these two cities is a mixed blessing. Economic activity is enhanced but the level of crime also escalates. This study did not address the question of whether or not military personnel (or their families) committed more crime or were the victims of more crime, or both. Military personnel are younger, more mobile and less attached to the city than other residents. They are potentially subject to brief assignments before being reassigned to other locations. The transient nature combined with relatively low salary for military personnel results in proportionately less home ownership and greater demand for multifamily housing, factors that tend to restrain rather than promote community spirit.

V. THE RESULTS

General Characteristics

The empirical results for three slightly different models are summarized in Table 3. For each model the dependent variable is crime per 100,000 population, CRIME. Column (1) lists each of the variables specified by one of three estimated equations. Columns (2) and (3) present the estimated coefficients, their standard errors and the P-values (for the two tail test of the null hypothesis that β equals zero). The standard errors are in parentheses below the estimated coefficients in column (2). Columns (4)-(5) and (6)-(7) provide the same information found in columns (2) and (3) but corresponding to the second and third models estimated. The summary statistics, adjusted R^2 and the standard error of the regression (SER), are reported in the last two rows of the table.

The three models summarized in Table 3 have eight explanatory variables in common; POLPOP, POL, POLSQ, INC, LABOR, VACANT, MILD, and PAV. In each case the estimated coefficients for these variables are statistically significant, have the same sign and are similar in size. Model 2 and model 1 have one additional overlapping explanatory variable (FEMHH) but model 2 uses high school dropouts (DROP) and the unemployment rate (URATE) to replace the youth (YOUNG) variable found in model 1. Model 3 uses URATE like model 2, but unlike model 2 it does not use DROP. Rather, the percent of population that is white (WFRAC) is substituted for (DROP). In addition model 3 differs from the other two equations by including the number of police officers per square mile (POLDEN). Each of the three models is influenced by regional dummies (RD) but the regions affecting the models are not consistent across regressions.

The Influence of Economic Variables

The economic health of a city as measured by median family income (INC) has the expected negative impact on crime. Based on model 1, as a city's INC rises by 100 dollars, crime is reduced by 14 per 100,000 population all else remaining constant. On the other hand, the size of the labor force (LABOR) has a positive effect on crime, with the number of crimes rising by 8 when the labor force increases by 100. The size of the labor force does not measure the number of people employed, rather the number willing and able to work so the sign on this variable is not a surprise. The unemployment rate (URATE) represents the fraction of the LABOR that is not employed. The marginal effect of URATE on crime can be seen by considering models 2 and 3. A one percentage point rise in URATE is estimated to cause crime to rise by 188 to 230 units. This inverse relationship is as hypothesized.

TABLE 3
REGRESSION RESULTS: ESTIMATED COEFFICIENTS,
STANDARD ERRORS AND P-VALUES

	Model 1		Model 2		Model 3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variable	Est. β	P-Value	Est. β	P-Value	Est. β	P-Value
POLPOP	594.15		535.56		515.18	
	(80.73)	0.000	(68.94)	0.000	(71.89)	0.000
POL	-37.07		-37.95		-40.00	
	(6.960)	0.000	(6.811)	0.000	(6.967)	0.000
POLSQ	0.0151		0.0160		0.0184	
	(0.0042)	0.001	(0.0041)	0.000	(0.0044)	0.001
POLDEN					-45.065	
					(26.87)	0.097
INC	-0.139		-0.111		-0.152	
	(0.0387)	0.000	(0.0287)	0.000	(0.0272)	0.000
LABOR	0.0815		0.0777		0.0854	
	(0.0133)	0.000	(0.0128)	0.000	(0.0131)	0.000
URATE			188.17		230.63	
			(88.17)	0.036	(85.70)	0.009
YOUNG	169.33					
	(82.63)	0.044				
FEMHH	175.72		188.86			
	(69.72)	0.014	(67.85)	0.007		
VACANT	272.23		259.32		263.23	
	(53.49)	0.000	(50.07)	0.000	(50.94)	0.000
WFRAC					-44.177	
					(13.99)	0.002
DROP			0.4578			
			(0.221)	0.041		
PAV	-1461.8		-1352.4		-1222.3	
	(407.8)	0.001	(398.3)	0.001	(413.0)	0.004
MILD	2818.0		3066.6		3386.1.0	
	(1165)	0.018	(1113)	0.007	(1122)	0.003
RD1	1135.1					
	(486.8)	0.022				
RD4			-1143.3			
			(528.7)	0.034		
RD5	-2005.2		-2461.4			
	(766.9)	0.011	(749.4)	0.002		
RD6					2175.2	
					(818.9)	0.010
INTERCEPT	-2374.1		-317.63		7180.7	
	(2623)	0.368	(2029)	0.876	(2203)	0.002
Adjusted R^2	0.75		0.76		0.74	
SER	1436.5		1399.3		1447	

The Influence of Police Variables

The interpretation of police variables employed in this study is different than previous studies. Police per 100,000 population (POLPOP) is entered as an exogenous, predetermined variable rather than an endogenous, simultaneously determined variable. It is hypothesized that POLPOP is largely decided by political and budgetary considerations prior to the current year. It is further assumed that in these political and budgetary deliberations, the law enforcement allocation and hence POLPOP is strongly and *positively* affected by past crime rates. Larger cities tend to have proportionately more per capita crime and as a result tend to employ proportionately more police officers than smaller cities, other things being equal. Thus, crime which is positively correlated with city size is expected to be positively correlated with POLPOP, which is also directly correlated with city population.

On the other hand, once the positive relationship between crime and *per capita* police (due is city size and greater past crime considerations) is controlled for, it is hypothesized that the *number* of police officers added to a city will, on the margin, have an negative impact. The argument for this stems from the "deterrence to crime attribute" associated with more police officers. POL is the variable designed to capture this impact. The squared value of the number of police officers POLSQ was also generated to model the possible nonlinear relationship between crime and the police level. The estimated coefficients for POLPOP, POL and POLSQ, found in table 3 are consistent with the discussion above. POLPOP is found to exert a statistically significant and positive influence on crime. The level of police officers has a significant and negative independent effect on crime that is nonlinear.

To more fully appreciate the influence of the police variables on crime, figure 1 has been constructed. Figure 1 has three panels. In each panel a bivariate scatter diagram between crime (Y axis) and the number of police officers (X axis) is presented along with a simple trend line. Panel A illustrates a positive correlation between crime and police using the original raw data.

Panel B shows the relationship between crime and police after controlling for the social, economic and demographic variables in regression model 1. This panel was constructed by defining the vertical axis as the difference between crime and the estimated value of crime based on all of the explanatory variables except the police variables (POLPOP, POL and POLSQ). By deducting the non-police variables from crime, their impact is eliminated from the vertical axis. This panel does not show a strong relationship between crime and police because police per capita (POLPOP) which is positively related to crime is mixed in with the number of police officers (POL), which is negatively related to crime.

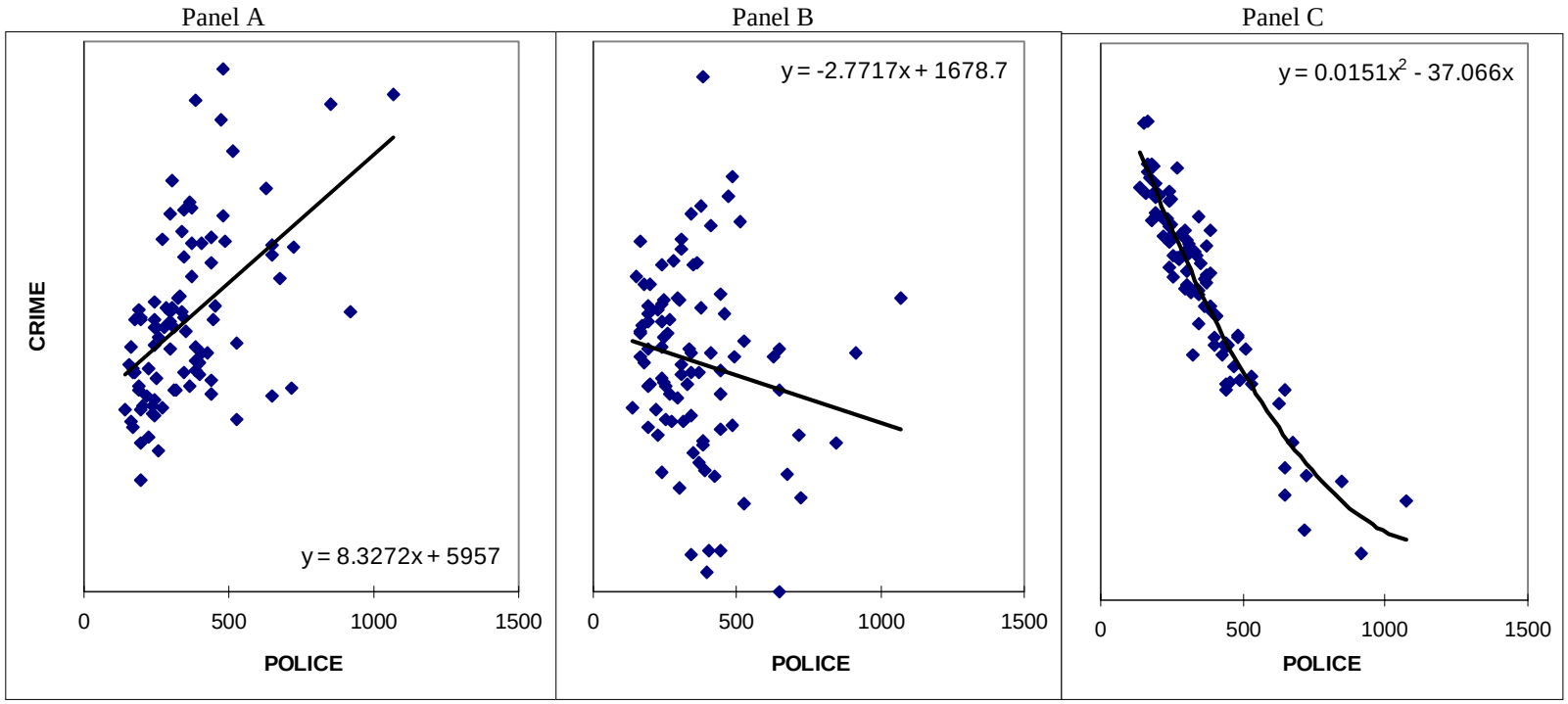
Panel C was constructed to further decompose the relationship between crime and police. This panel was modified by extracting the positive influence of POLPOP on crime from panel B in the same manner that the non-police variables were purged to construct panel B from panel A. By eliminating the impact of POLPOP, the final panel illustrates the relationship between crime and the level of police officers, holding all other factors constant. The curvilinear trend line in panel C depicts the quadratic specification estimated in regression model 1.

The Influence of Personally Assigned Vehicles

Personally assigned vehicles (PAVs) appear to significantly reduce crime independent of all other variables. The range in crime reduction is from 1222 (model 3) to 1462 (model 1). To my knowledge, this is the first time this variable has explicitly been tested in an econometric crime study. The influence of this variable on crime is quite dramatic; crime is reduced on average by 13.7% to 16.4% (assuming the average value of the dependent variable CRIME is 8,926 from Table 1) in those cities having PAVs. The argument that PAVs serve as a productivity enhancing capital complement to the production of police services is consistent with reported regression results.

FIGURE 1

THE RELATIONSHIP BETWEEN CRIME AND THE NUMBER OF POLICE OFFICERS:
A GRAPHICAL VIEW OF THE DECOMPOSITION



The Influence of Social Demographic Variables

The environmental or social demographic variables tested in this paper are YOUNG, DROP, FEMHH, VACANT and WFRAC. YOUNG is found in model 1 and yields results consistent with the theoretical expectations. Ceteris paribus, as YOUNG rises, one would expect more crimes to be committed. The output in table 3 indicates that a one percentage point rise in YOUNG is associated with a 169 increase in crime. The number of high school dropouts (DROP) is correlated with YOUNG because a dropout is defined as a person 16 to 19 years not enrolled in school and not a high school graduate. Thus, the positive coefficient on DROP is consistent with the hypothesized relationship.

Earlier, FEMHH and VACANT were argued to be endogenous variables that reflect deeper, underlying social conditions conducive to crime. FEMHH reflects a breakdown in the family unit. VACANT is an indirect measure of social decay manifested in physical deterioration. It could also be argued to be an indicator of economic distress. In either case, the anticipated effects of FEMHH and YOUNG on crime is positive. Models 1 and 2 estimate the effect of a one percentage point increase in FEMHH to increase the dependent variable by 176 to 189 units. All three models indicate the expected positive relationship between VACANT and the crime rate. On average, a one unit increase in VACANT will result in crime increasing by 265. Only model 3 found ethnicity (WFRAC) to be influential in affecting the crime rate. But this model did not control for FEMHH.

Two cities (Tacoma, WA and Norfolk, VA) were found to have an extreme concentration of military personnel in close proximity relative to the other cases analyzed in this study. A military dummy variable (MILD) was generated to test whether crime in these two cities is significantly influenced by this younger, less affluent and transient population. The results shown Table 3 suggest that the volume of crime for these two cities was statistically significant and is nearly 3,000 greater than other cities in the sample after consideration for all other variables was taken into account.

VI. CONCLUSIONS

Crime is America's top domestic policy concern. Policies designed to fight crime require a point of reference to understand the causes and correlates of crime. Sociologists, criminologists and economists have all contributed to the present understanding of crime but more needs to be done.

This paper has contributed to the identification and interpretation of socioeconomic and demographic correlates of crime for midsize, U.S. cities. A reduced form, single equation model was estimated that is capable of explaining 75 percent of the variation in crime across a sample of over 90 cities ranging in population from roughly 120,000 to 300,000. The results of the estimated regression model suggest there are numerous socioeconomic and demographic variables that influence crime that are not easily controlled by policy makers. However, other variables in the model appear to have a strong influence on crime and are subject to control by policy makers.

One such variable is personally assigned vehicles. Evidence from this research suggests that crime can be significantly reduced (by as much as 15%) by implementing a program of personally assigned, marked vehicles to police officers and allowing them to use the vehicle for personal use. The assigned vehicles seem to enhance police officer productivity and deter crime by the added visibility of the law enforcement vehicle. A second variable is the percent of vacant housing. This variable is a proxy for abandoned buildings in general and is an indirect measure of social decay. The evidence indicates that local efforts to minimize vacant buildings could dampened criminal activity and reported crime.

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