Urban Crime: Deterrence and Local Economic Conditions

BY SANTIAGO PINTO

Evidence shows that crime, both property and violent, has been declining in the United States since the beginning of 1990. The data also suggest that despite a general downward trend, the variation in crime rates across regions is considerable. A growing academic literature has been studying the causal factors explaining changes in crime rates. Most of this work attempts to determine whether the decline in crime can be attributed to more effective deterrence policies or to better economic conditions that facilitate access to legitimate labor market opportunities. The conclusions of this research may provide guidance concerning the kinds of policies that are most effective in controlling crime.

Economic Determinants of Crime

The economic theory of crime, proposed by University of Chicago economist Gary Becker in 1968, assumes that crime is a rational act. Economic agents engage in criminal activities if the expected psychic and monetary rewards of crime (taking into account, among other things, the return to legal labor market activities) are greater than the costs (determined by factors such as apprehension, conviction, and severity of punishment). Two hypotheses flow from this theory. The deterrence hypothesis claims that as more law-enforcement resources are targeted to fight crime, the probability of arrest increases, and the crime rate should therefore decrease. The economic-conditions hypothesis states that weak legitimate labor market opportunities should lead to lower opportunity costs of a crime (represented by foregone wages, employment, etc.), and a higher supply of criminal activities. Conversely, under this view, improving economic conditions should result in less crime.

The empirical literature on crime is far from conclusive about the importance of these effects. A few studies find evidence that higher criminal sanctions, which include policy arrests, incarceration, and other sanctions imposed through the justice system, reduce criminal activity. Others claim that the relationship between the two is either weak or nonexistent. Some papers even find a positive association between sanctions and crime. Research shows that the relationship between crime and a number of variables that capture the opportunity costs of crime (such as unemployment and real minimum wage) is not particularly strong either. Furthermore, it has been claimed that police hiring is related to local economic conditions, suggesting that the two factors cannot really be disentangled.

Conflicting results are generally explained by a number of empirical problems inherent in the crime research. The two most important issues cited in the literature are measurement errors in crime statistics and simultaneity between crime and sanctions. Measuring crime and sanctions accurately is a complicated task. Empirical models of crime are commonly estimated using official reported crime statistics. The FBI's Uniform Crime Reports (UCR) are the most widely used source of crime data. Measurement errors may arise from the fact that offenses are self-reported and the number of arrests is provided by local agencies. Indeed, the accuracy of the data depends on both the victims' willingness to report crimes and on police recording practices and procedures, which may differ across agencies. Additionally, measurement errors may arise simply because hiring more police leads to more crimes being reported.

Only a limited number of papers have directly addressed the problem of measurement errors. Recent work by Aaron Chalfin and Justin McCrary of the University of California, Berkeley re-examines this issue. Their work not only confirms that the UCR dataset suffers from a high degree of measurement errors, but it also quantifies this effect. They claim that estimates of the impact of arrests on crime rates obtained using the UCR dataset tend to be too small by a factor of five when they are not corrected for measurement error bias.

The problem of simultaneity between sanctions and crime is also central in the crime deterrence academic debate. According to the deterrence hypothesis, higher expected sanctions should decrease crime rates. But the causation operates in both directions: Increases in sanctions may also be observed in response to higher crime rates. Bruce Benson of Florida State University and his co-authors claim that it is plausible that police resources are reallocated to deal with higher levels of crime. When crime rates rise, citizens tend to demand more police, a view known as the "reallocation hypothesis." If it is true, then more crime would lead to a larger number of arrests. Thomas Garrett, an economics professor at the University of Mississippi, and Lesli Ott, a statistician at Yale CORE's Quality Measurement Group, seek to test this hypothesis. They use monthly data for 20 large U.S. cities during 1983-2004 and find strong support for the reallocation hypothesis and weak support for the view that arrests reduce crime. They also find that the crime-arrest relationship is very heterogeneous across the cities in their sample and across types of crimes.

In addition, the use of the minimum wage in these studies is indeed problematic. Changes in the minimum wage may have other unintended effects on crime. For instance, if a higher minimum wage increases unemployment, then some people (especially those more likely to be

affected by changes in the minimum wage and with weak labor attachment) may decide to rely on criminal activities for income. A recent work by Andrew Beauchamp and Stacey Chan, from Boston College, focuses on this precise issue. In their study, they find evidence that an increase in the minimum wage tends to displace youth from legal to illegal activities. Thus, according to their results, the effect of a higher minimum wage on employment and, consequently, on crime, dominates the wage effect.

Greater public law enforcement and crime may also be observed in a more general setup that considers both private and public crime prevention and explicitly allows for potential criminals to be mobile across geographical areas. Kangoh Lee of San Diego State University and the author of this article have developed a theoretical spatial model of crime that incorporates some of these features.

In the model, criminals allocate their illegal activities across geographical areas depending on the relative expected benefits of crime. At the local level, the probability of being apprehended is determined by the interplay between public law enforcement and private precautionary measures. Our research determined that in this context, and when the provision of local public law enforcement is decided strategically by a local agency, it is possible to obtain a positive relationship between local public law enforcement and crime. The conditions under which this result holds depend on how residents respond to the relative levels of local public law enforcement. For instance, if residents respond to an increase in local public law enforcement by decreasing private precautions significantly, then the overall level of local protection would be perceived as being too low relative to other regions, attracting more criminals into the area. It is also possible to infer from this analysis that when relevant factors are overlooked (in other words, when the spatial dependence between variables such as private security measures and local law enforcement is neglected), it is likely to obtain results that seem counterintuitive at first glance.

In order to identify the effects of sanctions on crime, some research work uses quasi-experimental methods. A few recent studies use terrorism-related events to test the deterrent effect of police. One example is the work by Rafael Di Tella, an economist at the Harvard Business School, and Ernesto Schargrodsky of the University Torcuato Di Tella. A terrorist attack on the main Jewish center in Buenos Aires, Argentina, in July 1994 led to an increased police presence in geographical areas with Jewish and Muslim institutions. The decision to protect these areas is assumed to be independent of the previous levels of crime in the respective areas. In this context, the authors examine the police-crime relationship before and after the terrorist attacks and find that more police decreases auto theft by about 75 percent. They also show, however, that such effect takes place only in the blocks where those institutions are located, and, in fact, little or no changes are observed one or two blocks away.

Most research work does not fully isolate the impact of labor market variables and deterrence on criminal activities. Even though disaggregated micro-level data generally contain information on individuals' criminal behavior, wages, and unemployment spells, it does not include information on deterrence measures. When researchers employ aggregate data, they generally do not use extensive deterrence and economic variables. Therefore, the conclusions concerning the relative impact of economic conditions and sanctions on crime are far from conclusive mostly because they rely on different data sets and empirical methods.

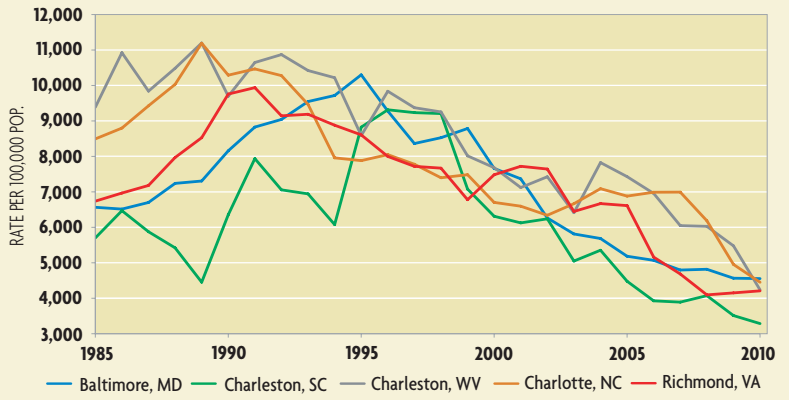
Using state-of-the-art statistical techniques and better data, more recent research has found a significant effect of sanctions on criminal activity and a stronger effect of labor market conditions on crime rates than previous work. Hope Corman of Rider University and Naci Mocan of the University of Colorado Denver examine the impact of several measures of deterrence (past arrests, police force size, and prison population) and local economic conditions (unemployment and real minimum wage) on different categories of crime. They use monthly data for New York City spanning the period 1977-1999. Their approach consists precisely of using this high-frequency data to distinguish between the short-run and long-run effects of police on crime rates. The authors conclude that both deterrence and economic variables help explain part of the decline in crime rates, but the contributions of deterrence measures seem to be larger. Also, according to their findings certain categories of crime are more responsive to changes in economic conditions than others. For instance, the unemployment rate affects burglary and motor vehicle theft, and the minimum wage has an impact on murder, robbery, and larceny. So even though it is not always the same economic factor, it seems that economic conditions affect most categories of crime except for rape and assault.

The work by Chalfin and McCrary also calculates the percentage change in crime rates due to a 1 percent increase in the number of police, or the elasticity of crime rates with respect to police, for similar categories of crime. They do not explicitly examine the impact of economic variables on crime rates, though. They use a panel data set of 242 cities and year-over-year changes in crime rates and police during the period 1960-2010. Their approach proposes various statistical procedures to control for both measurement and simultaneity error biases. They find that additional resources devoted toward law enforcement tend to reduce violent crime more than property crime. More precisely, the police elasticity of crime is -0.34 for violent crime and -0.17 for property crime.

Crime Statistics in the Fifth District

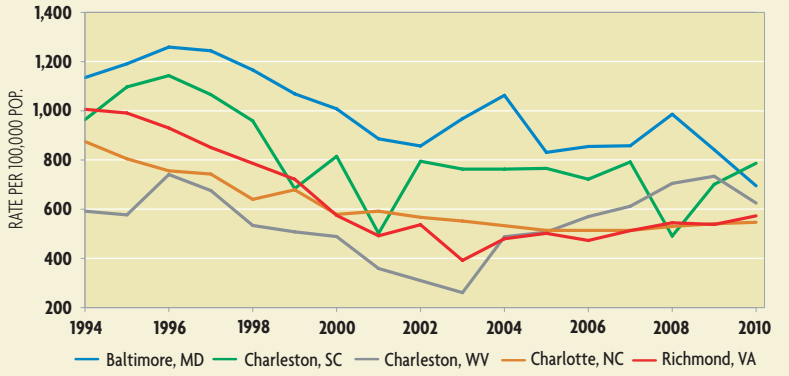
A few interesting observations result when we apply some of the above techniques to examine the impact of deterrence policies and economic conditions on crime rates in the Fifth District. We begin by describing the behavior of crime and arrests aggregated at the state level. Next, we focus on the relationship between crime, arrests, and local economic

Property Crime Rates in Large Fifth District Cities



SOURCE: FBI Uniform Crime Reports

Arrest Rates for Property Crime in Large Fifth District Cities



SOURCE: FBI Uniform Crime Reports

conditions in five of the largest cities within the district: Baltimore, Md.; Charleston, S.C.; Charleston, W.Va.; Charlotte, N.C.; and Richmond, Va. We use state- and city-level crime data from the UCR. We obtain the number of offenses and arrests for seven categories of crime and combined them into two broader categories: violent crime (murder, rape, assault, robbery) and property crime (burglary, larceny, and motor vehicle theft).

In general, crime rates in the Fifth District follow the same declining pattern since the beginning of the 1990s as the one observed in the entire country. Yet their behavior shows a few differences across states. In Virginia and West Virginia, property and violent crime rates are below the U.S. rates, but in Maryland and South Carolina, the rates are above the country's rates. Crime rates in North Carolina are very much in line with those observed in the United States. In recent years, South Carolina has been showing the highest property and violent crime rates within the group.

As with crime rates, arrest rates for both property and violent crimes also show a declining trend during the 1990s. Arrest rate trends have started to flatten out since the beginning of the 2000s, however. Compared with the country's average arrest rate, rates are generally lower in Virginia and West Virginia and higher in Maryland, North Carolina, and South Carolina. North Carolina exhibits the highest arrest rates for both property and violent crime.

Overall, crime and arrest rates significantly decline from the early 1990s until 2000, but since the year 2000 the downward crime trend is less pronounced and arrest rates become fairly constant.

The five cities in the study generally have higher property and violent crime rates than their respective states' averages. (See charts.) The exception is Charleston, S.C., which since 2005 exhibits a property crime rate lower than the state average. Property crime rates decline sharply since the beginning of the 1990s in all cities. Violent crimes also decline but less markedly, and in Charleston, S.C., Richmond, Va., and Charleston, W.Va., the trends are relatively flat. Even though arrest rates in the cities are also generally higher than their respective states' averages (with the exception of Charlotte, N.C., where the property crime arrest rate is below the state's average), the differences tend to be smaller than the ones observed for crime rates. Also, arrest rate trends in all these cities become flat (in Baltimore, Md., Charlotte, N.C., and Charleston, S.C.) or show a positive slope (in Richmond, Va., and Charleston, W.Va.) since the beginning of the 2000s.

Crime, Deterrence, and Economic Conditions in the Fifth District

We use monthly data during the period 1998-2010 to examine the relationship between criminal offenses and crime deterrent policies (measured by police arrests), and between criminal offenses and local economic conditions (measured by the local unemployment rate the real minimum wage). We adopt a similar approach to that of Corman and Mocan. One difference, however, is that while they look at the impact of deterrence and economic factors on seven different categories of crime, we aggregate offenses into property and violent crimes. Specifically, we use different lag structures to estimate the impact of monthly changes in the number of arrests, unemployment rates, and real minimum wages on the changes in the number of property and violent offenses for each one of the cities.

The table presents the results of a preliminary analysis. The table only reports the signs of the coefficients that are statistically different from zero. The deterrence hypothesis would predict a negative sign for arrests. To the extent that unemployment and real minimum wages capture legitimate labor market opportunities in the cities examined here, a positive sign is expected in the unemployment column and a negative sign in the real minimum wage column.

The results reveal that the relationship between crime and arrests and between legal labor market opportunities and crime are far from consistent across cities and types of crime. For instance, arrests appear to have a negative impact on property crime in Baltimore, Md., and a negative impact

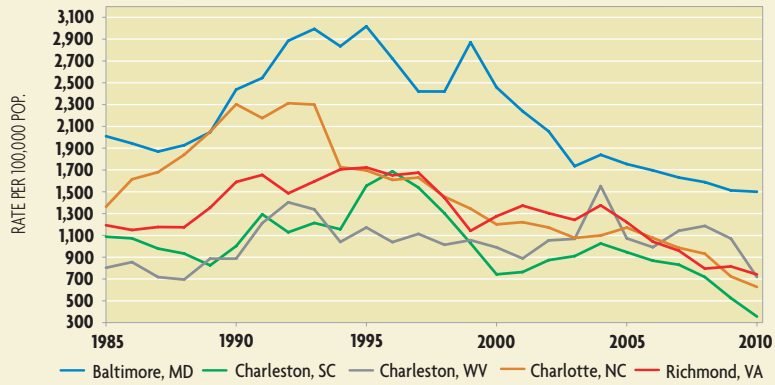
on violent crime in Charleston, W.Va., and Charlotte, N.C. Higher unemployment increases property crime in Charlotte, N.C., and violent crime in Richmond, Va. Finally, when the real minimum wage increases, property and violent crime decrease in Charlotte, N.C., and property crime decreases in Charleston, S.C.

The fact that the table shows a few empty cells reveals the lack of a robust connection between the variables included in the analysis. This kind of outcome, however, is consistent with the conclusions of the research cited earlier. It has been argued that the weak connection between arrests and crime is to some extent expected because the use of arrests to test the deterrence hypothesis is already built on strong assumptions. Not only does it assume the number of arrests for a specific crime accurately reflects the likelihood of apprehension for committing that crime, but it also requires that potential criminals have timely access to this information and are capable of assessing the likelihood of being arrested based on this data.

The literature also justifies the weak effect of unemployment and wages on crime rates in various ways. Work by Richard Freeman of Harvard University describes some of these explanations. First, when deciding to become criminals, individuals consider the labor opportunities available specifically to them. Aggregate information about unemployment and wages may not necessarily reflect these opportunities. The weak connection between these aggregate measures and crime does not invalidate the rational theory of crime; it simply reflects the fact that more disaggregated data would be required. Second, legal work and crime are not necessarily exclusive activities. There is some evidence suggesting that individuals, especially young men, participate at any point in time in both the legal and illegal labor market depending on the opportunities available to them. This type of behavior suggests that the elasticity of the supply of crime is relatively high. As a result, significant changes in the level of criminal activities will only be observed when wages and unemployment rates change in very large amounts. In other words, small fluctuations in these variables will not necessarily affect crime rates.

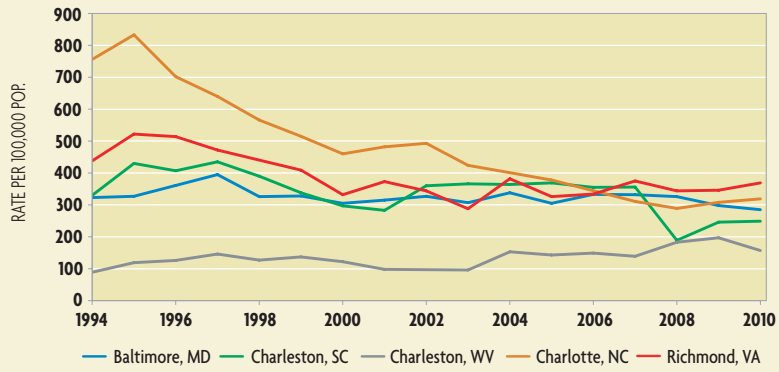
In summary, after many years of research, there is still no consensus on the effect of arrests and legitimate labor market opportunities on crime rates. The research on crime faces numerous challenges. Recent work has attempted to overcome some of the limitations using micro-level data and applying novel statistical techniques. Following a similar approach as the one developed by Corman and Mocan, we conduct a preliminary study on the determinants of crime in five of the largest cities in the Fifth District. From the analysis, we conclude that the relationship between crime and arrests and between crime and legitimate labor market opportunities are very heterogeneous across cities and types of crimes. Even though arrests seem to lower crime, they only have an effective deterrent impact in some cities. Lower unemployment and higher real minimum wages contribute to decreased crime rates, but their impact is not significant for all types of crime and for all cities. Needless to say, further research is required to identify the factors underlying criminal activities. Developing such understanding is critical for the design of appropriate crime-reduction policies. **EF**

Violent Crime Rates in Large Fifth District Cities



SOURCE: FBI Uniform Crime Reports

Arrest Rates for Violent Crime in Large Fifth District Cities



SOURCE: FBI Uniform Crime Reports

Effects of Deterrence and Legitimate Labor Market Opportunities

City	Type of Crime	Arrests	Unemployment	Real Minimum Wages
Baltimore, MD	Property Violent	(-)		
Charleston, SC	Property Violent			(-)
Charleston, WV	Property Violent	 (-)		(-) (-)
Charlotte, NC	Property Violent	 (-)	(+)	
Richmond, VA	Property Violent		 (+)	

SOURCE: Author's estimates