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### The effect of municipal drug fund revenues on crime rates

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#### Abstract

This paper examines the relationship between municipal drug fund revenues and crime rates in the Memphis, Tennessee metropolitan statistical area (MSA). Such revenues have garnered media attention in recent months for sometimes-controversial reasons. In some jurisdictions, these revenues are significant sources of funding for local police departments, although questions have been raised about the constitutionality of their sources, as well as their efficacy. Using data gathered from municipalities in the Memphis, TN MSA, in this paper we attempt to determine if those funds are effective at reducing crime rates. Our conclusion is that the funds have little impact on local crime rates, although we must note that a relatively small sample size might contribute to this lack of significance. Nonetheless, this paper contributes to the dialogue about the above issue.

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## 1. Introduction

This paper examines the relationship between local crime rates and municipal drug funds in the Memphis, Tennessee metropolitan statistical area (MSA). Municipal drug funds are special revenue accounts created by local governments to absorb funds generated from several sources:

1. Fines from drug offenses. In Tennessee, half of these fines are allocated to the local government's general fund, the other half going to the special revenue account, A.K.A. the drug fund.
2. Proceeds from the sale of property forfeited to the local government unit, and forfeited cash. One hundred percent of these funds flow into the local drug fund.
3. Donations. These can be voluntary in nature, from civic organizations for example, or compulsory, in the case of defendants ordered to pay into the fund above and beyond the legal minimum fine.
4. Appropriations. Local governments can elect to contribute additional funds to the drug fund beyond those from the above sources.

Revenues collected in the drug fund can be used for a variety of expenses, including local drug treatment and education programs, drug enforcement, and general law enforcement purposes. It is the connection between the sources of revenues for these drug funds, the second one in particular, and the use of these funds for general law enforcement spending, that is the motivation behind this paper. The issue of civil asset forfeiture has generated considerable media attention and calls for reform recently<sup>1</sup>. At issue is the practice by local governments of seizing property loosely associated with criminal drug activity prior to, or even in the absence of, the arrest and conviction of the property owner for illegal actions. A 2014 investigation by the Washington Post newspaper found that since 2001, state and local police have seized \$2.5 billion in cash and property from over 60,000 individuals. In 81 percent of those cases, no indictment was ever filed, and the owners of the seized property must prove that it was acquired lawfully before it is returned<sup>2</sup>.

While there is no shortage of controversy surrounding civil asset forfeiture, it worth considering whether or not the funds allocated to general public safety expenditures had any impact on local crime rates. This is not to provide justification for the most egregious practices, such as notorious "highway interdiction" programs found in states like Iowa and Texas<sup>3</sup>, nor is it to excuse the apparently wasteful expenditures made with some of the funds, including a \$637 coffee maker for a sheriff's department in Texas<sup>4</sup>. However, when considering the socially optimal level of drug funds and the asset forfeitures that fuel them, one must consider the full spectrum of costs and benefits.

There is some conflicting research on the effect of police expenditures on crime. Marvell and Moody (1996) addressed the inconsistencies in results of prior papers and further analyzed the

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<sup>1</sup> "Lawmakers say abuses of civil asset forfeiture require reform legislation," The Washington Post, February 11, 2015

<sup>2</sup> "Asset seizures fuel police spending," The Washington Post, October 11, 2014

<sup>3</sup> "Aggressive police take hundreds of millions of dollars from motorists not charged with crimes," The Washington Post, September 6, 2014

<sup>4</sup> "Asset seizures fuel police spending," The Washington Post, October 11, 2014

relationship between police and crime. Marvell used the number of police to measure police levels and data from the Uniform Crime Report, excluding arson, to measure crime at state and city levels. Marvell found at both the city and state level that an increase in police reduces crime, but only the city analysis was significant. One reason given for the difference in city and state levels is that cities might exaggerate crime reduction as police are added and criminals move their crime out of the town.

Brown (1982) supports the theory that increased police efforts lead to a decrease in crime rates in a town in part because crime is displaced to neighboring jurisdictions. Brown analyzed the spatial distribution of crime in Chicago suburbs for the years 1972 and 1973, and concluded there is little spillover of violent crime from the criminal's suburb, but there is evidence of inter-jurisdictional property crime spillover. This property crime spillover is most prominent in areas where potential reward is the greatest, such as areas with high numbers of retailers and manufacturers.

Meanwhile, Friedman *et al.* (1989) looked at the short run and long run effect of police expenditures on crime, and also found that an increase in police spending lead to crime decreasing, at least in the short run. However, as time passes, criminals may adjust to the new police level and increase their criminal activities at the same level of outlays. Friedman found that an increase in police expenditures equal to population growth does not lower crime rate, and that the cost of crime prevention should be rising faster than the population to maintain the same level of per capita police protection.

## 2. Data and Methodology

The data analyzed for this paper come from two broad sources: the local governments in the Memphis, TN MSA and the Federal Bureau of Investigation (FBI). Information on public safety spending, drug fund revenues, and other local fiscal measures were obtained from the Tennessee Comptroller of the Treasury, Division of Local Government Audit. Data on school district-level poverty rates were obtained from the U.S. Census Bureau Small Area Income and Poverty Estimates. Crime data were obtained from the FBI Uniform Crime Reports. The data cover the years 2009 through 2013. Initially two counties in Mississippi, DeSoto and Marshall, and one in Arkansas, Crittenden, were included in the sample. However, due to differences in the frequency with which data were reported to the state governments of Mississippi and Arkansas, those counties were dropped from the sample, leaving three counties in Tennessee: Shelby, Fayette, and Tipton, the former of which is the most populous county in the state. There are 16 cities and towns within these three counties.

We employ an OLS model to produce our parameter estimates. The fixed-effects model specification is as follows:

$$Y_{it} = \alpha + \beta X_{it} + e_{it} \tag{1}$$

Where,  $Y_{it}$  is the crime rate in jurisdiction  $i$  at time  $t$ ,  $X_{it}$  is a vector of explanatory variables, and  $e_{it}$  is the error term.  $\beta$  is the vector of parameter estimates.

For our explanatory variables, we use the following, each observed at the jurisdiction level and annually: median income, poverty rate, the percent of population that is black, the unemployment

rate, the number of police officers employed, and total drug fund revenues. Summary statistics are presented in Table I.

Table I. Summary statistics

Variable	Description	Mean	Standard Deviation	Minimum	Maximum
Medinc	Median Income	47355.38	8370.59	28467	60117
Poverty	Poverty rate	0.1703	0.0531	0.1220	0.2180
Pctblack	Percent of population that is African-American	0.3332	0.1456	0.1100	0.5200
Unemp	Unemployment rate	10.9850	2.5478	6.5	19.8
Officers	Number of police officers	208.03	607.81	2	2454
Otherexp	Drug fund revenues	420507.01	1124534.54	-99	4627000

### 3. Results and Conclusions

The parameter estimates are presented in Table II. The results suggest that median income is negatively associated with crime, which is to be expected. The impact is relatively small – a \$1 increase in median income is associated with a 0.00007 percent rise in the crime rate – but the estimate is not significant. A one percent increase in the poverty rate would lead to a 0.0032 percent increase in crime, but here again the coefficient estimate is not significant. A one percent increase in the black population causes a slight decrease in the crime rate – approximately 0.0007 percent – but is not significant. Finally, an increase in the unemployment rate leads to a slight increase in crime, of roughly 0.00002 percent, but is also not significant.

An increase in the number of police officers is also associated with an increase in crime, a result that might seem counterintuitive. However, more police would allow for increases in patrols and other crime interception efforts, thus increasing the number of crimes recorded or reported, not necessarily increasing the number of crimes committed. In this case, the coefficient estimate is statistically significant at the 1% level.

Table II. Parameter estimates

Variable	Parameter Estimate	Standard Error	Pr >  t
Intercept	-0.07186	0.15407	0.6453
Medinc	8.435857E-7	0.000002	0.6772
Poverty	0.32023	0.44934	0.4832
Pctblack	-0.06841	0.11014	0.5406
Unemp	0.00214	0.00511	0.6787
Officers ***	0.00002605	0.00000689	0.0010
Otherexp	-1.15637E-9	3.896118E-9	0.7693

R <sup>2</sup> = 0.5324 Adjusted R <sup>2</sup> = 0.4104 n = 73	***: statistically significant at the 1% level		
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Turning to the variable of greatest concern, public safety spending as derived from drug revenues, we find that the effect is very small. A \$1 increase in drug fund revenues is associated with a 0.000000115 percent decrease in crime, perhaps suggesting a minor improvement in police interdiction efforts as result of more spending. However, the coefficient estimate is not at all significant.

This suggests a number of possible explanations. First, the relatively small sample size (n=73) might affect the significance of one or more explanatory variables. More data from other jurisdictions or past years might increase the apparent significance of the drug fund variable. Further, it might be that drug fund spending is small relative to total public safety spending, and thus will necessarily have little effect on crime rates. Indeed, drug fund revenues were on average 1.95 percent of total police spending, with a maximum value of 8.33 percent. Thus, at most these funds represent a relatively modest boost to police department budgets. Lastly, it might be that these funds are being spent on unproductive uses, in terms of reducing crime rates.

Whatever the case, additional research is warranted on this important question. If it can be shown that revenues allocated to drug funds have a meaningful impact on crime, this might serve as a counterpoint to the criticisms of these programs, and provide a more nuanced understanding of what these programs mean for public safety.

#### 4. References

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