Trust But Verify:

Lessons for the Empirical Evaluation of Law and Policy

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January 25, 2012

Abstract

In a recent article, Aneja, Donohue and Zhang claim that they are unable to replicate the regressions published by the National Research Council in Chapter 6 of *Firearms and Violence*. They conclude that the NRC regressions must have been based on bad data supplied by John Lott. The implication is that earlier studies that found that right-to-carry laws reduced crime were flawed because of bad data. However, we can replicate the NRC results with Lott's original data and with the data set used by the NRC. The earlier studies are not flawed by bad data. The source of the replication problem, however, was that Aneja, Donohue, and Zhang did not estimate the correct model specification—a problem that they themselves admit in subsequent communications issued in 2012. There were also errors in the data set that they assembled. Errors that when corrected reversed the only estimates that they obtained indicating that right-to-carry laws may have increased crime.

Keywords: guns, crime, shall-issue, right-to-carry, NRC

JEL codes: K14, K42

Introduction

Economics and criminology cannot be a legitimate science unless published results can be easily replicated by others. The data and programs must be made readily available to interested parties. The data and programs should be checked before posting so that researchers who download the material can conveniently estimate the published regressions and generate the same results as those in the published article, including claims made in the text and footnotes. The data and programs should be publically available no later than the date of acceptance of the article in a journal, or the date of posting of the article on a working paper site such as Research Paper in Economics (repec.org), NBER (www.nber.org), Social Science Research Network (www.ssrn.com) or departmental working paper site.

As a case in point, in a recent article, Aneja, Donohue, and Zhang (2011), hereafter ADZ, reviewed the National Research Council (2005), hereafter NRC, review of the effect of right-to-carry laws, also known as shall-issue laws, on crime. These laws require that permits be issued to all persons who meet certain legislated requirements. Aside from Illinois, the one state that still bans concealed carry, states that have not passed right-to-carry laws leave it up to the issuing authorities, typically local police or sheriff departments, to determine whether or not to grant the applicant a concealed weapons permit. Such states are known as "may issue" states. It is the usual case that may-issue states, especially in urban cities and counties, issue very few concealed carry permits, typically limited to celebrities, wealthy individuals, and politicians. An interesting policy question is whether shall-issue laws, which increase the number of concealed carry permits, increase or decrease crime. The theory is that criminals, knowing that ordinary citizens

might be carrying firearms, but being unable to discern who is and who isn't, will tend to forswear a violent attack for fear of being shot. Under this theory, crime should go down.

The original article in this area is Lott and Mustard (1997) which found that states with shall-issue laws had significantly lower violent crime rates than may issue states or states that ban concealed carry. The publication of the Lott and Mustard article generated a controversy that, as illustrated by the publication of the ADZ article, continues to this day. The Lott and Mustard results have been tested many times. There have been a total of 29 peer reviewed studies by economists and criminologists, 18 supporting the hypothesis that shall-issue laws reduce crime, 10 not finding any significant effect on crime, including the NRC report[1], and ADZ's paper, using a different model and different data, finding that right-to-carry laws increase one type of violent crime, aggravated assault.

In their article, ADZ make a strong point that data and methodological flaws can produce inaccurate conclusions. They attempt to replicate the results of the NRC report with a data set purportedly used by the NRC. Their attempts at replication fail. "The basic story that we saw above with respect to the no-covariates model holds again: We cannot replicate the NRC results using the NRC's own data set….Once again, our … estimates diverge wildly from the … estimates which appeared in the NRC report." (ADZ p. 583) Their conclusion is unambiguous.

> Data reliability is one concern in the NRC study. We corrected several coding errors in the data that were provided to us by the NRC (which had originally been obtained from

[1] Although one member of the Council concluded that the NRC's own results indicated that shall-issue laws reduced murder.

> John Lott). Accurate data are essential to making precise causal inferences about the effects of policy and legislation – and this issue becomes particularly important when we are considering topics as controversial as firearms and crime control… when attempting to replicate the NRC specifications—on both the NRC's and our own newly constructed data sets – we consistently obtained point estimates that differed substantially from those published by the committee.
>
> Thus an important lesson for both producers and consumers of econometric evaluations of law and policy is to understand how easy it is to get things wrong. In this case, it appears that Lott's data set had errors in it, which then were transmitted to the NRC committee for use in evaluating Lott and Mustard's hypothesis. The committee then published tables that could not be replicated (on its data set or a new corrected data set)…. This episode suggests to us the value of making publicly available data and replication files that can re-produce published econometric results. This exercise can both help to uncover errors prior to publication and then assist researchers in the process of replication, thereby aiding the process of ensuring accurate econometric estimates that later inform policy debates. (ADZ, 613-4)

We enthusiastically agree with the thoughts expressed in the first sentence and in the last two sentences. However, we have to point out that ADZ have still not released all their data and programs well over a year after their article has been published. They also fail the basic requirement that data and programs be easily downloadable because nowhere in their paper do they inform the reader where to acquire the data and programs. We also note that the NRC did

not make their data and programs readily available to other researchers, though this issue was not a serious problem as their data was obtained from Lott and he has continued to make that data available on request.

ADZ are claiming that the data set that John Lott provided to the NRC, which was the same data set that he sent to over 130 researchers around the world, including one of the authors of this paper, was flawed and therefore generated flawed results. The implication is that the 18 articles that used that data to confirm the Lott and Mustard hypothesis that shall-issue laws reduce crime, or the 10 articles that found no effect after altering the specification of the model, are irrelevant because their results are based on bad data. If this is true, then it does call into question all preceding studies based on the Lott data set. However, as we shall see, it is not true.

In the new working paper those accusations are now somewhat muted but not altogether eliminated.[2] For example, "…there were some errors in the data, which was supplied by Lott."

[2] In October 2012 the *American Law and Economics Review* published an Erratum bearing the names of ADZ as well of John V. Pepper and Charles F. Wellford. The Erratum says:

> In section four (pp. 578-584) of the above referenced article the authors report their efforts to replicate some of the results of analyses conducted by a panel of the National Research Council (NRC) and reported in *Firearms and Violence* (2004). Based on this analysis, Aneja, Donohue and Zhang (2011) conclude that they "cannot replicate the NRC results using the NRC's own data set" (p. 583) and that the NRC committee "published tables that could not be replicated." (p. 614). Subsequent to the publication of this article, members of the NRC panel demonstrated to the authors that the results in question were replicable if the authors used the data and statistical models described in Chapter 6 of the NRC (2004) report. The results presented in Tables 1b and 2b of Section 4 of the article do not replicate the NRC results because different data and models were used in the attempted replication effort. Thus, the results reported in the article should *not* be interpreted to mean that if one uses the data and model used by the NRC panel the results they reported cannot be replicated. In fact, replication using the NRC's data and

(ADZ 2012, 21), "…clear errors in the Lott and Mustard specification, data, and standard errors." (22), "… inaccurate Lott data…." (27), and, most egregiously, "…pure data errors that entered into the NRC data set when Lott transmitted an imperfect data set…." (71). Thus, ADZ continue to mention "data errors" without noting that these errors involved minor judgment differences in the timing of when laws were enacted and, more importantly, did not materially affect the results.

Failure to replicate published regression results can be due to data errors or program errors. ADZ were able to get what they believed to be the NRC data but they were not able to get the programs. This means that the fact that ADZ, "…cannot replicate the NRC results using the NRC's own data set…. (p. 583) could be due to a mistake in the programming or the wrong data set or errors in the data set. It is not obvious that it has to be a problem with the data.

> models produces results that are identical to those reported by the NRC panel. (ADZ 2012b, 1)

The Erratum say that ADZ's replication efforts failed because in those efforts "different data and models were used." In fact, the primary problems were in the specification of the models estimated; the residual data problems that ADZ might have in mind here are presumably the "few small errors in the NRC data" they listed in ADZ (2011, 585).[2] So ADZ, as coauthors of the Erratum, are not being candid about the source of the problem.

The Erratum then has a second and concluding paragraph. It speaks of the importance of making data and replication files publicly available, and then concludes:

> Donohue, Aneja, and Zhang have now issued an amended version of the published paper, which removes the above inaccurate claim about replication of the NRC results and corrects some other minor errors that do not alter the major findings of the published paper: Donohue, John J., Aneja, Abhay and Zhang, Alexandria, The Impact of Right to Carry Laws and the NRC Report: The Latest Lessons for the Empirical Evaluation of Law and Policy (July 27, 2012). Available at SSRN: http://ssrn.com/abstract=2118893. (ADZ 2012b, 2)

Thus, in August 2012, ADZ issued an NBER working paper, 93 pages in length, that supersedes their article published the preceding year. The title of the paper has changed by the addition of the word "Latest." The 2012 working paper does not explain itself in relation to article published the preceding year. In fact, the working paper cites the 2011 article only in footnotes, the first of which appears on page 21 (21 n.11, 23 n.14, 29 n.18).

Background

Lott and Mustard's study appeared in 1997. The results that became the focus of the ongoing debate were based on a data set consisting of county data for the years 1977-1992 collected by the authors from a variety of sources. This original data set was lost in a hard disk crash. It was reconstructed from the original sources. The resulting "reconstructed" data set was the one provided to researchers by Lott. It is also the data set provided to the NRC by Lott. The NRC refers to this data set as the "reconstructed Lott 1992" data set, though it more accurately should have been referred to as the Lott-Mustard 1992 data set, since David Mustard did most of the data collection. Lott then published a book entitled *More Guns, Less Crime* (Lott 1998) using county level data from 1997 to 1994. In the second edition of the book (Lott 2000), Lott expanded the county data through 1996 and provided city level data. David Mustard again helped put these additional years of data together. The NRC also used a revised and extended county data set for the years 1977-2000, again provided to the NRC by Lott, which is referred to in the NRC report as the "revised Lott 2000" data set. John Whitley and Florenz Plassmann supplied the data to Lott for the additional years from 1997 to 2000 and updated some data after the census department corrected its earlier estimates following the 2000 census.

When the original Lott and Mustard (1997) article appeared, two of the authors of this paper (Moody and Marvell) were skeptical of the results and sent Lott an email requesting the data set for replication purposes. Lott sent both the data set and the STATA programs ("do files") used to generate the results in the 1997 article. Moody was able to replicate the Lott and Mustard results.

It turns out that Moody still has the data set and do files from 1997 on the server. We used the data set that Lott sent Moody in 1997 to generate the MLMZ (Moody, Lott, Marvell, Zimmerman) results in Tables 1 and 2. Lott also made the "revised Lott 2000" data set available to Moody and Marvell and many other researchers. This data set is also still on Moody's server with the name Lott6.dta and a 2003 date.

Lott had also provided these data sets and "do files" to both the NRC and Donohue. ADZ make much of the fact that the NRC's "…do files" for their tables had not been retained" (p. 580). However, ADZ could have had the correct NRC data set and the correct do-files, if they had simply asked John Pepper, one of the editors. Also, since the NRC was using Lott's data and "do files" the very same data and programs that had been shared with Donohue, and the model specification was published in Lott and Mustard (1997) and Lott (1998, 2000), it is strange that ADZ claim not to be able to figure out which regressions the NRC estimated. It is also true that these problems could have been avoided if the NRC had made its data and do files more readily available to other researchers.

Replication achieved[3]

NRC Table 6-1: the dummy variable model

In the first column of Table 1 we show the original results from the Lott and Mustard (1997) article (Table 3, top line, p. 20). These results were based on the original data set before the hard

[3] All of the data and programs used to generate the results presented in this paper can be downloaded from http://cemood.people.wm.edu/NRC.replicate.zip.

disk crash.[4] The entries present the estimated coefficients on the shall-issue dummy variable. In the second column we reproduce the NRC committee's replication of the same model based on the reconstructed Lott 1992 data set. The estimates are exactly the same except for the coefficient on murder which was reported as -.076 by Lott and Mustard and as -.073 by the NRC. Thus, it would appear that the data set used by the NRC was virtually identical to that originally used by Lott and Mustard, even after being reconstructed. In the third column ("MLMZ") we replicate the Lott and Mustard results using the reconstructed Lott 1992 data set sent by Lott to Moody in 1997. The results are identical to those of the NRC, indicating that the data set sent to Moody in 1997 is the same as the data set provided to the NRC.

Table 1: Replications of NRC Table 6-1
Coefficients on the Shall-Issue Dummy Variable

	Lott & Mustard	NRC	MLMZ	ADZ
	1	2	3	4
Violent	**-.049**	**-.049**	**-.049**	**-.044**
Murder	**-.076**	**-.073**	**-.073**	**-.064**
Rape	**-.053**	**-.053**	**-.053**	**-.061**
Robbery	-.022	-.022	-.022	-.007
Assault	**-.070**	**-.070**	**-.070**	**-.057**
Property	**.027**	**.027**	**.027**	**.032**
Burglary	.0005	.0005	-.0005	-.001
Larceny	**.033**	**.033**	**.033**	**.050**
Auto Theft	**.071**	**.071**	**.071**	**.098**

Notes: Column 1 reports the original results from Lott and Mustard (1997, Table 3, p. 20). Column 2 reports the NRC results from Table 6-1, line 2, pp. 128-9, "Committee Replication Revised 1992"). Column 3 reports the MLMZ results estimating the original Lott and Mustard specification on the reconstructed Lott 1992 data set sent to Moody in 1997. Column 4 reports the results of estimating the model on the new ADZ data for the years 1977-1992, using the original LM specification including arrest rates for each crime and the LM shall issue dummy, both merged into the ADZ data set from the reconstructed Lott 1992 data set. Bold indicates significance at the .05 level, two-tailed. Data and programs used to generate all tables are available at http://cemood.people.wm.edu/NRC.replicate.zip.

[4] Lott suffered a hard disk crash on July 3, 1997 where he lost the original data used in the paper with David Mustard. Lott and Mustard then reconstructed the data set. They had given out the original data set to critics such as Dan Black, Dan Nagin, and Jens Ludwig. These critics would not return a copy of the data set to Lott after the crash. This forced Lott and Mustard to put the data together again from scratch so that it could be supplied to other researchers such as the NRC.

In the fourth column ("ADZ") we estimate the dummy variable model on the new ADZ data set, using the Lott-Mustard specification including the Lott-Mustard shall-issue dummy, the arrest rate for the crime in question, and all 36 demographic variables. Since the ADZ data set included only the arrest rate for violent and property crimes, we merged the arrest rates for the individual crimes from the Lott 1992 data set. We also merged the Lott-Mustard shall-issue law dummy. The results are very similar, indicating that the new ADZ data set is not much different from the original Lott-Mustard data set for the years 1977-92. It would be very unusual if the data sets were identical because government agencies frequently revise previously published data.

NRC Table 6-2: Before and after trend model

Lott hypothesizes that the dummy variable model could be misleading if the crime rate is increasing before the law and decreasing after, sometimes referred to as the "inverted-V" hypothesis. In this case, if the "inverted-V" is symmetrical a dummy variable, estimated the difference in average crime rates before and after the law, would be zero. Similarly, if crime rates were rising quickly before the law and falling afterwards, a simple dummy variable could be positive or negative since the average crime rate after the law could still be higher than the average before the law, despite the fact that the crime rates are falling. The dummy variable can be misleading in other ways. To examine this point, Lott estimated trend models for each of the FBI index crimes and published the results (after coefficient minus before coefficient) in Table 4.8 of *More Guns, Less Crime* (2000, p 76). Table 2 reports one replication of the before-and-after trend model. This model simply replaces the shall-issue dummy variable with the before

and after trend variables. The model includes the arrest rate for the crime in question and all 36 demographic variables. The NRC committee attempted to replicate the trend model in two ways: using the Lott 1992 data set and the Lott 2000 data set, restricted to 1977-1992. The results from Lott's Table 4.8 are reproduced in the first column of Table 2 ("Lott"). The NRC's attempt to replicate the results is presented in the second column ("NRC-1": from NRC 2004, Table 6-2, line 2). The results are slightly different from Lott's, but generally in agreement. In the third column ("MLMZ-1") we present the results of our replication attempt using the Lott 1992 data set. The results are identical, except for a slight discrepancy in the burglary estimate. This confirms that the data set sent to the committee was indeed the same as that Lott sent to other researchers.

Table 2: Replications of NRC Table 6-2
Difference Between the After and Before Trends

	Lott (2000)	NRC-1	MLMZ-1	NRC-2	MLMZ-2	ADZ
	1	2	3	4	5	6
Violent	**-.009**	-.005	-.005	**-.0215**	**-.0215**	**-.0067**
Murder	**-.030**	**-.0425**	**-.0425**	**-.0341**	**-.0341**	**-.0203**
Rape	**-.014**	**-.0137**	**-.0137**	**-.0337**	**-.0337**	**-.0365**
Robbery	**-.027**	**-.0272**	**-.0272**	**-.0302**	**-.0302**	**-.0267**
Assault	**-.0046**	.0046	.0046	**-.0263**	**-.0263**	**.0059**
Property	**-.006**	**-.0069**	**-.0069**	**-.0113**	**-.0113**	**-.0142**
Burglary	**-.003**	**-.0158**	**-.0163**	**-.0180**	**-.0180**	**-.0180**
Larceny	**-.015**	-.0011	-.0011	**-.0084**	**-.0084**	**.0136**
Auto Theft	-.001	-.0031	-.0031	.0025	.0042	**-.0167**

Notes: Column 1reports the Lott results from NRC (2004, Table 6-2, line 0, pp.128-9) which reproduce the results reported in Table 4.8 in Lott (2000, p. 76). Column 2 is from NRC (2004, Table 6-2, line 2, pp.128-9, "Committee Replication Revised 1992"). The committee used the original Lott and Mustard specification (including all 36 population-age-gender variables and the arrest rate for the crime in question) on the reconstructed Lott 1992 data set. Column 3 reports the MLMZ results from estimating the original Lott and Mustard specification on the reconstructed data set sent to Moody in 1997. Column 4 reports the results from NRC (2004, Table 6-2, line 3, pp. 128-9) where the trend model is estimated on Lott's "revised 2000" data set, constrained to the years 1977-1992. It uses the original Lott and Mustard specification. Column 5 reports our replication using the "revised 2000" data set. Column 6 reports the results of our estimation of the Lott and Mustard trend model using the new ADZ data set. Bold

indicates significant at the .05 level, two-tailed. Data and programs used to generate all tables are available http://cemood.people.wm.edu/NRC.replicate.zip.

Correcting the ADZ replications

ADZ did not report any attempts to replicate the NRC tables 6-1 and 6-2. However, they do report attempts to replicate parts of NRC tables 6-5 and 6-6. In ADZ Table 1b they report that they cannot replicate row 3 from NRC Table 6-5 (dummy variable model with no covariates) and Table 6-6 (trend model with no covariates). Using data and programs provided by John Pepper, we were able to replicate those results exactly, as demonstrated in Tables 3 and 4.

Table 3: Re-estimation of ADZ Table 1b

Crime	NRC Dummy Model No covariates	MLMZ Replication	NRC Trend Model No Covariates	MLMZ Replication
	1	2	3	4
Violent	**0.1292**	**0.1292**	**-0.0062**	**-0.0062**
Murder	-0.0195	-0.0012	-0.0122	-0.0122
Rape	**0.1791**	**0.1791**	**-0.0217**	**-0.0217**
Robbery	**0.1999**	**0.1999**	**-0.0088**	**-0.0088**
Assault	**0.1234**	**0.1234**	**-0.0065**	**-0.0065**
Property	**0.2124**	**0.2124**	**-0.0081**	**-0.0081**
Burglary	**0.1906**	**0.1906**	**-0.0199**	**-0.0199**
Larceny	**0.2258**	**0.2258**	**-0.0071**	**-0.0071**
Auto	**0.2333**	**0.2333**	**0.0057**	**0.0057**

Notes: Columns 1 and 2 report estimates on the shall-issue dummy variable. Column 1 reports NRC Table 6-5 row 3. Columns 3 and 4 report estimates on the post-law trend variable. Column 3 reports NRC Table 6-6 row 3. Data from 1977-2000. Bold indicates significant at the .05 level, two-tailed. Data and programs used to generate all tables are available at http://cemood.people.wm.edu/NRC.replicate.zip.

Table 4: Re-estimation of ADZ Table 2b

Difference Between After and Before Trends

Crime	NRC Dummy Model with Covariates	MLMZ Replication	NRC Trend Model with Covariates	MLMZ Replication
	1	2	3	4
Violent	**0.0412**	**0.0412**	**-0.0095**	**-0.0095**
Murder	**-0.0833**	**-0.0833**	**-0.0203**	**-0.0203**
Rape	-0.0016	-0.0016	**-0.0281**	**-0.0281**
Robbery	**0.0359**	**0.0359**	**-0.0258**	**-0.0258**
Assault	**0.0305**	**0.0305**	**-0.0192**	**-0.0192**
Property	**0.1148**	**0.1148**	-0.0001	-0.0001
Burglary	**0.0619**	**0.0619**	**-0.0213**	**-0.0213**
Larceny	**0.1240**	**0.1240**	**-0.0073**	**-0.0073**
Auto	**0.1274**	**0.1274**	**-0.0049**	**-0.0049**

Notes: Columns 1 and 2 report estimates of the coefficient on the shall-issue dummy variable. Column 1 reports NRC Table 6-5 row 1. Columns 3 and 4 report estimates of the coefficient on the post-law trend variable. Column 3 reports NRC Table 6-6 row 1. Bold indicates significant at the .05 level two-tailed. Data and programs used to generate all tables are available at http://cemood.people.wm.edu/NRC.replicate.zip.

The difference between the ADZ and NRC results is not a data problem. The problem is that ADZ altered the regression model. As a result, their specifications are different from all those who have attempted to replicate Lott's work and different from the NRC. For the murder, rape, robbery, and assault regressions, ADZ did not use the arrest rate for the crime specific arrest rate, but instead used the arrest rate for all violent crime. For those specifications involving burglary, larceny, and auto theft, ADZ used the arrest rate for all property crime. ADZ ignored the "truncation bias" that they are introducing into the estimates by making this seemingly innocent change in the model specification. The truncation bias occurs in county-level data because in some years many counties do not experience certain types of crimes at all—80 percent have no murders for instance. If the murder rate in a county is zero before the law goes into effect, simple randomness means that sometimes the crime rate will go up, but no matter how effective the law is, the reverse cannot happen because crime rates cannot fall below zero. Using the arrest rate for

murder, which is usually missing or zero in counties with zero murders, drops those counties out of the regression and allows murder to both increase and decrease in the remaining counties. However, when the arrest rate for violent crime is used, counties with zero murders are kept in the murder regression, truncating the dependent variable at zero. An entire literature has emerged within the debate on right-to-carry laws that has dealt with this issue using Tobit, negative binomial, or other limited dependent variable methods (e.g. Lott 1998 pp. 390 n. 8, 399 n. 19; Lott 2000 pp. 285, 288; Plassmann and Tideman 2001; Plassmann and Whitley 2003 pp. 1354-57). Unfortunately, ADZ ignore this literature and they write as if they are the first to discuss the possible simultaneity between crime rates and arrest rates (see e.g., Bronars and Lott, 1998 and Lott, 2000).

Not all the differences in the results were due to ADZ changing the specification. The ADZ data set includes 100-140 more counties each year than the 3120-3140 counties in the Lott 1992 data set. Some of these counties were omitted from the Lott 1992 data set because of data problems documented by the FBI. However, when we dropped these problematic counties from the ADZ data set and re-estimated, the results were virtually unchanged.

There are some errors in the data set that ADZ produced. For example,

- The observations for county 2060 in Alaska are repeated 73 times for 1996. .

- The first full year of the shall-issue law for Kansas is coded as 1996 when in fact the law was not passed until 2006.

- The first full year of the shall-issue law for Florida is coded as 1989 when in fact the law was passed in 1987.

- The first full year of the shall-issue law for South Dakota is coded as 1987, however the law was passed in 1985.[5]

As can be seen from the last three columns in Table 1, the errors in ADZ's data set biased the results towards what they wanted to show. While the data errors do make the benefits of concealed carry laws for murder, rape and robbery slightly smaller, they actually cause the coefficient for aggravated assaults to switch signs, to go from showing a benefit for right-to-carry laws to a cost. It is a mistake of some import given that ADZ's claim regarding the impact that concealed carry laws has on aggravated assaults has gotten play in places such as the New York Times.[6] Yet, the real puzzle here is why ADZ chose to alter the specification without stating they had been that. In previous work Donohue used the correct specifications and was able to replicate Lott's results and he had used the "do" files that had been supplied with the data.

The NRC and ADZ were selective over what regressions to replicate. Many of the points ADZ raise have already been dealt with extensively with in other specifications that were not replicated by the NRC. Such specifications included the impact of cocaine in four different

[5] These coding errors assume that ADZ are correct about when other states adopted right-to-carry laws. For example Lott and Mustard (1997) followed Cramer and Kopel (1995) and assumed that North and South Dakota adopted right-to-carry laws prior to 1977.
[6] Editorial, "The Scourge of Concealed Weapons," New York Times, December 22, 2012.

ways; tens of thousands of regressions using different combinations of control variables (including removing demographic variables); data on the number of police, per capita expenditures on police and various policing strategies; state level unemployment and poverty as well as county level measures; the large differences in state right-to-carry laws; and city, county and state level crime data (Bartley and Cohen, 1998; Lott, 2000, 2010; Moody, 2001).

Conclusion

ADZ couldn't replicate the NRC results with the NRC data. They jumped to the conclusion that it was due to bad data from Lott. We now know that the data that Lott provided to the NRC was the same as that provided to hundreds of other researchers, including that used in earlier papers by Donohue that had no problem replicating Lott's work. Using Lott's data, we could we replicate the NRC results for both the dummy variable and trend model, corresponding to the NRC Tables 6-1 and 6-2 and, since the NRC was also able to replicate the original Lott and Mustard results, the NRC must have been using the same data. We were also able to replicate the NRC "no covariate" model for the 1977-2000 sample. We find it hard to believe that ADZ couldn't replicate those results with the NRC datua. Researchers cannot be held responsible for errors committed by others who request their data.

The fact that ADZ did not try to contact Lott in an attempt to understand the source of their replication problems is curious. These issues could have been resolved with an email or phone call. ADZ are practicing one-upmanship when they should be practicing science.

We now know that the data provided to the NRC was not tainted with errors. Therefore James Q. Wilson was perfectly justified to conclude that right-to-carry laws reduced murders, since the NRC's own regressions, based on good data provided by Lott, showed a significant negative effect on crime. Also, all the peer-reviewed studies that are based on Lott's data that find that shall-issue laws reduce violent crime, or at least do not increase violent crime, are not tainted by errors. The record still stands at 18-1-10.

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