An Evaluation of the 1977 Canadian Firearm Legislation: Robbery Involving a Firearm

by

Gary A. Mauser
Faculty of Business Administration
Simon Fraser University
Burnaby BC V5A 1S6
604-936-9141 voice
604-936-9140 fax
email: mauser@sfu.ca

and

Dennis Maki
Department of Economics
Simon Fraser University
Burnaby BC V5A 1S6

Suggested running head: Evaluating the 1977 Canadian Firearms Legislation

Submitted to Applied Economics. August 2000. Accepted February 2002. An earlier version was presented to the: Annual Meeting of the American Society of Criminology, Nov 11 - 14, 1998, Sheraton Washington Hotel, Washington DC.

An Evaluation of the 1977 Canadian Firearm Legislation: Robbery Involving a Firearm

Abstract

The effect of the 1977 Canadian firearm legislation on robberies involving firearms is evaluated between 1974 and 1992 using a pooled cross-section, time series model. The results show that the 1977 legislation did not reduce robbery involving firearms, nor did it have a significant effect on the total robbery or armed robbery rates. The legislation may even have acted perversely in that it may have increased robberies with firearms. In general, these results are consistent with previous published findings but contrast with unpublished governmental studies. The implication that this legislation may have acted perversely is new and requires further investigation.

key words: Canada, gun control, firearm legislation, cross-section time-series, regression, armed robbery

Fig. 1. Robberies Involving a Firearm, Armed Robberies, Total Robberies, Canada, 1974 - 1992. Source: Statistics Canada

Fig. 2. Data Variability

Table I: The Variables in This Model

Independent Variables

Deterrence Variables

CRFR - Clearance rate for armed robbery involving a firearm
Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

CRAR - Clearance rate for armed robbery
Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

CRTR - Clearance rate for total robbery
Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

POPPOL - Total provincial population per police effective.
Source: Statistics Canada, Centre for Justice Statistics (Cansim D93334 through D93343).

Socio-Economic Variables

INDIANR - Percentage of population Registered Status Indians
- number of legally registered Aboriginals divided by the total provincial population
Source: Department of Indian Affairs and Northern Affairs. (Numerator from Table 1, Registered Indian Population by Region, and Indian Register)

YOUTH - Male youth percentage of provincial population
- annual estimate of number of males, 15 -24 years of age divided by provincial population
Source: Statistics Canada, the numerators are Cansim C892659 plus C892677 for Newfoundland, C892977 plus C892995 for P.E.I., C893295 plus C893313 for N.S., C893613 plus C893631 for N.B., C893931 plus C893949 for Que., C894249 plus C894267 for Ont., C894567 plus C894585

for Man., C894885 plus C894903 for Sask., C895203 plus C895221 for Alta., and C895521 plus C895539 for B.C..

UNEMP - Unemployment rate

Source: Statistics Canada, Seasonally Adjusted Labour Force Statistics (71-201), various issues.

WPPC - Weeks of Unemployment Insurance (UI) benefits paid divided by total provincial population

Source: Statistics Canada (numerator from Cansim D730368 through D730377).

TYIMMR - Three year moving total of international immigrants divided by total provincial population

Source: Statistics Canada, Employment and Immigration Canada; (numerator from Cansim D125626 through D125635).

FYIPMR - Five year moving total of persons resident in a province who moved to that province from some other province in that year divided by total provincial population

Source: Statistics Canada, Family Allowance Payments; (numerator from Cansim D269457 through D269466).

NPRR - Non-permanent residents per total provincial population

Source: Statistics Canada; (numerator from Cansim D125644 through D125673).

Time Trends and Dummy Variables

GUNLAW - DUMMY

1974 - 1977 = 0

1978 - 1992 = 1

DNFLD is unity for the 19 observations for Newfoundland, and zero otherwise. DPEI, DNS, DNB, DQUE, DONT, DMAN, DSASK, DALTA are defined analogously.

TIME is a sequence of consecutive integers for each province beginning with unity for 1974 through 19 for 1992.

TNFLD is a sequence of consecutive integers beginning with unity for the 1974 observation for Newfoundland, and ending with 19 for the 1992 observation for Newfoundland. It is zero elsewhere. Thus, TNFLD = TIME*DNFLD. Other provinces are defined analogously.

Population (the denominator for most variables) Cansim D2 through D11.

Dependent variables

FR - Robbery involving a firearm

- actual robbery involving a firearm per 100,000 total population

Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

AR - Armed robbery

- actual robberies involving a weapon of any kind [including firearms] per 100,000 total provincial population

Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

TR - Total robbery

- all actual robberies whether or not it involved a weapon of any kind per 100,000 total provincial population

Source: Statistics Canada, Centre for Justice Statistics (Publication 85-205)

Table II. Variable Descriptions

Variable	Mean	Variance	Minimum	Maximum
FR	16.851	487.23	0.00	108.98
AR	32.875	997.31	0.81	140.90
TR	65.628	2547.0	4.92	212.66
CRFR	40.171	310.18	0.00	133.30
CRAR	39.661	178.10	0.00	96.30
CRTR	34.163	129.49	11.80	92.10
INDIANR	1.907	3.91	0.00	8.23
YOUTH	8.759	1.11	6.58	10.84
UNEMP	9.985	14.51	2.80	20.80
TYIMMR	0.012	0.75E-04	0.16E-02	0.04
POPPOL	547.000	7599.00	346.00	734.00
WPPC	0.221	0.02	0.04	0.63
FYIPMR	0.116	0.24E-02	0.02	0.23
NPRR	0.005	0.17E-04	0.48E-03	0.02

Table III. Pooled Regression Models for Evaluating the Impact of the 1977 Canadian Firearms Legislation. (OLS, Clearance Rate Unlagged).

	Dependent Variables					
Independent	FR		AR		TR	
Variables	Firearm Robberies		Armed Robbery		Total Robberies	
	Coeff.	T- ratio	Coeff.	T-ratio	Coeff.	T-ratio
GUNLAW	0.156	0.08	0.836	0.30	1.739	0.40
DNFLD	-9.798	-1.29	-20.540	-1.89	-57.338	-3.42
DPEI	-2.386	-0.39	-6.807	-0.78	-39.406	-2.92
DNS	1.973	0.36	-1.157	-0.15	-17.890	-1.51
DNB	-5.947	-1.08	-12.954	-1.63	-41.294	-3.21
DQE	78.284	7.84	64.089	4.51	56.564	2.60
DONT	-14.583	-1.95	-37.991	-3.57	-68.581	-4.19
DMAN	5.402	1.03	4.407	0.59	-14.801	-1.29
DSASK	4.623	0.61	3.317	0.31	-27.864	-1.68
DALTA	-1.327	-0.25	10.398	1.40	-4.494	-0.39
TIME	1.807	4.03	3.115	4.88	4.472	4.57
TNFLD	-1.959	-3.87	-3.391	-4.69	-4.486	-4.01
TPEI	-1.718	-3.94	-3.120	-5.02	-4.056	-4.26
TNS	-1.463	-4.25	-2.477	-5.05	-3.742	-4.97
TNB	-1.279	-3.36	-2.355	-4.35	-3.609	-4.32
TQUE	-3.252	-9.28	-2.079	-4.17	-1.791	-2.34
TONT	-0.309	-1.00	0.040	0.09	0.102	0.15
TMAN	-0.233	-0.52	0.081	0.13	0.776	0.79
TSASK	-0.437	-0.85	-0.655	-0.89	-1.587	-1.41
TALTA	-0.353	-1.08	-1.345	-2.88	-1.463	-2.05
INDIANR	-2.478	-0.98	-4.415	-1.23	-2.082	-0.38
YOUTH	3.756	1.90	4.004	1.42	7.704	1.77
UNEMP	-0.037	-0.08	-0.147	-0.23	-0.238	-0.24
TYIMMR	658.71	4.77	1178.4	5.98	1564.9	5.19
CR[1]	-0.008	-0.35	-0.037	-0.80	-0.170	-1.69
POPPOL	-0.013	-0.75	-0.028	-1.18	-0.047	-1.30
WPPC	26.562	1.06	37.697	1.05	37.570	0.69

[1] CR [clearance rate] differs for each dependent variable

FYIPMR	-56.760	-1.13	-147.08	-2.06	-196.94	-1.80
NPRR	-429.02	-1.27	-902.32	-1.88	-1076.7	-1.46
Constant	-21.551	-0.99	7.038	0.22	32.769	0.69
R square	0.964		0.964		0.967	

Note 1: CR differs for each dependent variable.

Table IV. Comparing OLS Regression Models with Lagged and Unlagged Clearance Rates

DV=FR,

OLS nolag = 101 negative, 91 positive

OLS lag = 101 negative, 93 positive

DV=AR,

OLS nolag = 115 negative, 88 positive

OLS lag = 119 negative, 95 positive

DV=TR,

OLS nolag = 66 negative, 123 positive

OLS lag = 76 negative, 117 positive

NB. The following uses +/- 1.65 to determine significance.

Table V. Pooled Regression Models. (EGLS, Clearance Rate Unlagged).

	Independent Variables					
	FR		AR		TR	
	Firearm Robberies		Armed Robbery		Total Robberies	
	Coeff.	T- ratio	Coeff.	T-ratio	Coeff.	T-ratio
Dependent Variable						
GUNLAW	1.578	1.81	1.563	0.99	4.518	2.11
DNFLD	-4.970	-1.07	-21.801	-2.54	-64.178	-4.75
DPEI	-8.723	-2.09	-18.195	-2.43	-64.616	-5.16
DNS	0.374	0.10	-7.712	-1.13	-32.453	-2.73
DNB	-5.317	-1.53	-16.506	-2.49	-55.255	-4.94
DQE	92.295	11.18	75.298	5.74	71.831	3.53
DONT	-5.794	-1.23	-31.329	-3.53	-54.017	-3.96
DMAN	3.522	0.93	1.479	0.21	-21.727	-1.80
DSASK	4.116	0.76	1.927	0.21	-34.172	-2.33
DALTA	-2.819	-0.80	8.291	1.16	-7.573	-0.59
TIME	1.105	3.83	2.187	4.03	2.146	2.41
TNFLD	-1.248	-4.62	-2.453	-4.82	-3.175	-3.82
TPEI	-1.042	-3.64	-2.309	-4.74	-2.658	-3.27
TNS	-1.184	-5.01	-2.031	-4.51	-2.764	-3.31
TNB	-0.932	-3.95	-1.890	-4.18	-2.553	-3.34
TQUE	-3.456	-6.15	-2.197	-2.75	-1.723	-1.29
TONT	-0.295	-1.27	0.233	0.49	0.153	0.19
TMAN	0.011	0.04	0.518	0.85	1.677	1.58
TSASK	-0.403	-1.00	-0.450	-0.64	-0.994	-0.87
TALTA	-0.240	-0.98	-1.159	-2.22	-0.888	-0.90
INDIANR	-2.417	-1.36	-4.942	-1.63	-2.253	-0.47
YOUTH	-0.805	-0.72	-1.292	-0.76	-2.146	-0.85
UNEMP	0.085	0.46	0.016	0.05	0.144	0.34
TYIMMR	522.13	6.14	928.42	5.83	958.79	4.14
CR[1]	-0.003	-0.44	-0.008	-0.38	-0.074	-1.91
POPPOL	-0.008	-0.98	-0.015	-1.10	-0.032	-1.74
WPPC	9.993	0.90	19.260	1.10	37.701	1.55
FYIPMR	31.731	1.11	-64.358	-1.25	-45.737	-0.63
NPRR	-435.59	-2.37	-872.64	-2.67	-592.33	-1.27

Constant	11.386	0.85	47.925	2.23	109.89	3.36
Buse R square		0.521		0.600		0.576

Note 1: CR differs for each dependent variable.

Table VI. Comparing GLS Regression Models with Lagged and Unlagged Clearance Rates

DV=FR,

GLS nolag = 0 negative, 236 positive

GLS lag = 10 negative, 158 positive

DV=AR,

GLS nolag = 0 negative, 144 positive

GLS lag = 0 negative, 183 positive

DV=TR,

GLS nolag = 0 negative, 246 positive

GLS lag = 0 negative, 239 positive

NB. The following uses +/- 1.65 to determine significance.

file: AE00 tables 1-3-02
from AE00 tables 8-8-dr