

To Serve and Collect; The Economics and Politics of Traffic Fines

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Introduction

- Determinants of traffic tickets
 - related to degree of traffic infringement?
 - related to marginal returns to local safety?
- Anecdotes
 - Local governments use traffic fines as substitutes for collecting tax revenues
 - Police officers are having the number of tickets they issue enter their job performance review
 - Out of town drivers have a higher probability of being fined



Waldo
6 miles ahead



The U.S. Department of Justice report on the Ferguson, Missouri police department illustrates many of these issues. The report noted that Ferguson law enforcement efforts were focused on generating revenue:

City officials routinely urge Chief Jackson to generate more revenue through enforcement. In March 2010, for instance, the City Finance Director wrote to Chief Jackson that “unless ticket writing ramps up significantly before the end of the year, it will be hard to significantly raise collections next year. . . . Given that we are looking at a substantial sales tax shortfall, it’s not an insignificant issue.” Similarly, in March 2013, the Finance Director wrote to the City Manager: “Court fees are anticipated to rise about 7.5%. I did ask the Chief if he thought the PD could deliver 10% increase. He indicated they could try.” The importance of focusing on revenue generation is communicated to FPD officers. Ferguson police officers from all ranks told us that revenue generation is stressed heavily within the police department, and that the message comes from City leadership (US DOJ 2015,2).

Introduction

- We suggest that whether a driver receives a traffic ticket is a function of
 - The driver's opportunity cost of contesting a ticket
 - officers fine drivers with a high opportunity cost
 - Objectives of elected officials, who appoint the Chief of Police,
 - fine non-voters – “tax exporting”
 - fine more when fiscal conditions are tight

Source of data

- All traffic tickets written and warnings issued in the state of Massachusetts from April 1, 2001 through May 31, 2001
- Speeding comprises the majority of citations (56 percent)
- We will focus on traffic citations due to speeding

Tax exporting? Comparison of means

- Likelihood of being fined instead of receiving a warning
 - Out of town drivers has a 51 percent
 - Local driver has a 30 percent
- Average fine amount
 - Out of town drivers: \$123
 - Local drivers: \$118
- Both differences are statistically significant.
- Investigate whether results holds up when controlling for vehicle speed, driver characteristics, etc.

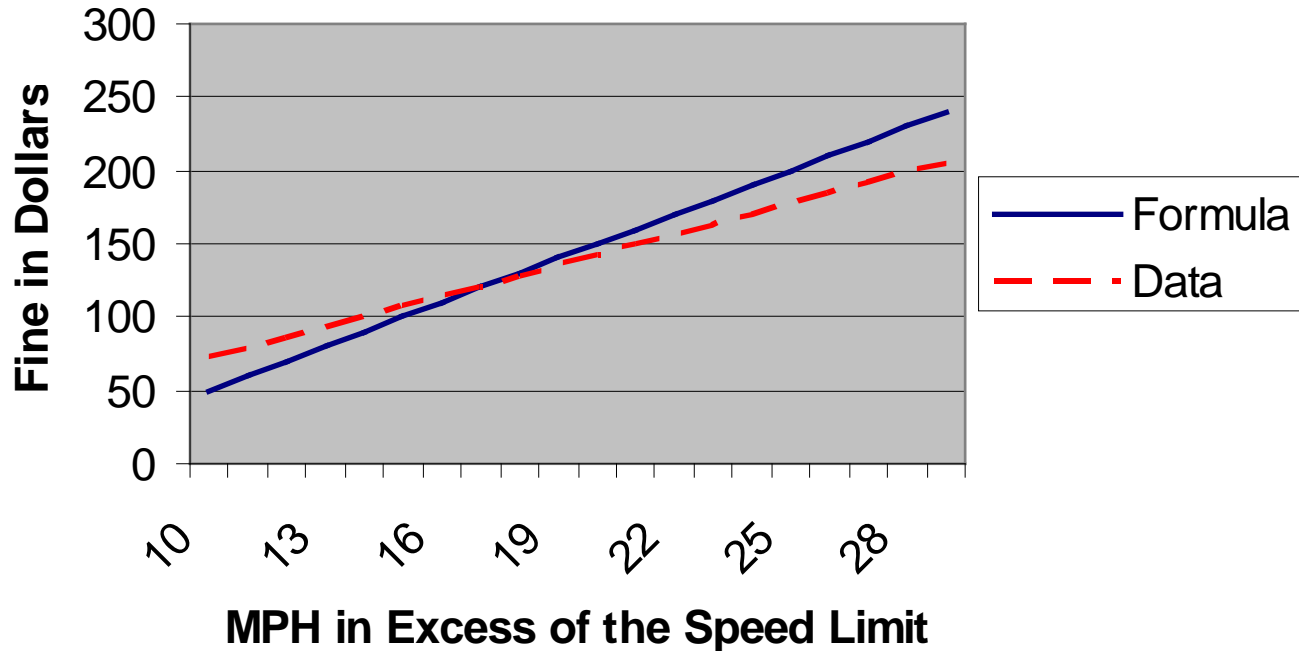
Institutions: How Fines are set

- Tickets and warnings, are issued using the Massachusetts Uniform Citation
- Whether the police officer issues a ticket or a warning is up to the discretion of the officer
- Massachusetts state law suggests formula for fines
 - $\$50 + 10 * (\text{speed} - (\text{speed limit} + 10))$
- We find that of those, who go 10mph over speed limit have only a 50 percent chance of receiving a fine, and that that officers deviate from suggested fine amount.

Institutions: How Fines are set

- Do officers deviate from the minimum fine?
 - If yes, this suggests that that officers exercise some discretion. Some drivers pay more and this might be related to local institutions or it could be related to officers' idiosyncratic preferences.
- Run regression of fine on speed over the speed limit
 - Use observations where a fine is imposed and the driver's speed is at least 10 miles per hour over the speed limit (n=29,752).

Size of Fine: Formula vs Data



- \$108 ticket for driving 15 mph over the speed limit – Minimum fine \$100.
- \$80 ticket for driving 11 mph over the speed limit – Minimum fine \$60.

Institutions: How Fines are set

- Traffic citation, which carries a fine, can be appealed in court
 - Appeal occurs at assigned District Court, which is indicated on the ticket.
 - Massachusetts has 62 district courts, and 351 municipalities.

Institutions

- Local police officers are employees of municipalities' police departments.
- Department headed by Chief of Police.
- Chief of Police appointed for up to three years by the governing board.
 - the governing board can remove that chief at any time
- Voters in each municipality elect the governing board
 - elected board members are the acting executives of the town
 - assess taxes, decide on spending.

Institutions

- Proposition 2 ½ (passed in 1980) places explicit limits on
 - maximum amount of revenue generated through property taxation by Massachusetts municipalities
 - the amount by which any municipality may increase this revenue from one year to the next.
- Town board of selectmen (aldermen) can propose an override referendum to increase property taxes
- Override referendum allows for tax increase beyond the levy limit prescribed by Proposition 2 ½
- Passage of the override requires a majority vote of approval by the electorate

Institutions

- Suggestive evidence that traffic fines are related to police department budget size:
 - per capita police budgets increase with revenues from fines and forfeitures
 - minimum and maximum salaries for officers and sergeants increase with the size of the per capita police budget across municipalities
 - size of the per capita police personnel budget increases with fine and forfeiture revenues

Institutions

- Property taxes are the single largest source of revenue in a municipality.
 - Property taxes comprise 57 percent of total revenues (2001)
 - State aid 20 percent
 - Local receipts 15 percent
 - 8 percent falls in “all other category”.
- Most speeding fines collected in Sturbridge, fines extrapolate to \$438,525 annually.
- For twenty-five Massachusetts municipalities speeding fines amount to more than 1% of their total tax revenue

Hypotheses

Opportunity cost hypothesis

- Officers are more likely to issue a fine when the opportunity cost of contesting is high.
 - Uncontested citations raise revenue
 - Frequent court attendance reduces time available to ticketing
 - Appearing in court is potentially unpleasant
- We measure opportunity cost by the distance between driver's residence and where the ticket can be appealed in court
 - Police officer knows from the car's license plate the driver's state and sometimes the driver's town of residence
 - Once a driver is pulled over, the officer can observe the home address on the driver's license

Institutions: Court locations for appeals

- Traffic citation, which carries a fine, can be appealed in court
 - Appeal occurs at assigned District Court, which is indicated on the ticket.
 - Massachusetts has 62 district courts, and 351 municipalities.
 - This implies that for some people, appeals involve larger time costs, because they reside farther away from the District court, where they can appeal.

Hypotheses

Political Economy Hypothesis

- Tax exporting to non-voters – i.e. ticket out of town drivers
- Fiscal conditions of the local government matters
 - Failure to pass an override referendum
 - Property values
 - Tourism

Data and Empirical Framework

- Includes speeding tickets issued in Massachusetts from April 1, 2001 through May 31, 2001.
- We use a statistical model to estimate whether the driver receives a fine or a warning.

Data and Empirical Framework:

Explanatory variables

- **Fiscal** vector includes
 - whether a municipality rejected a tax increase via an override referendum → +
 - value of its property tax base → -
 - measure of municipality's dependency on tourism → -

Data and Empirical Framework

- **DriverX** vector includes
 - driver is from out of town = 1, 0 otherwise → +
 - driver is from out of state = 1, 0 otherwise → +
 - “distance to court” measure → +
 - miles per hour over the posted speed limit → +
 - age of the driver → -
 - indicator variables for the race and the gender of the driver → ?

Data and Empirical Framework: More predictions

- Predicted ticketing behavior of state troopers vs. local officers.
 - principle of state trooper: state government
 - principle of local officer: local government
- Three types of drivers
 - in-town
 - out-of-town but from MA
 - out-of-town and not from MA.

Data and Empirical Framework : More predictions

- Political economy model: fines are determined by whether a person resides in the officer's jurisdiction
 - state troopers charge a higher fine to drivers from out of state
 - local officers have only preferential treatment for those in town - treat everyone else, in state or out of state, equally
- Opportunity cost model: state troopers and local officers are more likely to ticket the further the driver resides from the court of jurisdiction
- Local fiscal conditions: a determinant of ticketing for local police, but not for state troopers

Variable	Analysis of Citations		Analysis of Fine \$Amount	
	(N=64036)		(N=29416)	
	Mean	Std. Dev.	Mean	Std. Dev.
Fine Amount / \$			122.24	56.12
Citation Issued = 1, 0 otherwise	0.459	0.498		
Out of State Driver = 1, 0 otherwise	0.156	0.363	0.225	0.418
Out of Town Driver = 1, 0 otherwise	0.774	0.418	0.853	0.354
Override loss = 1, 0 otherwise	0.020	0.139	0.027	0.163
Distance to Court (miles)	52.09	232.91	75.66	284.16
Hospitality employment (percent of total employment)+	3.783	1.179	3.479	1.027
Mph over speed limit	15.143	5.039	17.082	5.748
Property value (per capita)	89,070	52,437	81,408	49,919
Black = 1, 0 otherwise	0.044	0.206	0.051	0.220
Hispanic = 1, 0 otherwise	0.035	0.183	0.047	0.211
Female = 1, 0 otherwise	0.391	0.487	0.331	0.471
Age	35.56	13.51	33.52	12.72
State Police = 1, 0 otherwise	0.273	0.446	0.456	0.498
Commercial Drivers License = 1, 0 otherwise	0.029	0.169	0.023	0.149

Findings

- Probability of a fine given by local officer
 - 11 percent higher for out of town drivers
 - 20 percent higher for out of state drivers
- Probability of a fine given by state officer
 - 13 percent higher for out of town drivers
 - 28 percent higher for out of state drivers
- The longer distance to court, the higher probability of a fine.

Findings

- Failed override referendum increases probability of a fine by 28 percent for out of town drivers. No increase for local drivers.
 - This effect is stronger for local police than for state police
- Lower probability of a fine in wealthier municipalities.
 - This effect is stronger for local police than for state police

Findings

- Going one percent extra above speed limit increases probability of a fine by 0.5 percent
- Hispanics have a 14 percent higher probability of receiving a fine relative to whites.
- No differential treatment of blacks.

Findings

- Older drivers are less likely to receive a fine.
- Females have a 33 percent lower probability of receiving a fine.
- Younger females are less likely to receive a fine relative to older females.

Findings – Amount regressions

- Fine amount given by local officer higher by
 - 4 percent for out of town drivers
 - 9 percent for out of state drives
- Fine amount given by local officer higher by
 - 8 percent for out of town drivers
 - 16 percent for out of state drives
- Each log point distance increases the fine by 3 percent

Findings – Amount regressions

- Override loss leads to an 8 percent higher fine amount.
- One percent increase in speed over limit leads to a one percent increase in fine amount
- Race, Age, Gender similar effect as in regressions examining the effect of these variables on the probability of a fine.

Horse Race: Voting Model vs. Opportunity Cost Model

- Include in-town indicator
- Include out-of-state indicator
- Left-out category: out-of-town but in-state

- Include distance to court

Alternative interpretation?

Town Size Effect

- Local drivers receive fewer citations because local police have close personal relations to those drivers.
- How to address this
 - Use town fixed effects
 - Prediction: coefficient on in-town smaller, but remains negative and statistically significant
 - Interact in-town dummy with town size.
- Run regressions separately for local police and state troopers
 - Prediction: state troopers do not discriminate against in-town drivers

Conclusions

- Speed over speed limit is not sole determinant of speeding tickets.
- Out of state drivers face a higher probability of a fine and a higher fine.
- Drivers who face a higher cost to appeal a ticket are more likely to receive a citation and receive a higher fine.
- Consistent with model that police officers seek to reduce work effort, and work as agents of revenue-maximizing principals by “exporting” taxes to drivers who are not local constituents.
- Local fiscal conditions matter:
 - Traffic fines are more frequently imposed in those municipalities where revenues from property taxes are lower.
 - Fines are also more frequent when voters rejected an override referendum to temporarily increase the limit on property tax revenue.