Trafficking Networks and the Mexican Drug War

Presenter: Federico Masera - Universidad Carlos III de Madrid

Melissa Dell

September 23, 2014

Mexican Political Framework and the Drug War

1. Huge industry:
    1. 14-48 Billion US$ annually
    2. 14% regularly produce, 68% have DTOs
2. Increase in drug related violence: 50000 deaths in the last 5 years (increasing at 30% per year)
3. Felipe Calderon (2006-2012) PAN: First president that made fighting organized crime the priority

Mexican Mayors and the Drug War

Mayors have an important role in the drug war:

1. Name the municipal police chief
2. Set local police policies

A PAN mayor is more likely to implement President Calderon anti-DTOs policy with respect to a non-PAN mayors

Research Questions

What is the causal effect of the PAN party war on drugs policies on:

1. Drug related violence where the policy is implemented?
2. Spillover effects on drug trade and violence in neighboring cities?
3. Drug routes to the US?

Methodology

Uses a RD approach focusing on close losses/wins of the PAN party in city elections

Builds a network model of Mexico road system from the producing areas to the exit points

Direct Effects of a Close PAN Victory

Main Specification

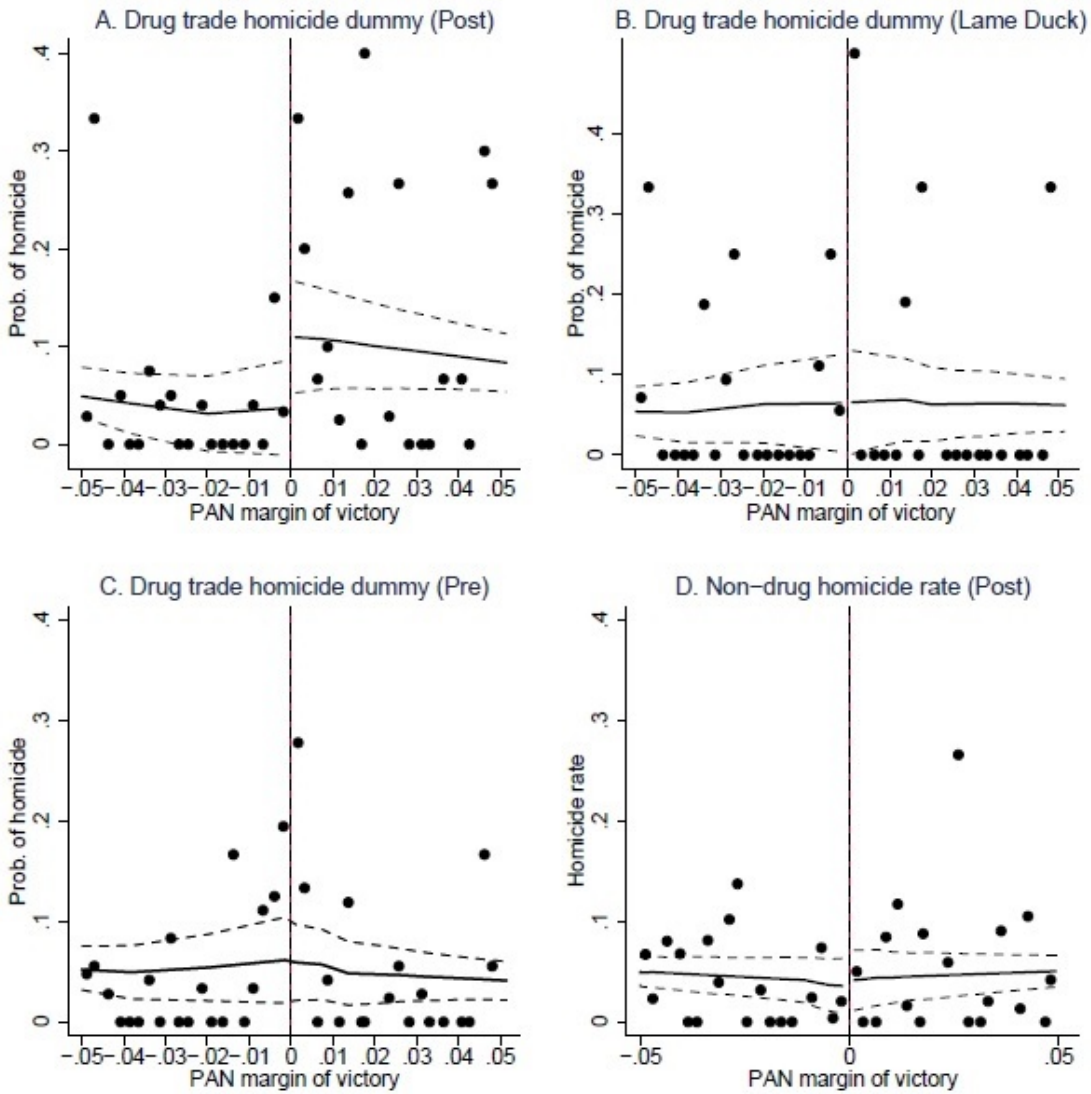
$$\begin{aligned} y_{ms} &= \alpha_0 + \alpha_1 PANwin_{ms} + \alpha_2 PANwin * spread_{ms} \\ &\quad + \alpha_3(1 - PANwin_{ms}) * spread_{ms} + \delta X_{ms} + \alpha_s + \epsilon_{ms} \end{aligned}$$

- Municipal elections in 2007 and 2008 (Post-Calderon)
- Election in which PAN won or came second
- Treatment cutoff: $\pm 5\%$ spread
- Weighting: Triangular Kernell

Assessing Identification

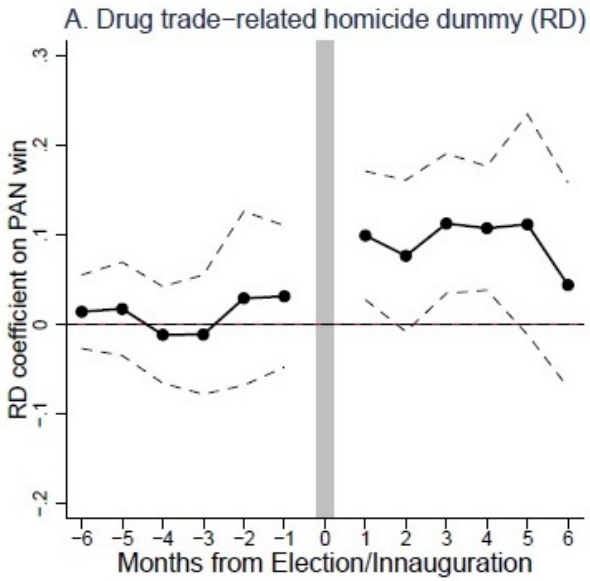
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Own municipality					Neighboring muns.	
	5% vote spread		t-stat on		t-stat on		t-stat on
	PAN won	PAN lost	means difference	RD estimate	RD estimate	RD estimate	RD estimate
Crime characteristics							
Drug-trade homicide probability	0.0β	0.04	(-0.51)	-0.01	(-0.38)	-0.02	(-0.47)
Confrontation death probability	0.04	0.04	(0.01)	0.01	(0.12)	0.01	(0.25)
Annual homicide rate (1990-2006)	1.37	1.50	(-0.46)	-0.07	(-0.20)	-0.07	(-0.31)
Political characteristics							
Mun. taxes per capita (2005)	59.84	56.75	(0.23)	15.86	(0.84)	9.01	(0.42)
Turnout	0.61	0.59	(0.99)	0.02	(0.85)	0.00	(0.71)
PAN incumbent	0.27	0.32	(-0.61)	0.00	(0.01)	-0.07	(-1.03)
PRD incumbent	0.17	0.13	(0.63)	0.02	(0.30)	0.00	(-0.02)
% alternations (1976-2006)	0.31	0.31	(-0.20)	0.01	(0.27)	-0.04	(-1.85)*
PRI never lost (1976-2006)	0.07	0.07	(-0.04)	-0.01	(-0.13)	0.01	(0.36)
Demographic characteristics							
Population (2005)	60259	50991	(0.35)	23169	(0.64)	3.67	(0.81)
Population density (2005)	220.23	191.05	(0.42)	8.63	(0.08)	-37.53	(-0.33)
Migrants per capita (2005)	0.02	0.02	(-0.69)	0.00	(-0.45)	0.00	(0.08)
Economic characteristics							
Income per capita (2005)	4.29	4.48	(-0.53)	-0.14	(-0.29)	-0.05	(-0.11)
Malnutrition (2005)	32.76	31.2	(0.53)	0.99	(0.28)	-1.63	(-0.51)
Mean years schooling (2005)	6.26	6.19	(0.32)	0.04	(0.15)	0.10	(0.36)
Infant mortality (2005)	22.54	22.26	(0.22)	0.14	(0.10)	0.35	(0.27)
HH w/o access to sewage (2005)	8.51	8.44	(0.05)	0.24	(0.15)	0.43	(0.36)
HH w/o access to water (2005)	16.14	18.22	(-0.62)	-0.94	(-0.23)	-1.58	(-0.52)
Marginality index (2005)	-0.15	-0.12	(-0.23)	-0.06	(-0.31)	-0.09	(-0.49)
Road network characteristics							
Detour length (km)	27.32	24.58	(0.14)	4.68	(0.16)	17.99	(0.85)
Road density (km/km^2)	0.15	0.13	(1.08)	0.01	(0.52)	0.00	(0.10)
Distance U.S. (km)	708.27	735.49	(-0.55)	-73.77	(-1.23)	-78.56	(-1.30)
Geographic characteristics							
Elevation (m)	1406.75	1380	(0.19)	-30.38	(-0.18)	-47.49	(-0.29)
Slope (degrees)	3.62	3.25	(0.89)	0.31	(0.58)	0.10	(0.25)
Surface area (km^2)	1787	725	(1.36)	1488	(1.46)	1089	(1.29)
Average min. temperature, C	11.76	12.23	(-0.57)	-0.39	(-0.38)	-0.45	(-0.47)
Average max. temperature, C	26.37	26.64	(-0.45)	-0.22	(-0.30)	-0.13	(-0.21)
Average precipitation, cm	115.16	105.2	(0.82)	10.87	(0.79)	2.10	(0.16)
Observations	70	82		430		430	

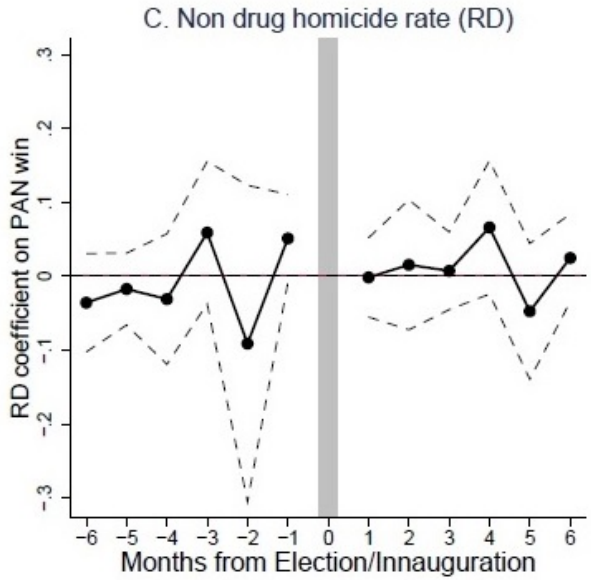
Graphical Analysis



Regression Discontinuity Results

$$y_{ms} = \alpha_0 + \alpha_1 PANwin_{ms} + \alpha_2 PANwin * spread_{ms} + \alpha_3(1 - PANwin_{ms}) * spread_{ms} + \delta X_{ms} + \alpha_s + \epsilon_{ms}$$





RD Results

$$
\begin{aligned}
y_{ms} &= \alpha_0 + \alpha_1 PANwin_{ms} + \alpha_2 PANwin * spread_{ms} \\
&\quad + \alpha_3 (1 - PANwin_{ms}) * spread_{ms} + \delta X_{ms} + \alpha_s + \epsilon_{ms}
\end{aligned}
$$

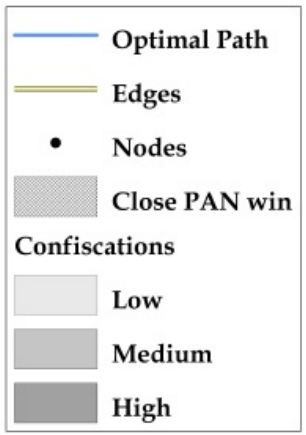
Drug-related homicide probability		
PANwin	0.084***	0.087***
PAN win * detour		0.070***

Monthly drug-related homicide probability average = 6%

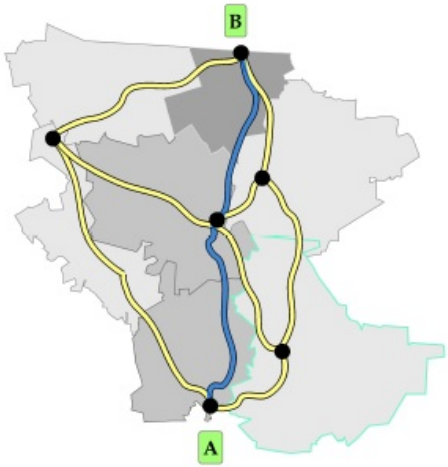
Spillover Effects

Network Model

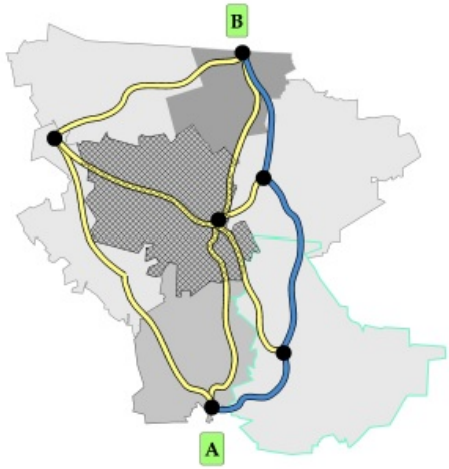
1. DTOs want to use route that minimizes distances production to exit point
2. If PAN (almost) wins increases costs of passing through that region (to infinity)
3. DTOs observe police placement and re-minimize their costs



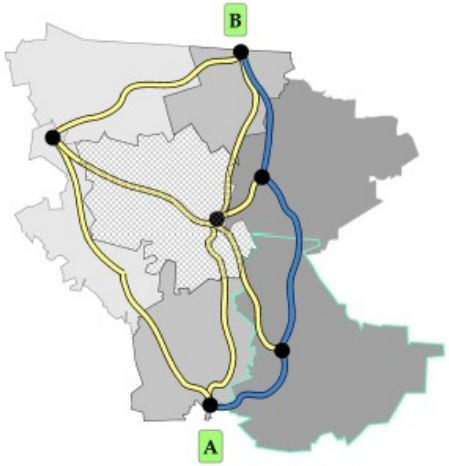
(a) Legend



(b) Basic environment



(c) Close PAN victory increases costs; routes change



(d) Do confiscation patterns also change?

Results - Confiscations

$$conf_{mst} = \beta_0 + \beta_1 Routes_{mst} + \psi_{st} + \delta_m + \epsilon_{mst}$$

	Confiscation	
	Dummy	log(Value)
β_1	0.016^{***}	0.170^{***}

Monthly average confiscation probability = 5.3%

Results - Homicides

$$hom_{mst} = \beta_0 + \beta_1 Routes_{mst} + \psi_{st} + \delta_m + \epsilon_{mst}$$

	Homicides	
	Drug related	Non-dug related
β_1	0.013^{***}	0.017

Monthly drug-related homicide probability average = 4.4%

Conclusions

PAN policies of fighting DTOs have:

1. Increased drug related violence in cities where they were implemented
2. Moved drug routes to new optimal paths
3. Increased homicide rates in cities passed by the new drug routes