Education and youth crime

Effects from introducing the EMA programme

Ricardo Sabates & Leon Feinstein

13-April-2005

Overview

1. Background
2. Objective
3. Theoretical framework
4. Data
5. Methodology
6. Results
7. Implications

Background

- Direct interventions for crime reduction
  - Increase resources for police
  - Increase severity of the sanction
- Indirect interventions for crime reduction
  - Change in economic incentives associated with changes in crime.
    - Machin & Meghir: cross-area changes in crime associated with cross-area changes in wages (UK)
    - Hansen & Machin: change in minimum wage affect crime rates (UK)
    - Machin & Marie: evidence on benefit cuts & crime (UK)
  - Change in post-compulsory school attendance in US associated with decrease in crime

Objective

- To use the random variation provided by the area-specific provision of Educational Maintenance Allowances (EMA) to estimate the effects of the programme on juvenile crime.
- To explore complementarities of direct and indirect interventions.
- To enable government to consider external benefits in their trade-off between expenditure and effectiveness of policies.

Theoretical framework

- Why do we expect an effect from an educational programme?

i. From participation in education:
  - Enhances skills and improves future earnings
  - Spending time in education & peer group selection
  - The learning benefit: patience & risk aversion

ii. From income support (if provided)

The EMA Programme

Educational Maintenance Allowance Programme

- Aim: to increase post-16 participation in education
- Income support (£30-40 a week)
- Eligibility: household income < £20 (£30 in London)
- Piloted in 15 Local Education Authorities in 1999
- Evaluated as a successful programme by the IFS
- Rolled over nationally in September 2004

Crime Data and other variables

Juvenile crime by LEA using Offenders Index

- Crime data on convictions for burglary
- Matching courts to LEAs
- Post-1999 classification of LEAs (150)
- Standardisation of the crime rate (by age-specific pupil)

Educational variables by LEA using LEASIS

- Data available on characteristics, attainment, absence, and quality.

Other variables

- FSM as a measurement of deprivation, LEA under 24 unemployment & Census 2000 indicators

Structure of the Data

	Pre-EMA				Post-EMA		
	YEAR						
	96	**97**	**98**	**99**	**00**	**01**	**02**
Coh1	16	17	18	19	20	21	22
Coh2		16	17	18	19	20	21
Coh3			16	17	18	19	20
Coh4				16	17	18	19
Coh5					16	17	18
Coh6						16	17
Coh7							16

Methodology

- Difference-in-differences estimation

$$C_{at}^{EMA} - C_{at-1}^{EMA} = \Delta C_{at}^{EMA} \quad \text{and} \quad C_{at}^{NEMA} - C_{at-1}^{NEMA} = \Delta C_{at}^{NEMA}$$

$$\Delta C_{at}^{EMA} - \Delta C_{at}^{NEMA} = \phi$$

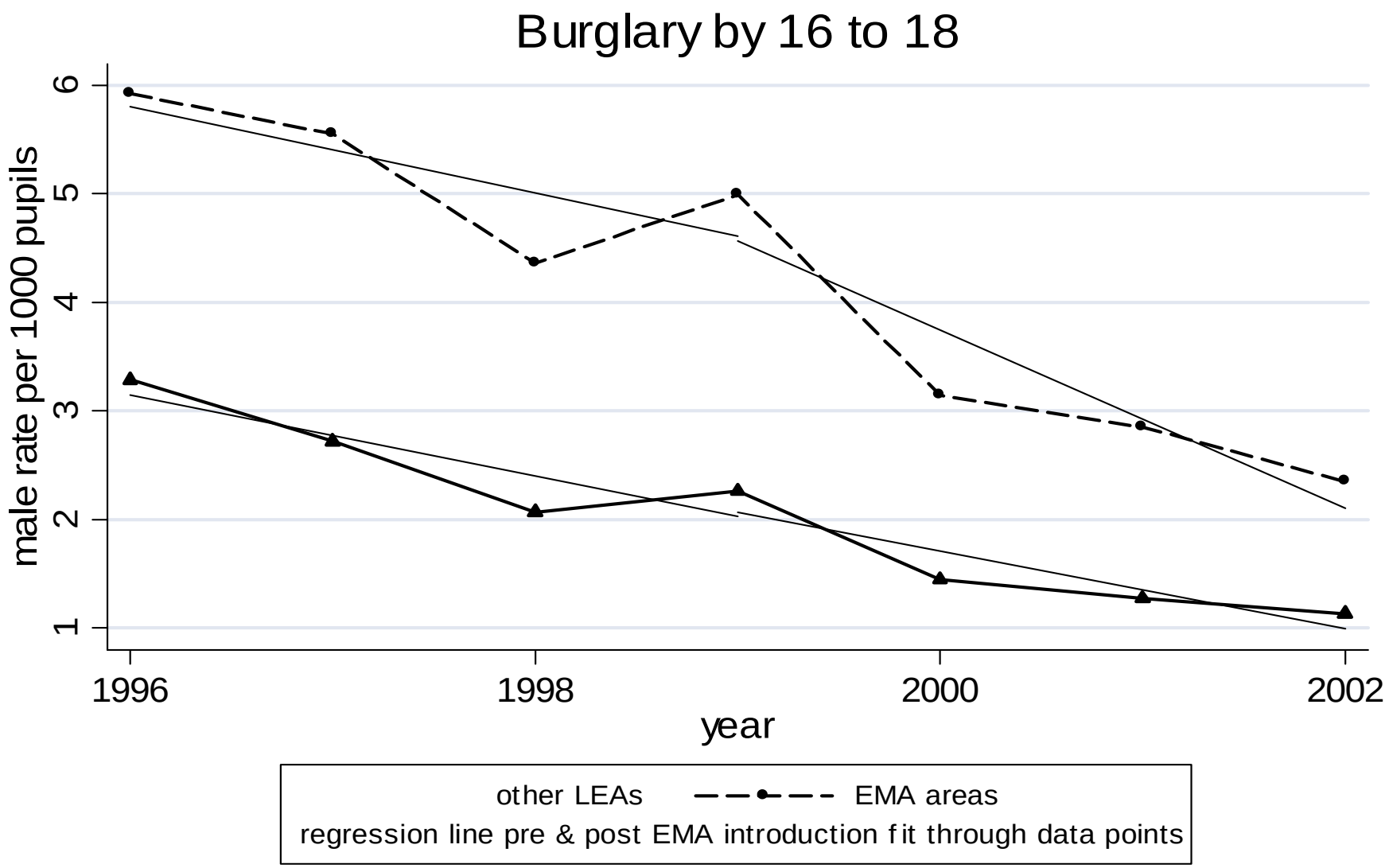
- This estimate is unbiased under the assumption that the programme is introduced randomly so that there are no differences between treatment and non-treatment areas with respect to the juvenile convictions.

Difference in Male Juvenile Burglary Convictions (16-18 year old) per 1,000 pupils.

	Before EMA	After EMA	Within Group Difference
EMA Areas	4.219	2.230	-1.989 (0.379)***
Non-EMA Areas	2.227	1.176	-1.051 (0.098)***
			Difference-in-differences
Between Group Difference	1.991 (0.673)***	1.054 (0.525)**	-0.937 (0.377)**

Note: Estimation based on 15 areas where the EMA programme was piloted. Before EMA is defined as 1996 to 1999 and after EMA post 1999. Asterisks (*),(**),(***) represents significance at 10, 5 & 1 percent levels, respectively. Estimations are weighted by population. Standard errors, in parenthesis, are clustered by LEA.

Trends in Burglary: EMA & non-EMA areas



Data source: OI

- One way to deal with the potential bias is to introduce controls

$$C_{at} = \alpha + \beta T_a + \phi Ta * PolicyOn + \varphi X_{at-1} + u_{at}$$

- We include the following controls

(i) educational and economic
(ii) census characteristics
(iii) initial differences in crime rates
(iv) area trends

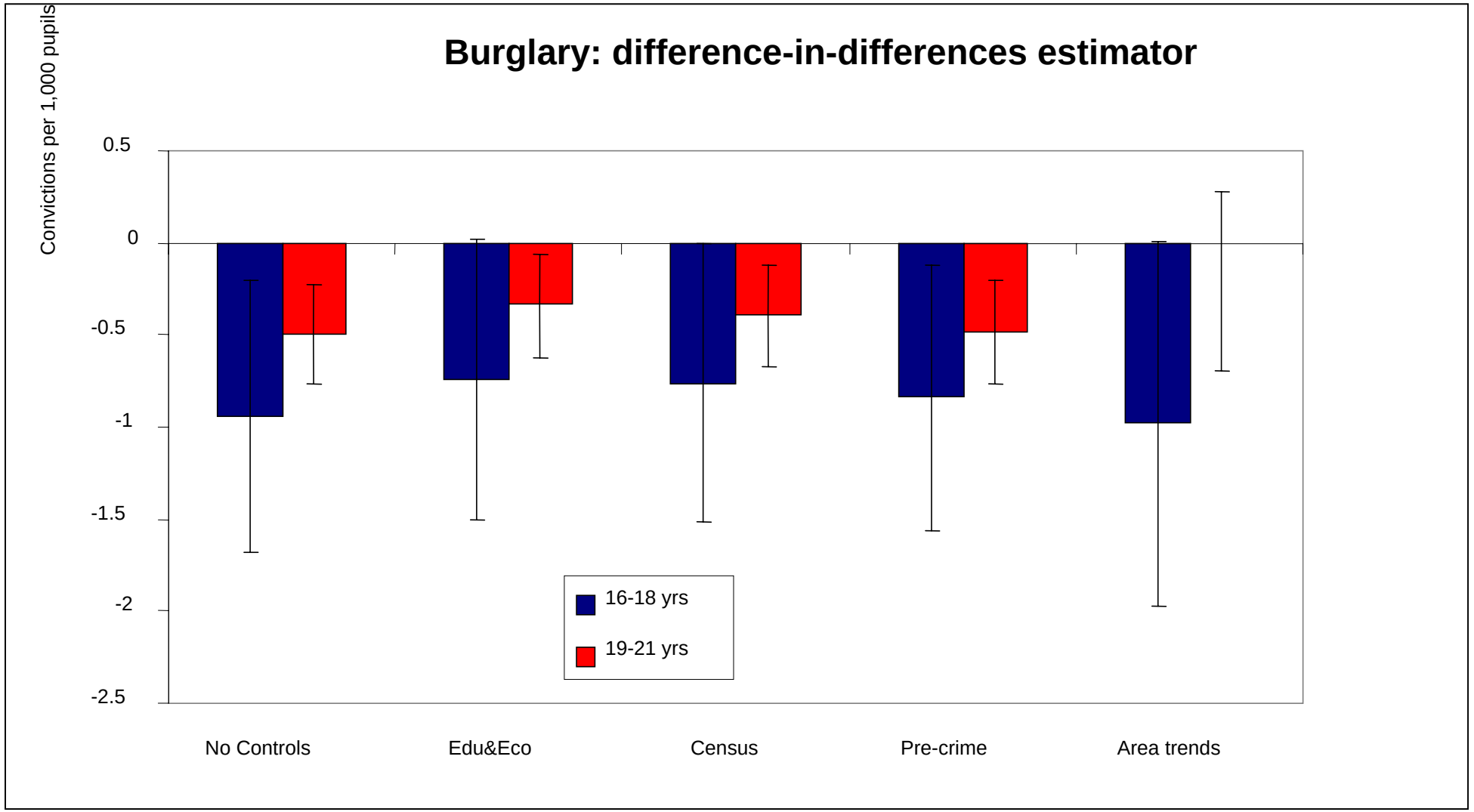
Regression analysis on 16-18 years old burglary rates

	(no controls)	**(ed/eco)**	**(census)**	**(pre-crime)**	**(area-trend)**
Dependent variable: Male **Burglary**					
EMA	**1.991 (0.673)*** **	1.270 (0.556)**	1.301 (0.487)***	0.571 (0.149)***	**-0.256 (0.378)**
EMA*policy-on	**-0.937 (0.377)** **	-0.742 (0.388)*	-0.761 (0.387)*	-0.841 (0.368)**	**-0.982 (0.504)***

Sensitivity Analysis

- So far, results raise two issues:
- First, if indeed the EMA programme does have an externality effect on crime, this will be captured by a decline in convictions for people aged 16 to 18. Is it possible that convictions declined for older individuals in EMA areas relative to other LEAs?
- Second, is it possible that other crime prevention initiatives were in action in EMA areas and thus the significant EMA effect may be a confounder of a ‘combined’ effect?

Results: burglary for older cohorts



Cont…

	(20-29)	(30-39)	(40-49)	(50-69)
EMA	0.684 (0.409)*	0.183 (0.080)**	0.111 (0.028)***	0.006 (0.005)
EMA*policy-on	0.019 (0.165)	0.043 (0.041)	-0.032 (0.035)	0.005 (0.006)
Number of Obs.	1,848	1,848	1,848	4,620

Note: Asterisks (*),(**),(***) represents significant at 10, 5 & 1% levels, respectively. Estimations are weighted by population and NO CONTROLS are included. Standard errors are clustered by LEA.

A direct government initiative

Reducing Burglary Initiative

- Home Office initiative introduced in 1999 aim to reduce burglary in worst areas of England & Wales.
- £25m were given in direct support to police force areas; 63 projects £60k each approx.
- Of 15 EMA pilots, 7 also received RBI support, 53 only RBI.
- Therefore we can estimate the model for areas with both initiatives, EMA only, RBI only against the rest of the LEAs.

$$C_{at} = \alpha + \beta_i T_{ia} + \phi_i T_{ia} * PolicyOn + \varphi X_{at-1} + u_{at}$$

Difference in Male Juvenile Burglary Convictions (16-18 year old) per 1,000 pupils.

	Before RBI	After RBI	Within Group Difference
RBI Areas	3.164	1.585	-1.579 (0.213)***
Non-RBI Areas	2.013	1.106	-0.907 (0.086)***
			Difference-in-differences
Between Group Difference	1.151 (0.331)***	0.479 (0.280)*	-0.672 (0.228)**

Note: Estimation based on 60 areas where the RBI initiative granted funds. Before RBI is defined as 1996 to 1999 and after RBI post 1999. Asterisks (*),(**),(***) represents significance at 10, 5 & 1 percent levels, respectively. Estimations are weighted by population. Standard errors, in parenthesis, are clustered by LEA.

Results: EMA, RBI, EMA-RBI

	(No controls)	(Eco&Edu)	(Census)	(Pre-crime)	(Area trends)
EMA	1.447 (0.792)*	0.853 (0.695)	0.742 (0.536)	0.381 (0.212)	0.283 (0.343)
RBI	0.934 (0.331)***	0.505 (0.307)	0.348 (0.297)	0.155 (0.119)	0.183 (0.197)
EMA-RBI	2.874 (1.011)***	2.013 (0.820)**	2.135 (0.698)**	0.774 (0.225)***	-0.541 (0.559)
EMA*policy-on	-0.780 (0.648)	-0.641 (0.620)	-0.691 (0.606)	-0.770 (0.658)	-0.137 (0.603)
RBI*policy-on	-0.595 (0.247)**	-0.477 (0.255)*	-0.505 (0.249)*	-0.534 (0.234)**	-0.048 (0.295)
EMA-RBI * policy-on	-1.367 (0.403)***	-1.087 (0.479)**	-1.115 (0.471)**	-1.215 (0.357)***	-1.551 (0.470)***

Conclusions

- First, conviction rates for male burglars seem to have fallen by more in EMA areas relative to non-EMA areas.
- Our estimates were age specific.
- The main finding is that conviction rates for burglary offences was significantly greater in areas that introduced the EMA and the RBI.

Cont…

- In EMA-RBI areas, these rates fell between 1.1 and 1.5 convictions per 1,000 pupils relative to other areas.
- At the rate of 1.1 less convictions, we estimate that it will take nearly 6 years for burglary rates in these areas to reach the average of the other LEAs.
- Crime prevention could be achieve by a combination of government policies, both by direct intervention and indirectly by providing opportunities for youths.