Probation and recidivism in Italian juvenile crime: estimating the effect of intergenerational transmission of crime through a cohort of young criminals

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Background

Empirical analysis documents the existence of a significant intergenerational criminal relationship between fathers and their children. The hypothesis at work supposes that children directly observe and model their parents' behavior, such as policies that appear to be successful at reducing crime today may reduce crime even further in the future. This relationship has been largely proved in this literature across multiple data sets, cities and countries starting from the seminal work of Glueck and Glueck (1950) using a sample of boys raised in Boston; then empirical studies were carried out mainly in England (see, Gregory (2004) for a review) and Sweden (Janson, 1982). Recent studies include the estimates of Farrington et al. (2009) and van de Rakt et al. (2009) who use data from England and Netherlands, respectively, and the review for the US studies by Thornberry (2009).

Despite these arguments, the economics of crime literature has largely ignored the relationship between an individual's own criminality and that of his parents, at least because there is a difficulty to discount the future costs for the society of the current juvenile criminality and determine realistic estimates of alternative policies applied to young criminals - as well as adult criminals.

Objective

The purpose of this study is estimating the role of the parental criminality in determining juvenile crime in Italy, investigating if the mechanisms underlie this familial relationship can help to identify the potential effects of various policies on criminal behavior. In particular, we focus on the effect of probation, a policy applied in Italy to juvenile offenders that is alternative to other specific measures related to juvenile law. The assessment of this policy intervention, regulated by the Art. 28 of the D.P.R. [Decree of the President of the Republic] n. 448 of September 1988, is based on the differences of recidivism rates, representing an indicator of the intervention's efficiency by the institutions operating in the field. The interest on this outcome refers to the evaluation of specific laws that compares groups of individuals treated by the law intervention with those that are not subjected to the treatment. Clearly, our specific aim is to disentangle the average effect on population to marginally evaluate the impact on the recidivism rate of adolescents with offender parents with respect to those without criminal activities.

Data

Our dataset is composed from a cohort of 1100 young criminal representative of the Italian cohort of 1987 that follows from 2001 (age 14) to 2010 (age 23). Data from the juvenile justice contains data collected by the Offices of Youth Social Service (OYSS) and have a territorial distribution slightly

greater than administrative regions. These offices kept in charge young criminal if produced the offense before age 18, such as we can find in the dataset adult people if these have punishment to discount. Since our aim is to evaluate recidivism rate, we merge information in the adult criminal career of people born in 1987 until 2011 considering data of the Prison Administration Department. To avoid that people may be under the juvenile law regime, we follow the same individuals for the successive five years since OYSS took in charge the young criminal and, as robustness, we build a recidivism rate after six years. As a measure of efficiency, we restrict the sample for individuals assigned to the probation and had a positive result from the activities. We include probation (and probation with positive result) as a dummy variable, in which 1 is the individual assigned to the treatment and 0 otherwise. Among the individual and socio-demographic variables that we include as control to estimate the mean effect of the probation in the recidivism rate, we select the variable of interest - adolescents with offender parents with respect to those without criminal activities - using this dichotomous variable to estimates heterogeneous differences of parental criminal status.

Methods

In this section, we focus on the causal estimates of the application of the probation with respect to other juvenile punishments (or not, as for example detention) on the recidivism rate. To do this, we follow the conterfactual framework of policy evaluation developed in the cklassic version by Rubin (1974). Let y_1 denote the outcome of interest (i.e., recidivism rate), when the subject under analysis recieved the treatment and y_0 the same outcome without the treatment. Since an individual cannot be in both states at the same time, we cannot observe the two outcomes in the same subject. No assumptions are made about y_0 and y_1 distributions, but we assume that we have an independent, identically distributed (i.i.d.) sample from the population of interest. This assumption in particular rules out cases where the treatment of one unit affects another's outcome (Heckman, Lochner, and Taber, 1998). This assumption may be also called the stable unit treatment value assumption (SUTVA) in the evualution literature. Consider the binary treatment indicator of probation described above. The effect of the treatment in which we are interested is the difference in the outcomes with and without treatment, $y_1 - y_0$. Since this difference is a random variable and can be calculated for each individual of our sample, it is possible to estimate different feature of its distribution. For example, Rosenbaum and Rubin (1983) proposed to estimate the well known average treatment effect by $ATE \equiv E(y_1 - y_0)$. Some authors have criticised this measure for not being relevant for policy purposes, because it averages across the entire population considering also subjects who would never be eligible for treatment. A second quantity of interest, and one that has received much recent attention, is the average treatment effect on the treated, which we denote $ATT \equiv E(y_1 - y_0 \mid probation = 1)$. That is, ATT is the mean effect for those who actually participated in the program (i.e. probation).

Development in this estimator have conducted to expand the definition of both treatment effects by conditioning on covariates and the use of a different estimator with respect to ordinary least squares (OLS). In fact, under quite general assumptions, the inverse probability weighted (IPW) estimator yields

valid results provided that all the confounders are observed (Lefebvre et al., 2008; Lefebvre and Gustafson, 2010).

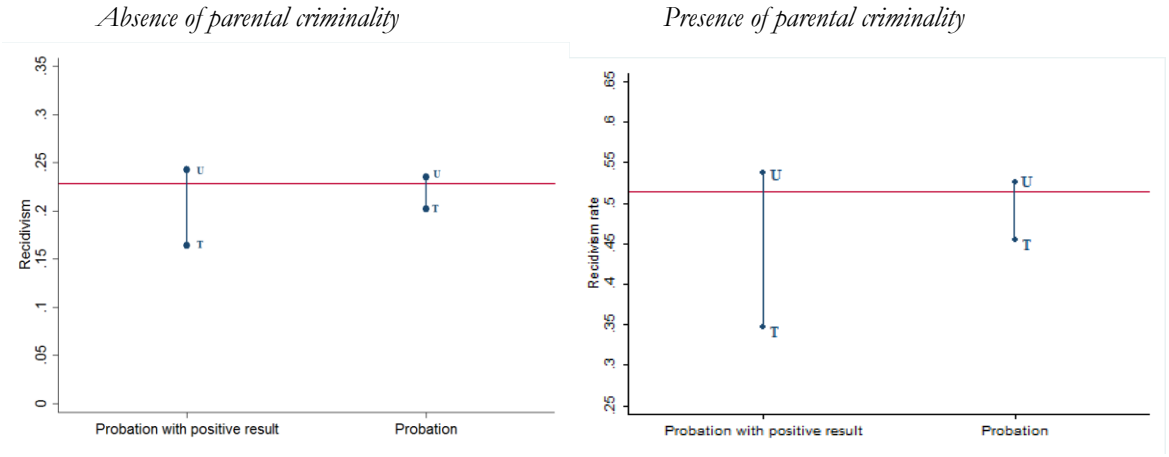
Results

The estimates for the cohort of Italian young criminal suggest a recidivism rate of 0.27 after five years and 0.29 after six. The *ATE* for young criminal that are assigned to the probation have a recidivism rate lower of 12 percentage points with respect to those assigned to other punishment policies. Estimates of *ATT* are found close to those ATE.

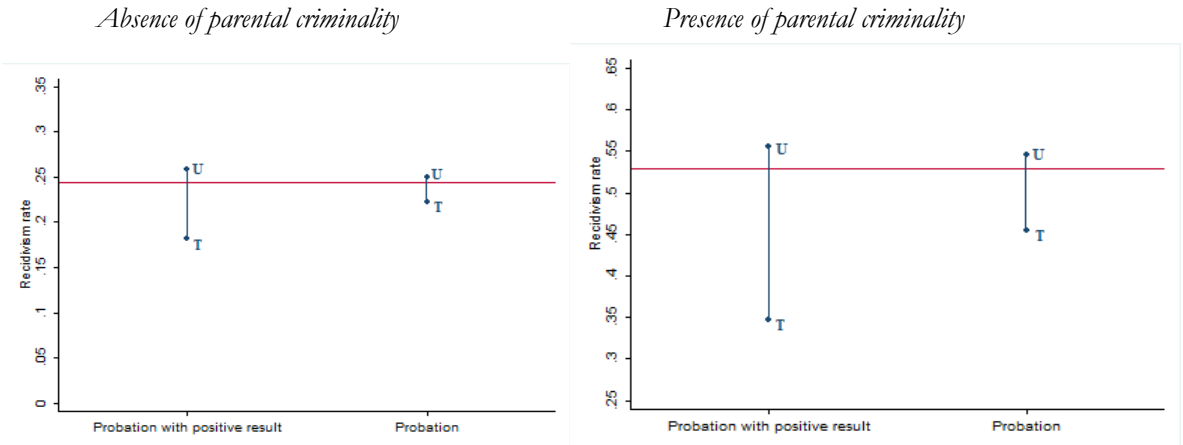
Figure 1 shows the average of the recidivism rate by groups of treated considering either those assigned to probation and those ex-post that obtained positive result. The graph are then marginalized on the left for adolescents that do not have parents involved in criminal activities and on the right pattern those involved. We note a double recidivism rate for young criminals with parents involved in criminal activities, a result not linked with probation and the length of the rate of recidivism.

Figure 1 - Recidivism rate by treated (probation) and untreated group and length

Length: 60 months;



Length: 72 months;



An indication that also emerges in Table 1 and 2 from the estimates of the impact of the probation policy on the recidivism rate is that large differences in probation of successful adolescent depends on

parent criminal condition. As you can see, the presence of parents that determine an intergenerational transmission of crime increases the measures of the effect of the recidivism rate in a range from 10 and 25 percentage points, based on the estimator used, but irrespective of the length of the outcome indicator.

As a first conclusion, the clear role of the parents in determining juvenile crime and the mechanisms that characterize this familial relationship helps to identify the potential effects of probation on criminal behavior. This also allows us to develop an analytical framework to compare benefits and costs of the extension of the probation to young adult, as a law proposal has been recently discussed in Italy.

Table 1 - Estimates of ATE and ATET using as treated individual that had success in probation policy

	Absence of parental criminality		Presence of parental criminality	
	OLS	IPW	OLS	IPW
ATE				
Recidivism rate (60 months)	-0.09***	-0.09***	-0.2**	-0.36***
	(0.033)	(0.035)	(0.104)	(0.089)
Recidivism rate (72 months)	-0.09***	-0.09**	-0.22**	-0.37***
	(0.034)	(0.038)	(0.107)	(0.09)
ATT				
Recidivism rate (60 months)	-0.08***	-0.09**	-0.29***	-0.23**
	(0.034)	(0.04)	(0.106)	(0.122)
Recidivism rate (72 months)	-0.08***	-0.08**	-0.3***	-0.24**
	(0.035)	(0.041)	(0.106)	(0.123)

Notes: All estimates include a set of covariates as controls. Standard errors in round brackets. Significant levels reported as: p-value *** ≤ 0.01, ** ≤ 0.05, * ≤ 0.1.

Table 2 - Estimates of ATE and ATET using as treated individual that were assigned to the probation

	Absence of parental criminality		Presence of parental criminality	
	OLS	IPW	OLS	IPW
ATE				
Recidivism rate (60 months)	-0.05*	-0.05*	-0.15*	-0.27***
	(0.032)	(0.036)	(0.097)	(0.108)
Recidivism rate (72 months)	-0.05*	-0.05	-0.16**	-0.29***
	(0.034)	(0.039)	(0.098)	(0.108)
ATT				
Recidivism rate (60 months)	-0.06**	-0.05	-0.17**	-0.21***
	(0.033)	(0.04)	(0.099)	(0.07)
Recidivism rate (72 months)	-0.05*	-0.04	-0.19**	-0.23***
	(0.034)	(0.042)	(0.1)	(0.07)

Notes: All estimates include a set of covariates as controls. Standard errors in round brackets. Significant levels reported as: p-value *** ≤ 0.01, ** ≤ 0.05, * ≤ 0.1.

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