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The Quality of Life in Prisons: Do Educational Programs Reduce In-prison Conflicts?

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The Quality of Life in Prisons: Do Educational Programs Reduce In-prison Conflicts? *

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Abstract

The harshness of punishment society chooses to impose on crime offenders is mandated by law. However, the quality of life in prison can make this punishment harsher. This creates a variation in the severity of punishment which is not legislated and may differ from society's taste for penalties. Indicators of in prison violence and conflicts seem to be appropriate proxy variables for prison conditions. Using indicators of in prison violent behavior, we use an exogenous source in education participation in educational programs in order to asses the effect of education on such measures of conflict. Applying instrumental variables techniques to census data for Argentine prisons, we find that educational programs significantly reduce indicators of property damages in prison. Such reductions amounts to a 60 percent decrease relative to the mean level of property damages.

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1 Introduction

The quality of life in prisons is a relevant component of the "effective" punishment prisoners face while doing time. For a given sentence, a more violent and conflictive facility makes punishment harsher. Katz et al. (2003) find evidence that quality of life in prisons, proxied by the number of deaths within a facility, has a deterrent effect on crime and that such effect is higher than the controversial deterrent effect of death penalty. Di Tella and Dubra (2006) build a model where society's beliefs, the level of punishment and the economic system are jointly determined, giving rise to two different equilibria: one with harsher punishment than the other. The authors show that the severity of punishment is jointly determined with the economic system.[1] From the point of view of a system based on retribution, varying prison conditions corresponds to a change in retribution which is not legislated. In this sense, worse prison conditions could be seen as one society's taste for more severe punishment and a legal system which does not encompass such taste. Also, for adherents to the idea of deterrence, the quality of prison life is also relevant, since it may also represent varying degrees of deterrence which are not directly related to the intended punishment.

In Argentina, which is just one example but that may be generalized to other western democracies, the idea of imprisonment is to restrain an individual from ambulatory freedom. This means that in principle, individuals should face the same rights in prisons (i.e. health, education, human and civil rights) than individuals outside them, with the exception of free circulation. For example, if an inmate does not meet the years of education mandated by law, she should be able to get her education while in prison. The same applies to health and the minimum requirements covered by law. In this context, degraded living conditions inside prisons impose a higher punishment that the one mandated by law**.** While the quality of life inside prison is not completely independent from average prisoners' characteristics[2], it should be

[1] They develop a model to explain the empirical fact that countries that believe in the so called "American dream", where effort pays have also harsher punishment. They show beliefs are correlated with the economic system and, too, with the system of punishment. In their model, two equilibria (harsh and soft punishment) arise. Both equilibria have identical fundamentas but different beliefs about the luck relative to effort in the realization of income.

[2] Dangerous prisoners may often cause harm to their peers, lowering the quality of life in prisons.

the prison authorities' duty to ensure inmates are fulfilling their sentence properly, according to the punishment mandated by law.

The quality of life in prison has many dimensions, ranging from providing prison amenities such as athletic facilities and cable TV in the United States to very basic health and educational services in Latin America. However, the level of conflict within a prison can be considered as a proxy variable for such quality of life. High conflictive jails can be regarded as having a low quality of life and vice-versa. It is true that the level of conflict for a given prison is not independent from the prisoners inside, which varies a lot among facilities. However, at least for the case of Latin American prisons, there are also many circumstances affecting the level of conflict within a prison that are related to their management and administration. For the specific case of Argentina Isla and Miguez (2003) document the very poor quality in the prison administration system mentioning several factors. Among them, personnel absenteeism is very high, human capital of prison managers and guards is very low. Moreover, prison guards hardly have any skill in conflict resolution techniques and some times they are the ones initiating a conflict and/or perpetuating bitterness among prisoners.

If we believe that sentences mandated by law, either adhering at the idea of retribution or to the deterrence one, reflect society's taste for punishment then, the quality of life in prisons should be guaranteed to surpass some set of minimal standards. We argue that quality of life within prisons can be proxied by in prison conflict and violent behavior. Therefore to lower in prison conflicts is one way of enhancing the living standards of prisoners. However, lowering prison conflicts puts some pressure on public expenditure from local and federal governments, which often lack human resources to perform such activities. Moreover, there is an old criminological finding (Schnur, 1949) showing a positive relationship between prison conflicts and recidivism, but in the opposite direction of the argument held by Katz et al. (2003).

Given the motives described above, it seems relevant to study which policies that are already in place can decrease in prison conflict. Among the activities that are present in most prisons, educational programs are often available to prisoners for several reasons. The main argument to have prison based educational and training programs is that given the high incarceration rate of individuals, from minorities or vulnerable groups, such programs are often justified to facilitate offenders to reintegrate into society successfully. Wilson et al. (1999) surveys the literature looking

at the relationship between educational programs and recidivism. Unfortunately, most of the evidence cannot overcome the selection problem, i.e. less conflictive prisoners are more likely to participate and less likely to relapse in the first place. Steurer, Smith and Tracy (2001) show that participants in prison based educational programs in three states of the American Union enjoy higher subsequent earnings once they are released from prison. Unfortunately, the study does not address the bias caused from self-selection into educational programs. Tyler and Kling (2006) use panel data in order to control for time invariant unobserved heterogeneity among inmates in the state of Florida and find that General Educational Development (GED) programs offered in prison increase post release earnings 15% for minorities with respect to non participants, even though these effects fade after three years. They find no significant effect of participating in GED programs.

In terms of experiences in developing countries, Argentina boasts a long tradition in prison based educational programs, starting in the early 1950s. However, evidence on the effects of such programs is scarce and neither literature concerning prison conditions in Argentina is abundant. Isla and Miguez (2003) provide anecdotal evidence of life inside prisons for convicted thieves. They state that in Argentine prisons they are often neglected and that there are violent spaces where the quality of life is quite poor. According to the authors, by no means prisons have any "reforming effect" on inmates. Prisons are portrayed as highly corrupted places, where prison authorities are often the ones inciting violent behavior. Furthermore, given the current state of the prison system, a prison is regarded as a "school of criminals" perpetuating exclusion and marginality.[3] In contrast with this view, Scarfo (2008) provides also anecdotal evidence of schools functioning in prisons in the province of Buenos, Aires, where half of the country's prison population is concentrated. According to the author, schools provide a safe environment within the prison and class rooms are spaces where penitentiary officers are not allowed while lectures are taking place. Scarfo argues that educational programs within prisons are important as a way to help individuals to re-enter society. In a survey of about 200 individual cases of prisoners it can be observed the very low educational attainment of inmates.[4] Moreover, tests administered prior to this survey show that while more than 92% of surveyed indi-

[3] Evidence of this is found by Bayer et al. (2009) for juvenile correctionals in the USA.

[4] This finding is consistent with the survey data we later use in the paper.

viduals state they can read and write, they fail basic reading/writing requirements. Also, 50% of respondents stated that they believe they will learn useful things by participating in in-prison educational programs and 32% think they will have a better chance of improving their "conduct". Focus groups among prison students in the province of Buenos Aires reveal a perception that education is regarded as beneficial inside and eventually outside prison since it can improve prisoners skills.

It is entirely possible that both views can come to be true for different individuals: some could be truly reformed while others can become better criminals. Given these opposite views of in prison education programs it is quite interesting to evaluate them using an impact evaluation program methodology. For policy considerations one would be interested in finding out if on average individuals that participate in education programs tend to engage in less conflicts/violent behavior.

Using census data for sentenced male Argentinean prisoners during 2002-2005, this paper studies the importance of improving the quality of life in prisons for those that participate in educational programs relative to those that do not by observing if there is a reduction in different indicators of conflict/violent behavior. Law 24.660 from 1996 mandates that all prisoners with less than the minimum required education level should participate in education programs. Because of administrative limitations at the province level this mandate is not completely fulfilled for all eligible prisoners. Specifically, on average only 25% of eligible prisoners under the mandate of the law actually end up participating. Moreover, this percentage varies widely within and across provinces which gives us a seemingly source of exogenous variation that creates two groups of individuals: those that by law should receive the minimum required education and do so and those that should but do not. Under a probit estimation procedure we find that participation in education programs for this population reduces significantly conflicts measured by injuries, property damages, sanctions and severe sanctions within prisons. Specifically, the estimated magnitudes of the effects on injuries lie between 0.1 and 0.3 percentage points; on property damages between 0.1 and 0.8 percentage points; on sanctions between 1.3 and 1.8 percentage points and finally for severe sanctions lie between 0.9 and 1.5 percentage points. Acknowledging the possible existence of an omitted self selection term we use per capita expenditure in education at the province level as an instrument for education participation. We find that participation in education programs reduces on average property damages

in a percentage point in a statistically significant way which interpreted relative to the mean percentage of property damages in the sample yields a reduction of 50% in these type of conflicts.

The remainder of the paper is organized as follows: section two presents the conceptual framework, section three briefly describes the Argentinean Penal and Educational System for inmates, section four describes the data used in the paper while section five presents the main results. Finally, section six concludes.

2 Conceptual Framework

To estimate the impact of prison education participation on conflictive behavior one needs an exogenous variation in participation at the individual level since it could be the case that there is self-selection from prisoners to participate in these programs. In this paper, we exploit a mandatory law of prisoners' education rights in Argentina. Law 24.195 of 1996 states that prisons must guarantee schooling for inmates whose educational attainment is below the compulsory nine years of basic education (complete Educación General Básica EGB).[5] The law mandates that any inmate failing to provide the necessary documentation that proves that he has not completed EGB must attend school while in prison. For higher educational levels, prisons may or may not offer such education. However, there are administrative and financial limitations at the provincial level to fulfill the mandate of this law. This gives us an exogenous variation which creates two groups of individuals: those that by law should receive education EGB and do and those that should and do not.

In this paper we first study the relation between education participation for these two groups on several conflict behavior measures at the individual level through a simple difference estimator of the form

$$conf = \alpha + \beta edpart + X\gamma + Z\delta + error \tag{1}$$

where $conf$ denotes a binary measure of conflict/violence at the individual level. $Edpart$ is a binary variable for eligible individuals under the law that takes the value

[5] It is worth mentioning that this law has been modified by Law 26.206 of December 2006. However, the period analyzed in this paper is 2002-2005 and therefore Law 24.195 is the relevant one for us.

one if the individual participates in EGB program and zero otherwise. Finally, the terms X and Z represent individual and prison/province characteristics. If, due to administrative and financial limitations, participation of prisoners in educational programs at the province level is randomly assigned (or only depends on controls X and/or Z), a probit estimator gives an unbiased and consistent estimate of β.

If we are willing to assume selection into educational programs takes place based on observable characteristics, we can apply propensity score matching. We obtain local linear propensity score estimates of the average treatment effect that education participation has on conflicts inside prisons where participation is based on all variables included in X and Z.

However, it could be the case that some type of self selection among prisoners is present in this process. If such effect is not fully captured by X or Z, both the probit and the matching estimator are biased and inconsistent. If in the error term si correlated with the education decision, both estimators will be biased. A priori it is difficult to know whether positive or negative selection may emerge. One view is that prisoners truly interested in being reformed might self-select positively into these programs if participation is granted on request. On the other hand, it could be the case that participation in these programs depends on the influence a prisoner has inside the prison. If so, these could actually be the most violent individuals that probably do not view education as a way to reform themselves. Finally, it could also be possible that prison authorities select which prisoners participate either as a reward for good behavior or a precautionary measure by sending the most conflictive prisoners.

Under this scenario the law mandate should be seen as generating only a *partial* exogenous variation of participation in prison education programs. Therefore, to estimate the effect of participation on conflictive behavior one requires a second source of exogenous variation that determines individual participation within the two groups but should not affect directly conflictive behavior. We argue that in Argentina a source of exogenous variation that determines participation in prison education programs is total per capita spending in education at the province level. Even under a self selection story the final number of prisoners that end up participating will depend on the supply of education inputs e.g. number of available seats in the classroom or availability of teachers for adult education, among others. While prison education

is mandated at the national level, it is actually supplied by provincial authorities. Hence, the final supply of in prison education depends on schooling public budgets at the provincial level.

Figures 1 to 4 provide evidence compatible with our assumption. They show a reduced form relation between mean per capita education expenditure at the provincial level and the corresponding percentage of conflictive interactions within prisons used in this paper. Conflict or violence at the province level is an average across prison facilities of four in prison measures: i) property damages, ii) personal injuries, iii) sanctions to prisoners due to inappropriate behavior and iv) severe sanctions.[6] These figures reveal a negative relation between mean per capita expenditure in education and measures of conflict in prisons across provinces. Provinces that have a higher per capita expenditure in education have on average lower in prison conflicts. Our theory is that per capita expenditure in education influence the supply of education for prisoners. To substantiate this we regress conflictive behavior of an individual on his education participation in prison programs and instrument the latter by per capita expenditure in education at the province level.

The exclusion restriction of this two stage instrumental variable procedure is that, conditional on the controls included in the regression, per capita expenditure in education at the province level is only related with in prison conflict through education participation in prison education programs. Particularly, this restriction will not hold if per capita expenditure in education at the province level is correlated with the attitudes of provincial authorities or civil population towards prisoners' well-being. For instance, provinces that care about in prison conflicts could allocate a higher amount of resources to the education sector. We believe this is not the case for several reasons. First, while expenditure on education is decentralized, given the way the central government redistributes taxes at the province level, there is very little scope for provincial governments to increase/decrease educational expenditure.[7] Second, the total expenditure in education at the province level should not be influenced by the small or even negligible number of prisoners relative to the aggregate population.

[6] All these measures are described in detail in the data section.

[7] Law 24.195 sets the amount that should be spent on education at the national level. Moreover, most of provincial income is not generated by provincial revenues but by national government transfers, circa 80%, according to Rivas and Mezzadra (2005). The authors show that there is little correlation between provincial educational needs and transfers and that such transfers are the result of complicated political aggreements instead of a set of rules.

Specifically, on average prison population represents only 0.001% of total population in the province. Last but not least, if there is indeed a correlation between total expenditure in education and preferences of prisoner well-being at the province level it is reasonable to believe that it would be constant through time. All specifications include province fixed effects and dummies indicating changes of government at the province level in order to account for this possibility.

3 Prisons and Education in Argentina

3.1 The Argentine Penal Legislation

In 1996 the Argentine Congress approved Law 24.660. This law regulates punishment depriving personal freedom for convicted individuals and replaced the previous which dated back to 1958. The goal of this new law is to make inmates acquire the capacity to understand and respect the law, endeavoring their proper reintegration to society. Law 24.660 states that the mandatory treatment of the inmates must be programmed and individually monitored with respect to the norms that regulate life, discipline and work. Moreover, the penitentiary regime is based on the notion of *progressiveness.* This notion limits the time that inmates stay in closed prisons as well as the time for promotion to the following stage, conditioned on a positive evaluation of the inmates conduct.[8] The progressiveness of the penitentiary regime applied to convicts is characterized by four periods:

1. *Observational period:* during this period, the inmate is evaluated in several dimensions. She has medical, psychological and social evaluations, together with a criminological profile. All this information must be properly filed and updated.

2. *Treatment period:* during this period and according to prison facilities, the inmate goes through different phases in order to gradually attenuate the restrictions imposed by the sentence. This may include changes within each prison department or even prison transfers.

[8] Cfr. Argetine Law 24.660, articles 1-6

3. *Test period:* this period comprises the gradual incorporation of the inmate to less restrictive activities, including the incorporation to the regime of semi-liberty.

4. *Parole period:* the inmate leaves the prison for periods up to seventy two hours in order to carry out different activities: studying, participation in training programs, family visits, work, etc.

Each time an inmate enters a prison, he must be examined by a doctor, who certificates the inmates' physical and mental health. Also, some basic information about the inmate is gathered on his personal file.[9] Once the entry proceedings are finished, and in order to avoid possible conflicts among prisoners, inmates are gathered into homogeneous groups taking into account the offenders sex, age, physical and mental health, schooling attainment, criminal record and the nature of the offence committed.

The *Federal* Penitentiary Service (SPF, for its Spanish abbreviation) is in charge of all federal prisons in Argentina while each *Provincial* Penitentiary Service is in charge of the remaining prisons within each province. All offenders to the federal system are put away in federal prisons, i.e. tax evasion, drug trafficking, smuggling, counterfeiting, money laundering, among other felonies, as well as all offences committed in the National Capital City (CABA[10]). All other prisoners must serve time in the provincial penitentiaries. When a sentenced prisoner is sent to prison, the criteria to choose which prison should she be sent to is based on the type of crime committed and distance to her relatives.

3.2 Educational Requirements for Inmates

The educational system in Argentina is divided in 5 periods: 1) Initial education (kindergarten) for children between three and five years of age; 2) General education (EGB or Educación General Básica) which is mandatory, lasts for nine years and starts at the age of six; 3) "Polimodal" education (high school) which lasts for 3 years and where students can opt for different specializations (humanities, sciences,

[9] Marital and legal status, educational level, etc.

[10] Ciudad Autónoma de Buenos Aires

etc) during this cycle;[11] 4) Superior education which includes tertiary and university studies; and finally 5) Graduate education.

The penal system is designed to encourage prisoners' good behavior by means of rewarding positive actions and punishing negative ones. The education acquired is oriented so as to make inmates acknowledge her obligations and the norms that govern life in society. In particular, the inmates right to acquire education must be guaranteed from the moment they enter the prison. Specifically, Law 24.660 states that every prisoner whose educational attainment is below the compulsory nine years (EGB) must receive education while in prison. For other educational levels (polimodal and superior education), prisoners may or may not receive such education.[12]

The system regulating education in Argentina was decentralized in the early nineteen nineties, where the Argentine Congress transferred most primary and secondary schools to provincial governments. Even though in prison education is supervised by the Ministry of Justice (a national authority) as a result of school decentralization this federal entity has to make individual agreements with each Ministry of Education at the province level. Hence, while all the in-prison education is coordinated at the national level, it has to be supplied by provincial authorities. In this vein, each provincial government must guarantee a functioning school in each prison.

However, there are severe limitations to fulfill the mandate of Law 24.660. The first problem is a chronic shortage of supply of prison educational programs. One important input of such programs is adult education teachers who are scarce across the country. This scarceness is more evident for prisons given that there are no extra incentives for teachers to work in those institutions.[13] Second, even though the facilities that have both remanded and sentenced prisoners should guarantee in prison education to all of them, the Ministry of Justice does not enforce this requirement for the remanded prisoners. So, in practice, education is not really available for all the inmates that should be attending school. Finally, even though there is a protocol for allocating inmates to classes in the case of excess demand, favoring first those who are either illiterate or are about to finish compulsory education, such protocol is

[11] In order to compare it with the United States system, EGB is the sum of elementary education plus two years of high school. On the other hand Polimodal level is equivalent to the last three years of high school in the United States.

[12] For example in Buenos Aires, some university degrees can be obtained. The Centro Universitario de Devoto has over 200 university students who are inmmates.

[13] There is no wage differential for teaching in prisons.

generally altered by prison authorities.

4 Data

The data used in this paper comes from The National Statistical System about the Observance of Punishment (SNEEP for its Spanish abbreviation).[14] The system has the objective of periodically gathering statistical information about all sentenced and remanded prisoners in the whole country. Annually, the system collects the data from both federal and provincial prisons. The information is gathered through a specific questionnaire which includes census data of prison population and specifies important events that happened to the prisoner during that year. In the first part of the questionnaire there is information about the inmates age, sex, nationality, marital status, educational level, working status and training level, place of residence before incarceration, judicial jurisdiction, legal status, where the inmate comes from (direct entry or transferred from another prison) and type of the offence committed. In the second part of the questionnaire there is information about what the inmate did over the past year. There are also questions about the prisoners activities (work in prison, training attainment, participation in educational programs, sports and recreational activities) and if they received medical attention and visits. Finally, there is also a record about the inmate conduct, disciplinary sanctions, attempts to escape, security measures[15] and their status on the progressive system.

Information from the SNEEP is available through out the period 2002 to 2005. Each year, data on all remanded and sentenced prisoners in the country is collected, which implies information on approximately 45,000 individuals per year. Unfortunately, the system is not designed to allow the merging of observations in a panel of prisons nor prisoners throughout the period, forcing us to use the data as a pooled cross-section data set. Based on this restriction, the pooled years give us information on 184,374 inmates. However, in this paper information of only a selected group of prisoners will be used. Specifically, we restrict our information to only prisoners that have received a sentence (43.1% of all prisoners) and that are in the observational or treatment period of progressiveness to ensure ourselves that they spend all of their

[14] Sistema Nacional de Estadísticas sobre Ejecución de la Pena (SNEEP)
[15] Cfr. Penal Code, art 52

time inside the correctional (72.39% of all sentenced prisoners). This selection was done due to several motives. First, the sample is restricted to sentenced prisoners because education is not available for remanded prisoner, in spite of being required by law.[16] Secondly, we only consider sentenced inmates who are not able to leave the prisons because inmates in test or parole treatment may leave the prison for some period of time, and some of them may participate in educational activities outside the prisons, but this information is not available in SNEEP.

Moreover, we further restrict this sample to use only male Argentinean prisoners excluding the relatively few foreigners that are located in provincial prisons since the mandate of the law states that prisons must guarantee schooling for argentine inmates whose educational attainment is below the compulsory nine years of basic education (complete EGB). We also decided to drop all prisoners that report zero as their age (29 prisoners) and if their reported date of sentence was before 1993 (396 prisoners), after 2005 (1,010 prisoners) or missing (2,734).[17] Hence, our treatment and control groups are those that by law should receive education EGB and do and those that should and do not. Of our restricted sample 81% of them report a level of education lower than EGB leaving us with a final restricted sample of 26,531 prisoners. We find that only 30% of the prisoners who should receive mandatory education indeed are participating in an educational program. These 7,829 prisoners will therefore comprise our treatment group while the remaining 18,702 conform our control group.

The main characteristics of the sample can be observed in tables 1 and 2. The first table presents the number of prisoners in each province that have not completed EGB and hence, according to Law 24.660, should be receiving education while in prison. As it can be appraised, effective participation rates of inmates in formal education programs is relatively low even though the law states it should be 100%. While the average participation rate is 25%, it actually varies widely across provinces suggesting different administrative state units have different supply of educational

[16] The latter do not participate from formal educational programs because they are often transferred among different prisons/regions while waiting for trial -educational curricula is not homogeneous across states- and due to the lack of adult teachers, who are always assigned first to sentenced prisoners.

[17] This last restriction was done because law 24.660 was passed in 1993 and hence only prisoners sentenced after this date should be covered by it. Similarly, if the date of reported sentence was after 2005 or missing it would mean that the prisoners are really still under process or we are not able to determine for certain if he is condemned or his case is still under process.

facilities available to inmates. For example, participation is above 50% in only three provinces and is below 10% in five others. Moreover, as can be observed the standard deviation across years in each province also varies widely. Table 2 shows summary statistics of the individual characteristics of the inmates in the selected sample and of the prisons they belong to.

In terms of the information used to measure conflicts ($conf$) four different specifications are used. Two are related to the punishment individuals receive as a result of inappropriate conduct and the other two comprise information of actual violent activities. A first measure of inappropriate behavior is sanctions ($Sancs$) which takes the value one if the inmate received any type of sanction during the period observed. A second measure is severe sanctions ($Sevsancs$) which takes the value one if the inmate received a severe sanction during the period, where severe sanction means that the inmate was isolated in his chamber for fifteen consecutive days or seven weekends as well if the inmate was taken to a higher security facility. It should be noticed that $Sancs$ includes $Sevsancs$ in the sense that all severe sanctions are sanctions. Our first measure of violent activities is involvement in damaged property (Pd) which takes the value one if the inmate participated in any violent behavior where property damages occurred during the corresponding period. A second measure of violent activity is defined as injuries (Inj) which takes the value one if the inmate participated in any violent behavior that involved injuries or mortal wounds to others during the observed period. The two measures Pd and Inj are disjoint in the sense that property damages does not include acts of violence that ended up in injuries. Furthermore, the survey includes a question which serves to determine if the prisoner had an inappropriate conduct during the observed period. To reduce measurement error on our dependent variables we interact this information with the four measures of conflict giving us measures of conflict for individuals that were actually reported to have an inappropriate conduct.

Descriptive statistics of these conflict measures are shown in table 3. While 9% of the sample faced some sort of sanctions as punishment for inappropriate behavior, 8% faced some type of severe sanction. In contrast, only 2% of the inmates have participated in violent activities causing property damages and only 1% are reported to be involved in extremely violent episodes causing injuries. Violent indicators somehow misrepresent conflict in prisons, as it can be observed between the differences in the

percentage of inmates participating in violent activities vis à vis the ones receiving sanctions. This divergence is caused by the fact that the inmate can appeal to the courts when faced with in-prison violent charges. If he is found not guilty, this information is removed from the inmate's file, whereas prisoner's punishment via sanctions cannot be undone. Hence in the remaining of the paper we use both type of measures.

5 Results

5.1 Probit Estimates

Recall that we have a pooled cross section data set at the individual level. We use a maximum likelihood approach to estimate β which yields a probit difference estimator under normality of the error term. The corresponding empirical specification of (1) is the following

$$conf_{ips} = \alpha + \beta edpart_{ips} + X_{ips}\gamma + Z_{ps}\delta + \eta_t + a_s + u_{ips} \tag{2}$$

where $conf_{ips}$ is the binary measure of conflict of individual i in prison p and province s ; $edpart_{ips}$ takes the value one if individual i in prison p and province s participates in an education program under the mandate of Law 24.660 and zero otherwise; X and Z are vectors of individual and prison/province characteristics respectively described in Table 2; η_t and a_s are time and province fixed effects while u_{ips} represents the idiosyncratic error.

Table 4 reports four different specifications of (2) for each of our conflict measures where all of them include province and time fixed effects. Moreover, in all specifications we present both Huber-White robust standard errors allowing arbitrary patterns of within-province serial correlation and clustered standard errors at the province level.[18] The first specification for each measure presents the estimate of β controlling only for province and time fixed effects. For most of the conflict measures the estimate is negative and statistically significant under robust standard errors, suggesting that participation in education programs is related with lower in

[18]Bertrand et al. (2004) report that robust standard errors provide good performance in panels where the number of time periods is small such as the one we have. However, cluster standard errors are also reported to allow possible correlation among prisoners within the same province.

prison conflict. Nonetheless, all measures are statistically insignificant under clustered standard errors.

These estimates would provide an unbiased and consistent effect of prison education programs if participation was independent of any individual, prison and province characteristic. This assumption is probably too strong and hence the remaining specifications reported in Table 4 include in a step wise fashion additional controls from the X and Z vectors. The second specification includes only prisoners' individual characteristics. As can be observed, the sign, magnitude and statistical significance of education participation is maintained for all conflict measures. The only exception is Injuries which is now negative and statistically significant suggesting that participation is correlated with some prisoner characteristics. It is interesting to note that there are some consistent characteristics that are related with conflictive/violent behavior inside prisons. For example, individuals that have been more time in jail, that are sentenced for a greater number of committed felonies and that are recidivist are more likely to engage in inappropriate behavior. On the contrary, individuals that are older, married and practice some sport within the prison are less likely to engage in this type of behavior. Although not reported, the third specification include prison and province characteristics. Among them we find that prisons with a higher number of prisoners, percentage of thieves and rapists are more likely to have more violent interactions. We also find that prisons with a higher percentage of murderers are less likely to have violent interactions between prisoners. This result may be driven by the fact that these are probably high security prisons where prisoners have less freedom and are more monitored. Not surprisingly, after controlling for province fixed effects, poverty and unemployment at the province level do not significantly explain conflict inside prisons.

Even after controlling for all these individual, prison and province characteristics it might still be the case that there is an unobservable characteristic of the individual or the prison that determines both participation and inappropriate behavior. The survey also provides information of whether the prisoner participates in any type of labor activity inside the prison. It is reasonable to believe that participation in these activities could proxy for the unobservables that determine participation in education programs. Hence, the last specifications of Table 4 include a dummy variable that gives information if the prisoner participates or not in labor activities. As can be

observed, prisoners that participate in labor activities are less likely to engage in conflictive behavior. More importantly, the estimate of education participation does not change significantly which reassures our previous findings. These results are statistically significant under both cluster and robust standard errors, except for property damages which is never significant under the former.

Based on these last specifications we find that participation in education programs reduce on average conflictive/violent behavior. The practical significance of such programs are not negligible. Specifically, participation in education programs reduces Injuries and Property damages in 0.1 percentage points evaluated at the mean of all control variables. Relative to the mean percentage of these violent behaviors reported in table 3 we find that education programs reduce them in 17% and 6% respectively. Furthermore, participation in education programs reduce on average sanctions and severe sanctions in 1.3 and 0.9 percentage points (or 15% and 11% relative to the corresponding sample mean) respectively.

It is important to note that we cannot differentiate the transmission mechanisms through which this effect of education programs takes place. It is perfectly consistent with our results that two different mechanisms are at work. On the one side, education programs could influence the behavior of prisoners through changes in their moral values and psychological attitudes towards violent behavior. On the other side, it could be that the effect found is capturing a reduction in idle time of prisoners. On average, participation in education programs requires three hours per week day (excluding Saturday and Sundays) amounting to 15 hours per week. Assuming that a prisoner has 14 hours per day in idle time participation in education programs represents 15% of total time endowment. Given that we find that on average inappropriate behavior is reduced in 15% the second story is quite plausible. However, if the effect was entirely driven through this second channel we would expect to observe that after controlling for labor activities (which also demands time) the estimate would have reduced significantly pointwise. We do not observe this which also gives evidence in favor of the first channel.

For policy purposes it might not be so important to distinguish which channel is at work. For behavior within prisons the relevant aspect is that education programs can reduce conflictive and violent behavior which is important per se. For behavior outside the prison, once the sentence term is completed, the evidence in favor of

the positive effects of education programs on violent behavior has been established. Schnur (1949) finds that recidivism rates decrease for prisoners with lower measures of misconduct inside prisons. Furthermore, Phipps et al. (1999), Wilson et al. (2000); Steuer and Smith (2003) and Tyler and Kling (2006) have obtained evidence in favor of positive effects that prison based education may have on recidivism rates and post release income.

5.2 Propensity Score Matching Estimates

We also estimate the average treatment effect of participating in education programs for the eligible population using a local linear propensity score matching methodology. To estimate the propensity to participate in these prison based education programs we use all the variables in vectors X and Z. The results reported in Table 5 show that the average treatment effect for all conflict measures is negative and statistically significant at the 1% level except for injuries. Compared to the probit estimates we find that the average treatment effects under this estimation procedure are greater in absolute terms. For the ones that are statistically significant the magnitude of the effect under this estimation procedure is 0.8 percentage points for property damages, 1.8 pp for sanctions and 1.5 pp for severe sanctions. Relative to the mean percentage of each conflict measure in the sample these amount to a reduction of 51%, 20% and 19% respectively.

5.3 IV Estimates

As mentioned in the conceptual framework, the estimates presented above could be biased and inconsistent if some type of self-selection among prisoners is present. If in the error term there is a self-selection term that represents tendency to conflictive behavior, which is not captured by any variable included in X or Z, a positive or a negative selection bias may arise. If prisoners that are less (respectively more) prone to violent behavior are self-selecting themselves into the program a negative (positive) bias arises in the difference estimator. That is the effect previously found would be on average over (under) estimated.

To account for this possibility we instrument education participation with per capita expenditure in education at the province level. As shown in Figures 1 to 4

there is a negative reduced form relationship between mean per capita education expenditure at the province level and our four conflict measures. Our exclusion restriction is that mean per capita education expenditure at the province level directly determines individual participation in prison based education programs but is not correlated with the supposedly omitted self selection term. Evidence that our instrument is relevant for individual participation is provided in the lower panel of Table 6. For all specifications, the coefficient of mean per capita education expenditure at the province level is positive and statistically significant at the 1 and 10% level depending on the standard errors used. Even though not reported, all specifications include controls X and Z as well as time and province fixed effects.

A possible critique to the use of this instrument may be that expenditure in education of a given province is correlated with the province's preferences for the well-being of prisoners and hence directly related with conflict behavior inside prisons. We argue that this is not the case for several reasons. As previously mentioned there is very little scope for state governments to modify educational expenditures. Furthermore, the number of prisoners relative to the aggregate provincial population is insignificant making it difficult to imagine that expenditure in education decisions could be significantly influenced by the well being of prison population. Evidence compatible with this view is shown in Figure 5. It presents the trend of mean per capita expenditure in education across provinces which clearly has increased over the period of analysis in all of them. These trends suggest that expenditure decisions could be regarded as exogenous relative to in prison conflict measures. Finally, all regressions include province fixed effects and control for changes of state governors during 2002 to 2005. These variables allow us to control for constant preferences regarding the well being of prisoners as well as any changes that might occur due to changes in Governors. Ultimatley we argue that our instrument is capturing how changes in expenditure within provinces influence individual participation in prison education programs.

Table 6 presents the difference estimates using our instrumental variable.[19] Relative to our previous finding we observe that the effect of participation in prison education programs has a higher absolute coefficient for all conflict measures. Under our exclusion restriction this implies that the difference estimator presented a

[19] All specifications present bootstrap standard errors to account for the first stage estimation.

positive bias and that prisoners with a higher unobservable violence propensity were self selecting themselves. Alternatively, this is also compatible with the idea that prisons' authorities are selecting their most conflictive prisoners into these programs. Nonetheless, the standard errors also increase and hence only for the Property Damage measure we are able to reject the null hypothesis using the bootstrap standard errors. Under cluster standard errors we are also able to reject the null for Injuries. In practical terms these findings imply that on average individuals that participate relative to those that do not are one percentage point less likely to engage in conflicts where there are property damages or injuries. Relative to the mean percentage of Property damages and Injuries in our sample this amounts to a reduction of almost 60% and 90% respectively. Notice that this effect is similar to the one found for Property Damages using the propensity score matching procedure.

6 Conclusions

The level of conflicts is a relevant policy variable given its high correlation with the quality of life within a prison. Either adhering to deterrence or retributions views for punishment, if prison conditions are degraded, effective punishment differs from the one mandated by law. This "extra" punishment, which is not legislated, may indicate a divergence from society's taste for punishment, as indicated by its legal system. Also, maintaining order within a prison is costly and puts pressure on subnational governments' budgets. In this sense, it is important to see if there are any policies which can lower in prison conflict.

Using a census of sentenced male Argentinean prisoners for 2002-2005 we estimate the effect that prison based education programs have on in prison conflict behavior. The treatment and control groups are selected based on Law 24.660 from 1996 which mandates that all prisoners with less than the minimum required education level (complete EGB) should participate in educational programs. Under probit and propensity score matching methodologies we find that participation in education programs reduces significantly injuries, property damages, sanctions and severe sanctions within prisons. Using per capita expenditure in education at the province level as an instrument for participation we find that education programs reduce only property damages in a statistically significant way. The results of IV probit suggest that the

probit difference estimator presents a positive selection bias implying that prisoners with a higher innate violence propensity are self selected (or selected by prison authorities) into these programs.

The reduction in conflicts due to education participation is compatible with two transmission mechanisms. On the one side, education programs could change prisoners' moral values and psychological attitudes towards violent behavior. On the other side, it could simply be the result of less idle time. Even though we believe that the first channel is the one at work, for policy purposes it might not be so important to distinguish between both channels. As far as behavior within prisons is concerned, the relevant aspect is that education programs can reduce conflictive and violent behavior which is important per se. For behavior outside the prison, once the sentence term is completed, the evidence in favor of the positive effects of education programs on violent behavior, reduction in recidivism and better labor opportunities has been established.

Even though we are not able to do a cost benefit analysis of education programs inside prisons the evidence suggests that these should be promoted and extended if they turn out to be financially viable. Future research should comprise a cost benefit analysis not only including the monetary value of conflict reduction inside prisons but also measuring the positive effects education has outside penitentiaries.

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Appendix

Table 1: Rate of participation in formal education programs of prisoners who should be receiving education

State	Number of Prisoners	Mean Rate of Participation	Standard Deviation
Buenos Aires	3,319	0.28	0.45
CABA	364	0.10	0.30
Catamarca	365	0.01	0.10
Chaco	8,005	0.34	0.47
Chubut	932	0.47	0.50
Cordoba	1,318	0.36	0.48
Corrientes	1,378	0.71	0.45
Entre Rios	1,020	0.20	0.40
Formosa	402	0.53	0.50
Jujuy	347	0.27	0.44
La Pampa	548	0.20	0.40
La Rioja	48	0.00	0.00
Mendoza	172	0.12	0.32
Misiones	970	0.12	0.32
Neuquen	613	0.30	0.46
Rio Negro	692	0.30	0.46
Salta	809	0.11	0.31
San Juan	658	0.09	0.29
San Luis	387	0.03	0.17
Santa Cruz	130	0.73	0.45
Santa Fe	3,539	0.22	0.41
Santiago del Estero	89	0.34	0.48
Tierra del Fuego	62	0.15	0.36
Tucuman	364	0.09	0.29
Total	26,531	0.25	0.37

Source: SNEEP. Authors calculations

Table 2: Characteristics of prisoners and prisons

Characteristic	Number of Prisoners	Mean	Standard Deviation
Individual characteristics			
Age	26,501	31.22	9.93
Married	26,531	0.11	-
Unemployed when entered prison	26,531	0.31	-
Number of years in prison	23,804	3.68	2.49
Number of crimes committed	26,531	1.32	0.68
Participates in working programs	26,531	0.49	-
Participates in sport activities	26,415	0.86	-
Received visits in the past year	26,531	0.83	-
Tried to escape	26,406	0.09	-
Has a reduction in sentence time	26,026	0.04	-
Recidivist	26,133	0.32	-
Prison Characteristics			
Number of inmates	26,531	802.00	609.03
Average age of prisoners	26,531	31.47	2.53
% Assassins	26,531	0.16	0.13
% Rapist	26,531	0.22	0.30
% Thieves	26,531	0.53	0.14
% Inmates with primary education	26,531	0.50	0.17
% Inmates with secondary education	26,531	0.15	0.08
% Inmates with tertiary education	26,531	0.00	0.01
% Inmates who tried to escape	26,531	0.09	0.25

Source: SNEEP. Authors calculations

Table 3: Measures of Violence inside prisons

Characteristic	Number of Prisoners	Mean	Standard Deviation
Injuries	25,066	0.01	0.08
Damaged Property	25,066	0.02	0.13
Sanctions	25,066	0.09	0.28
Severe Sanctions	25,066	0.08	0.27

Source: SNEEP. Authors calculations

Table 4: Probit estimates. Dependent Variables: Conflict/Violent Behavior

Characteristic	Injuries				Property Damage			
	I	II	III	IV	I	II	III	IV
Participates in Education Program	0.029	-0.159	-0.231	-0.227	-0.302	-0.263	-0.221	-0.209
	(0.063)	(0.085)+	(0.092)*	(0.093)*	(0.065)**	(0.078)**	(0.102)*	(0.103)*
	[0.233]	[0.195]	[0.137]+	[0.137]+	[0.328]	[0.312]	[0.170]	[0.169]
Participates in work activities				-0.402				-0.23
				(0.087)**				(0.074)**
				[0.072]**				[0.153]
Number of years in prison		0.031	0.031	0.033		0.025	0.036	0.033
		(0.014)*	(0.014)*	(0.014)*		(0.013)+	(0.015)*	(0.015)*
		[0.011]**	[0.010]**	[0.011]**		[0.025]	[0.026]	[0.029]
Age		-0.037	-0.037	-0.034		-0.059	-0.066	-0.065
		(0.006)**	(0.007)**	(0.007)**		(0.005)**	(0.006)**	(0.006)**
		[0.011]**	[0.009]**	[0.010]**		[0.007]**	[0.006]**	[0.005]**
Married		-0.195	-0.174	-0.163		-0.367	-0.052	-0.051
		(0.181)	(0.186)	(0.187)		(0.137)**	(0.138)	(0.138)
		[0.196]	[0.204]	[0.208]		[0.191]+	[0.125]	[0.127]
Unemployed when entered prison		0.013	0.051	-0.059		-0.117	0.019	-0.102
		(0.075)	(0.077)	(0.085)		(0.062)+	(0.068)	(0.076)
		[0.048]	[0.082]	[0.104]		[0.058]*	[0.066]	[0.112]
Number of crimes committed		0.078	0.042	0.041		0.018	-0.023	-0.021
		(0.047)+	(0.048)	(0.048)		(0.046)	(0.053)	(0.054)
		[0.023]**	[0.026]	[0.026]		[0.055]	[0.064]	[0.066]
Participates in sport activities		0.01	-0.008	-0.004		-0.387	-0.625	-0.623
		(0.092)	(0.097)	(0.100)		(0.063)**	(0.081)**	(0.081)**
		[0.067]	[0.078]	[0.076]		[0.197]*	[0.244]*	[0.247]*
Received visits in the past year		-0.233	-0.127	-0.128		-0.445	-0.092	-0.09
		(0.095)*	(0.097)	(0.098)		(0.087)**	(0.090)	(0.090)
		[0.100]*	[0.095]	[0.093]		[0.172]**	[0.102]	[0.102]
Tried to escape		-0.14	0.646	0.652		-0.025	0.592	0.621
		(0.167)	(0.215)**	(0.215)**		(0.126)	(0.166)**	(0.167)**
		[0.222]	[0.349]+	[0.340]+		[0.233]	[0.231]*	[0.219]**
Has a reduction in sentence time		-0.101	-0.201	-0.165		-0.73	-0.636	-0.624
		(0.178)	(0.184)	(0.186)		(0.235)**	(0.264)*	(0.264)*
		[0.152]	[0.149]	[0.151]		[0.151]**	[0.186]**	[0.191]**
Recidivist		0.177	0.163	0.147		0.109	0.137	0.133
		(0.069)*	(0.073)*	(0.074)*		(0.067)	(0.073)+	(0.073)+
		[0.092]+	[0.097]+	[0.102]		[0.089]	[0.087]	[0.085]
Prison and State Characteristics	NO	NO	YES	YES	NO	NO	YES	YES
Observations	20,774	17,754	17,754	17,754	19,295	16,553	16,553	16,553

Robust standard errors in parenthesis (+ significant at 10%; * significant at 5%; ** significant at 1%)

Cluster (at province level) standard errors in brackets (+ significant at 10%; * significant at 5%; ** significant at 1%)

All regressions include state and time fixed effects.

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Table 4 (continued): Probit estimates. Dependent Variables: Conflict/Violent

Characteristic	Sanctions				Severe Sanctions			
	I	II	III	IV	I	II	III	IV
Participates in Education Program	-0.106	-0.131	-0.144	-0.128	-0.075	-0.087	-0.116	-0.1
	(0.026)**	(0.031)**	(0.033)**	(0.033)**	(0.027)**	(0.031)**	(0.034)**	(0.034)**
	[0.089]	[0.080]+	[0.057]*	[0.056]*	[0.060]	[0.055]	[0.052]*	[0.053]+
Participates in work activities				-0.443				-0.417
				(0.032)**				(0.033)**
				[0.120]**				[0.118]**
Number of years in prison		0.009	0.013	0.018		0.006	0.01	0.015
		(0.006)	(0.006)*	(0.006)**		(0.007)	(0.007)	(0.007)*
		[0.010]	[0.008]	[0.009]*		[0.009]	[0.008]	[0.008]+
Age		-0.046	-0.047	-0.045		-0.047	-0.048	-0.045
		(0.002)**	(0.002)**	(0.002)**		(0.003)**	(0.003)**	(0.003)**
		[0.006]**	[0.005]**	[0.005]**		[0.006]**	[0.005]**	[0.005]**
Married		-0.139	-0.101	-0.088		-0.084	-0.062	-0.046
		(0.056)*	(0.058)+	(0.058)		(0.057)	(0.060)	(0.060)
		[0.086]	[0.070]	[0.074]		[0.083]	[0.078]	[0.082]
Unemployed when entered prison		0.04	0.075	-0.03		0	0.039	-0.058
		(0.029)	(0.031)*	(0.032)		(0.031)	(0.032)	(0.034)+
		[0.051]	[0.051]	[0.059]		[0.063]	[0.061]	[0.061]
Number of crimes committed		0.04	0.043	0.044		0.04	0.045	0.047
		(0.020)*	(0.021)*	(0.021)*		(0.021)+	(0.022)*	(0.022)*
		[0.020]*	[0.021]*	[0.025]+		[0.021]+	[0.024]+	[0.027]+
Participates in sport activities		-0.275	-0.371	-0.369		-0.312	-0.381	-0.382
		(0.036)**	(0.040)**	(0.041)**		(0.037)**	(0.041)**	(0.042)**
		[0.095]**	[0.142]**	[0.139]**		[0.135]*	[0.161]*	[0.157]*
Received visits in the past year		-0.212	-0.118	-0.125		-0.119	-0.031	-0.038
		(0.037)**	(0.038)**	(0.039)**		(0.038)**	(0.040)	(0.040)
		[0.082]*	[0.065]+	[0.069]+		[0.092]	[0.094]	[0.100]
Tried to escape		-0.13	-0.177	-0.134		-0.129	-0.26	-0.217
		(0.057)*	(0.104)+	(0.103)		(0.059)*	(0.110)*	(0.108)*
		[0.147]	[0.388]	[0.385]		[0.132]	[0.377]	[0.373]
Has a reduction in sentence time		-0.15	-0.203	-0.196		-0.084	-0.139	-0.131
		(0.074)*	(0.076)**	(0.076)**		(0.078)	(0.081)+	(0.081)
		[0.305]	[0.254]	[0.256]		[0.279]	[0.219]	[0.224]
Recidivist		0.192	0.2	0.184		0.207	0.218	0.202
		(0.029)**	(0.030)**	(0.030)**		(0.030)**	(0.031)**	(0.031)**
		[0.082]*	[0.085]*	[0.091]*		[0.088]*	[0.089]*	[0.095]*
		[0.140]**				[0.112]*		
Prison and State Characteristics	NO	NO	YES	YES	NO	NO	YES	YES
Observations	24,918	21,582	21,582	21,582	24,918	21,582	21,582	21,582

Robust standard errors in parenthesis (+ significant at 10%; * significant at 5%; ** significant at 1%)

Cluster (at province level) standard errors in brackets (+ significant at 10%; * significant at 5%; ** significant at 1%)

All regressions include state and time fixed effects.

Table 5: Propensity Score Matching Estimates

Conflict/Violence	Number of observations	ATT	Bias	Bootstrap S.E.	T-stat
Injuries	6,305	-0.003	0.001	0.002	-1.531
Property Damage	6,305	-0.009	0.000	0.003	-3.284
Sanctions	6,305	-0.019	0.000	0.007	-2.734
Severe Sanctions	6,305	-0.015	0.001	0.007	-2.257

All estimates are based on local linear regression matching.

Table 6: IV Probit estimates. Dependent Variables: Conflict/Violent Behavior

Characteristic	Injuries	Property Damage	Sanctions	Severe Sanctions
Participates in Education Program	-1.556	-2.543	-0.183	-0.047
	(1.059)	(0.773)**	(0.544)	(0.514)
	[0.918]+	[1.473]+	[0.804]	[0.924]
Observations	17,754	16,553	21,535	21,535
First Stage				
State per capita investment in Education	0.003	0.003	0.002	0.002
	(0.000)**	(0.000)**	(0.000)**	(0.000)**
	[0.001]**	[0.001]**	[0.001]+	[0.001]+

Bootstrap standard errors in parenthesis (+ significant at 10%; * significant at 5%; ** significant at 1%)

Cluster (at province level) standard errors in brackets (+ significant at 10%; * significant at 5%; ** significant at 1%)

All regressions include state and time fixed effects as well as the controls in Models IV of Table 4.

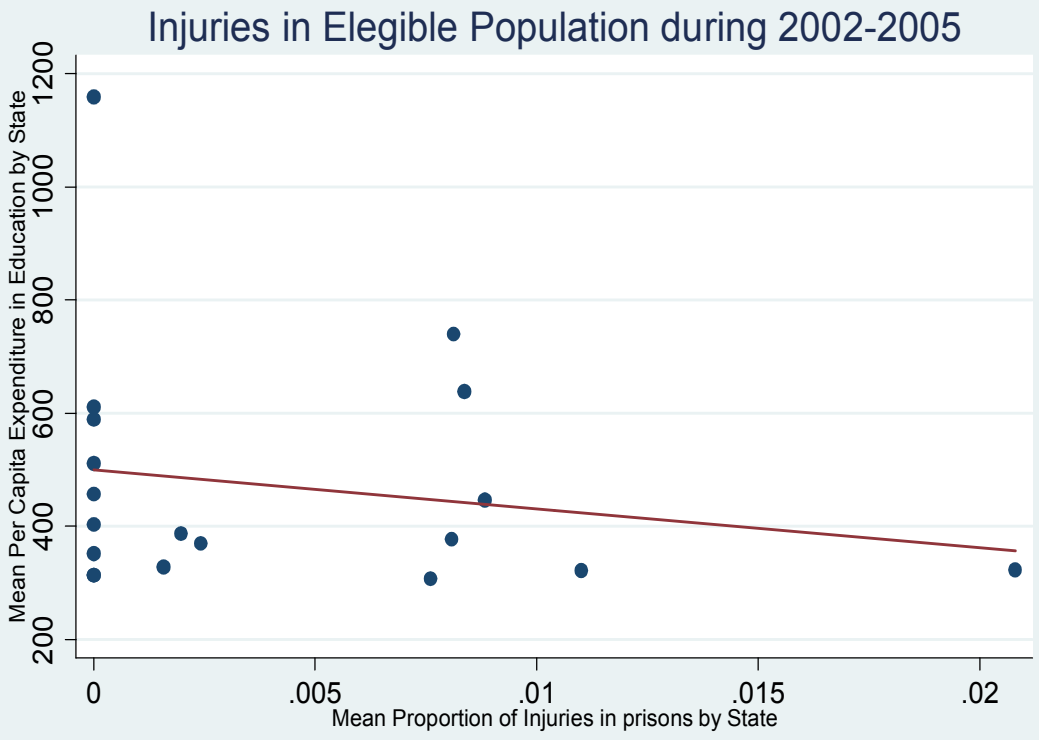

Figure 1

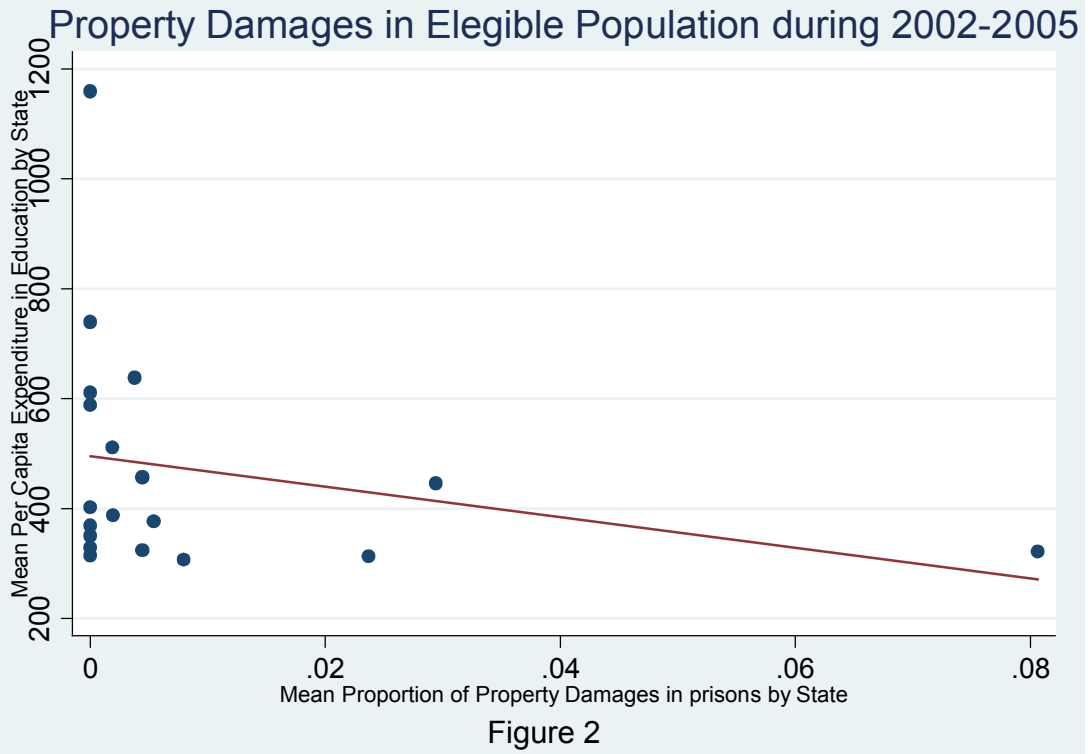

Figure 2

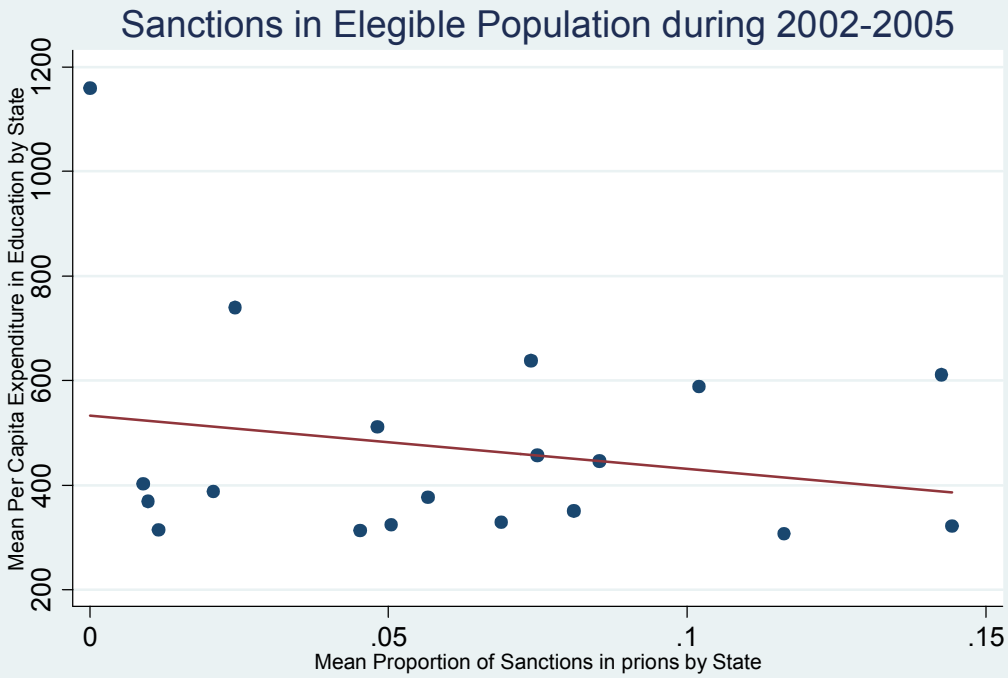

Figure 3

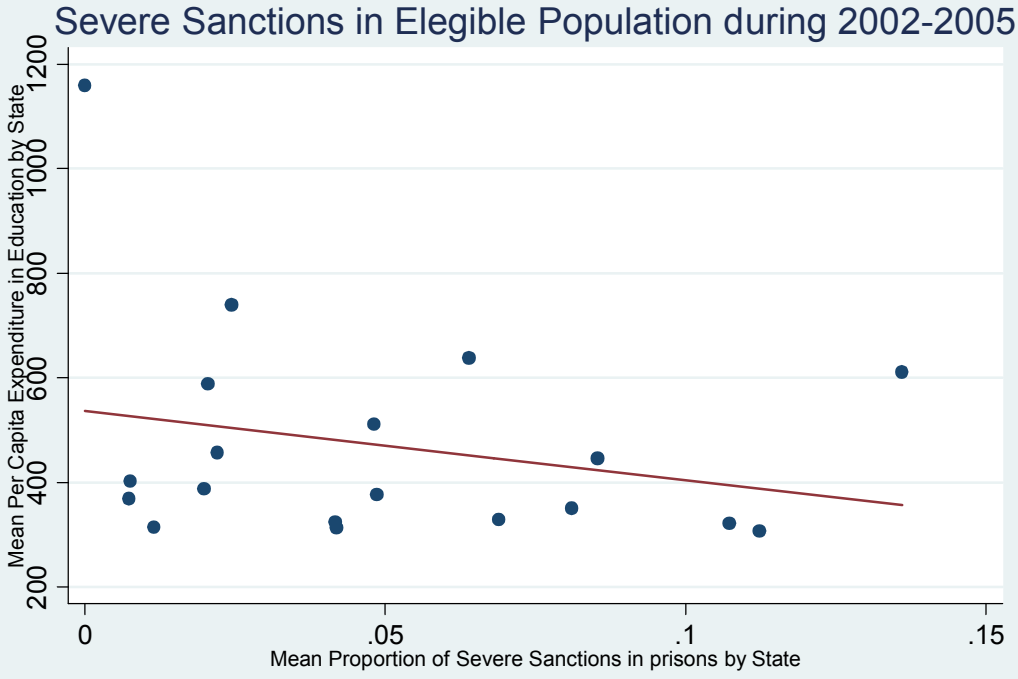

Figure 4

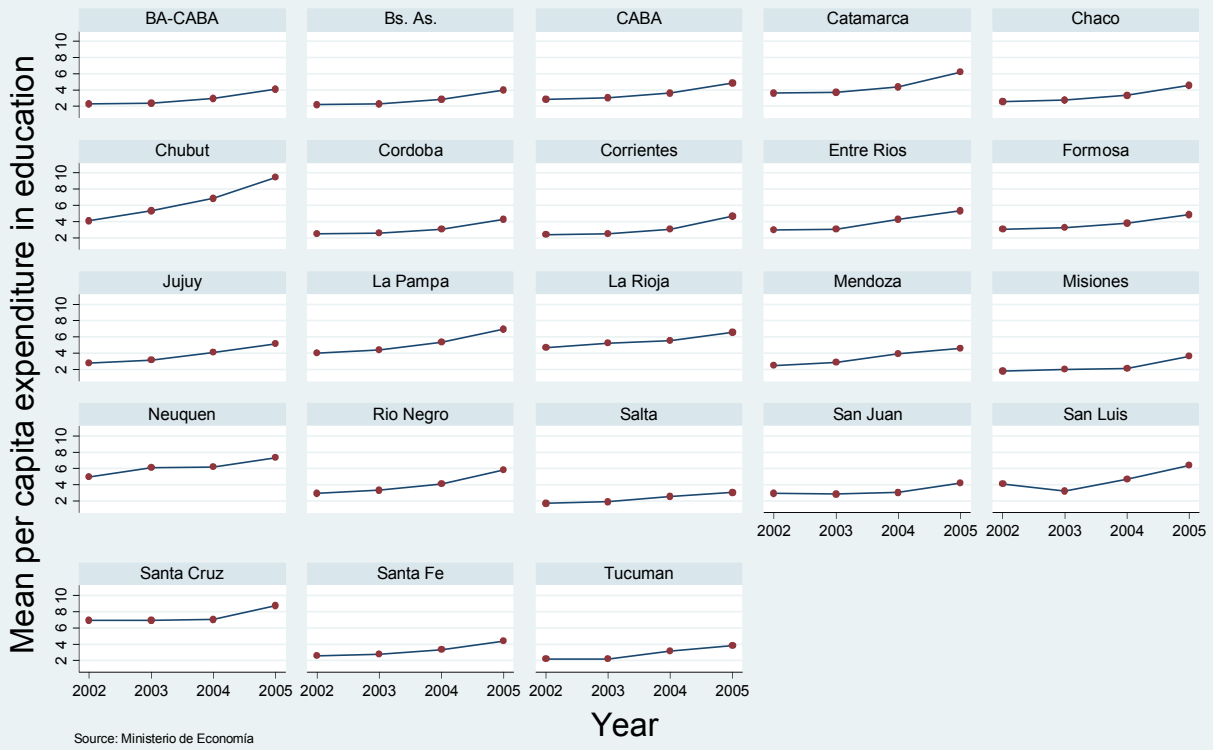
Mean Per capita Expenditure in Education by State
BA-CABA
Bs. As.
CABA
Catamarca
Chaco
Chubut
Cordoba
Corrientes
Entre Rios
Formosa
Jujuy
La Pampa
La Rioja
Mendoza
Misiones
Neuquen
Rio Negro
Salta
San Juan
San Luis
Santa Cruz
Santa Fe
Tucuman
Mean per capita expenditure in education
2 4 6 8 10
2002 2003 2004 2005
Year
Source: Ministerio de Economía

Figure 5

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