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Leave the Door Open? Prison Conditions and Recidivism

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Leave the Door Open? Prison Conditions and Recidivism [*]

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Abstract

The question of how prison conditions affect recidivism is very important. In designing a prison system, one would want to know the answer. We estimate the effect on recidivism of replacing time served in a common closed-cell prison with time served in an open-cell one. We deal with the endogenous assignment of inmates to different prison regimes using variation that is driven by nearby prisons' overcrowding. Switching regimes for a year reduces recidivism by around 6 percentage points. The effects are largest for inmates with low levels of education and are weak for hardened criminals.

Keywords: Crime, Prison Conditions, Deterrence, Rehabilitation, Open Prison
JEL Codes: K14, K42

1 Introduction

Over recent decades most developed countries have witnessed high and often increasing rates of incarceration. In the United States, at the end of 2015, almost one per cent of the adult population was behind bars, with a sevenfold increase in the incarceration rate since the early 70s (Carson and Anderson, 2016). Over the last 15 years the total prison population has gone up by almost 20 percent, more than the corresponding growth rate of the world population, in spite of strong counteractive forces (see Table 8 in Walmsley, 2016).[1]

This process risks feeding on itself, as a large fraction of those who are sent to prison are repeat offenders. In the U.S. State prisons, for example, about 40 percent of released inmates are re-incarcerated within three years.[2]

Addressing this "revolving door" problem is now a top priority for many policymakers: if societies were able to reduce reoffending, victimization and incarceration rates would be reduced as well, generating large economic and social benefits (see Raphael and Stoll, 2009). Since recidivating criminals have already spent time in prison, it is natural to ask whether, and if so how much, prison conditions affect subsequent recidivism. In designing an optimal prison system one would want to know an answer to this question, as well as the possible trade-offs involving relative cost and deterrence effects.

In broad terms, there are two alternative and opposite views on how prison conditions should be and on their impact on recidivism.

One view is that prison life should isolate inmates not just from the outside world: inmates should spend a large part of the day inside their cell, movements inside the prison should be regulated and monitored; discipline should be strict, with punishment for every deviation, and inmates should have little or no room to choose how their daily life is organized. We will call prisons of this kind *closed*. According to this view, the experience of harsh prison conditions is what deters current inmates from recidivating.

Another view maintains that punishment for criminal behaviour should amount to no more than

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[1]For example, criminal participation should decrease with population aging.

[2]Re-incarceration rates are lower than re-arrest rates, as not all arrestees are incarcerated.

the limitation of freedom. Within the prison walls life should be as normal as possible; inmates should spend most of the day outside their prison cell, working, studying, keeping personal relationships, in an environment that allows for movement around the prison premises with little supervision; self-responsibility is emphasized. We will call prisons of this kind *open*. According to this view, rehabilitation – rather than deterrence – is what curbs recidivism, and rehabilitation is only possible if inmates are given the possibility to make decisions, are treated as adults and are asked to take responsibility for their choices.[3]

These different approaches have been followed in different countries and at different times.

In the United States the traditional and prevalent approach to criminal justice stressed the deterrence effect of harsh prison conditions and narrowed the rehabilitation efforts to solitary confinement. For a brief interlude, at the end of the 60's, concerns emerged that many correctional institutions were detrimental to rehabilitation. Some proposals were put forward, envisaging prison conditions preparing inmates for their successful re-entry into society, [4] and some correction facilities were built according to those proposals. Then, at the beginning of the 70's, with the intellectual backing of the work by Robert Martinson et al. (1974), the media, politicians and the public opinion converged on the idea that "nothing works" when trying to rehabilitate prisoners. Hence, the U.S. went back to the emphasis on "tough-on-crime" policies, incapacitation and deterrence.

The open prisons model was instead championed by some European countries, and most notably by the Scandinavian ones, where open prisons started being built since the 70's. [5]

Recently, also in the U.S. attention on the potential benefits of a rehabilitative approach has been on the rise. Rehabilitation is increasingly seen as an effective way of keeping the long-term costs

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[3]As the Director of one of those open prisons noted: *"How can I reeducate someone who cannot even decide at what time to take a shower? How can I know whether that person has learned to abide by the rules, if I am the one that controls all his behaviour? There is no rehabilitation without the ability to choose"*. The Economist (May 27, 2017) also noted about Bastoy, an open prison in Norway: *"...what is most unusual about Bastoy is not that it treats prisoners like human beings, but that it treats them like adults."*

[4]The President's Commission on Law Enforcement and Administration of Justice in its report "The Challenge of Crime in a Free Society" (published in 1967) recommended that " *the model institution would resemble as much as possible a normal residential setting. Rooms, for example, would have doors rather than bars. Inmates would eat at small tables in an informal atmosphere. There would be classrooms, recreation facilities, day rooms, and perhaps a shop and library.*"

[5]A fact sheet on criminal services in Norway reads: "*The punishment is the restriction of liberty; no other rights have been removed... During the serving of a sentence, life inside will resemble life outside as much as possible... You need a reason to deny a sentenced offender his rights, not to grant them.*"

of housing inmates in check.[6] Scholarly papers (e.g., Pratt, 2008, Ward et al., 2013) as well as the general press (e.g., Larson, 2013, Benko, 2015, The Economist, 2017) have brought the spotlight on the "Scandinavian model" of open prisons.

It is difficult, however, to draw general lessons about the effect on recidivism of open prisons from the experiences of the Scandinavian ones. One obstacle is size: most of the existing open prisons house less than 100 inmates, and even the largest do not usually exceed 350 (Pratt, 2008), while in the United States the average number of inmates at maximum-security prisons is around 1,300. Another obstacle is given by the sizeable differences in the average time spent in prison, which is close to 3 years in the United States (Pew Center, 2012) and just three to six months in the Scandinavian countries (Aebi et al., 2015).

A further obstacle is cost: for example, spending in Scandinavian prison is in excess of 100 thousand dollars per inmate per year, compared with just 31 thousand dollars in the United States (although some US States spend up to twice this number, for example New York).[7]

A final obstacle is, of course, the selection problem, as inmates who are sent to the open prisons are not a random sample of the population of inmates (neither would interact with a random group of inmates), so that any naive comparison of their recidivism rates with those of inmates sent to closed prisons would not have a causal interpretation.[8] To the best of our knowledge, there is no rigorous study of the causal effect on recidivism of the open prison model.

The main contribution of our paper is to fill this gap in a quasi-experimental setting. We use data from one of the largest detention centers in Europe, and the largest *open* prison in Italy, the *Bollate* prison, inaugurated at the end of 2000 near the city of Milan.[9] Besides being open, Bollate is *large* (about 1000 inmates), *costs no more* – if anything, less – than a traditional closed prison in the same

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[6]Correction Corp. of America, the largest private prison firm, has announced a change in its business model, committing to "*play a leadership role in reducing recidivism... planning to expand the company's prison rehabilitation programs*". Quoted in a *Wall Street Journal* article (See WSJ, September 12, 2014: "*Prison Firm CCA seeks to reduce the number of repeat offenders*").

[7]Prison cost and prison population statistics for European countries can be found in Aebi et al. (2015). The U.S. value has been estimated by the Vera Institute of Justice, a nonprofit research and advocacy organization.

[8]Moreover, ethical considerations may prevent researchers from randomly assigning inmates to different prison regimes.

[9]Bollate prison featured in 2003 in the New York Times article "*Italian inmates receive training in a Cisco computer program: Behind bars but learning to network.*"

country (more on this later), and features an average prison time that is close to the one in U.S. prisons. To solve the selection problem, we look at the intensive margin of the treatment – the *length* of the period spent in the open prison, conditional on the total years served – and exploit a variation in such margin that we show is as good as random. Hence we study the causal effect of varying the length of the sentence served in the open prison, holding the total time spent in prison constant.

Specifically, we focus on a subset of inmates who did not go through the standardized selection process into Bollate and were displaced there due to overcrowding of the prison in which they were serving their sentence (we will often refer to them as "displaced inmates", while we will call "selected inmates" those transferred to Bollate after the screening process).[10] What is key for our purpose is that neither Bollate nor the sending prisons get to choose the inmates to be displaced or the time of displacement. The Regional branch of the Prison Administration (RPA) irregularly grants the overcrowded prisons in the Region permission to displace, towards one of the (few) undercrowded prisons, a given (variable) number of inmates. Each of the sending prisons then displaces that given number of inmates working its way down a list of displaceable inmates, on a "conveyor belt," first-in-first-out basis. Each inmate present in the sending prison enters that list, in chronological order, as soon as he receives his first conviction.[11]

Hence, we compare the recidivism of inmates who were serving the *same time spent in prison* in the *same prison* and became displaceable to the open prison after the *same length of time* since their incarceration, but whose residual sentences to be served there – which represent our measure of the treatment – differ in length because of *i*) differences in the number of inmates already in the list at the moment each inmate became eligible for displacement and *ii*) differences in the number and size of displacement opportunities granted by the RPA to the sending prison. Both differences are plausibly uncorrelated with the inmates' idiosyncratic propensity to recidivate.

The focus on displaced inmates offers two further advantages. First, since they do not go through any selection process, the external validity of our results is likely to be stronger. Secondly, they typically spend less time in Bollate than selected inmates; because of this, Bollate's management

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[10]See Section 2.2.1 for more information on the screening process. The usefulness of focussing on the intensive margin of the treatment in connection with recidivism is noted and exploited by Di Tella and Schargrodsky (2013).

[11]Displaced inmates are all male, as there are no overcrowded female prisons.

tends not to start with them (long lasting) training initiatives explicitly targeted to rehabilitation –
for example, they are rarely given the opportunity to work outside the prison walls. This means that
their experience is potentially able to tell apart the effects on recidivism of specific rehabilitation
initiatives – such as working or training programs – and those simply due to prison conditions that
require inmates to make decisions and take responsibility for their choices, within the boundaries set
by the prison walls.[12]

To briefly preview our results, we find that the opportunity to serve a given total time served
replacing one year in a traditional closed prison with one year in an open one reduces recidivism
(over a three-year period) by about 6 percentage points (against an average three-year recidivism of
about 40 percent).[13] The opportunity to serve time in the open prison might not be fully realized:
the potential time may exceed the actual one whenever inmates are later transferred from Bollate to
other prisons, typically as a result of disciplinary measures, or when they are granted an early release
(through home detention, monitored liberty or other forms of non-custodial sentence). Given that both
possibilities are endogenous, we only exploit the variability of the potential time served in Bollate.
We find that these intention-to-treat effects differ across different categories of inmates: the reduction
of recidivism is higher for inmates who did not have previous convictions and who are less educated.
Hence, the treatment seems most effective when administered early enough on those people who are
less well equipped to deal with the challenges of a non criminal life. There is also evidence that
inmates with the highest risk of recidivating, who tend to recidivate within a short period of time, do
not respond much to the treatment.

We repeat a similar analysis on the sample of inmates explicitly selected to Bollate. Although in
this case we are less confident that we identify the causal effect of the treatment – if the most promising
inmates are more quickly transferred to Bollate, our estimate would overstate the causal effect – it is
nevertheless interesting that the size of the estimated effect is roughly equal in the two samples: given
the likely upward bias in the estimate for the selected inmates, it seems safe to conclude that the effect

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[12]It is interesting to report that our idea of focusing the analysis on displaced inmates initially met the skepticism of
Bollate's management. Ex-ante, they were concerned that the shorter time served at Bollate and the lower involvement in
rehabilitation initiatives would result in no discernible effect on recidivism.

[13]Equivalently, we estimate at about -6 percentage points per year the difference between the effect on recidivism of
serving the sentence in an open and in a closed prison.

of the treatment for the displaced inmates is at least as large as that for the selected ones.

It is not easy to reach neat conclusions on the mechanisms underlying the reduction in recidivism, since the open and closed prison models differ on a number of fronts – a different idea of punishment, freedom of movement inside the prison walls, self-responsibility, trust, rehabilitation programs, productive use of time, quality of the physical facilities, quality of the peers, presence of overcrowding – and we have no detailed information on whether and how these factors change and influence behavior with time served in prison.[14] We do find that the longer inmates stay in Bollate, the more they are likely to be given access to jobs outside of prison, and to be allowed day releases. This suggests that offering opportunities to work and facilitating the entry (or re-entry) into the labor market is an important driver of our results.

However, compared to selected inmates, displaced ones are less likely to be given access to (outside) work opportunities while in prison. Also, since they usually remain at Bollate for a shorter period, they are less involved in other activities more explicitly aimed at rehabilitation (like training programs). Yet, as already mentioned, we find that the treatment is at least as effective in reducing their recidivism. We interpret this as indirect evidence that other aspects of the treatment are also likely to play a role. Indeed, displaced inmates experience in the open prison an environment which is radically different from that of other, closed prisons: a threefold increase in the time spent outside their cell (from 4 to up to 12 hours), a shift from meticulous external control on their daily life to self-responsibility, from constrained idleness inside the cell to productive use of time. Our conjecture is that the longer displaced inmates face these differences, the more they produce a psychological turnaround that reduces recidivism.

The reduced recidivism might also result from weaker deleterious peer effects: indeed, Bollate's management might use the selection to limit the arrival of "bad" peers. If so, the possibility to scale up the Bollate experience would be curtailed, since a less exacting selection process would undermine the effectiveness of the treatment. We use data on the cell and the cell bock to measure the effect on recidivism of being exposed to a larger group of "worse" inmates during an inmate's stay. We find

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[14]Given our focus on the intensive margin of the treatment, we would need to observe exogenous changes in all these components of the treatment to parse out their relative importance.

no evidence that such exposure increases recidivism. There is also no evidence that overcrowding differences between Bollate and the prison of origin explain the reduction in recidivism.

1.1 Relationship with the literature

Several studies have tried to identify the causal determinants of recidivism. Most of them focus on the impact on re-offending of receiving, or not receiving, a custodial sentence or analyze the impact of the incarceration length; only a few, and in particular Katz et al. (2003), Drago et al. (2011), and Chen and Shapiro (2007), take into account the conditions under which the sentence is served. The latter are the ones most closely related to our work. The first paper finds that harsher prison conditions (proxied by prison suicides) are associated with lower crime rates; the analysis is cross-sectional, however, it does not consider the recidivism of individual inmates and cannot identify causality. The other two papers show that worse conditions increase recidivism. Drago et al. (2011) use variation in prison assignment and measure prison conditions using the degree of prison overcrowding, deaths in prison, and degree of isolation. Chen and Shapiro (2007) exploit discontinuities in the assignment of federal prisoners to security levels, though their estimates are noisy due to a small sample problem. None of these studies however compares outcomes for sharply different prison regimes, like we do for the open versus closed prison models.

There is more experimental evidence on the effects of post-release treatment programs for ex-inmates – for example, job training – on recidivism and employment, albeit with mixed results: some papers find that job training can be beneficial (Raphael, 2010, Redcross et al., 2010), other finds the opposite (Visher et al., 2005), or no effects Cook et al. (2015). Job training programs are also part of the conditions that inmates experience in the open prison. In our case, however, these programs are only one of the aspects of the treatment, and they take place while inmates are still detained (possibly during day releases), while post-release job training, once inmates are out of prison, may compete with inmates' old delinquent habits.

As to the literature that has analyzed the effect of imprisonment on recidivism, without distinguishing among different prison conditions, we note that there is no consensus on the sign of the

effect, let alone its magnitude. A review by Nagin et al. (2009) concludes that *"As imprisonment is used in contemporary democratic societies, the scientific jury is still out on its effect on reoffending."* Another insightful literature review by Ouss (2013) stresses the need for *"evidence-based economic contributions to addressing the relationship of incarceration to recidivism."*

Most quasi-experimental studies have used the random assignment of judges (and of their sanctioning preferences) to estimate the effect of incarceration and incarceration length on inmate's outcomes. Among these, Bhuller et al. (2016) use data from Norwegian prisons and find that spending more time in prison, some of which invest heavily in trying to rehabilitate inmates, lowers recidivism. Yet, as judges do not govern whether individuals end up in an open prison, their analysis is silent about the causal effect of this prison model as such.[15]

Di Tella and Schargrodsky (2013), in a radically different prison context, leverage the same exogenous variation to show that Argentinean inmates who spend a larger fraction of their sentence under electronic monitoring, instead of ordinary imprisonment, have *lower* recidivism. Mueller-Smith (2015), using data from Harris County, Texas, another example of a harsh prison regime, finds that incarceration generates an increase in the likelihood of defendants reoffending after being released, while Loeffler (2013) finds no evidence that incarcerations changes recidivism.

Using a regression discontinuity design, Mueller-Smith and Schnepel (2017) measure similar criminogenic effects when offenders are sentenced to spending time in Texan prisons rather than be put on probation.[16] Interestingly, Kuziemko (2013) also uses a regression discontinuity design, exploiting changes in Georgia's parole-board guidelines, to show that an extra year in prison, but coupled with incentives to participate in rehabilitation efforts, leads to large reductions in recidivism.

Our results suggest a way to interpret these opposite findings. Prison time served by inmates in facilities with a radically different prison life and with different rehabilitation programs may lead to different recidivism behavior: it might reduce or increase recidivism, depending on whether it takes

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[15]Landersø (2015) studies a somewhat related issue, the effect of incarceration length on labor market outcomes, using data from Danish prisons (he focuses on short sentences, between one and two months). Sentencing conditions and imprisonment lengths in Scandinavian prisons have been extensively studied in the criminology and sociology literature, though the focus is not in identifying causal effects.

[16]Criminogenic effects of prison time have been found by Gaes and Camp (2009), Mueller-Smith (2015), and Harding et al. (2017), while Dobbie et al. (2018) and Green and Winik (2010), exploiting again random assignment of judges, find that recidivism does not respond to incarceration.

place in open prisons, like Bollate or prisons in Scandinavia, or in a harsher one, like typical Italian prisons, or prisons in Argentina and Texas.[17]

The rest of the paper is organized as follows. Section 2 provides additional information on Bollate and on the selection process, describes the data and discusses our identification strategy. Section 3 presents the results and a battery of robustness checks. Section 4 investigates potential mechanisms underlying our results. Section 5 concludes.

2 The Quasi-experiment

To better understand the nature of the "Bollate treatment" and the sources of variability that will allow us to identify its causal effect it is useful to start with a little background on the working of the Italian judicial and prison system and on the Bollate prison.

2.1 The Bollate Prison

Inmates convicted to a prison sentence of less than three years and inmates waiting for their definitive sentence are typically incarcerated in jails (*Case Circondariali*), near the place where they reside, or, temporarily, near the place where they committed the crime.[18] Given that most incarcerations in the *Case Circondariali* tend to be short term, these detention centers invest very little effort in trying to rehabilitate the inmates. If convicted of a prison sentence of at least three years, the inmates are transferred to a prison, known as *Casa di Reclusione*.

The aim, in principle, is a) to separate offenders convicted of serious crimes from the other ones, and b) to focus rehabilitative efforts on those inmates who spend a sufficiently long time in prison. In practice, due to severe overcrowding and chronic lack of resources, the rehabilitative efforts in most *Case di Reclusione* are often rather limited.

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[17]Admittedly, while we focus on the intensive margin some of the papers quoted consider the extensive margin. Our proposed reconciliation implicitly assumes that the effect of the treatment on recidivism has the same sign at both the extensive and intensive margins.

[18]Individuals can be incarcerated before trial if caught in the act of committing an offence (*flagranza di reato*) or whenever there is a significant risk that they either pollute the evidence, recommit the same crime, or escape the judgment (upon decision of a special court, *Giudice per le indagini preliminari*).

We focus on inmates who spent at least part of their sentence in the "*Casa di Reclusione* Bollate" (near Milan; we will henceforth refer to this prison simply as Bollate). Bollate was opened at the end of 2000 with the explicit goal of creating an open prison with a rehabilitation program, leaving ample room for a range of activities and establishing joint work/training programs with regional institutions, firms, and non governmental organizations.

It is one of the few, and certainly the largest, open prison in Italy (as mentioned above, they are more common in Nordic countries and, to a lesser degree, in the United Kingdom).[19] Bollate prison cells are kept open during the day, and prisoners are trusted to serve their sentences with minimal supervision: inmates are allowed to move freely around the prison with electronic badges. Inmates can go to school and university, they have access to several job training programs, as well as work inside or outside the prison for agricultural and service cooperatives. For about 5 percent of inmates even the prison walls are "open," as they get to work outside during day releases.[20]

Bollate has its own garden produce, grown by inmates. They run a restaurant, open to the public, and publish a magazine (every other month). Inmates elect their representatives and, within a given budget, have a say on several aspect of their prison life (furniture, food, etc). When children are visiting, they can spend their time in dedicated play rooms that are nicely furnished and full of toys, and spouses are guaranteed some intimacy. Security is not merely seen as a police concern but also educators, psychologists and even the inmates themselves are involved and given responsibilities. Inmates are asked to sign a "Responsibility Pact," committing to responsible behavior lest they be transferred to a different prison. In such an environment, and possibly also thanks to the threat of transfer to an ordinary prison, violence is contained and fewer guards are needed, which keeps costs down.

Summing up, Bollate offers its inmates several opportunities to develop their human and social capital and to experience self-responsibility, within the limits posed by the restraints on freedom.[21]

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[19]Some examples are Halden Fengsel (Norway), Suomenlinna Prison (Finland), Soebysoegaard (Denmark), HM Prison Prescoed (South Wales), HM Prison Castle Huntly (Scotland), HM Prison Ford (England).

[20]Of the 9,318 inmates who have spent some time in Bollate between 2000 and 2009 four evaded prison during such day release, while one inmate managed to evade Bollate from the inside.

[21]The appendix Figures A2 to A4 provide photographic evidence on the prison conditions at Bollate and at the initial prisons.

Table 1 documents several features of Bollate and of the prisons from which Bollate draws most of its inmates (almost 70 percent of inmates in Bollate are transferred from the largest *Casa circondariale* in the Lombardy region, San Vittore).

The first striking difference between Bollate and all other prisons is that inmates are free to move within the prison walls for most of the day (10 to 12 hours), while inmates in most other prisons spend only around 4 hours outside their cells (which is the minimum time required by law). These differences in the time spent idle inside the cell can also be observed in prisons located in other countries. According to a recent survey carried out in the UK, in open prisons 54 percent of inmates can move freely inside the prison for 10 or more hours (HM Inspectorate of Prisons, 2017). In ordinary closed-cell UK prisons inmates spend most of their time inside their cell.[22]

Bollate is also the youngest prison. San Vittore was built in 1879, following Bentham's panopticon design. Opera, the other major *Casa di Reclusione* in the region, was built in 1980. These older prisons tend to be overcrowded: in 2009, at San Vittore, the ratio of inmates over official capacity was 142 percent, at Opera it was 128 percent (similar conditions are observed in all the other years of our sample). Bollate, instead, is always below its capacity. Table 1 suggests that this contributes to better prison life, keeping suicides and attempted suicides, self-inflicted injuries, and hunger strikes at the lowest level compared to all the other prisons in Lombardy (we will test in Section 3.3 whether overcrowding is driving our results).

Apart from the open cell policy and the lack of overcrowding, Bollate is special for its rehabilitation efforts, and in particular for those targeted at improving inmates' future labour market prospects. In most prisons, a small fraction of inmates (between 12 and 30 percent) work for the prison administration in menial jobs with little or no specialization, which are unlikely to improve much their future employability. In Bollate, inmates have the opportunity to work for employers other than the prison administration, both inside and outside the prison, and to learn skills which will be useful in the labour market: carpenters, electricians, chefs, welders, ICT specialists, taylors, odontologists... At any given point in time, about 30 percent of inmates are actively working for pay, either for employers that open

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[22]The UK HM Inspectorate of Prisons (2017), concerned about these numbers, recommends that inmates are given at least 10 hours of yard time. The report highlights also a series of studies on the behavioral issues that tend to emerge when inmates spend the whole day inside their cells.

a production line inside Bollate or for employers outside of the prison walls. The fraction of inmates with similar arrangements is just 0.5 percent at San Vittore, 6.5 percent at Opera, and is never larger than 6.6 percent at other prisons in Lombardy.

While one might think that all these efforts come with a hefty price tag, a remarkable feature of Bollate is that its running costs are much lower than the average prison in Italy. Appendix Table A2 shows, for two recent years, that the per-inmate daily cost of Bollate was 65 euros (USD 28,000 per year), while the average for the whole country was 115 euros (USD 49,000 per year). The difference is mainly due to the lower wage bill for guards and administrators, in turn resulting from their lower number compared to the number of inmates (wages of prison staff do not vary across prisons). In 2009, in Bollate, 470 prison guards and administrative staff dealt with 1032 inmates, a ratio of less than one guard every two inmates. Nationwide such ratio was close to 2/3.

Overall, prison conditions in an open prison like Bollate are clearly more pleasant than those in a typical closed prison. The effect of this on recidivism is an empirical question, as in theory there are forces working in opposite direction. On the one hand, more pleasant prison conditions lower the disutility of prison and therefore reduce generic deterrence. The effect on specific deterrence is less clear cut: since recidivating inmates are not readmitted into Bollate, for rational and forward looking criminals the effect should be muted; however, it seems safe not to assume that all inmates are fully rational and forward looking, and so the possibility of a negative effect on deterrence should not be discounted. On the other hand, by improving the prospects of a profitable re-entry in the society, serving time in an open prison that offers training and working programs increases the opportunity cost of reoffending. Moreover, as we will argue below, even aside from participation in training or working programs, prison conditions that trust inmates to make decisions and ask them to take responsibility for their choices might, in and of themselves, influence the inmates' future behavior. Before turning to the empirical test of the effect on recidivism, it is important to discuss how inmates get transferred to Bollate.

2.2 Selection to Bollate

As a rule, inmates present at Bollate are selected through a screening process from a pool that includes both, those who apply to be sent there and those who are proposed by the administration of a different prison (usually in the same region) or by the Justice Department.[23] A third channel of access to Bollate, quantitatively more important in the first few years since the prison's opening, is provided by displacement of inmates from nearby overcrowded prisons. These displaced inmates do not go through the screening process, and will be the focus of our analysis. Yet, it is useful to first review the process through which the selected inmates arrive at Bollate.

2.2.1 The Selected Inmates

The Regional branch of the Prison Administration for Lombardy (the "*Provveditorato Regionale di Milano*", RPA), together with the prison administration of Bollate, assesses each transfer application to determine whether a number of criteria are satisfied. Broadly speaking, inmates should: have a residual sentence in the range of 2 to 10 years (the upper limit has later been removed); be in good health, and not be under methadone treatment; have a definitive sentence;[24] have shown propensity and active interest for rehabilitation programs (this is reflected in a positive assessment by a specialized team, that drafts a psychological profile of each applying inmate); have had generally good behaviour in the previous prison(s); and, finally, reside or have interests and relationships in the Lombardy region.[25] Once the assessment is completed and the various criteria deemed satisfied, the transfer of the inmate to Bollate is finalized.

Clearly, these criteria involve a good deal of positive selection: inmates are explicitly screened to identify those who would be more receptive of the rehabilitation efforts, and it is therefore highly

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[23]A small number of inmates hand themselves in directly to the Bollate prison (this does not guarantee that they will be accepted to Bollate). We treat these cases as if they applied to be sent to Bollate.

[24]The Italian judicial system allows for up to two courts of appeal. Depending on whether or not a given sentence is resisted, and up to which degree of appeal, the time which elapses before the sentence becomes definitive can vary by several years. Although in principle a convict should not go to prison before the sentence is definitive, there can be a number of reasons why he/she is incarcerated before the final appeal is decided.

[25]This aspect is not peculiar to Bollate. In general, convicts are sent to prisons geographically close to their area of residency and interest.

likely that their intrinsic propensity to recidivate be lower than that of the average inmate. [26] There-fore, a naive comparison between their recidivism and that of the average inmate would almost surely overstate the causal effect on recidivism of serving the sentence in an open prison.

Focussing on the intensive margin of the treatment – the length of the residual sentence upon arrival to Bollate – might help to sidestep the selection problem. The time it takes for the screen-ing procedure to be completed and therefore, given the total time served, the length of the residual sentence upon arrival to Bollate, can vary for a host of factors (incomplete requests, bureaucratic de-lays in handling applications, number and speed of appeal trials...). The variability imparted by these factors might in principle be exploited to tease out the causal effect of the treatment on recidivism. However, the length of the delay itself might reflect some selection. For example, "better" inmates (more educated, with better labour skills, better behaviour, etc.) might be identified more quickly, so they would end up in Bollate earlier; or, conversely, "better" inmates might be retained for longer by the prison of origin, so they would end up in Bollate later.

Unfortunately, we are not able to weigh the importance of the different delays, and we cannot control for all the variables that belong to the information set relevant for the selection process of inmates (we only know whether they applied or were proposed, where they were spending their previous prison time and their previous criminal history). For this reason, we will focus on a different source of variability in the residual sentence to identify the causal effect of the treatment.

2.2.2 The Displaced Inmates

As mentioned, not all inmates that are present in Bollate go through the screening process. Dur-ing the period that we considered, the (Lombardy) RPA frequently granted overcrowded prisons in the Lombardy region permission to displace some of their inmates towards nearby prisons that had spare room. This occurred whenever overcrowding became particularly severe and there were enough empty cells in a nearby prison. Bollate, which opened in late 2000 with an availability of about 1000 prison beds, was often on the receiving end of these transfers (Figure 1 shows the size and timing of

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[26]By average inmate we actually mean "average among those inmates with similarly long sentences". A long sentence, by itself, would likely induce negative selection.

such episodes). Importantly, neither the management of Bollate nor that of the sending prison had control on which or when inmates were displaced there.[27] In Section 2.4 we will describe in detail how displacements occur.

2.3 The Data

2.3.1 Prison Records and Sample Selection

We worked with the Prison Administration ("*Dipartimento dell'Amministrazione Penitenziaria*") of the Italian Ministry of Justice, its regional administration office for Lombardy and the administration of the Bollate prison, to link different administrative records collected up until February 2013.

We were granted access to a large amount of information on inmates who spent some prison time in Bollate between December 2000, the opening month, and February 2013, the closing date of our analysis. The information includes the entire history of incarcerations, dating as far back as 1971, and of incarcerations following their release from Bollate (if occurring before 2013).

We restrict our sample to Italian (57 percent of inmates are foreigners), male (less than 30 inmates are female), non sex offenders. We exclude foreigners because of the difficulty in measuring recidivism for foreign offenders who, in more than 90 percent of the cases, [28] are illegal immigrants without any paperwork and are therefore able to hide their identity or leave the country after dismissal from prison. This introduces a large noise in the information about their recidivism, and we choose not to contaminate the data on the Italians. We also exclude 8 percent of inmates who are sex offenders, as they are subject to very specific incarceration rules. We focus on inmates who have served a definitive sentence.[29]

We measure recidivism through re-incarceration within three years from the end of the inmate's

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[27]Up until 2008, the inmates displaced to Bollate did not need to satisfy the requirements that we described before; only after 2008 a looser version of the screening process has been introduced also for displaced inmates, but given that our sample stops in 2009 almost all the displaced inmates that we consider belong to the pre-screening period. One of the robustness regressions shows that our results do not change when excluding inmates who entered Bollate after 2008.

[28]Sample estimate contained in a report by Openmigration.org.

[29]90 percent of inmates receive a definitive conviction before release. We restrict the analysis to these inmates. This avoids considering as recidivating an inmate who is released from prison, pending the result of an appeal, and is then re-incarcerated once the final sentence is pronounced (without the occurrence of a new crime).

custodial term (though we also look at shorter time windows).[30] The choice of a three year measure of recidivism forces us to restrict the analysis on inmates released up to 2009.

In the end our sample includes each inmate who spent some time in Bollate between the end of 2000 and 2009, was released (from Bollate or from some other prison) at the latest by 2009 and is Italian, male, non sex-offender: in total we have 2308 people. [31] For each of them we have a complete prison history, with the number and the dates of previous prison spells (if any) and the relative crimes, the dates of the period spent in Bollate, the length of the total time served corresponding to the crime for which they spent time in Bollate, the kind of crime, the date of a possible new incarceration after Bollate (and up to February 2013), whether the release from the last prison was followed by a non-custodial sentence (e.g. home detention, monitored liberty, parole, etc.) or by liberty. We have information on a number of characteristics of the inmates: age, sex, marital status, presence of relatives, education, drug addiction.

We also have some information on the selection process to Bollate, as we can distinguish the prisoners displaced there due to overcrowding of nearby prisons (i.e. not selected), those transferred for "treatment" reasons, those assigned there when their request has been approved, those assigned there by the Justice Department without mentioning "treatment", and those transferred for other reasons (mainly transfers from the Central Government or arrests by Bollate officers). This kind of information is missing for 12 percent of the sample (we will test that the results are robust to adding this group to the displaced inmates).

For the inmates displaced to Bollate from nearby overcrowded prisons we also know whether they were incarcerated after receiving a conviction and the date in which they were convicted, whenever the conviction occurred after their incarceration.

Figure 2 shows the distribution of the fraction of the total time served that is potentially served in Bollate. The left panel is for the sample of selected inmates,[32] the right one is for the sample of

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[30]Re-incarceration rates tend to be slightly higher than reconviction rates, though less than one percent of Bollate inmates get released due to an acquittal.

[31]The (Italian, male, non sex-offenders) inmates who were at Bollate in the period between 2000 and 2009 are 11,113; given that most of them have, so to speak by construction, long sentences, requiring that they had been released not later than 2009 considerably narrows down our sample.

[32]We include in this group the inmates for whom the information on the entry reason is missing

displaced inmates. In both cases, transfers are more likely to happen at the beginning of an inmate's incarceration, which skews the two distributions to the left.

The comparison between displaced inmates and selected ones is informative about the typical selection mechanism that takes place in open prisons. Table 2 shows the average recidivism, potential and actual time served in Bollate, and total time served, for groups of inmates identified by different reasons for entry: displaced from nearby prisons due to overcrowding (1552 inmates), actively selected into Bollate (475, further distinguished according to the different reasons for entry mentioned above), and inmates for which the information on entry reason is missing (281). For each group the table also reports the fraction who ended up in the cell block 5, where inmates working outside the prison are housed.[33]

Displaced inmates are not required to have a sufficiently long sentence, and therefore on average have shorter sentences than selected inmates (more on this later). Moreover, in the first few years since its opening, Bollate had considerable spare capacity and was often on the receiving end of displacements, which implies that many displaced inmates entered early into Bollate. For both these reasons, since we select our sample by requiring that inmates have been released at the latest by 2009, we end up oversampling displaced inmates over selected ones. If we were to drop this requirement, the displaced would represent about 60 percent of all Bollate inmates (cumulated over the years). Since their inflow depends on prison overcrowding, the fraction of displaced inmates who entered Bollate drops after the 2006 collective pardon (which corresponds to the peak of overcrowding). The pardon led to the sudden release of about one third of the prison population (see Drago et al., 2009, Barbarino and Mastrobuoni, 2014), and the fraction of displaced inmates entering Bollate drops from 75 percent in 2006 to 60 percent in 2007, 2008 and 2009, 44 percent in 2010, and 24 percent in 2011.

Inmates displaced to Bollate serve on average shorter sentences (1.440 years, or 17 months) considerably less than selected inmates (3.563 years, or 43 months); their average (potential) residual sentence upon arrival at Bollate is about 10 months (0.852 years) and is about 8 months shorter than that of the selected inmates. These differences reflect the fact that selected inmates are required to have sentences long enough for rehabilitation interventions to have sufficient duration, while no such

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[33] We only observe the cell block in which inmates were at the moment in which they were released from Bollate.

requirement is imposed on displaced inmates.

For both groups, the actual sentence length served in Bollate is on average about 80 percent of the potential one (the two measures coincide for about 2/3 of inmates). This happens because inmates might be transferred to other prisons or be given early release (transforming their prison sentence into a non-custodial one) before the end of their prison time.

Only a handful of displaced inmates finish their incarceration in cell block 5, while for the selected inmates the proportion is on average 14 percent (and can be as high as 25 percent for some subgroups). Consistently with the screening process which the selected inmates went through, their recidivism rate is on average much lower than that of displaced inmates (by 11.6 percentage points).[34] Among the selected inmates, those who applied to be transferred and those transferred by the Justice department have the lowest recidivism rates. The group of inmates whose entry reason is unknown is difficult to characterize: they show recidivism rates similar to those of the displaced inmates, total and potential residual sentence length similar to those of selected inmates, actual residual sentence length similar to those of displaced inmates. In the following we will group them together with the selected inmates, so as to keep the sample of displaced inmates as cleanly defined as possible.[35] Other differences between the two groups of inmates are shown in Table 3.

Displaced inmates are on average younger[36] and are less likely to have a stable relationship, are less educated, more likely to be drug addicted; their criminal profile is more skewed towards petty crimes, as is the case with the typical inmate in Italian prisons.[37] All these differences are statistically highly significant.

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[34]Clearly, the recidivism rate is an endogenous outcome, and cannot be used to establish the presence (and sign) of selection. The latter is the straightforward result of an explicit screening process, aimed at identifying inmates more responsive to rehabilitation interventions.

[35]As already mentioned, in one of the robustness checks we will group them together with the displaced inmates.

[36]The average age is considerably higher than in the United States, though is roughly in line with the average age of inmates in Italian prisons, which is close to 42 (Ristretti Orizzonti, 2014).

[37]Recall that one of the criteria in the screening process is a sufficiently long sentence, which is obviously correlated with the severity of the crime. The selection is therefore meant to identify, *among serious criminals*, those more likely to respond positively to the rehabilitation interventions.The difference in the criminal profiles of the two groups is consistent with the difference observed for the variable *Art. 4 bis*. The latter identifies the cases where the applicability of prison benefits (day releases, outside work, non-custodial sentences) is restricted. This occurs for a series of serious crimes (e.g. terrorism, organized crime, slavery, sex trade, kidnapping with extortion, etc.). 20 percent of selected inmates are subject to such restrictions, while the fraction goes down to 7 percent for displaced inmates.

2.4 The Identification Strategy

We assume that the recidivism probability of inmate i, R_i, is a (linear) function of the total time to be served (regardless of the type of prison), of the prison conditions, as measured by the times served in the open and in the traditional, closed prisons, of a vector of covariates capturing the characteristics of inmate i and his previous prison history, and of an unobserved error, capturing the idiosyncratic propensity to recidivate of inmate i:

$$R_i = \alpha_0 + \alpha_1 S_i + \alpha_2 S_i^O + \alpha_3 S_i^C + \gamma' X_i + \varepsilon_i, \tag{1}$$

where S_i is the total years served, S_i^O and S_i^C are the parts of the total years served in the open prison of Bollate and in a traditional, closed prison, respectively, X_i is a vector of covariates and ε_i is the unobservable propensity to recidivate. We allow for a direct role of total time in prison because the time away from the family and the social network, the chance to mature and grow older, while having no opportunity to commit crime, are all factors that might affect the inmate's future behavior. Our main interest is on the effect of prison conditions, and in particular of the residual sentence (potentially) spent in the open prison S_i^O (our measure of the treatment intensity) as opposed to the one spent in a traditional closed prison S_i^C; in theory, besides the length of time spent in each of the two prison regime, also the sequence in which the two regimes are experienced might matter. In our sample, however, it never happens that the time spent in Bollate precedes the time spent in the closed prisons, so we will not consider this possibility.

Since $S_i = S_i^O + S_i^C$, we cannot estimate separately α_1, α_2 and α_3. We therefore rewrite the model as

$$R_i = \beta_0 + \beta_1 S_i^O + \beta_2 S_i + \gamma' X_i + \varepsilon_i, \tag{2}$$

where $\beta_1 = \alpha_2 - \alpha_3$ and $\beta_2 = \alpha_1 + \alpha_3$. The equation makes clear that our coefficient of interest, β_1, reflects the difference between the effect on recidivism of the time served in the open and in the closed prison. Equivalently, β_1 captures the effect on recidivism of increasing in equation (1) S_i^O by one year

and simultaneously reducing S_i^C by one year, leaving S_i unchanged.

The estimated coefficient β_1 would have a causal interpretation under an assumption of conditional independence:[38]

$$S_i^O \perp \varepsilon_i | S_i, X_i. \qquad \text{(CIA)}$$

We will argue that, given the institutional features governing the displacement of inmates from overcrowded prisons, with an appropriate choice of the vector of covariates X_i, condition (CIA) is likely to hold in the sample of displaced inmates.[39]

Recall that all the inmates in overcrowded prisons become potentially displaceable as soon as they receive a conviction.[40] At that moment they enter a (prison-specific) list, chronologically ordered. Whenever an overcrowded prison is granted by the Regional Prison Administration the permission to displace to Bollate (say) n inmates, it will simply pick the first n in the list, following a first-in-first-out rule (with possible exceptions due to the composition of the displacement opportunities, better explained below).

For a given sentence length, S_i, the amount of time inmate i will (potentially) spend in Bollate, S_i^O, is larger the sooner he gets displaced there. In turn, other things equal, the latter occurs:

a) the sooner inmate i in prison j receives his first conviction;

b) the fewer inmates there are at that moment ahead of him on the list of displaceable inmates formed at prison j;

c) the larger (in number and/or in size) the opportunities to displace inmates towards Bollate granted to prison j by the (Lombardy) RPA from the moment in which inmate i entered the list.

Condition (b) is plausibly uncorrelated with inmate i's propensity to recidivate.[41]

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[38] In a linear model the weaker conditional uncorrelatedness suffices.

[39] If the link between ε_i and the conditioning variables were non linear, condition (CIA) might not be enough. In a robustness check we will control for the conditioning variables in a flexible way (through a rich set of fixed effects).

[40] As mentioned, in Italy inmates might be incarcerated before receiving a conviction.

[41] A potential challenge to this claim would arise if the length of the queue was strongly linked to overcrowding, and overcrowding influenced criminal tendencies. We will show that our result remain unchanged when we control for overcrowding in the prison of origin.

The same holds for condition (c). However, inmates of different age groups, and inmates addicted to alcohol or drugs, sleep at Bollate in different, dedicated cell blocks (inmates who sleep in different cell blocks will nevertheless meet while performing different activities). Prison j might thus not always be able to pick the first n in its chronological list. For example, when Bollate's spare capacity in the cell block dedicated to, say, young inmates (less than 30 years old) is smaller than the number of young inmates among the first n in the list of the displaceable inmates, some of those with the lower ranking in the list would be skipped and replaced by inmates with rank lower than n but not young.

Since we do not observe the detailed breakdown of the available places in Bollate into different cell blocks, we might detect some deviations from the first-in-first-out rule, correlated with inmate's age or addiction. These exceptions are relatively rare and can be seen in Figure 3, which compares, for the inmates eventually displaced to Bollate, the predicted order of displacement from a given prison of origin based on the date of conviction with the actual order of arrival; the correlation between the two orderings is close to 1.[42] Since we observe the age of displaced inmates and whether they are addicted to alcohol or drugs, we can include these variables in the vector of covariates X_i and therefore condition the correlation between recidivism and treatment intensity on such observables.[43]

The third factor determining the timing of an inmate's transfer to Bollate is the speed with which, after the incarceration, his conviction was meted out (condition (*a*)). This speed might be correlated with his propensity to recidivate. However, since we observe for each displaced inmate the date of conviction, we can compute the delay between incarceration and first sentence and simply condition on it. Table 3 shows that the time from incarceration to the first sentence is fairly short (slightly longer than one month on average).[44]

Controlling for such delay, total time served, age and addiction, the only sources of variability of the potential residual sentence to be spent in Bollate would then be differences in the number and

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[42]We will see that the results are robust to conditioning on the occasional differences between the predicted and the actual ordering of displacement.

[43]There is some flexibility in the definition of young, so we simply include age fixed effects. We use age at exit fixed effects, though very similar results are obtained when including age at transfer fixed effects. We cannot include both, as together they would be collinear with the time spent in Bollate.

[44]For about half of the displaced inmates such time is zero, as they are incarcerated at the time of their first sentence.

dimension of displacement opportunities towards Bollate granted by the RPA to the prison of origin at different moments and differences in the backlog of displaceable inmates at the time of inclusion in the list. This residual variability is likely to be as good as random (in Section 2.4.1 we will present a formal test).

In passing, our approach is reminiscent of the conditional independence assumption used by Drago et al. (2009), who also exploit the variability in the length of the residual sentence; in their case the variability is due to the timing of a mass release, in ours to the timing of displacement opportunities granted by the RPA and to other exogenous factors.

We will also estimate equation (2) on the sample of inmates actively selected to Bollate. In this case, we will exploit the variability in the timing of transfer to Bollate arising from differences in the speed with which the request to be transferred to Bollate was submitted (either by the inmate himself, or by the prison of origin) and in the length of time it took to screen the applications of inmates and grant their request. If our vector of controls X_i were to include all the variables observed by the people involved in the selection process, then we could conclude that condition (CIA) holds.

If, however, the people doing the screening had access to a larger information set, we would not be able to rule out the possibility that the transfer to Bollate occurs earlier for inmates with lower ε_i (for example, it might be that less problematic inmates are more quickly identified), thus inducing a negative correlation between ε_i and S_i^O, which would spuriously magnify the (negative) effect of the treatment and would challenge the causal interpretation of the results. For this reason we use the estimates on the sample of selected inmates only to help interpret the results for the displaced inmates and identify the mechanism underlying those results.

Before moving to the randomisation tests, it is worth pausing to consider whether the potential residual sentence is an appropriate measure of the treatment. Indeed, for about 2/3 of the displaced inmates the potential residual sentence upon arrival at Bollate also represents the actual sentence spent there, as they are never transferred again before their final prison release. An inmate might however be transferred to another prison ahead of time if he misbehaves, or if the treatment appears to be of little use, or he might be granted early release via a non-custodial sentence. Clearly, these possibilities are the result of the inmate's behaviour, so the actual time spent in Bollate suffers from endogeneity.

The effect of the residual sentence upon arrival at Bollate, therefore, has the nature of an intention to treat. It might differ from the average treatment effect as the actual prison time, possibly shorter, is endogenous. Despite this drawback, the actual prison time could be considered another appropriate measure of the treatment, since the residual sentence upon arrival might overstate the effective "dose" of the treatment received. This is a standard problem in policy evaluation studies: the intention to treat is more policy relevant, as compliance cannot be relied upon, but overstates the measure of the administered treatment due to non-compliance. We will present results for both measures of the treatment, using the potential time spent in Bollate as an instrument for the actual time.

2.4.1 Randomization and Balance Tests

Table 4 presents a test of the random assignment of our main measure of the treatment (potential years served in the open prison). The aim is to test the ability of observables to predict the intention to treat. We control for the total time served, the delay in receiving the sentence, and the variable "age," as these are mechanically linked to the time spent in Bollate.[45]

Columns 1 and 2 show that for the sample of displaced inmates the observed covariates are jointly unable to predict the intention to treat (the F test for the joint significance of all the covariates has a tail probability of 27 percent). Even taken one by one, only the coefficient on the fraud dummy is significantly different from zero, and only at the 10 percent level.

In Columns 3 and 4 we repeat the exercise without controlling for the time from incarceration to first sentence and for age. The tail probability of the F test is in fact even higher (34 percent), suggesting that the variability imparted by the delays in meting out the conviction or by the constraints due to the composition of available cells in Bollate is not generating selection. While in our baseline regression we remain cautious and exploit only the variability among inmates with equal conviction delay, age and addiction, we will show that our results are essentially unchanged when not imposing such restrictions.[46]

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[45]The discussion in Section 2.4 would suggest conditioning also on the variable "drug addiction;" conservatively, Table 4 includes this variables among the covariates whose significance gets tested, but the results would be unchanged had we conditioned also on "drug addiction."

[46]We will always control for the total time served. This is key, since residual and total sentences are strongly positively correlated. Without conditioning on the total time served, inmates with longer residual sentences are associated with more

The test for the random assignment of the treatment fails, instead, when we consider the sample of selected inmates (this is true also if we exclude from the selected those whose entry reason is unknown[47]). Several covariates are statistically significant, and the F test of their joint insignificance has a tail probability of only 0.1 percent. This was expected, since the delays in the selection process – which is the variability we exploit when we consider the selected sample – are potentially correlated with the inmates' individual characteristics, and we are unable to control for all the information available to the people doing the selection. For this reason, in the remainder of the analysis we focus on the sample of displaced inmates, showing the results for the sample of selected inmates only by way of comparison.

An alternative way to test for random assignment of the treatment is presented in Table 5. We first construct a measure of recidivism risk by regressing recidivism on all the pre-treatment characteristics listed in the upper part of Table 4, together with age fixed effects and (possibly) prison of origin and year by month of transfer to Bollate fixed effects. We thus exclude from this regression total time served, time from incarceration to first sentence and potential time spent in Bollate .[48] Next, we regress this measure of predicted recidivism on potential time spent in Bollate, total time served and time from incarceration to first sentence. A negative and significant coefficient on potential time spent in Bollate would mean that low risk inmates – as predicted on the basis of pre-treatment characteristics – tend to spend more time in Bollate, and would thus falsify the random assignment of the treatment. Table 5 shows that potential time spent in Bollate is uncorrelated with predicted recidivism (the point estimate is not significantly different from 0 and, if anything, is slightly positive).

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serious crimes.

[47]For brevity we do not show these results, which are available upon request.

[48]The R-squared in this first regression is around 20 percent.

3 Results

3.1 Non-parametric Evidence

The information on the exact time of re-incarceration allows us to construct non-parametric Kaplan-Meier cumulative failure (recidivism) functions to compare displaced inmates who spent different fractions of their sentence in Bollate. As in the rest of the analysis inmates are followed for three years after the end of their prison time.

Figure 4 plots failure functions for two groups of inmates, depending on whether they served less or more than 50 per cent of their total time served in Bollate (to compute these ratios we always use the potential time spent in Bollate, to avoid any endogenous interruption of the Bollate treatment). It is important to control for the total time served, since Bollate opened at the end of 2000 and, by construction, longer sentences will be negatively correlated with the fraction of time spent in Bollate. For this reason we produce separate plots, for inmates with total served in prison that are above and below 1.5 years (a figure which is close to the median and the mean). In both cases, the differences in recidivism up to a year after release are negligible. This likely captures inmates whose unobserved "propensity to recidivate" is strong enough to be unaffected by treatment efforts and quick to materialize. The inmates who do not recidivate for at least a year seem to be more responsive to the Bollate treatment. After the first year, the cumulative differences in recidivism start growing, reaching about 10 percentage points at the end of the recidivism window.

The differences between the failure functions are more striking when the total time served is above 1.5 years, meaning that the more treated inmates spend at least 9 months in Bollate. In relative terms these are large differences.

Next we use regression models to better control for total time served, for additional regressors, as well as to assess the statistical significance of these differences.

3.2 Main Results

We estimate the intention to treat effect by ordinary least squares with a linear probability model (later we will show that probit models as well as hazard models lead to similar results). The unobserved errors are allowed to be correlated among inmates who were released during the same week and spent their final prison time in Bollate in the same cell block (there are 5 cell blocks). This is to address concerns highlighted by Bayer et al. (2009) and Drago and Galbiati (2012), who find evidence of peer effects among inmates who have spent prison time together and who have been released at the same time. Alternatively, in the Online appendix Table A1, we use a spatial lag error model that allows errors to be correlated among inmates whose detention in one of the cell blocks has overlapped, even if their release has happened at different times. Finally, one could argue that Bollate inmates form relationships when they arrive, no matter the cellblock. This would also be a clustering that mimics the variation of our instrument. All methods to compute the standard errors deliver similar results, and in the rest of the analysis we use the first one.

When estimating the (local) average treatment effect, we run instead two-stage least squares regressions (2SLS), using the potential time served in Bollate as an instrument for the actual time served. A visual representation of the first stage is shown in Figure 5. For about 2/3 of inmates actual and potential days spent in Bollate coincide (they correspond to points on the 45 degree line in the figure). The rest of the inmates are transferred to other prisons before the end of their prison spell or are granted an early release (monitored liberty, home detention...). These are clearly endogenous outcomes. While the exogenous variability of potential time served in Bollate makes it a good instrument, a caveat is in order in interpreting the results of the 2SLS regressions, since the local average treatment effects are driven by the compliers, and these might be those who respond more strongly to the improved prison conditions.

The top panel in Table 6 shows the reduced form (intention to treat) regressions while the bottom panel show the 2SLS results. All measures of time served are in years (days divided by 365).

Consider first the intention to treat regressions (the top panel). In the first column, to provide a benchmark, we estimate the effect of the treatment in the simplest possible specification, controlling

only for total time served. One extra (potential) year in the open prison (and therefore, given the total time served, one less year spent in an ordinary closed prison) reduces recidivism by 7.3 percentage points (with a significance level of less than 1 percent).[49]

Following the argument presented in Section 2.4, in Column 2 we include also the time from incarceration to first sentence,[50] drug addiction and age at exit fixed effects as controls.[51] The estimated intention to treat effect is slightly reduced, to 6.3pp, still highly significant. This confirms that the variability associated with the delay in receiving the conviction and with the capacity constraints in Bollate is unlikely to selectively affect recidivism. In Column 3 we further add the other covariates listed in the upper panel of Table 4 (capturing demographics and the criminal history), prison of origin and year by month of transfer to Bollate fixed effects, exploiting both the variability within prisons and within month of transfer. The estimated intention to treat effect is unchanged and still highly significant. Finally, in Column 4, we also add the interaction between the year by month of transfer to Bollate fixed effects with the prison of origin fixed effect, to use only the variability among inmates who were displaced at the same time from the same prison. The estimated intention to treat effect is almost unchanged.[52]

It is worth noting that in all specifications the time from incarceration to the first sentence, meaning the delay in receiving the sentence, does not predict recidivism.

Moving now to the 2SLS results (bottom panel), the average treatment effects are about 4 percentage points larger than the corresponding intention to treat effects. The larger effect is expected, as the residual sentence upon arrival overestimates the length of the actual prison stay: in the first stage regression the coefficient is always close to 60 percent, with a t-statistic of about 15, and an F-statistic of about 200.

Taking Column 3 as our preferred specification, an extra year spent in Bollate, as opposed to any of the prisons of origin, reduces recidivism by 10.4 percentage points, i.e. by about 27 percent of the

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[49]An equivalent interpretation of the estimated coefficient is that the effect on recidivism of serving one year in an open prison is 7.3 percentage points smaller than the effect of serving the same time in a closed one.

[50]Adding the time to the first sentence we lose 15 observations, for which this information, which had to be hand collected from the judicial files, could not be found.

[51]Results would be unchanged had we controlled for age at transfer fixed effects (results are available upon request).

[52]In columns 3 and 4 the observations for which the fixed effects perfectly predict the outcome are dropped, in order to get correct standard errors.

average recidivism rate (39.6 percent).

The sign of the other covariates (shown in the Appendix Table A3) is in line with expectations. In particular, a previous history of recidivism, proxied by the number of previous incarcerations, is highly predictive of future recidivism.

Interestingly, the total time served increases recidivism, even though the effect is not statistically significant. Different forces would drive this coefficient to be positive, for example, building criminal capital (Chen and Shapiro, 2007), or unobserved criminal attitude that is observed to the judge, while specific deterrence would lead to a negative coefficient (see Nagin et al. (2009) for a review of the literature on specific deterrence). Our result show, however, that any inference on the effect of time served on recidivism must take into account the way in which the prison time is spent.

Drug addiction significantly increases recidivism, a well known result. We also control for marital status, three education dummies, three employment dummies, and nine crime dummies. As mentioned, the estimated effect of the treatment is virtually unaffected by the inclusions of these controls. This, together with the rise in the R-squared, suggests that controlling for unobserved selection would be unlikely to turn the results around.(see Altonji et al., 2005, Oster, 2013)

Table 7 presents the result of a similar analysis conducted on the inmates explicitly selected to Bollate. The first two columns include also inmates for whom the cause of entry is unknown while the following two columns restrict the analysis only to inmates who are known to have been screened. Since we do not have all the information used in the screening process, for the selected inmates we are less confident to be able to identify the causal effect of the treatment. Indeed, we expect the causal effect to be smaller than the estimated coefficient, since the latter also reflects the likely positive selection which takes place during the screening process and for which we cannot control. It is therefore interesting to note that the estimated effect of the treatment is roughly of the same size as that found for the displaced inmates. Taking into account the likely downward bias of the estimate for the selected inmates, it seems safe to conclude that the causal effect of the treatment for the displaced inmates is, in absolute terms, at least as large as that for the selected inmates.

3.3 Robustness Checks

In Table 8 we run several robustness checks (we focus on the displaced inmates). All regressions control for the set of variables included in our preferred specification (Column 3 of Table 6), including prison of origin and year times month of displacement fixed effects. For the sake of space we only report the intention to treat effects (those estimated through 2SLS are larger across the board, but paint a very similar picture). Since we are controlling for the time of displacement, we cannot also control for the time of exit, since jointly the two variables are collinear with the potential time spent in Bollate.

In order to control for the labor market conditions inmates face at the time of release, in Column 1 we control for the quarterly unemployment rate in Northern Italy and the quarterly youth unemployment rate. The estimated intention to treat effects is almost unchanged (-6.5pp against -6.3pp).

In Column 2 we test whether overcrowding explains our results. We collected data on prison capacity and prison population on the universe of Italian prisons (such data are available starting from 2003, so we loose two years of data). Overcrowding rates, measured as the ratio between prison population and prison capacity, are added as additional controls, also interacted with time spent in the prison of origin. If the reduction in recidivism were driven by the avoidance of time spent in overcrowded prisons we would expect the coefficient on "Potential years treated" in Bollate to change, which is not the case.

In columns 3, 4 and 5 we change the sample composition. In column 3 we add inmates with unknown entry reasons to the displaced, which reduces the absolute value of the coefficient by about 1pp. In Column 4 we exclude the few inmates who have one definitive conviction but also an ongoing trial at the time of release (for which they might have to face some time in prison). The (absolute value of the) estimated intention to treat effect is slightly smaller (-5.6 percentage points). The baseline results are roughly unchanged when we restrict to inmates who were transferred up until 2008, the year after which Bollate was allowed to provide some feedback about inmates who were supposed to be displaced (Column 5). The results are also robust to using different functional forms. In Columns 6 and 7 we use a probit model (linear and non-linear, respectively), instead of the linear probability

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one. This increases the (absolute value of the) marginal effects, from 6.3 to about 9 percentage points. In the Appendix Table A4 we also show that a semi-parametric hazard model delivers similar results.

In Column 1 of Table 9 we control for the occasional differences between the predicted and the actual order of transfer shown earlier in Figure 3. The coefficient on time served in the open prison is basically unchanged (it drops from -6.3 percent to -6.2 percent) and the coefficient on the difference between the two orderings is not statistically different from 0. This confirms that the difference, that is driven by the availability of prison beds in different prison sections, is as good as random.

In the following columns we address another potential identification issue. We control for total time served and delay in receiving the sentence in a flexible way, by including fixed effects corresponding to the length in quarters or months of the conditioning variables, to take care of the possibility that the relation between them and the unobserved propensity to recidivate be non-linear. The regressions presented in Columns 1 and 2 only exploit the variability among inmates whose total time served has the same number of quarters or months (respectively); the regression in Column 3 further controls in a flexible way for the time from incarceration to first sentence. Adding these more flexible controls leaves the results almost unchanged.

4   The Mechanism

Our results show that spending more time in an open prison, and correspondingly less time in one of the other traditional, closed prisons, reduces recidivism by a statistically significant and economically meaningful amount. What is not clear is the mechanism underlying this effect: is it merely the passing of time, leading to a larger dose of the same treatment? Or is the passing of time just the gateway for qualitative differences in the treatment, which are the true causes of the observed effect on recidivism? While we will not be able to conclusively answer these questions, in this Section we will make a first attempt at identifying the underlying mechanisms.

4.1 Heterogeneity of the Effects

We can learn something about the mechanisms by trying to identify the circumstances in which the treatment is most effective. We will therefore explore whether the effects across different groups of inmates are heterogeneous by simply interacting the time spent in Bollate (actual or potential) as well as the total time served with various observable characteristics. These are all coded as dummies: whether the crime committed is economically motivated, whether it is the first incarceration, whether the inmate is in a relationship, whether the inmate's educational attainment is above secondary education, whether his age is below median, whether he is subject to a judge order which prohibits accessing alternative sanctions (Art. 4 bis). We also include the interaction with the measure of recidivism risk (predicted on the basis of observables) used in Table 5, and in particular we consider whether such a measure is above the median or above the third quartile.

As before, the top panel of Table 10 measures intention to treat effects while the bottom one measures local average treatment effects.

We find evidence of heterogeneous effects for inmates at their first incarceration, inmates with low levels of education and inmates with high recidivism risk.

For inmates who are at their first incarceration the benefit of spending more time in Bollate, in terms of reduced recidivism, is roughly twice as large compared to inmates with previous incarceration spells. The benefit for inmates with education above secondary level, instead, is considerably smaller than for inmates with lower levels of education, and it disappears for inmates with high recidivism risk.

In particular, intention to treat effects for "rookie" displaced inmates are equal to -10.2 percentage points, while their average recidivism is just 26.2 percent (Column 4). This suggests that rehabilitation efforts are most successful when applied earlier in the criminal career, but it should be noted that even inmates who have been in prison before are responding positively to the treatment.

Column 6 shows that the treatment is more effective for inmates with lower levels of education, as the effect is considerably reduced (from 10 to 3 percentage points, measured with the intention to treat) for inmates with education above the secondary level. This points to a greater effectiveness of

rehabilitation efforts on those inmates who are less well equipped to cope with the challenges of a non-criminal life and who would be more likely to struggle once released.

Column 2 shows that for inmates with observables corresponding to a predicted recidivism risk in the top quartile of the distribution the effect of the treatment is approximately nil.[53] This result would be consistent with the non-parametric evidence presented in Section 3.1 if these high risk offenders were also the ones recidivating soon after release. This is indeed the case. Recidivism risk is strongly negatively correlated (-33% (t-stat=10.1)) with the time it takes recidivating inmates to be back in prison.

All other interaction terms are not statistically different from zero.

4.2 Direct and Indirect Evidence on the Mechanism

In Section 2.1 we highlighted that spending prison time in the open prison as opposed to any other closed prison in Lombardy can be very different. The first, and perhaps the most striking difference, is that in the open prison inmates spend two to three times more hours outside their cells. The significance of this difference becomes even more salient when we consider that, as shown in Table 1, San Vittore, Opera, Monza, and Busto Arsizio – the prisons from which more than 80 percent of displaced inmates come – are regularly overcrowded, which translates into more inmates per cell and thus less space than the 9 square meters (100 square feet) each inmate is supposed to have under normal circumstances. Bollate's facilities are newer and well kept, while the other prisons' buildings are old and in need of refurbishing. Another important difference is the "Responsibility Pact" that inmates sign when entering Bollate. They are required to actively participate in their rehabilitation program and partially determine the conditions of their time in prison (work, education, the interior design of their cell, the organization of common spaces, etc.) in exchange for good behavior.

Compared to the "panopticon-style" of prison life that is the norm in most prisons in the world, the conditions in the open prison are indeed a momentous change, and it is reasonable to conjecture not only that they can influence the inmates' recidivism, but also that such influence is increasing in

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[53]For inmates with observables corresponding to a level of predicted recidivism risk in the top 50 percent (column 1) the effects is roughly half that for inmates in the bottom 50 percent.

the duration of their stay in the open prison, as it takes time for them to take hold in the psychology of inmates used to being treated harshly and to being denied self-determination. The increasing effectiveness of these conditions, however, cannot be empirically tested, since they start to apply to all Bollate inmates as soon as they are transferred there, and we have no measures of their increasing intensity.

There is however one important aspect of the treatment that is unevenly assigned and whose time variability is measurable: work outside of the open prison. Inmates who work outside of Bollate are transferred to cell block 5, and once they are there Bollate keeps track of the day releases. Using this margin of variation we can provide direct, albeit only suggestive evidence of one aspect of the mechanism underlying our result.

In Table 11 we regress the fraction of days spent in day releases (typically corresponding to work outside Bollate) on the potential time served in the open prison, as well as the usual controls. Each additional potential year in Bollate increases the fraction by 0.767 percentage points (53 percent of the average)[54] for the selected inmates, and by 0.229 percentage points (95 percent of the average) for the displaced ones (the coefficient for the selected inmates is not significantly different from zero).[55] Hence, the probability to work outside, while being in the open prison, increases with the length of their stay (the intensity of the treatment). While this does not establish a causal link between working opportunities outside the prison and our rehabilitation result, it is consistent with the conjecture that the former is one of the mechanisms underlying the latter.

The differential intensity with which additional time spent in the open prison translates into the probability to work outside for displaced and selected inmates also offers indirect, supporting evidence for the role of other aspects of the open prison. Since we found that the treatment effect for the displaced inmates is at least as large as that for the selected inmates, and at the same time the former are less likely to be exposed to outside work, even as their stay in Bollate lengthens, their strong response to the treatment suggests that other aspect characterizing prison life in the open prison – the possibility to make decisions, being treated as adults, and the stress on self-responsibility – are also

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[54] During their entire stay, selected inmates spend on average 1.45 percent of their days outside of prison; displaced inmates only 0.24 percent.

[55] Since we do not require 3 years to compute recidivism, the sample size is slightly larger.

important and increase in importance as time goes by.

While our evidence is only indirect, it chimes well with some psychological analyses of the effect of open prisons. It has been argued that keeping life inside the prison walls as close as possible to a normal life is for inmates a powerful reminder that they are the sole responsible for the loss of freedom they are suffering. Removing the possibility to use the resentment of the system for being treated harshly as a way to crawl away from personal responsibility acts as a "glass funnel, directing all shame, anger and recrimination back onto oneself." And any time spent in such "polished glass nightmare... [is a] morally harsher sentence than twice that time inside a 24-hour war zone where some of the most powerful warriors wear state uniforms."[56]

4.3 Negative Spillovers

One additional mechanism that might be at play is provided by peer effects.[57] In principle, the inmates transferred to Bollate go through a screening process, described in Section 2.2.1, aimed at identifying those more likely to react positively to the rehabilitation efforts. By selecting these "better" inmates Bollate might in fact simply minimize negative peer influences. Since more time spent in Bollate is equivalent to spending more time with positively selected inmates, this could explain our results.

We test whether this is a relevant mechanism underlying our results by using the presence of displaced peers. Differently from selected inmates, displaced ones do not go through the screening process. Therefore, if peer effects were driving our results we would expect that a higher presence of displaced peers would weaken the effect of the treatment.[58] We measure the presence of displaced peers by computing the fraction of "prisoner days" spent together with displaced inmates: in Bollate (first measure); in the final cell block (second measure); in the final cell (third measure). While the last two measures might be endogenous (Bollate might redistribute displaced inmates to reduce negative peer effects), they are arguably more precise.

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[56]Quotes are from The Atlantic, September 17, 2014: Why Scandinavian Prisons Are Superior.

[57]See Chen and Shapiro (2007) and Bayer et al. (2009)) for evidence on peer effects in prison.

[58]We consider displaced inmates as "worse" peers precisely because they did not go through the screening process, which aims at identifying inmates more receptive of rehabilitation treatments. In fact, as noted before, the criminal profile of displaced inmates is, if anything, more skewed towards petty crimes.

In Table 12 we control for such exposure to displaced inmates, and also interact it with the potential time served in Bollate. If peer effects were part of the story, we would expect the effect of the potential time served in Bollate to be closer to zero when inmates face a larger fraction of displaced peers. The coefficient on the interaction is indeed positive, though not large and not significantly different from zero. A one standard deviation increase in the fraction of displaced inmates (20 percent) would increase the coefficient on potential time served by just 1.24pp.

And, more importantly, the coefficient on the potential time served in Bollate is still close to -6 percentage points.

As for the main effect of the fraction of displaced peer, it is negative. Given that for displaced inmates rehabilitation efforts tend to be less pronounced, one explanation for this is that spending time with more displaced inmates introduces positive investment externalities in rehabilitation.

Overall there is no conclusive evidence that the effect on recidivism is significantly affected by the exposure to potentially "worse" peers. This suggests that scaling up the Bollate experience, even through a less exacting selection process, would not be self defeating and would generate a larger overall effect on recidivism.

5 Conclusions

The questions of whether and how different prison conditions affect recidivism are very important ones in designing a prison system, along with questions about the relative costs of providing different prison conditions and about their effects on general deterrence. This paper offers a clear and robust affirmative answer to the "whether," some tentative answers to the "how," and briefly touches on the cost issue. It remains silent on the question of general deterrence, as the latter concerns the ex-ante impact of the threat of punishment on the public at large, while we only deal with inmates who have already experienced some form of punishment.

On the "whether" question, we showed that prison conditions offered in a typical open prison, with meaningful training and occupational activities, aimed at improving inmates' reintegration into society, are effective in curtailing recidivism. At the same time, we do find evidence that rehabilitation

has limited effects on inmates with the highest risk of recidivating, meaning that some targeting might be beneficial. Since these inmates are the first ones recidivating, there is also little evidence of treatment effects when the period of analysis is shorter than a year. For this reason it is important to measure recidivism over a sufficiently long period of time.

More data, particularly on the post release earnings and opportunities, would be needed to fully understand the mechanisms underlying our results, i.e. to answer the "how" question. We find evidence that one such mechanism involves offering inmates, while in prison, opportunities to work outside, thus making their entry into the labour market when released easier. Offering such opportunities might be difficult, however, particularly when there is substantial slack in the labour market. Therefore, policies aimed at reducing recidivism by "making prison work," while sensible and effective, might be hard to implement and are largely outside the control of prison administrators.

We also find evidence that, even for inmates who are scarcely involved in outside work, prison conditions emphasizing responsibility and respect of basic human rights are effective in reducing recidivism. Policies to that effect seem easier to implement, and are almost surely cost effective.

Indeed, we showed that the running costs of an open prison need not be larger, and are in fact considerably smaller, than those of a traditional closed prison, thanks to the fewer guards needed, in turn a positive pay-off of the emphasis on inmates' self-responsibility.

Finally, we do not find robust evidence that peer effects drive of our results. This should appease one possible concern about scaling up the experience of Bollate (by weakening somewhat the selection criteria), since worsening the ex-ante average quality of the selected inmates seems not to undermine the positive effects on recidivism. However, we do not know to what extent the behavioral changes caused by serving the sentence in an open prison hinge on the threat of being kicked out of that prison and sent back to a harsh, closed prison. If this were the case, expanding the number of open prisons might weaken that threat.[59]

More generally, the impact of expanding the number of open prisons on general deterrence has to be carefully considered, to make sure that the reduction in recidivism were not offset by an increase in the number of first time offenders, due to a lower expected cost of punishment. More experimentation

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[59]Unless, as it is now the case, a new access to an open prison were prevented to a recidivating inmate.

is needed to assess these possible general equilibrium effects.

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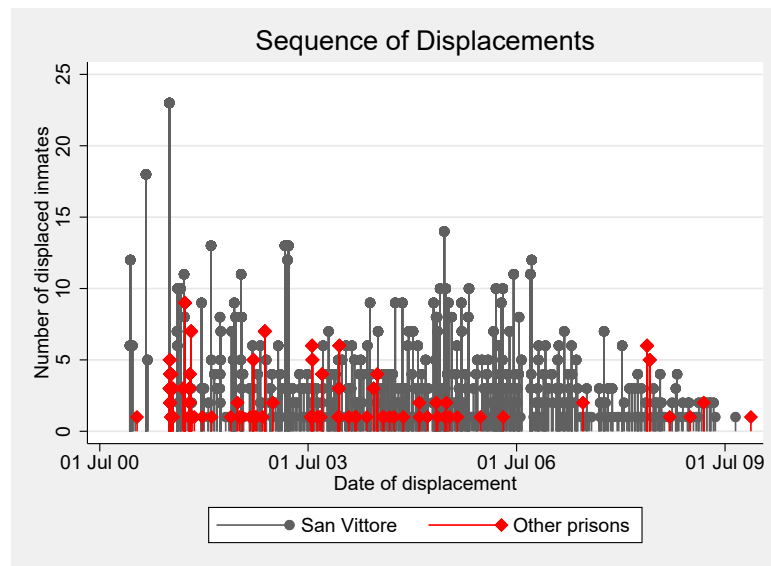
Figure 1: Sequence of Displacements

Notes: The figure plots the daily number of inmates displaced to Bollate from the San Vittore prison and from all the other prisons.
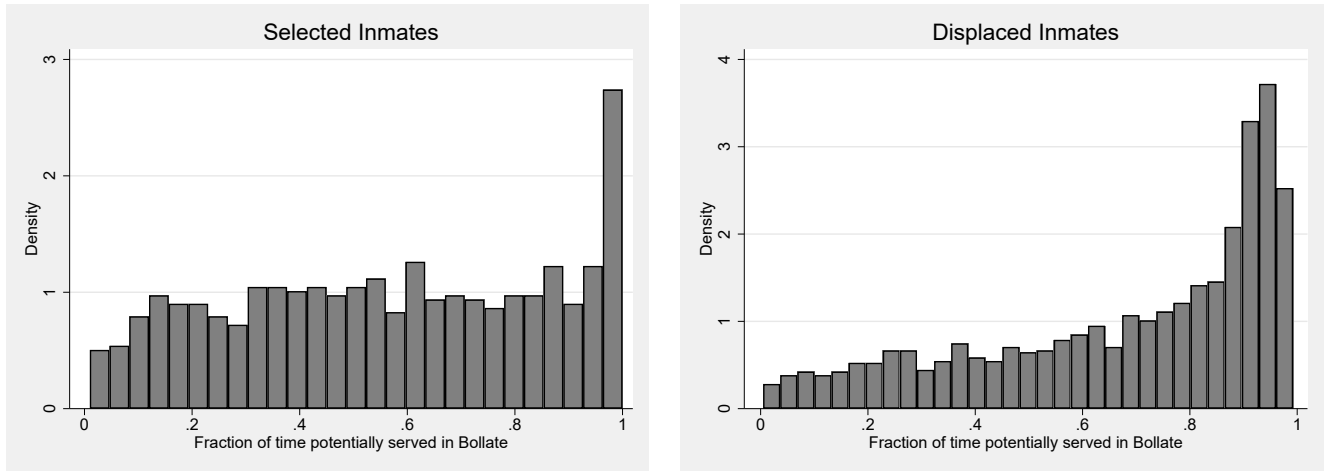
Figure 2: Distribution of the Fraction of Time Potentially Served in Bollate

Notes: The figure plots the distribution of the fraction of the total time that remains to be served when the inmate is transferred to Bollate. The left panel refers to selected inmates, the right one to the displaced.
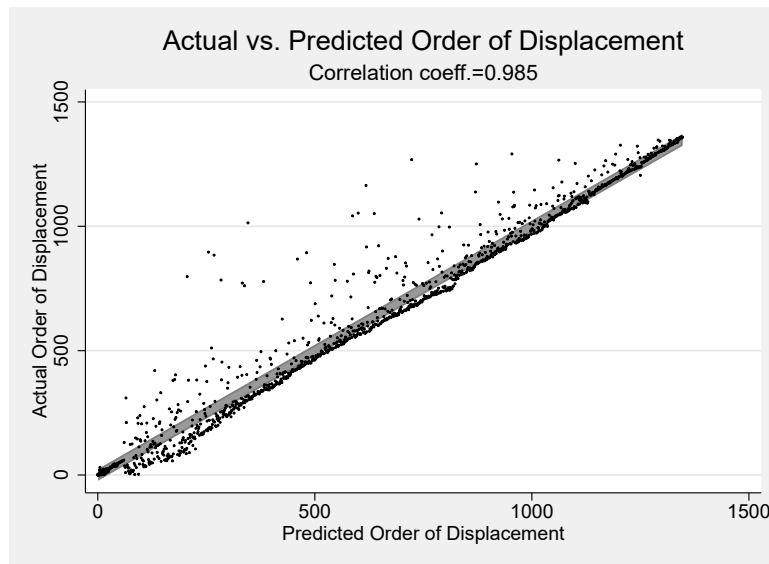
Figure 3: Actual vs. Predicted Order of Displacement

Notes: The figure plots the association between the predicted and the actual order of displacement. The former is the chronological order in which all inmates eventually displaced to Bollate received their first conviction, the latter is the actual chronological order of displacement.
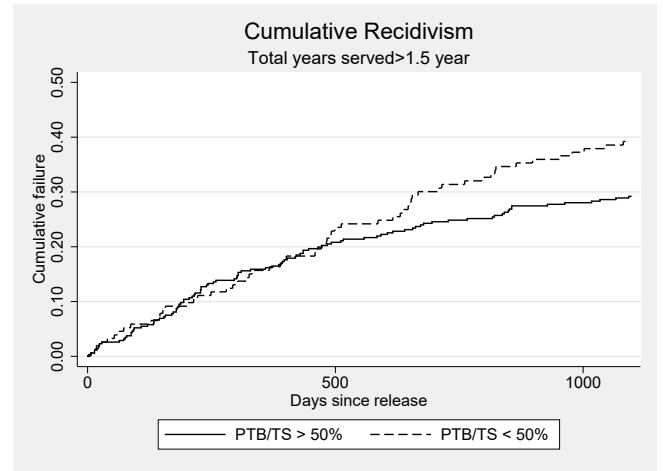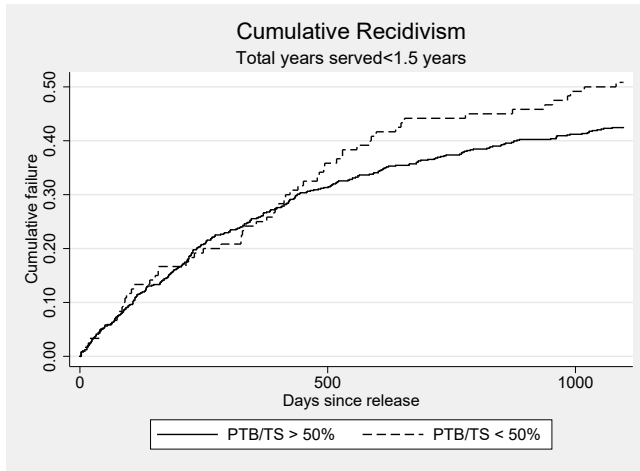
Figure 4: Kaplan-Meier Cumulative Failure (Recidivism) Functions

Notes: The figure plots, for each days since their release, the fraction of inmates who recidivated by that day. The solid and dashed lines refer, respectively, to those inmates for whom the ratio of the potential years treated in Bollate (PTS) and the total time served (TS) exceeds or fall short of 50 percent. The left and the right panels refer, respectively, to inmates whose total time served is shorter or longer than 1.5 years. Failure (recidivism) is truncated at 3 years, or 1095 days.
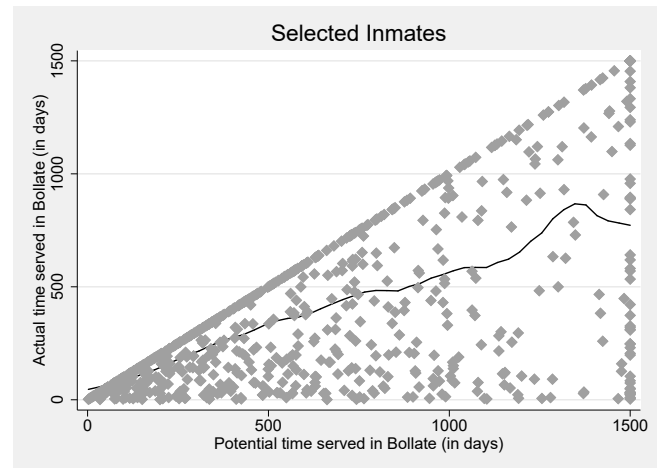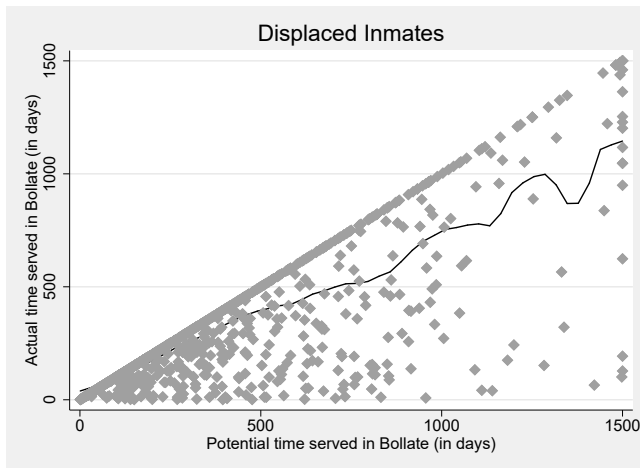
Figure 5: First Stage Relationship

Notes: The figure plots the association between potential and actual time served in Bollate (truncated at 1500 days). The latter can be shorter than the former whenever inmates transferred to Bollate are later transferred again to another prison. The left and right panels refer, respectively, to displaced and selected inmates. The solid line in each panel is a local linear regression. For about 2/3 of inmates the two durations coincide.

Table 1: Prison conditions in different prisons (2009)

Admission prison	Type	Hours	Established	Capacity	Inmates	Overcrowding rate	Suicides	Self-inflicted Injuries	Hunger strikes	Prison Work	Independent Work
Milano San Vittore	Mixed	8-21 vs. 4h	1879	1127	1596	42%	1.3%	9.6%	7.3%	17.5%	0.5%
Milano	Closed cells	9-11,18-19	1980	973	1246	28%	0.2%	0.8%	7.4%	28.3%	6.5%
Monza	Closed cells	9-11,13-15	1992	741	775	5%	0.5%	5.9%	3.0%	22.7%	6.6%
Busto Arsizio	Closed cells	9-11, 13-15	1982	297	425	43%	0.0%	3.3%	5.4%	23.3%	0.0%
Como	Closed cells	9-11, 13-15, 16.30-18	1980	606	546	-10%	0.7%	3.1%	3.8%	14.5%	1.8%
Bergamo	Closed cells	9-11, 13-15	1978	511	497	-3%	2.0%	13.9%	5.4%	12.7%	4.0%
Varese	Closed cells	8.45-11.30, 13.30-15.45	1886	99	135	36%	0.7%	4.4%	6.7%	12.6%	5.9%
Others	Closed cells	by law min. 4h									
Milano Bollate	Open cells	9-19, 8-20	2000	1311	1032	-21%	0.0%	0.7%	2.3%	22.6%	27.2%

Notes: Suicides (including attempted suicides), self-inflicted injuries, inmates in hunger strikes, prison work, and independent work are measured in 2009 and per-inmate, dividing by the number of inmates at the end of 2009. Overcrowding is the ratio between Inmates and Capacity (both head counts), minus 1 and multiplied by 100. Hours is the number of hours inmates are allowed to spend outside their cell.

Table 2: Recidivism and Treatment Intensity by Entry Reason

	Recidivism (3 yrs.)	Released from Cell block 5	Potential Years Treated	Actual Years Treated	Total Years Served	Nobs.
Transferred to be treated	0.316	0.148	1.493	1.201	3.729	196
Applied to be treated	0.246	0.106	1.468	1.166	3.530	199
Transferred by the Justice Dep.	0.254	0.254	1.312	0.908	3.017	63
Other entry reasons	0.353	0.000	2.145	1.777	4.078	17
Total selected sample	**0.280**	**0.139**	**1.482**	**1.168**	**3.563**	**475**
Entry cause unknown	0.416	0.046	2.242	0.795	4.047	281
Selected and unknown	**0.331**	**0.104**	**1.764**	**1.029**	**3.743**	**756**
Displaced	**0.396**	**0.024**	**0.852**	**0.683**	**1.440**	**1,552**

Notes: The table presents some relevant variables for groups of inmates defined by the reason with which they were transferred to Bollate: whether displaced or selected, and among the latter further distinguishing by different types and responsibilities for the transfer. "Recidivism" and "Released from Cell block 5 " are variables measured as the fraction of inmates for which the corresponding condition applies; "Potential years treated," "Actual years treated" and "Total years served" are measured in years.

Table 3: Summary Statistics

	Selected/Unknown (I)		Displaced Inmates (II)		II-I	
	mean	sd	mean	sd	mean	se
Recidivism (3 yrs.)	0.331	0.471	0.396	0.489	0.065	0.023***
Potential years treated	1.764	1.400	0.852	0.885	-0.913	0.058***
Total time served	3.743	3.284	1.440	1.707	-2.303	0.117***
Drug addiction	0.242	0.429	0.298	0.457	0.056	0.025**
Art. 4 bis	0.206	0.405	0.072	0.259	-0.134	0.017***
Total number of incarcerations	3.187	2.708	3.417	2.738	0.230	0.135*
In a relationship	0.336	0.473	0.262	0.440	-0.074	0.020***
Separated or divorced	0.099	0.299	0.089	0.285	-0.010	0.014
College degree	0.097	0.296	0.052	0.221	-0.045	0.012***
Secondary schooling	0.544	0.498	0.510	0.500	-0.033	0.024
Primary schooling	0.220	0.414	0.178	0.382	-0.042	0.019**
Homicide	0.083	0.277	0.014	0.118	-0.069	0.011***
Fraud	0.104	0.306	0.057	0.233	-0.047	0.013***
Threat of violence	0.114	0.318	0.040	0.196	-0.074	0.012***
Drug-related crime	0.380	0.486	0.243	0.429	-0.137	0.025***
Assault	0.139	0.346	0.110	0.313	-0.029	0.014**
Theft	0.427	0.495	0.429	0.495	0.002	0.023
Robbery	0.370	0.483	0.219	0.414	-0.151	0.020***
Crimes against the State	0.284	0.451	0.227	0.419	-0.058	0.022***
Crimes against the Public Health	0.405	0.491	0.253	0.435	-0.152	0.025***
Other crimes	0.074	0.262	0.121	0.326	0.047	0.013***
Age at exit	41.218	11.280	38.311	10.730	-2.907	0.556***
Time from incarceration to first sentence			0.103	0.261		

Notes: The table presents the summary statistics for the covariates used in the analysis, for the sample of selected and displaced inmates. With the exception of "Potential years treated" in Bollate, "Total years served", "Age at exit" (all measured in years), and "Total number of incarcerations" (a natural number), all other variables are dummy equal to 1 when the corresponding characteristic is present. The type of crime dummies are not exclusive, so they need not sum to 1. The sample of selected inmates include 281 inmates whose reason of entry is unknown. The standard errors in the last column are clustered by cell block and week of release, for a total of 392 clusters: *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
	Displaced Inmates				Selected Inmates	
	Potential years treated		**Potential years treated**		**Potential years treated**	
	coef	se	coef	se	coef	se
Art. 4 bis	0.040	0.046	0.046	0.049	0.030	0.124
Total number of incarcerations	0.164	0.111	0.053	0.113	-0.069	0.119
In a relationship	-0.005	0.005	-0.002	0.006	-0.030*	0.016
Separated or divorced	-0.030	0.038	-0.018	0.040	-0.203*	0.108
College degree	0.046	0.062	0.061	0.065	-0.172	0.167
Secondary schooling	0.004	0.066	-0.001	0.071	0.349*	0.184
Primary schooling	0.012	0.038	0.033	0.040	0.332**	0.133
Homicide	-0.006	0.052	0.005	0.057	0.117	0.180
Fraud	-0.713*	0.399	-0.659*	0.358	-0.295	0.253
Threat of violence	0.060	0.066	0.119*	0.064	0.214	0.159
Drug-related crime	0.118	0.134	0.108	0.133	0.021	0.147
Assault	0.290	0.185	0.231	0.185	-0.004	0.234
Theft	0.047	0.056	0.088	0.056	0.289**	0.146
Robbery	0.067	0.054	0.084	0.051	0.221**	0.089
Crimes against the State	0.076	0.060	0.067	0.062	0.077	0.101
Crimes against the Public Health	0.046	0.043	0.046	0.044	-0.087	0.085
Other crimes	-0.128	0.190	-0.049	0.188	0.233	0.235
Drug addiction	0.053	0.067	0.080	0.064	0.015	0.165
Time from incarceration to first sentence	-0.815***	0.203				
Total years served	0.429***	0.045	0.360***	0.031	0.235***	0.023
Age fixed effects	√				√	
Observations	1,537		1,552		756	
R-squared	0.586		0.555		0.434	
F-statistic for joint test	1.189		1.113		2.402	
p-value	**0.267**		**0.336**		**0.00125**	

Notes: Columns 1, 3 and 5 show the coefficients of a regression where "Potential years treated" in Bollate is regressed on the variables listed in the firs column, with or without age fixed effects. Columns 1 to 4 refers to the sample of displaced inmates, columns 5 and 6 to the sample of selected inmates. The latter includes 281 inmates whose reason of entry is unknown. The F-test at the bottom for the joint significance of these regressors excludes the variables which are expected, a priori, to affect the timing of transfer to Bollate (see Section 2.4; these are the variables below the continuous line, in italics; including or not drug addiction among them does not alter the results). Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Balancing Test based on Predicted Recidivism (displaced inmates)

	(1)	(2)	(3)	(4)
		Recidivism index		
	Index 1	Index 2	Index 1	Index 2
Potential years treated	0.004	-0.000	0.005	0.004
	(0.008)	(0.008)	(0.008)	(0.008)
Total years served	-0.006	-0.003	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)
Time from incarceration to first sentence	-0.027*	-0.032*	-0.052***	-0.054***
	(0.016)	(0.017)	(0.016)	(0.016)
Age fixed effects	√	√	√	√
Prison Fixed effects			√	√
Year/Month fixed effects			√	√
Observations	1,537	1,530	1,526	1,526
R-squared	0.403	0.379	0.486	0.512

Notes: We construct a measure of predicted recidivism (recidivism risk) by regressing actual recidivism on all observable characteristics listed in the upper part of Table 4 plus age fixed effects (denoted Index 1, in Columns 1 and 3) and prison fixed effects (denoted Index 2 in Columns 2 and 4). "Potential years treated" in Bollate, "Total years served" and "Time from incarceration to first sentence" are, therefore, excluded from this first step. The table presents the second step regression, in which predicted recidivism is regressed on "Potential years treated," "Total time served" and "Time from incarceration to first sentence". Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect of the Treatment for Displaced Inmates (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)	(3)	(4)
	Panel A: Reduced Form Model			
Potential years treated	-0.073***	-0.063***	-0.063***	-0.061***
	(0.019)	(0.020)	(0.021)	(0.023)
Total years served	0.014	0.015	0.025	0.022
	(0.012)	(0.014)	(0.017)	(0.018)
Drug addiction		0.117***	0.154***	0.146***
		(0.030)	(0.039)	(0.042)
Time from incarceration to first sentence		0.011	0.045	0.052
		(0.053)	(0.055)	(0.064)
Observations	1,552	1,537	1,526	1,493
R-squared	0.011	0.093	0.255	0.264
	Panel B: 2SLS Model			
Actual years treated	-0.119***	-0.102***	-0.104***	-0.099**
	(0.034)	(0.035)	(0.037)	(0.041)
Total years served	0.020	0.019	0.028	0.024
	(0.014)	(0.015)	(0.018)	(0.019)
Drug addiction		0.114***	0.163***	0.153***
		(0.031)	(0.040)	(0.042)
Time from incarceration to first sentence		0.015	0.053	0.062
		(0.055)	(0.056)	(0.065)
Age at exit FE		√	√	√
Other Xs			√	√
Prison FE			√	√
Year/Month FE			√	√
Prison × Year/Month FE				√
Observations	1,552	1,537	1,526	1,493
R-squared	-0.014	0.072	0.241	0.251
F-staton the excluded instrument	189.1	206	212.7	192.3

Notes: The average recidivism rate is 39.5 percent. A flag on the variables in the bottom part of the Table (below the double continuous line) signals inclusion in both, reduced form and 2SLS regressions. The "Other Xs" are all the covariates included in the upper part of Table 4. Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 7: Effect of the Bollate Treatment for Selected Inmates (dependent variable: inmate recidivates within 3 years (0/1))

Sample:	(1)	(2)	(3)	(4)
	Selected and unknowns		Selected inmates	
	Panel A: Reduced Form Model			
Potential years treated	-0.043***	-0.052***	-0.073***	-0.049*
	(0.015)	(0.019)	(0.019)	(0.028)
Total years served	0.007	0.024***	0.012*	0.027**
	(0.007)	(0.009)	(0.007)	(0.014)
Applied to be treated	-0.146***	-0.097*	-0.076	-0.100
	(0.039)	(0.058)	(0.050)	(0.074)
Transferred by the Justice Dep.	-0.141***	-0.191***	-0.074	-0.107
	(0.051)	(0.060)	(0.056)	(0.079)
R-squared	0.027	0.377	0.034	0.492
	Panel B: 2SLS Model			
Actual years treated	-0.094***	-0.128**	-0.099***	-0.070*
	(0.032)	(0.051)	(0.025)	(0.039)
Total years served	0.008	0.025***	0.012*	0.027**
	(0.007)	(0.009)	(0.007)	(0.014)
Applied to be treated	-0.108***	-0.043	-0.078	-0.107
	(0.040)	(0.058)	(0.049)	(0.075)
Transferred by the Justice Dep.	-0.121**	-0.157**	-0.090	-0.119
	(0.051)	(0.063)	(0.057)	(0.083)
Other Xs		√		√
Prison FE		√		√
Year/Month FE		√		√
Age at exit FE		√		√
Observations	756	722	475	441
R-squared	0.028	0.354	0.026	0.489
F-stat	117.4	69.13	281.5	146.7

Notes: The average recidivism is 28 percent for selected inmates, 33.1 when also inmates with unknown entry reason are included. A flag on the variables in the bottom part of the Table (below the double continuous line) signals inclusion in both, reduced form and 2SLS regressions. The "Other Xs" are all the covariates included in the upper part of Table 4. Clustered standard errors (by cell block and week of release, for a total of 339 clusters) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8: Robustness Regressions for Displaced Inmates (dependent variable: inmate recidivates within 3 years (0/1))

	(1) Additional controls/Early release	(2)	(3)	(4) Sample selection	(5)	(6) Functional form of time served in Bollate: Probit	(7)
	Labor market conditions	Overcrowding	Adding the unknowns	No ongoing trials	Year of entry ≤ 2008	Linear	Cubic term
Potential years treated	-0.065***	-0.063**	-0.055***	-0.056**	-0.062***	-0.089***	-0.095***
	(0.021)	(0.032)	(0.016)	(0.025)	(0.021)	(0.026)	(0.036)
Total years served	0.025	0.026	0.027***	0.018	0.024	0.030	0.030
	(0.017)	(0.019)	(0.010)	(0.019)	(0.017)	(0.019)	(0.019)
Time from incarceration to first sentence	0.044	0.011		0.019	0.042	0.063	0.064
	(0.055)	(0.052)		(0.069)	(0.055)	(0.066)	(0.065)
Unemployment rate in Northern Italy	-0.041						
	(0.057)						
Youth unemployment rate	0.016						
	(0.015)						
Overcrowding in prison of origin		-0.181					
		(0.120)					
Overcrowding (demeaned) × Yrs. served in prison of origin		0.014					
		(0.021)					
Observations	1,526	1,070	1,812	1,374	1,507	1,519	1,519
R-squared	0.256	0.280	0.241	0.260	0.256		
Mean dep. variable	0.396	0.414	0.399	0.379	0.379	0.396	0.396

Notes: Only the reduced form regressions are shown. All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. Overcrowding rates are available from 2003 onwards. In column 3 we add inmates whose entry reason is unknown to the displaced inmates. The probit results represents marginal effects computed at mean values, and are estimated by maximum likelihood. The coefficients on the squared and cubic term for potential years treated are precisely estimated to be close to zero and all the corresponding joint tests of significance can be rejected at less than the 5 percent level. Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Regressions with Additional Identification Conditions

	(1)	(2)	(3)	(4)
	Recidivates within 3 years			
Potential years treated	-0.062**	-0.064**	-0.069*	-0.074**
	(0.025)	(0.028)	(0.036)	(0.037)
Total years served	0.023			
	(0.018)			
Time from incarceration to first sentence		0.069	0.075	
		(0.082)	(0.099)	
Rank in the Delay of Displacement	-0.000			
	(0.002)			
Total time served FE (trimesters)		$\checkmark$		
Total time served FE (months)			$\checkmark$	$\checkmark$
Time from incarceration to first sentence FE (months)				$\checkmark$
Observations	1,493	1,484	1,461	1,355
R-squared	0.265	0.276	0.293	0.361

Notes: Only the reduced form regressions are shown. All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. Clustered standard errors (by prison section and week of release) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 10: Heterogeneity of the Effects for Displaced Inmates (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Displaced inmate recidivates within 3 years (0/1)							
	Above median risk index	Above 75th perc.	Economic crimes	First incarceration	In a relationship	Above secondary school	Below median age	Art. 4 bis
				Panel A: Reduced Form Model				
Potential years treated	-0.080***	-0.081***	-0.064*	-0.046**	-0.056**	-0.103***	-0.086***	-0.058***
	(0.020)	(0.019)	(0.039)	(0.022)	(0.023)	(0.026)	(0.023)	(0.019)
Interaction	0.044	0.092*	0.001	-0.056*	-0.023	0.073**	0.049	0.004
	(0.036)	(0.047)	(0.043)	(0.033)	(0.037)	(0.034)	(0.034)	(0.036)
R-squared	0.194	0.197	0.195	0.195	0.194	0.196	0.195	0.197
				Panel B: 2SLS				
Actual years treated	-0.129***	-0.138***	-0.085*	-0.074**	-0.087**	-0.180***	-0.135***	-0.089***
	(0.034)	(0.033)	(0.048)	(0.037)	(0.037)	(0.055)	(0.039)	(0.032)
Interaction	0.070	0.147**	-0.021	-0.088	-0.059	0.133**	0.075	-0.019
	(0.060)	(0.064)	(0.059)	(0.057)	(0.070)	(0.064)	(0.058)	(0.084)
Observations	1,537	1,537	1,537	1,537	1,537	1,537	1,537	1,537
R-squared	0.178	0.177	0.178	0.176	0.177	0.177	0.178	0.183
First stage F-stat	57.56	89.31	91.63	85.97	38.70	32.31	69.94	6.006

Notes: All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. In each column, the "Interaction" refers to the variable obtained multiplying "Potential years treated" (or "Actual years treated") times the variable listed in the heading of the column. The recidivism risk is the predicted recidivism used in Table 5, Index 1 (results using Index 2 are almost identical). Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 11: Mechanism: work opportunities (dependent variable: fraction of days spent working outside ($\times 100$))

Sample	(1) Selected	(2) Displaced	(3) Selected	(4) Displaced
	Reduced Form		2SLS	
Potential years treated	0.767	0.229**		
	(0.545)	(0.102)		
Actual years treated			1.432	0.412**
			(1.084)	(0.198)
Total years served	-0.679	0.096	-0.698	0.077
	(0.674)	(0.075)	(0.687)	(0.083)
Observations	1,236	1,892	1,236	1,892
R-squared	0.173	0.224	0.165	0.193
Mean dep. var.	1.448	0.242	1.448	0.242
First stage F-stat			17.84	196.8

Notes: All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. The sample of selected inmates includes those inmates whose entry reason is unknown. Clustered standard errors (by prison section and week of release) in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table 12: Mechanism: Peers or Treatment? (Displaced inmates) (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)	(3)
	Displaced inmate recidivates within 3 years (0/1)		
Peers measured using the:	*Whole prison*	*Section*	*Individual cell*
Potential years served	-0.060***	-0.061***	-0.054**
	(0.019)	(0.020)	(0.021)
Fraction of displaced peers	-0.173	-0.122*	-0.112**
	(0.110)	(0.069)	(0.053)
Potential years served	0.062	0.042	0.043
$\times$ Fraction of displaced peers	(0.073)	(0.055)	(0.049)
Total years served	0.021	0.020	0.008
	(0.015)	(0.015)	(0.017)
OtherXs	Yes	Yes	Yes
Observations	1,537	1,537	1,440
R-squared	0.195	0.196	0.199

Notes: All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. Columns 1 to 3 correspond to different neighborhoods within which the presence of other displaced peers is measured. Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Online Appendix

A Appendix

A.1 Spatial Lag Error Model for the Standard Errors

In the main text errors were clustered by week of exit and cell block. In this Section, to assess the robustness of that modelling choice, we model the errors as following a spatial structure (i.e. we use a spatial lag model). In particular, we allows the errors of inmates who spent at least one day together in the same cell block to be correlated with each other:

$$R_i = \beta_0 + \beta_1 D_i + \beta_2 S_i + \gamma' X_i + \lambda W \varepsilon_i + \varepsilon_i, \tag{A1}$$

where W is an adjacency matrix whose element (i, j) is positive when inmates i and j have spent at least one day in the cell block , and equal to zero otherwise. The adjacency matrix can be specified in a dichotomous or in a standardized way. The value of the (i, j) entry will be 1 in the former case, so that the composite error term is allowed to depend on the *sum* of all the peers' errors. With the standardized version the adjacency matrix the value of the (i, j) entry is normalized, so that the rows sum up to one. In this case the composite error term is allowed to depend on the peers' *average* errors. While the spatial lag model seems supported by the data (the loading λ is statistically significant), the standard errors are almost identical to the clustered standard errors used in the man text.

Table A1: Recidivism and Treatment Intensity with "Spatially" Lagged Errors (Displaced inmates) (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)	(3)	(4)
Adjacency matrix:	Dichotomic		Standardized	
Potential years treated	-0.073***	-0.066***	-0.074***	-0.066***
	(0.019)	(0.019)	(0.019)	(0.019)
Total years served	0.013	0.024*	0.015	0.023
	(0.011)	(0.014)	(0.011)	(0.014)
lambda	0.437***	0.487***	0.410***	0.486***
	(0.017)	(0.003)	(0.030)	(0.003)
Other Xs		$\checkmark$		$\checkmark$
Observations	1,537	1,537	1,537	1,537
log-likelihood	-1072	-903.5	-1071	-894

Notes: The adjacency matrix allows inmates who have potentially interacted in prison for at least one day to have correlated errors. The "Other Xs" are all the additional covariates and fixed effects included in Column 3 of Table 6. "Spatially" lagged standard errors in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

A.2 Tables

Table A2: Running costs for Bollate and the average prison

	Year 2012			Year 2013		
	Bollate		Whole country	Bollate		Whole country
Budget item	Total cost	Cost per inmate	Cost per inmate	Total cost	Cost per inmate	Cost per inmate
Goods and services	3,798,587	9.17	10.57	2,814,203.63	6.75	8.89
Labor costs	20,316,848	49.04	92.02	20,732,849	49.70	90.88
Inmate living, assistance, rehabilitation, and transport costs	2,927,871	7.07	8.56	2,856,439	6.85	9.37
Investments	44,159	0.11	3.75	51,063	0.12	7.37
Total:	27,087,465	65.39	115.21	26,454,555	63.41	116.87

Notes: All costs are in euro, at current prices of the year. The costs per inmate are per day in prison. To increase the comparability between the costs for Bollate and for the average prison we excluded from the latter a (rough) estimate of the central administration costs.

Table A3: Complete Regression Table of the Effect of the Treatment for Displaced Inmates (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)	(3)	(4)
	Displaced inmate recidivates within 3 years (0/1)			
Potential years treated	-0.073***	-0.063***	-0.063***	-0.061***
	(0.019)	(0.020)	(0.021)	(0.023)
Total years served	0.014	0.015	0.025	0.022
	(0.012)	(0.014)	(0.017)	(0.018)
Drug addiction		0.117***	0.154***	0.146***
		(0.030)	(0.039)	(0.042)
Time from incarceration to first sentence		0.011	0.045	0.052
		(0.053)	(0.055)	(0.064)
Art. 4 bis			-0.038	-0.025
			(0.052)	(0.054)
Total number of incarcerations			0.053***	0.053***
			(0.005)	(0.005)
In a relationship			0.015	0.012
			(0.029)	(0.030)
Separated or divorced			0.033	0.038
			(0.045)	(0.047)
College degree			-0.011	-0.010
			(0.062)	(0.062)
Secondary schooling			-0.018	-0.015
			(0.034)	(0.035)
Primary schooling			-0.021	-0.022
			(0.040)	(0.041)
Homicide			-0.085	-0.098
			(0.094)	(0.100)
Fraud			-0.020	-0.019
			(0.056)	(0.059)
Threat of violence			0.088	0.083
			(0.059)	(0.063)
Drug-related crime			0.218**	0.218**
			(0.101)	(0.104)
Assault			0.017	0.013
			(0.043)	(0.044)
Theft			0.087***	0.097***
			(0.028)	(0.030)
Robbery			0.028	0.037
			(0.039)	(0.040)
Crimes against the State			0.007	0.006
			(0.031)	(0.031)
Crimes against the Public Health			-0.207**	-0.199**
			(0.097)	(0.100)
Other crime			0.033	0.038
			(0.044)	(0.044)
Age at exit FE		√	√	√
Observations	1,552	1,537	1,526	1,493
R-squared	0.011	0.093	0.255	0.264

Notes: Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table A4: Logit Hazard Model (dependent variable: inmate recidivates within 3 years (0/1))

	(1)	(2)
	Recidivates	
Potential years treated	-0.295***	-0.296***
	(0.091)	(0.091)
Total time served	-0.005	-0.004
	(0.062)	(0.062)
Time from incarceration to first sentence	0.001	0.001
	(0.001)	(0.001)
Quartic in time	$\checkmark$	
Time fixed effects		$\checkmark$
Observations	32,023	31,312
Number of individuals	1172	1172
pseudo-R2	0.0555	0.0596

Notes: We construct monthly panel data and use a logit hazard model (inmates are followed up to when they recidivate or 3 years past release, whatever comes first. All regressions control for the additional covariates and fixed effects included in Column 3 of Table 6. Clustered standard errors (by cell block and week of release, for a total of 392 clusters) in parentheses: *** p<0.01, ** p<0.05, * p<0.1.
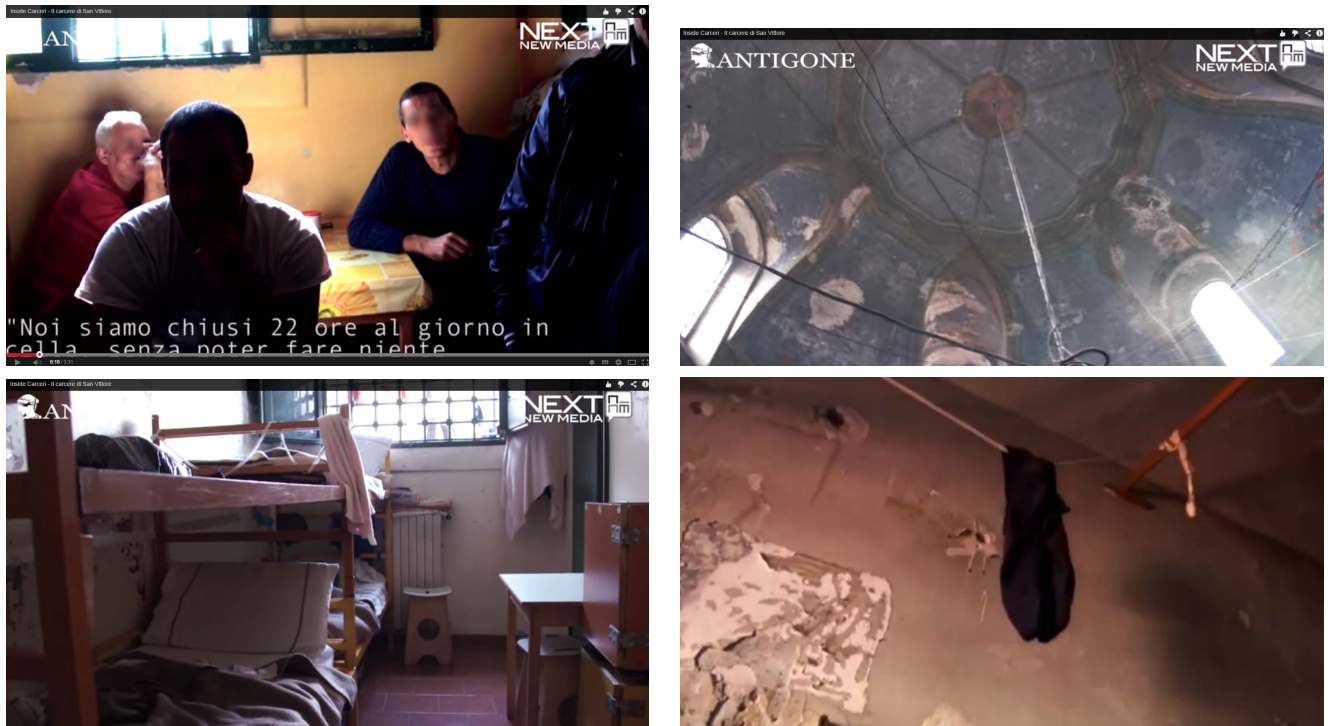
B Photographic Evidence

Figure A1: Pictures taken in San Vittore

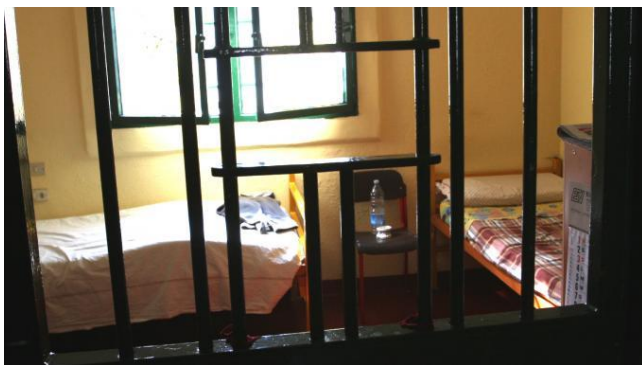Notes: All these pictures, showing the prison cells in San Vittore, have been found on the Internet.

Figure A2: Pictures taken in Bollate

Notes: The pictures have been taken from http://www.carcerebollate.it/. From left to right and top to bottom they show the visitors' center for children, a cell and a corridor.
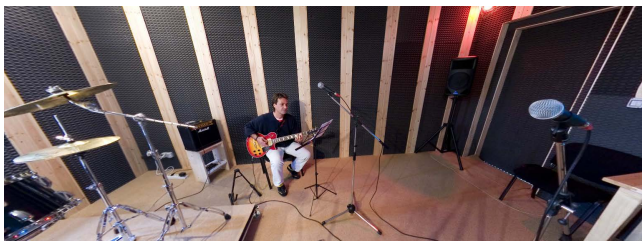
Figure A3: Pictures taken in Bollate

Notes: Most pictures have been taken from http://www.carcerebollate.it/. From left to right and top to bottom they show the horses, the library, the garden, the music sound room, and the glass laboratory.

Figure A4: Pictures taken in Bollate

Notes: Most pictures have been taken from `http://www.carcerebollate.it/`. From left to right and top to bottom they show the school, the carpentry, the computer laboratory, the kitchen, the garden produce, and the cell phone laboratory.