Prison work and recidivism

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Prison labor: principles

UN's *Standard minimum rules for the treatment of prisoners* (1955): all able convicts should be required to work

- for pay;
- in useful, nonafflictive occupations;
- preferably in full-time jobs created by the prison administration;

Rationales:

- avoid **idleness** and inactivity;
- earn **money** for self and dependents;
- develop **work habits** and **skills** for a normal post-release life.

Prison labor: reality

Rationing of work opportunities for convicts, due to

- scarce funds for prison work programs;
- overcrowding.

As a consequence, many inmates spend **long hours in a cell**.

Prison labor: reality

In Italy (compulsory work programs)

- participation $\approx$ 30% at end of 2017;
- average hourly wage $\approx$ €3.45;
- reincarceration rate $\approx$ 70%;
- average number of hours of time out-of-cells $\approx$ 4

In Australia (compulsory work programs?)

- participation $\approx$ 80% of eligible inmates in 2017-2018;
- average hourly wage $\approx$ \$1.20;
- reincarceration rate $\approx$ 45%;
- average number of hours of time out-of-cells $\approx$ 10

Prison labor: reality

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Successful prison programs to be closed due to budget cuts with devastating results, warns former boss

By Lucy Marks

Updated 3 Mar 2018, 1:45pm

Question

Does substituting idle time in a cell with active time at work reduce reincarceration?

- Institutional setting: the Italian prison labor system
- Admin data from the Department of Prison Administration (DPA)
- Twofold empirical analysis:
  - quasi-experimental (credible identification of the **causal effect**)
  - structural (identification of **causal mechanisms, "change-levers"**)

Answer

- Paid **employment in unskilled prison jobs** contributes substantially to the rehabilitation of convicts.

- One standard deviation increase in annual hours spent at work (240 hours per year) reduces the reincarceration rate by
  - $\approx$10 percentage points one year of release, off a base of 18.4%;
  - $\approx$15 percentage points three year of release off a base of 32.1%.

- The implied **rate of return on government funds** is over 40%

- The **liquidity effect** accounts for 1/3, the **training effect** for 2/3;
  - so the monetary compensation in prison work programs is important, and even more so the habit of working and associated mental health.

- The **criminal capital** effect has little relevance.

Institutional background

The Italian Prison Code, three key provisions:

1. work is compulsory *for convicts*; two types of jobs
   - **prison jobs** (90%), mostly unskilled, offered by the DPA, **all eligible**:
   - **external jobs** (10%) offered by private employers, **highly selected**.

2. prison work is not punitive and convicts must be paid a **fair wage**
   - in prison jobs: at least 2/3 of negotiated national wage.

3. providing work opportunities *to convicts* is compulsory for the DPA

In reality prison work is heavily rationed. ▸ rationing

The rationing mechanism for prison jobs is **work sharing**.

Assignment to prison work

Rotation mechanism characterized by two components.

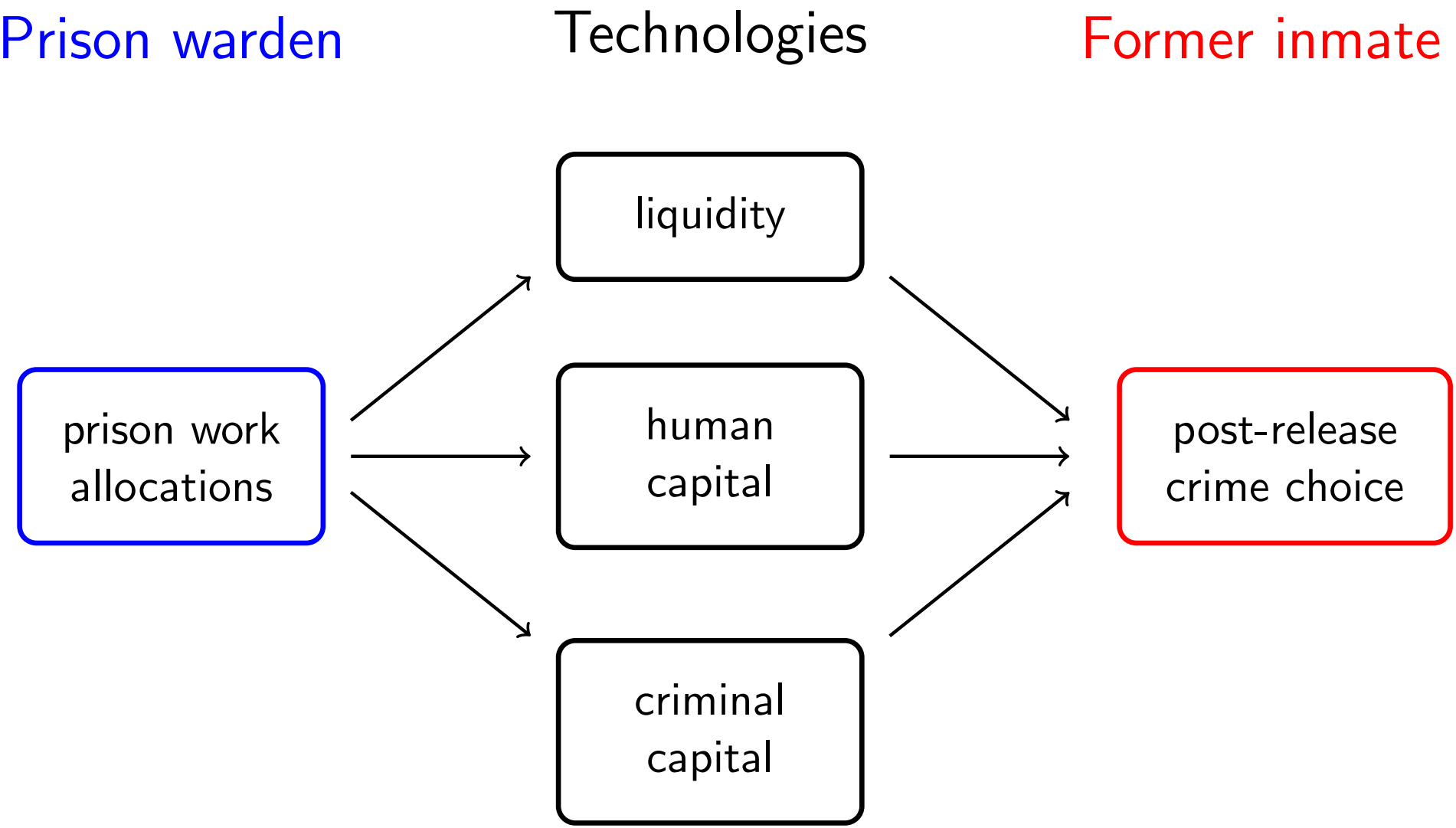
1. Discretionary (*de facto*) component:
   - convicts may be deemed "unreliable" or are unfit to work;
   - **key implication**: time at work reflects unobserved characteristics.

2. Deterministic (*de jure*) component:
   - assignment order must reflect the duration of the unemployment spell;
   - **key implication**: *ceteris paribus*, inmate admitted earlier
     - will have higher work priority at any stage of the rotation process;
     - and so will work for longer, on average. ▸ example

The deterministic component provides an **instrument**: one's entry date

▸ distribution of entry dates

Model


Prison warden
Technologies
Former inmate
prison work allocations
liquidity
human capital
criminal capital
post-release crime choice

Data

- internal database maintained by the DPA;
- 94,857 **adult convicts** released from 209 facilities:

Year	Released	Year	Released
2009	21,347	2011	24,878
2010	24,213	2012	24,819

- sample selection:
  1. **male** convicts only, 94.5%;
  2. convicts w/**complete work records** ($\alpha > 2004$), 95.3%.
  3. convicted for property crimes, 88.2%

Sample statistics, 1/5

Variable	Mean	St. dev.	Min	Max
Italian	0.581	0.493	0	1
Moroccan	0.100	0.300	0	1
Tunisian	0.064	0.245	0	1
Romanian	0.060	0.245	0	1
Albanian	0.033	0.179	0	1
Age at release	36.3	10.5	18.0	88.0
age 18-24	0.133	0.339	0	1
age 25-31	0.267	0.442	0	1
age 32-38	0.245	0.430	0	1
age 39-45	0.178	0.382	0	1
age 46+	0.177	0.482	0	1

Sample statistics, 2/5

Variable	Mean	St. dev.	Min	Max
Number of children	0.62	1.18	0	17
Nonmissing marital status	0.877	0.329	0	1
married	0.274	0.446	0	1
never married	0.552	0.497	0	1
divorced or separated	0.068	0.252	0	1
Nonmissing edu attainment	0.546	0.498	0	1
years of education	7.04	2.99	0	16
no education	0.092	0.289	0	1
elementary school	0.212	0.409	0	1
middle school	0.605	0.489	0	1
high school	0.079	0.269	0	1
college	0.012	0.111	0	1

Sample statistics, 3/5

Variable	Mean	St. dev.	Min	Max
Year entered prison	2008.8	1.49	2005	2012
Year released	2010.6	1.10	2009	2012
Released North	0.394	0.489	0	1
Released South	0.420	0.494	0	1
Prison term (years)	1.81	1.17	0.5	6.0
Reincarcerated within 1 year	0.184	0.387	0	1
days out	162.5	102.8	0	365
Reincarcerated within 2 years	0.271	0.445	0	1
days out	279.8	198.7	0	730
Reincarcerated within 3 years	0.321	0.467	0	1
days out	374.8	291.2	0	1095

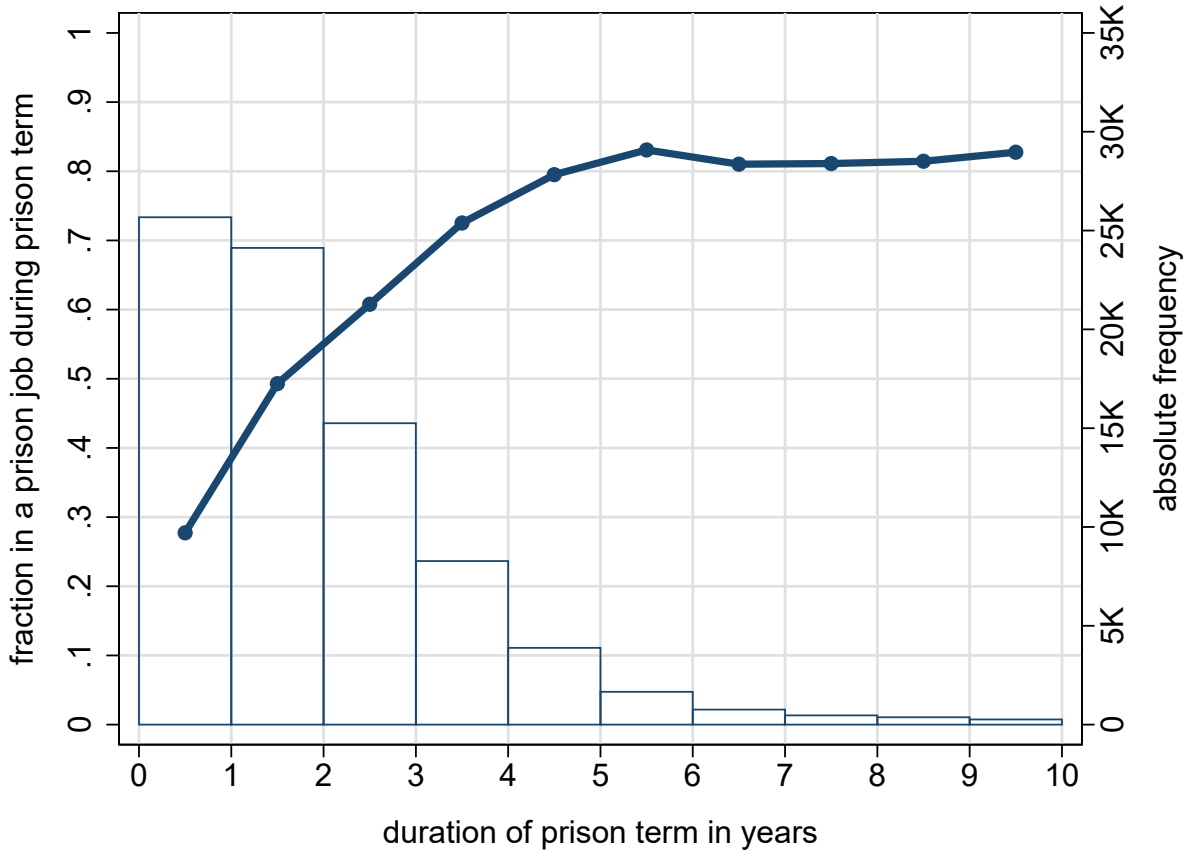
Sample statistics, 4/5

Variable	Mean	St. dev.	Min	Max
Number of offenses	1.82	1.16	1	12
Drug dealing	0.460	0.498	0	1
Larceny/Burglary/MV theft	0.267	0.442	0	1
Robbery	0.206	0.404	0	1
Assault	0.176	0.381	0	1
Receiving stolen goods	0.126	0.331	0	1
Against judicial system	0.083	0.276	0	1
Fraud/Forgery/Counterfeit.	0.078	0.269	0	1
Menacing	0.077	0.266	0	1
Extortion	0.064	0.245	0	1
Criminal association	0.047	0.211	0	1
Vandalism	0.031	0.173	0	1
Rape	0.022	0.147	0	1
Murder (any kind)	0.012	0.111	0	1
Other offenses	0.137	0.244	0	1

Sample statistics, 5/5

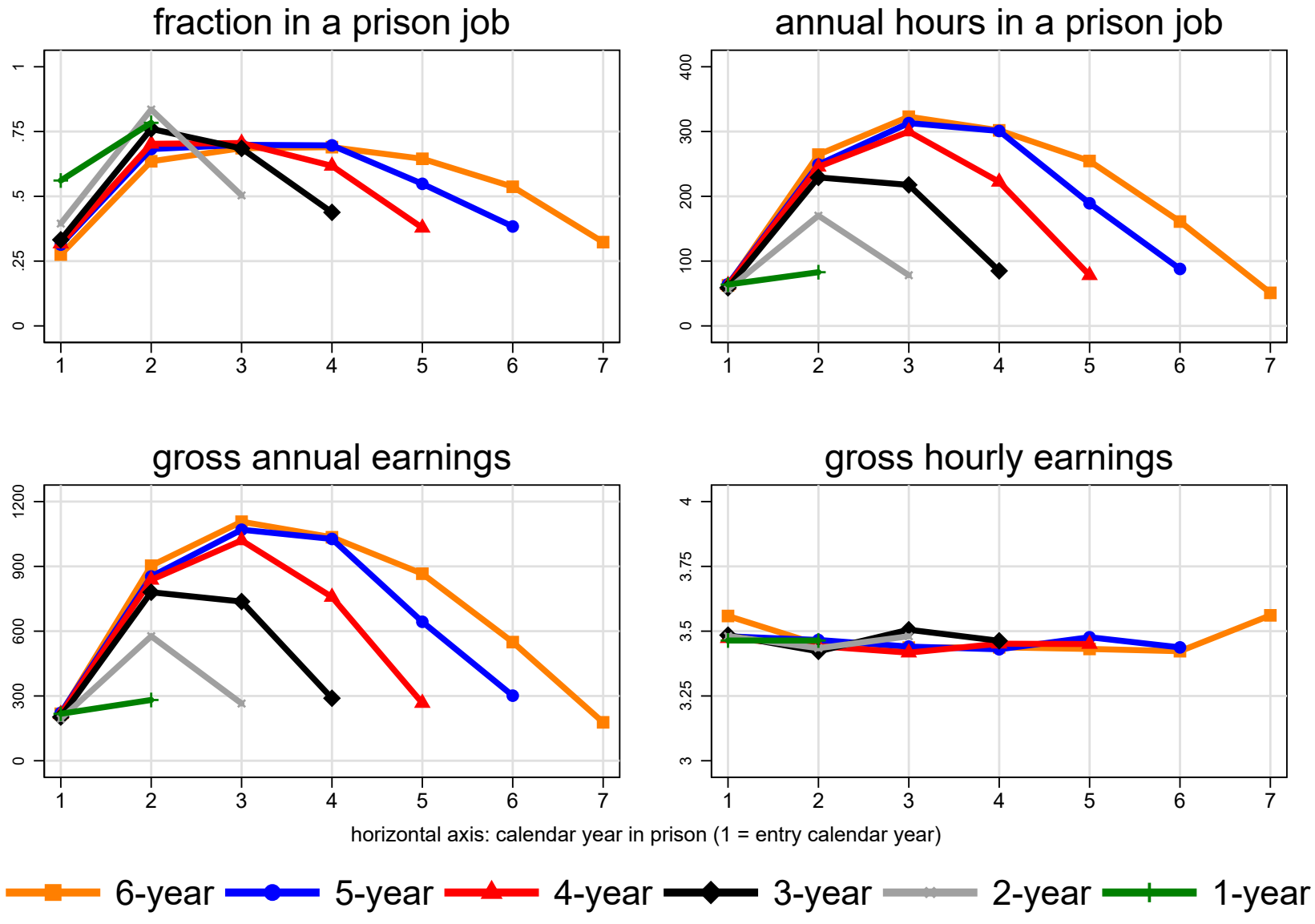
Variable	Mean	St. dev.	Min	Max
Worked during prison term	0.488	0.500	0	1
hours worked per year	206.4	243.0	0.3	1962.5
total hours worked	499.5	756.8	1	8894
hourly wage	3.44	0.50	2.18	43.55
net hourly wage	2.91	0.64	1.47	39.30
annual earnings	707.62	845.47	1.01	7508.79
net annual earnings	621.96	774.73	0.61	7005.69
total earnings	1718.82	2642.62	2.93	32561.57
net total earnings	1515.83	2402.72	1.76	30203.59

Prison terms and fraction in prison jobs



- about 20% of convicts are "ineligible" for prison jobs, unobservable.
- dropped in the main analysis (intensive margin), robust to inclusion.

Work and earnings profiles by term



Empirical analysis

"Reduced-form" specification "consistent" with the model structure:

$$R_{i\mathbf{tp}} = \beta_0 + \beta_1 h_i + \beta_2 \mathbf{X}_i + \zeta_{\mathbf{tp}} + u_{i\mathbf{tp}}$$

- h_i are standardized average annual hours (instrumented)
- $\mathbf{X}_i$ are dummies for age, offenses, nationality, prob. apprehension
- $\zeta_{\mathbf{tp}}$ are year and prison dummies, for the entire term

Structural specification, key ideas:

- theoretical probability of re-offending within 1 year of release is a function of parameters capturing the three technologies;
- these parameters can be estimated by either maximum likelihood or minimum distance (GMM); the latter economizes on assumptions.

Results

Overall effect after, for 1 SD increase in average annual hours (240)

"Reduced-form" (1 year)	"Reduced-form" (3 years)	Structural (1 year)
-0.104**	0.149**	-0.109
(0.036)	(0.043)	

Structural decomposition:

Mechanism	Contribution	Share
Liquidity	-0.037	33.9%
Rehabilitation (criminal capital)	-0.001	1.0%
Training (human capital)	-0.071	65.1%
Total	-0.109	100%

Back-of-the envelope calculation

Implied rate of return on public funds allocated to prison jobs in Italy, after 3 years:

- variable (short-run) annual cost per inmate: €8000
- average prison term in sample: 2.2 years
- 14.9 pp reduction implies expected reduction of 3.9 months, €2622
- via 1 std dev (240 hours) per year, 528 hours in 2.2 years
- at a cost of 528×€3.5 ≈ €1848

$$2622/1848 - 1 \approx 42\%$$

This is a short-run rate, higher in the long run

Conclusions

- Paid **employment in unskilled prison jobs** contributes substantially to the rehabilitation of convicts.
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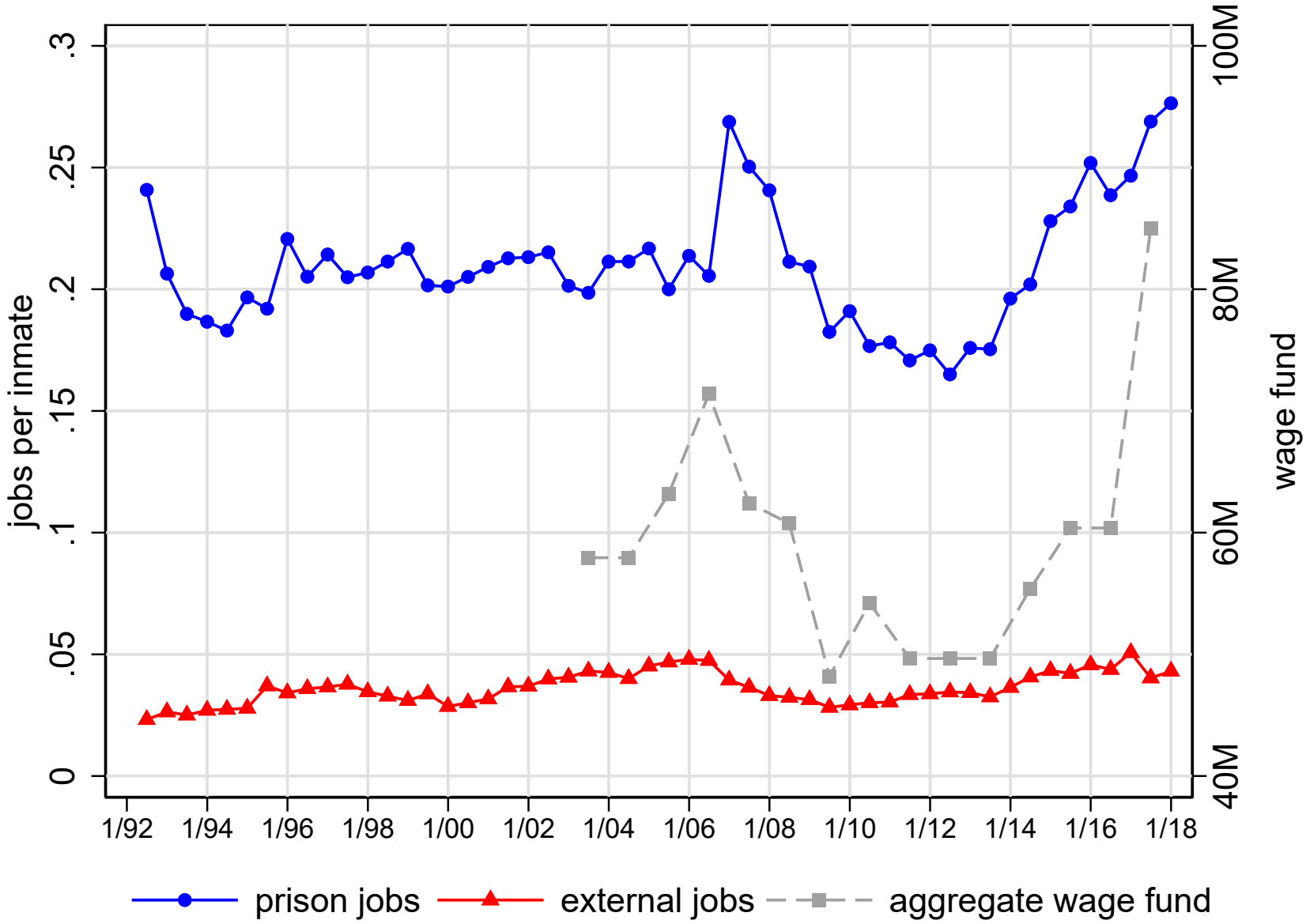
Prison jobs and the wage fund



return

The rotation mechanism, example

- One prison, offering one job
- Turnover period of one quarter
- So 4 inmates are assigned to work every year
- Assignment to work takes place at the beginning of the year
- The score is the duration of the current unemployment spell
- Two cohorts (entry year): 2008 and 2009

The rotation mechanism, example

Summary at date 12/31/2008

Inmate:	$\mathcal{F}$	$\mathcal{E}$	$\mathcal{D}$	$\mathcal{C}$	$\mathcal{B}$	$\mathcal{A}$
Entry year	2009	2009	2008	2008	2008	2008
Entry date	9/24/09	9/23/09	9/26/08	9/25/08	9/24/08	9/23/08
Release date	9/24/12	9/23/12	9/26/11	9/25/11	9/24/11	9/23/11
Last employed	-	-	-	-	-	-
Piority score	0	0	97	98	99	100
Assigned 2009	No	No	Yes	Yes	Yes	Yes
Days worked	0	0	0	0	0	0

The rotation mechanism, example

Summary at date 12/31/2009

Inmate:	$\mathcal{F}$	$\mathcal{E}$	$\mathcal{D}$	$\mathcal{C}$	$\mathcal{B}$	$\mathcal{A}$
Entry year	2009	2009	2008	2008	2008	2008
Entry date	6/24/09	6/23/09	9/24/08	9/25/08	9/24/08	9/23/08
Release date	6/24/12	6/23/12	9/24/11	9/25/11	9/24/11	9/23/11
Last employed	-	-	12/31/09	9/30/09	6/30/09	3/31/09
Piority score	190	191	0	92	184	275
Assigned 2010	Yes	Yes	No	No	Yes	Yes
Days worked	0	0	91	91	90	89

The rotation mechanism, example

Summary at date 12/31/2010

Inmate:	$\mathcal{F}$	$\mathcal{E}$	$\mathcal{D}$	$\mathcal{C}$	$\mathcal{B}$	$\mathcal{A}$
Entry year	2009	2009	2008	2008	2008	2008
Entry date	6/24/09	6/23/09	9/24/08	9/25/08	9/24/08	9/23/08
Release date	6/24/12	6/23/12	9/24/11	9/25/11	9/24/11	9/23/11
Last employed	9/30/10	6/30/10	12/31/09	9/30/09	12/31/10	3/31/10
Piority score	92	184	365	457	0	275
Assigned 2011	No	Yes	Yes	Yes	No	Yes
Days worked	91	90	91	91	182	178

The rotation mechanism, example

Summary at date 12/31/2011

Inmate:	$\mathcal{F}$	$\mathcal{E}$	$\mathcal{D}$	$\mathcal{C}$	$\mathcal{B}$	$\mathcal{A}$
Entry year	2009	2009	2008	2008	2008	2008
Entry date	6/24/09	6/23/09	9/24/08	9/25/08	9/24/08	9/23/08
Release date	6/24/12	6/23/12	9/24/11	9/25/11	9/24/11	9/23/11
Last employed	9/30/10	9/30/11	6/30/11	3/31/11	12/31/10	
Piority score	457	92	-	-	-	-
Assigned 2012	Yes	Yes	-	-	-	-
Days worked	91	181	181	180	182	262

The rotation mechanism, example

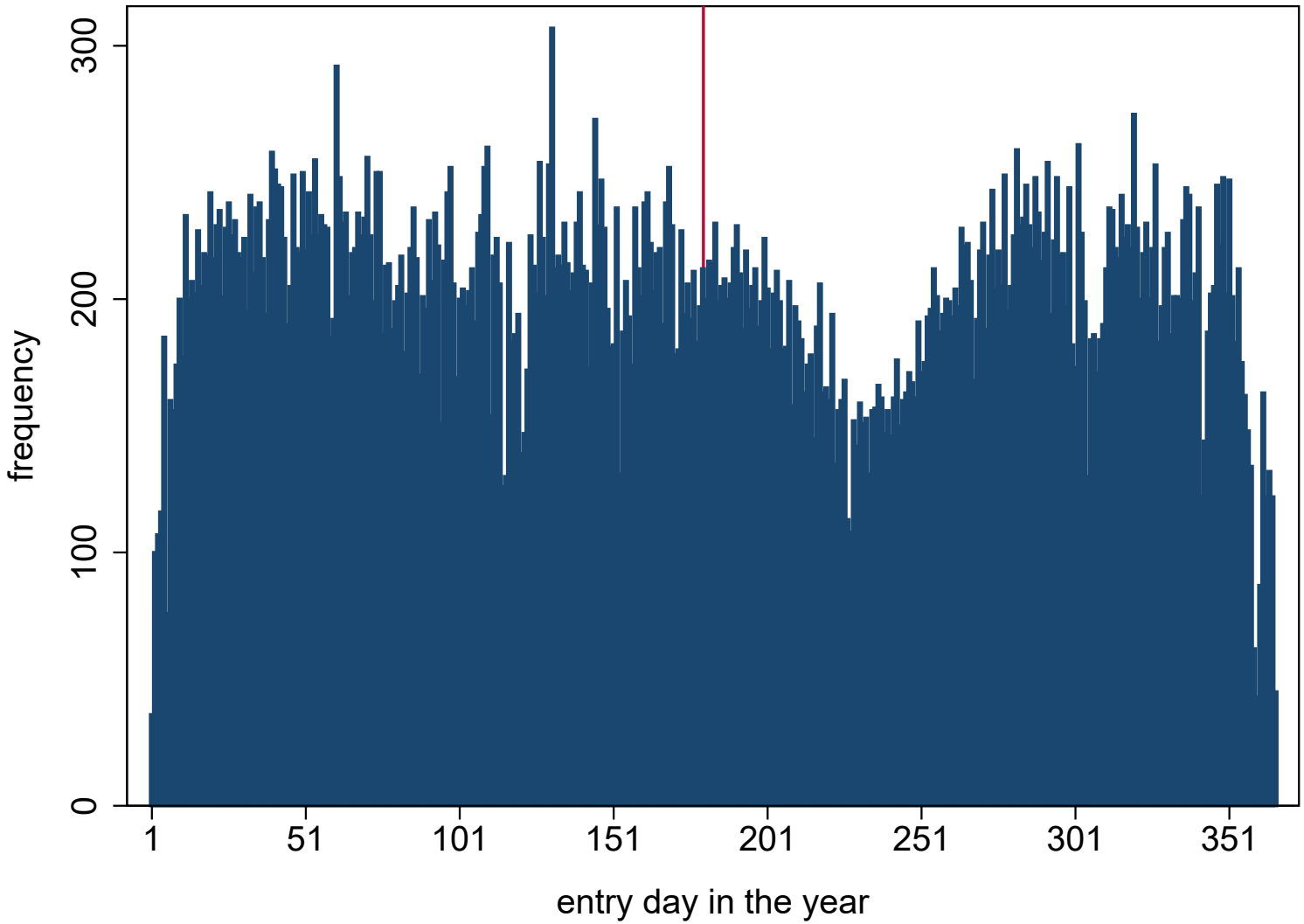
Summary at date 12/31/2012

Inmate:	$\mathcal{F}$	$\mathcal{E}$	$\mathcal{D}$	$\mathcal{C}$	$\mathcal{B}$	$\mathcal{A}$
Entry year	2009	2009	2008	2008	2008	2008
Entry date	6/24/09	6/23/09	9/24/08	9/25/08	9/24/08	9/23/08
Release date	6/24/12	6/23/12	9/24/11	9/25/11	9/24/11	9/23/11
Last employed	3/31/12	6/23/12	6/30/11	3/31/11	12/31/10	9/23/11
Piority score	-	-	-	-	-	-
Assigned 2013	-	-	-	-	-	-
Days worked	180	264	181	180	182	262

Within each cohort, inmates who enter earlier work more, on average

return

Distribution of entry dates



return