# What works in France?

# Questions and Answers about Recidivism and Electronic Monitoring

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# General background

Figure: Prison versus electronic monitoring

A recent increase in the use of electronic monitoring (EM) in many countries (United States, France, England, North Africa...):

- much cheaper than prison
- to cope with prison overcrowding
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## A collective research project

Anaïs Henneguelle, Benjamin Monnery, Annie Kensey, "Better at Home than in Prison? The Effects of Electronic Monitoring on Recidivism in France", *Journal of Law and Economics*, vol. 59, August 2016

## Main contributions

- Estimate the effect of EM (versus incarceration) on future criminal activity
- Explore heterogenous effects and potential mechanisms

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# Outline

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# Theory

- Seminal model of Becker, 1968
- Abrams, 2013: prison sentences prevent crime through incapacitation and deterrence

But might other forms of punishments be more effective?

## Detrimental effects of incarceration

- Adverse impacts on labor-market outcomes and family relationships (Mueller-Smith, 2014)
- Degrading prison conditions (Drago et al., 2009)
- Peer effects inside prison (Bayer et al., 2009)

## Detrimental effects of EM

- Specific deterrence theory (Berecochea and Jaman, 1981, Kuziemko, 2013)

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# Existing estimates

## Main empirical challenge

Omitted Variable Bias: offenders who obtain EM may differ on observables and unobservables from those who end up in prison.

## Only a few convincing papers

- Argentina 2013 (Di Tella and Schargrodsky): first to provide compelling evidence of crime-preventing effects of EM
- England 2015 (Marie): first to provide evidence in Europe
- Denmark 2014 (Andersen and Andersen): investigate how EM affects unemployment

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# The French setting - 1/4

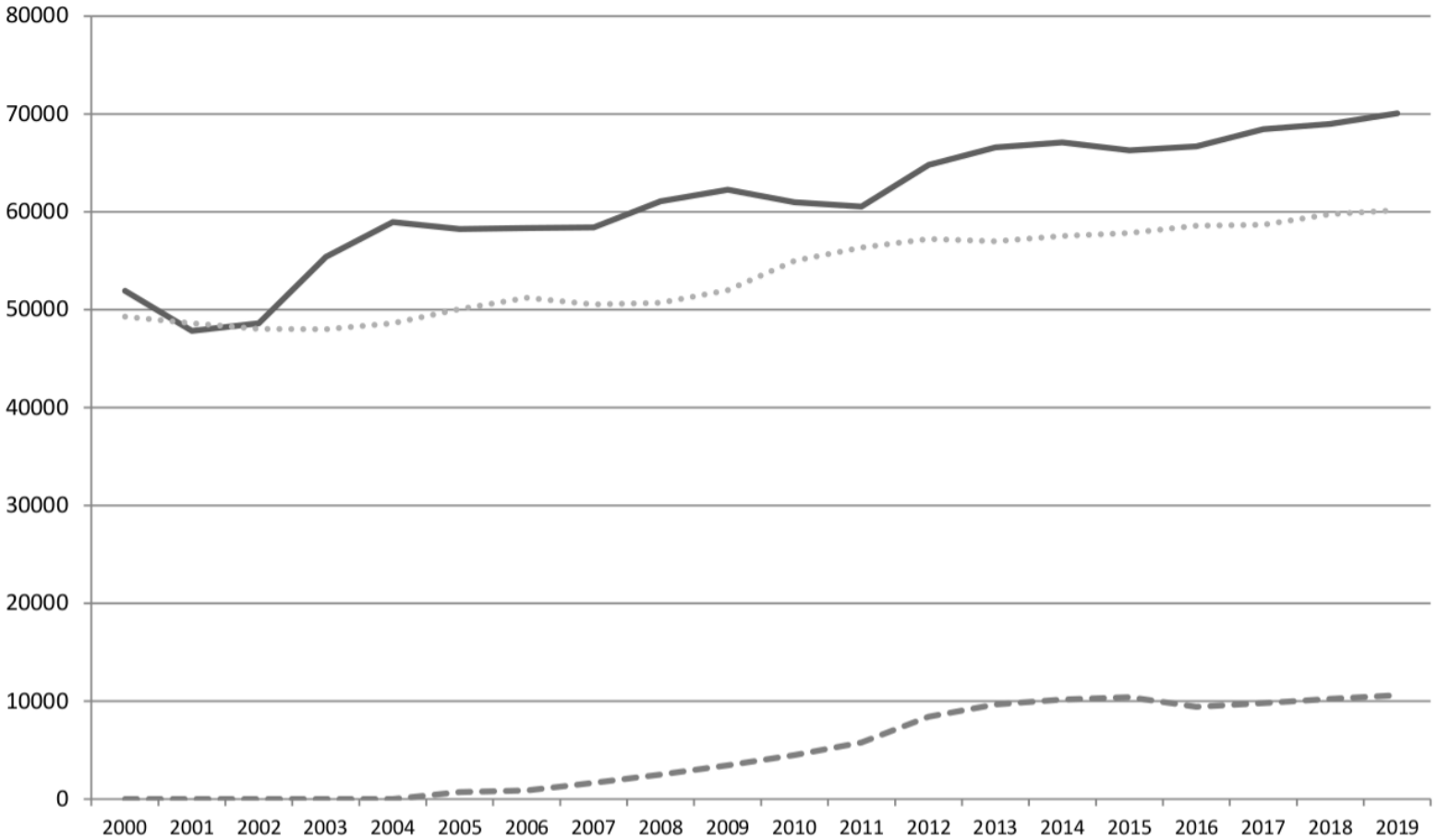


Figure: Number of inmates (*black line*), prison beds (*light grey dotted line*), and convicts under electronic monitoring (*grey dashes*) in France from 2000 to 2019

# The French setting - 2/4

## EM eligibility conditions:

1. All offenders convicted to prison sentences shorter than 1 year...
2. ... who have a fixed-line telephone...
3. ... and whose family and landlord accept the electronic device

## Selection process

In the 4 months after conviction, all eligible cases are treated by a second judge ("*Juge de l'application des peines*") who:

- requests a social investigation
- conducts individual hearing with offenders.

The decision to grant EM or not is likely based on observables and unobservables.

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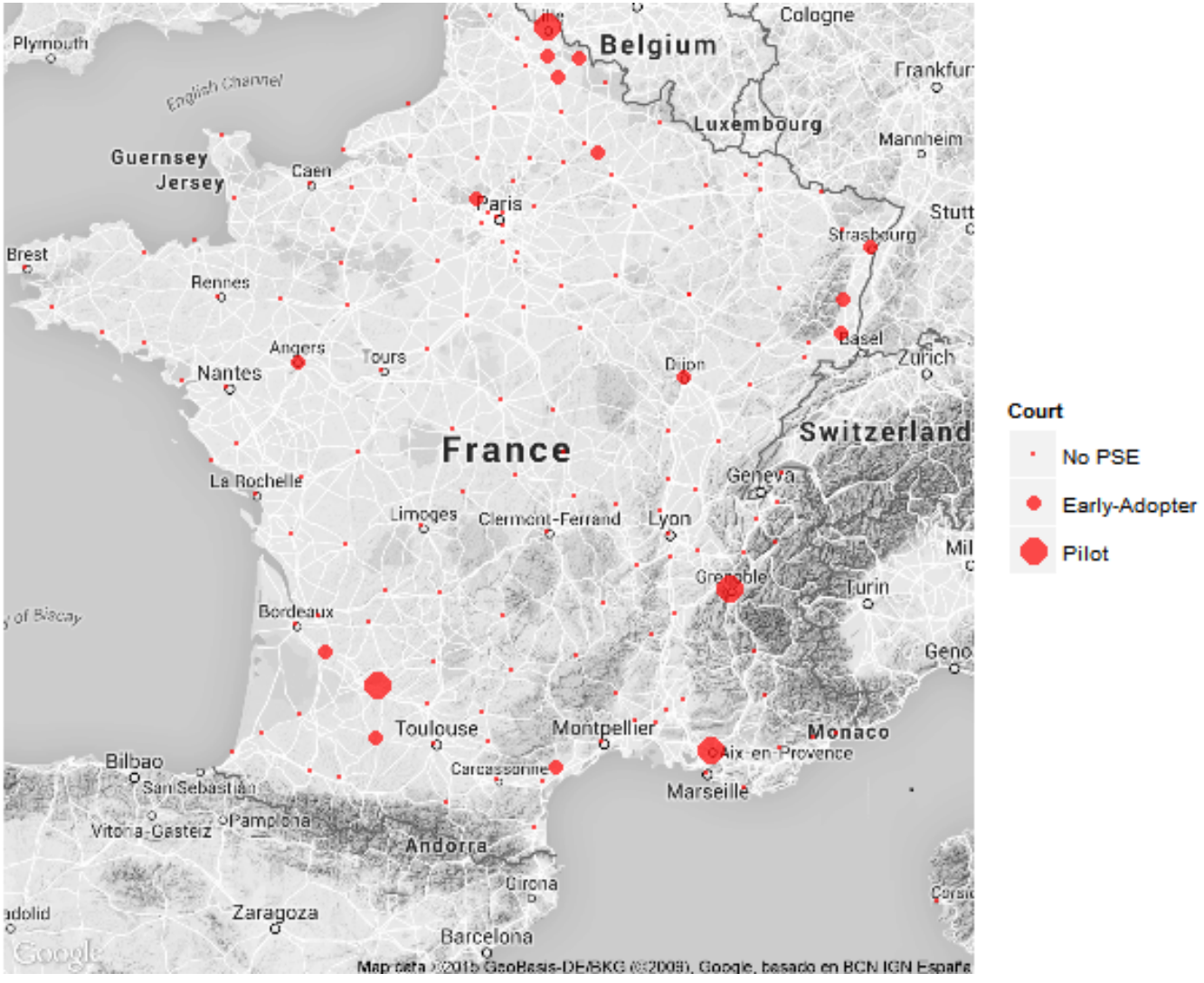
# The French setting - 3/4

## An experiment (2000-2002) followed by a gradual roll-in

1. 1997: law on EM as a (full) substitute for incarceration
2. October 1st 2000 - October 1st 2001: implementation of EM as a pilot experiment, in only four High Courts
3. January 1st 2002: all French courts are allowed to grant EM to eligible offenders
4. December 2002 - May 2003: first wave of adoption of EM, including 13 new courts (over about 190 courts).

# The French setting - 4/4

Figure: Map of EM roll-in in French courts (2000-2002)



# Outline

# Data

- Two nation-wide surveys conducted by the French Prison Administration:
  1. "Prisoners 2002": stratified sample of 9000 prisoners released in S2 2002
  2. "EM Study": population of 580 first EM in France (2000-2003)
- Sociodemographic data, full criminal records, recidivism

- Sample restrictions to improve the comparability between both groups:
  - exclude back-door EM
  - exclude sentences > 1 year
  - exclude homeless
  - exclude pre-trial detainees and bench warrants
- 2.827 offenders, including 457 front-door EM and 2.370 incarcerated

## Variable of interest

Recidivism: defined as any reconviction (or new prison conviction) within 5 years after release
(+ reincarceration of 26 EM offenders before the end of EM for repeated incidents)

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# Descriptive statistics - 1/3

| Variables | Mean | Mean (EM) | Mean (Pr) | Diff. | Range |
|---|---|---|---|---|---|
| **Socio-demographic characteristics** | | | | | |
| Male | 88.3% | 93.2% | 87.3% | *** | [0;1] |
| Age | 30.6 | 33.2 | 30.1 | *** | [13.6;100.6] |
| *Standard deviation* | *(10.9)* | *(11.3)* | *(10.7)* | | |
| Employment | 41.9% | 63.9% | 37.7% | *** | [0;1] |
| Couple | 32.0% | 42.9% | 29.9% | *** | [0;1] |
| Children | 42.6% | 50.3% | 41.1% | *** | [0;1] |
| **Prior incarcerations** | | | | | |
| Frequency | 61.5% | 69.4% | 60.0% | *** | [0;1] |
| Average number | 1.4 | 0.8 | 2.9 | *** | [0;27] |
| *Standard deviation* | *(2.8)* | *(1.8)* | *(2.9)* | | |
| **Prior convictions to alternative sentences** | | | | | |
| Frequency | 52.1% | 50.8% | 52.4% | *n.s.* | [0;1] |
| Average number | 1.0 | 1.9 | 0.8 | *** | [0;20] |
| *Standard deviation* | *(1.6)* | *(3.1)* | *(1.1)* | | |
| Sample Size | 2 827 | 457 | 2 370 | | |

The sample is composed of offenders who were sentenced to a prison term < 1 year, had a home and who started serving their sentence (in prison or under EM) strictly after their date of conviction.
* p<10%, ** p<5%, *** p<1%.

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# Descriptive statistics - 2/3

| Variables | Mean | Mean (EM) | Mean (Pr) | Diff. | Range |
|---|---|---|---|---|---|
| **Type of initial offense** | | | | | |
| Acts of Violence | 17.2% | 18.4% | 16.9% | *n.s.* | [0;1] |
| Sexual assaults | 4.6% | 4.8% | 4.6% | *n.s.* | [0;1] |
| Traffic | 20.5% | 27.1% | 19.2% | *** | [0;1] |
| Property | 39.0% | 32.4% | 40.2% | *** | [0;1] |
| Drugs | 10.7% | 8.5% | 11.2% | * | [0;1] |
| Immigration | 1.9% | 0.0% | 2.3% | *** | [0;1] |
| Weapons | 2.0% | 2.2% | 2.0% | *n.s.* | [0;1] |
| **Prison sentence** | | | | | |
| Initial sentence (months) | 4.8 | 5.4 | 4.6 | *** | [0;12] |
| *Standard deviation* | *(3.2)* | *(3.0)* | *(3.2)* | | |
| Early-release | 20.0% | 0.0% | 23.8% | *** | [0;1] |
| **Prison characteristics** | | | | | |
| Prison type | | | | | |
| *Maison d'arrêt* | 78.3% | 80.1% | 78.0% | *n.s.* | [0;1] |
| *Centre de détention* | 21.7% | 19.9% | 22.0% | *n.s.* | [0;1] |
| Overcrowding rate | 111.7% | 113.5% | 111.3% | *n.s.* | [26.6%;250%] |
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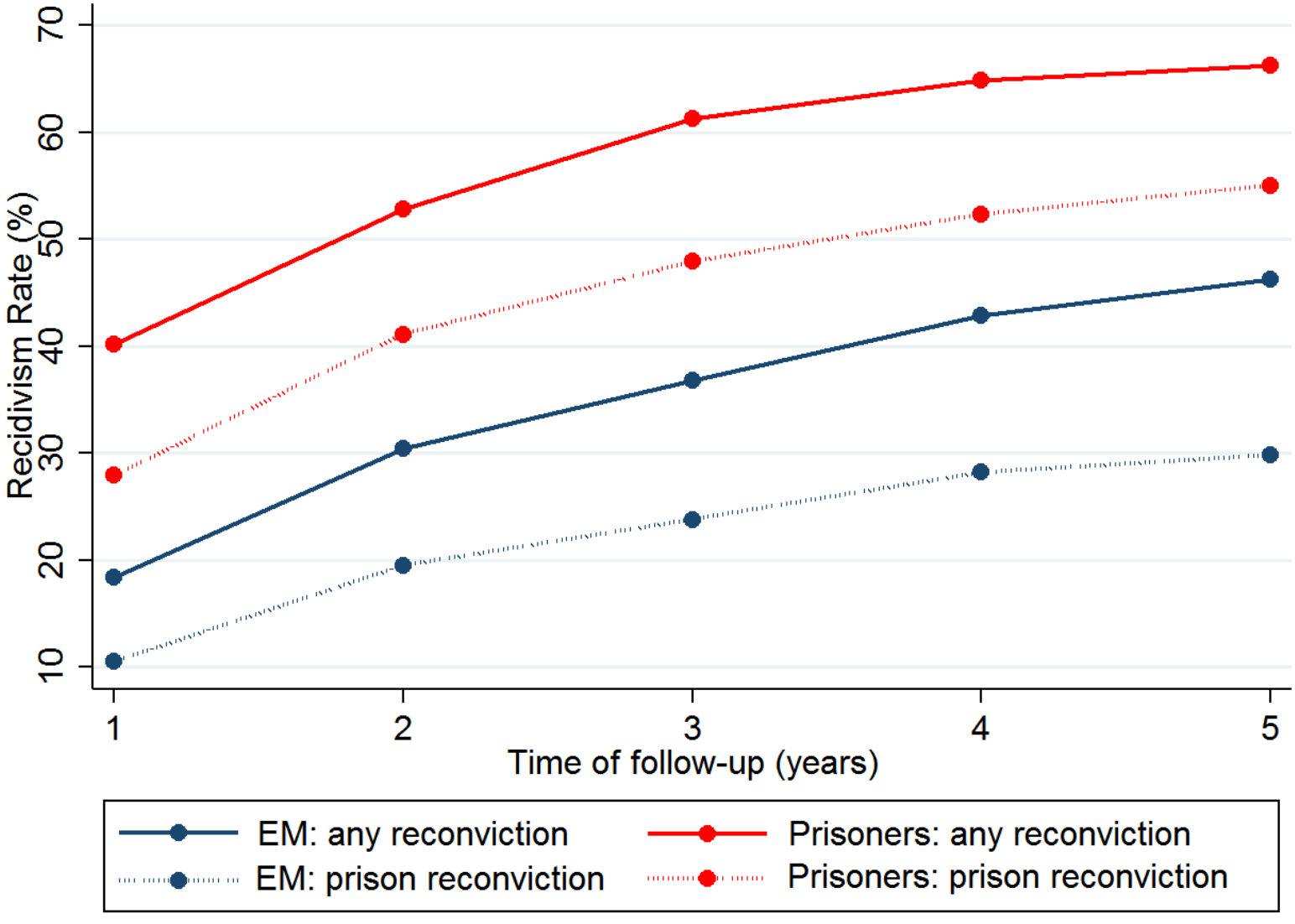
Figure: Recidivism over time



# Outline

# A quasi-natural experiment

## Cross-court disparity as instrumental variables (IV)

- 3 types of courts:
  1. Pilot courts (n=4): Agen, Aix-en-Provence, Grenoble, Lille
  2. Early-adopter courts (n=13)
  3. Late-adopters (n=176)
- Source of variation in the individual probability of EM treatment

## Main concern: endogenous selection of courts into EM

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# Endogenous selection of courts?

Table: Differences in 5-Year Recidivism Before the Introduction of EM

| | 2002 cohort | 1996-1997 cohort |
|---|---|---|
| Pilot court | -0.0296 (0.0384) | 0.0031 (0.0587) |
| Early-adopter court | -0.0002 (0.0219) | -0.0027 (0.0404) |
| *Ref: late-adopters* | 0 | 0 |
| Initial sentence length | x | |
| Demographics | x | x |
| Past convictions | x | x |
| N | 2 270 | 2 207 |

The table reports $\hat{\beta}$ (s.e.) from OLS regressions of 5-year recidivism after controlling for large set of individual characteristics. The 2002 sample only includes prisoners who were incarcerated before the first EM was granted in their court (if any). Prison releasees of 1996-1997 are matched to the future type of their corresponding court, based on the location of their prison.
* p<10%, ** p<5%, *** p<1%

# Econometric specification

## Objective

"ATT effect" of EM treatment: causal effect of serving a prison sentence at home under EM rather than in prison on individual probability of recidivism.

Two-equation model:

$$Recid^*_{i,c} = \beta_0 + \beta_1 EM_i + \boldsymbol{X}'_i\beta + \epsilon_{i,c} \quad (1)$$

$$EM^*_{i,c} = \alpha_0 + \alpha_1 CourtAlreadyUsedEM_{i,c} + \alpha_2 ShareEM_{i,c} + \boldsymbol{X}'_i\gamma + e_{i,c} \quad (2)$$

- Two instruments capturing EM availability at the court level:
  1. *CourtAlreadyUsedEM*
  2. *ShareEM*

- $\boldsymbol{X}$ = **initial sentence length** (q, $q^2$) **+ demographics** (sex, age, $age^2$, parent, couple, employed) **+ prior convictions** (dummies for prison/probation, number in each category) + date of release + weighted sampling (offence type, early-release)

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# Benchmark estimates

Table: Electronic Monitoring and Recidivism

| | Y= Any Reconviction In The Next 5 Years | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| **Probit Model** | | | |
| Electronic Monitoring | -0.1523*** | -0.1276*** | -0.0832*** |
| | (0.0409) | (0.0320) | (0.0286) |
| *Pseudo* $R^2$ | 0.17 | 0.22 | 0.27 |
| **Linear Prob. Model** | | | |
| Electronic Monitoring | -0.1614*** | -0.1344*** | -0.0954*** |
| | (0.0440) | (0.0351) | (0.0318) |
| *Adj.* $R^2$ | 0.21 | 0.26 | 0.31 |
| Demographics | | x | x |
| Past convictions | | | x |
| N | 2 827 | 2 827 | 2 827 |

Robust standard errors in parentheses, clustered at court level. All regressions control for the variables used for weighted sampling. Probits report Average Marginal Effects.
* p<10%, ** p<5%, *** p<1%.

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# Causal estimates from cross-court variation

| | Probit | Bi-Probit with 1 IV | Bi-Probit with 2 IV | OLS | 2SLS with 1 IV | 2SLS with 2 IV |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **$Y_1$ = Recidivism** | | | | | | |
| EM | -0.0832*** | -0.0705** | -0.0711** | -0.0954*** | -0.0553* | -0.0571* |
| | (0.0286) | (0.0323) | (0.0341) | (0.0318) | (0.0316) | (0.0343) |
| **$Y_2$ = EM** | | | | | | |
| *CourtAlreadyUsedEM* | | 0.1294*** | 0.0956*** | | 0.6365*** | 0.3813*** |
| | | (0.0078) | (0.0145) | | (0.0481) | (0.1042) |
| *ShareEM* | | | 0.0582** | | | 0.4986*** |
| | | | (0.0254) | | | (0.1731) |
| *Adj. $R^2$* | | 0.66 | 0.65 | 0.65 | | |
| $\rho$ | | -0.12 | -0.13 | | | |
| Hansen Test | | | | | | 0.706 |
| F-stat: | - | 1598 | 250 | | 119 | |
| N | 2 827 | 2 827 | 2 754 | 2 827 | 2 827 | 2 754 |

Robust standard errors in parentheses, clustered at court level. All regressions control for the variables used for weighted sampling, demographics, and past convictions. Values for probit and biprobit estimates are Average Marginal Effects from maximum likelihood regressions.
2SLS= two-stage least squares; IV= instrumental variable; OLS= ordinary least squares.
* p<10%, ** p<5%, *** p<1%.

# Causal estimates from cross-court variation

| | Probit | Bi-Probit with 1 IV | Bi-Probit with 2 IV | OLS | 2SLS with 1 IV | 2SLS with 2 IV |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **$Y_1$ = Recidivism** | | | | | | |
| EM | -0.0832*** | -0.0705** | -0.0711** | -0.0954*** | -0.0553* | -0.0571* |
| | (0.0286) | (0.0323) | (0.0341) | (0.0318) | (0.0316) | (0.0343) |
| **$Y_2$ = EM** | | | | | | |
| *CourtAlreadyUsedEM* | | 0.1294*** | 0.0956*** | | 0.6365*** | 0.3813*** |
| | | (0.0078) | (0.0145) | | (0.0481) | (0.1042) |
| *ShareEM* | | | 0.0582** | | | 0.4986*** |
| | | | (0.0254) | | | (0.1731) |
| *Adj. $R^2$* | | 0.66 | 0.65 | 0.65 | | |
| $\rho$ | | -0.12 | -0.13 | | | |
| Hansen Test | | | | | | 0.706 |
| F-stat: | - | 1598 | 250 | | 119 | |
| N | 2 827 | 2 827 | 2 754 | 2 827 | 2 827 | 2 754 |

Robust standard errors in parentheses, clustered at court level. All regressions control for the variables used for weighted sampling, demographics, and past convictions. Values for probit and biprobit estimates are Average Marginal Effects from maximum likelihood regressions.
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* p<10%, ** p<5%, *** p<1%.

# Robustness checks

| | Probit | Bi-Probit |
|---|---|---|
| 100km neighboring courts | -0.0937*** | -0.0768** |
| | (0.0309) | (0.0390) |
| N = 1 666 | | |
| Local crime rate (level + 2 year change) | -0.0857*** | -0.0749** |
| | (0.0314) | (0.0372) |
| N = 2 716 | | |
| Released 3/1/2002 - 3/31/2003 | -0.0783*** | -0.0658* |
| | (0.0301) | (0.0345) |
| N = 2 578 | | |
| Alt. Starting Date | -0.0868*** | -0.0753** |
| | (0.0281) | (0.0337) |
| N = 2 754 | | |
| Courts with >20 convicts | -0.0896*** | -0.0789** |
| | (0.0289) | (0.0345) |
| N = 2 408 | | |
| Instr: Pilot, early-adopter | -0.0832*** | -0.0696** |
| | (0.0286) | (0.0330) |
| N = 2 827 | | |

Robust standard errors in parentheses, clustered at court level. All regressions include the full set of control variables. Values are Average Marginal Effects.
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# Qualitative effects

## Type of new offences

- We model simultaneously the probability of a new offence in 3 categories (3SLS):
  1. Property crime
  2. Traffic crime
  3. Others

- Little evidence of crime-specific effects of EM

## Seriousness of new offences

- We rely on two indicators:
  1. Any new prison conviction or not
  2. Total amount of new prison sentences accumulated over the 5-year follow-up

- Evidence of de-escalation after EM: offences committed after EM are less serious

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# Qualitative effects: crime seriousness

Table: Seriousness of new crime(s) over the Next 5 Years

| | Any New Prison Sentence | | Total Length of New Prison Sent. | |
|---|---|---|---|---|
| EM | -0.0823*** | -0.0973*** | -8.7884*** | -8.9771*** |
| | (0.0320) | (0.0291) | (3.0985) | (2.2792) |
| Conditional on Recid | No | Yes | No | Yes |
| N | 2 768 | 1 583 | 2 827 | 1 635 |
| Sample Average | 45.7% | 73.5% | 19.46 mos | 19.88 mos |
| Estimated effect of EM (%) | -18 | -13 | -45 | -45 |

Robust standard errors in parentheses, clustered at court level. Prison conviction estimates are obtained from bivariate probit regressions. Prison sentence length estimates are obtained from joint estimations of a tobit and a probit regression on the sample of reoffenders. All regressions include the full set of control variables and correct for endeogeneity of EM using the same instruments.
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# Outline

# Why is EM effective?

Short-term incapacitation (at home)?

Heterogeneity by individual profiles

Intensity of Supervision under EM

# Short-term incapacitation?

Table: Causal effects at different time windows

| | Q1 | Q2 | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|
| EM | -0.0290 | -0.0578* | -0.0933*** | -0.0848*** | -0.1148*** | -0.0906*** | -0.0711** |
| | (0.0269) | (0.0307) | (0.0263) | (0.0308) | (0.0346) | (0.0313) | (0.0341) |
| N | 3 001 | 3 001 | 3 001 | 3 001 | 3 001 | 3 001 | 2 827 |
| % Recid. | 16.6% | 27.5% | 39.3% | 51.9% | 60.3% | 63.9% | 65.4% |
| EM Effect | (-17.5%) | (-21.0%) | -23.7% | -16.3% | -19.0% | -14.2% | -10.9% |

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# Profiles and Supervision

Table: Heterogeneity of Effects by Profile and Supervision

| **Profile** | Yes | No | **Supervision** | Yes | No |
|---|---|---|---|---|---|
| Younger than 28 | -0.0811** | -0.0897** | Control visit | -0.0926*** | -0.0218 |
| | (0.0342) | (0.0440) | | (0.0229) | (0.0371) |
| Has children | -0.1082** | -0.0526* | EM length $>$ median | -0.0824** | -0.0543 |
| | (0.0471) | (0.0277) | | (0.0440) | (0.0378) |
| Employed | -0.0768* | -0.0944* | Obligation: work | -0.0816** | -0.0043 |
| | (0.0393) | (0.0521) | | (0.0332) | (0.0591) |
| Prior incarceration | -0.1181** | -0.0559* | Incident during EM | -0.0259 | -0.1077*** |
| | (0.0511) | (0.0330) | | (0.0403) | (0.0376) |

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# Why is EM effective?

## Short-term incapacitation (at home)?

- Long-standing effect

⇒ EM promotes long-term change

## Heterogeneity by individual profile

- Little evidence by age, parenthood, employment
- Difference by prior experience of prison

⇒ Importance of specific deterrence and/or reciprocal behavior

## Intensity of Supervision under EM

- Control visits at home
- Length of supervision
- Work obligations

⇒ Specific deterrence again and rehabilitation through work

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# Conclusion

## Main results

- A robust causal beneficial effect of EM
  1. A large reduction in recidivism of 6-7 pp or 9-11%
  2. A long-standing effect (5 years), driven by long-term change (specific deterrence + rehabilitation), and not by short-term incapacitation
  3. A de-escalating effect too, with far less prison reconvictions and shorter sentences in case of recidivism

- Uncertainty about the current effectiveness of EM in France: the EM boom in France after 2005 led to lower supervision

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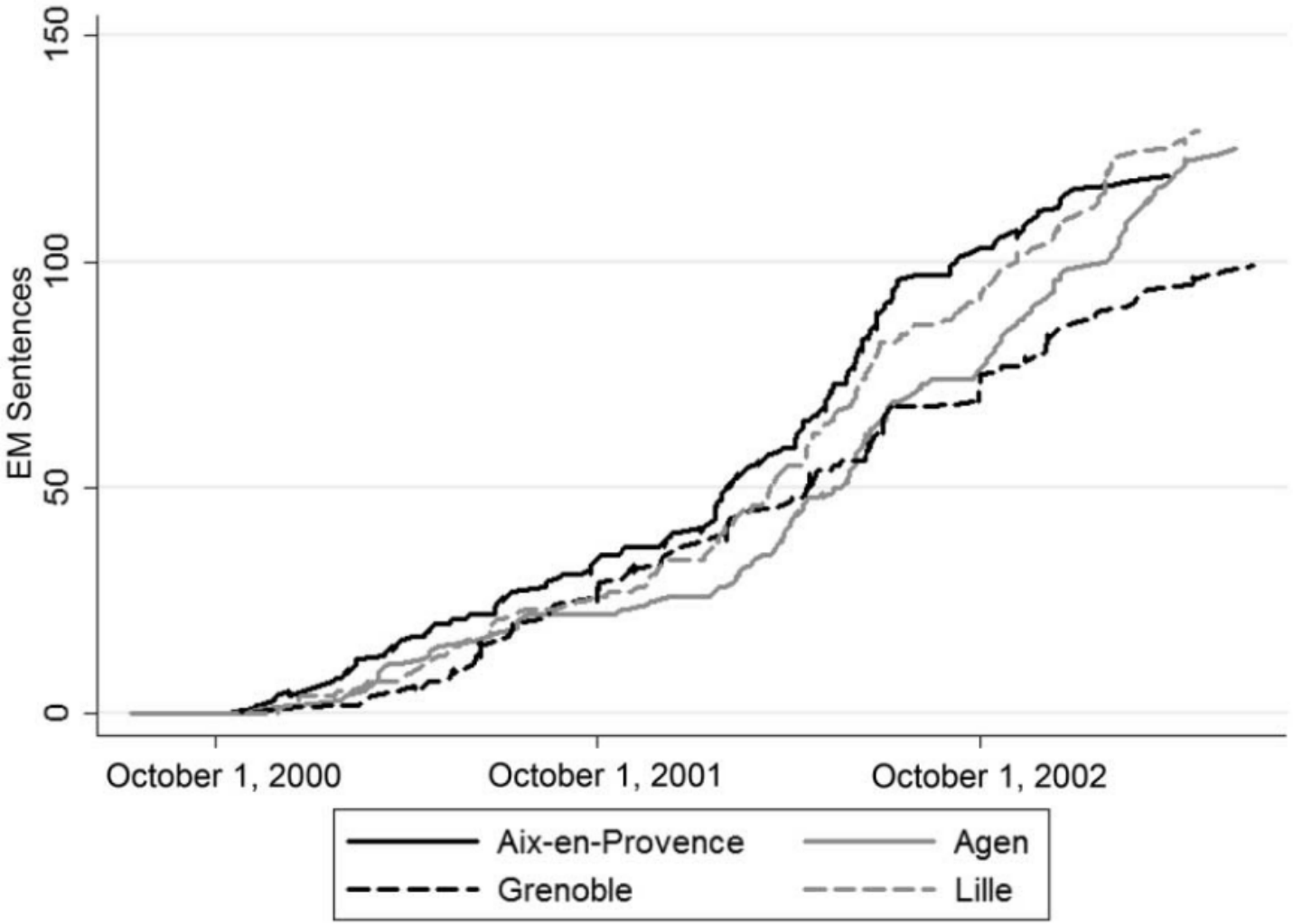
  the EM boom in France after 2005 led to lower supervision

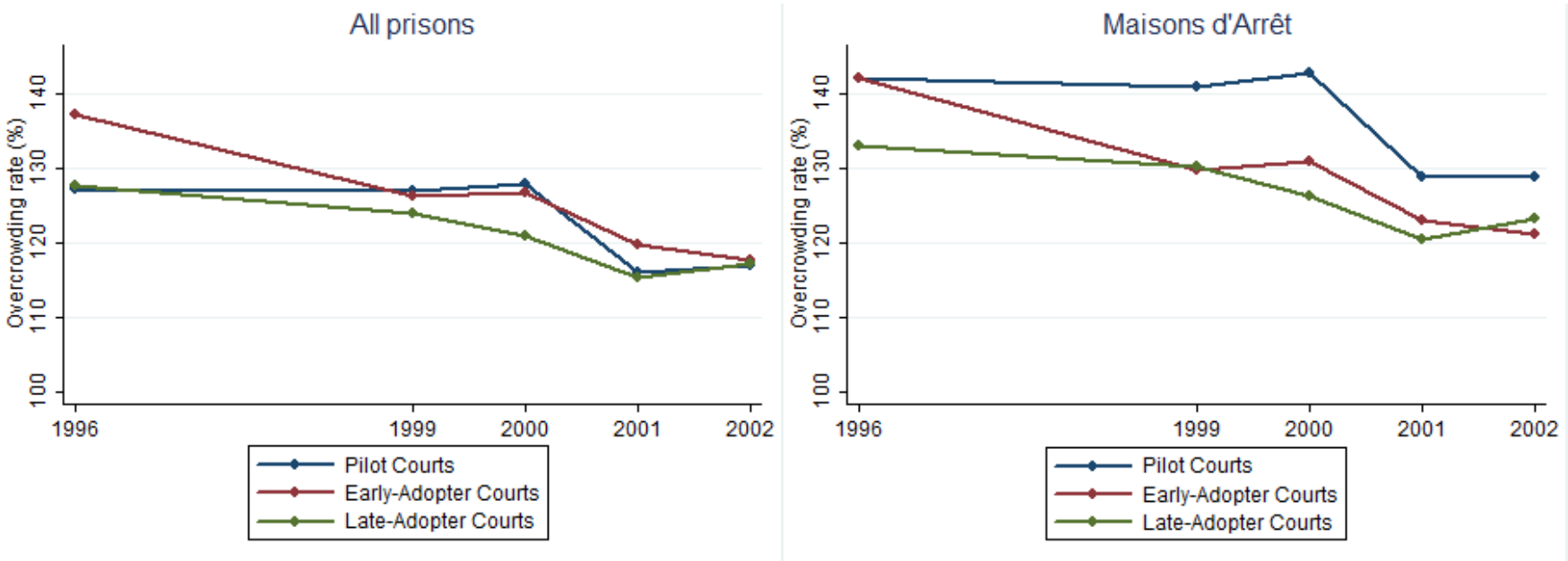
# The French setting: pilot courts

Figure: Number of Electronic Monitoring Sentences granted in Pilot Courts



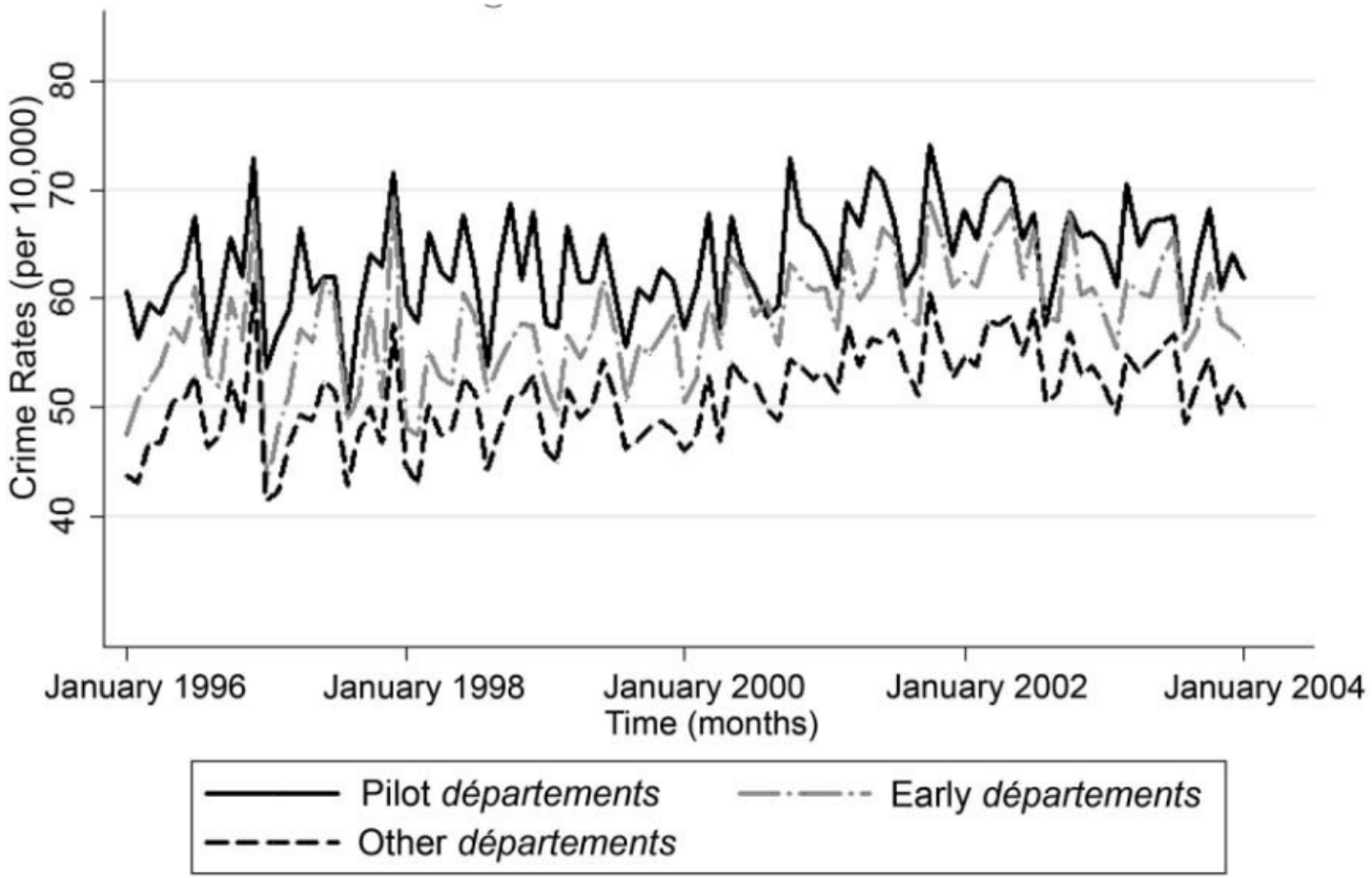
# Differences between Pilot and Other Courts 1/2

Figure: Prison overcrowding



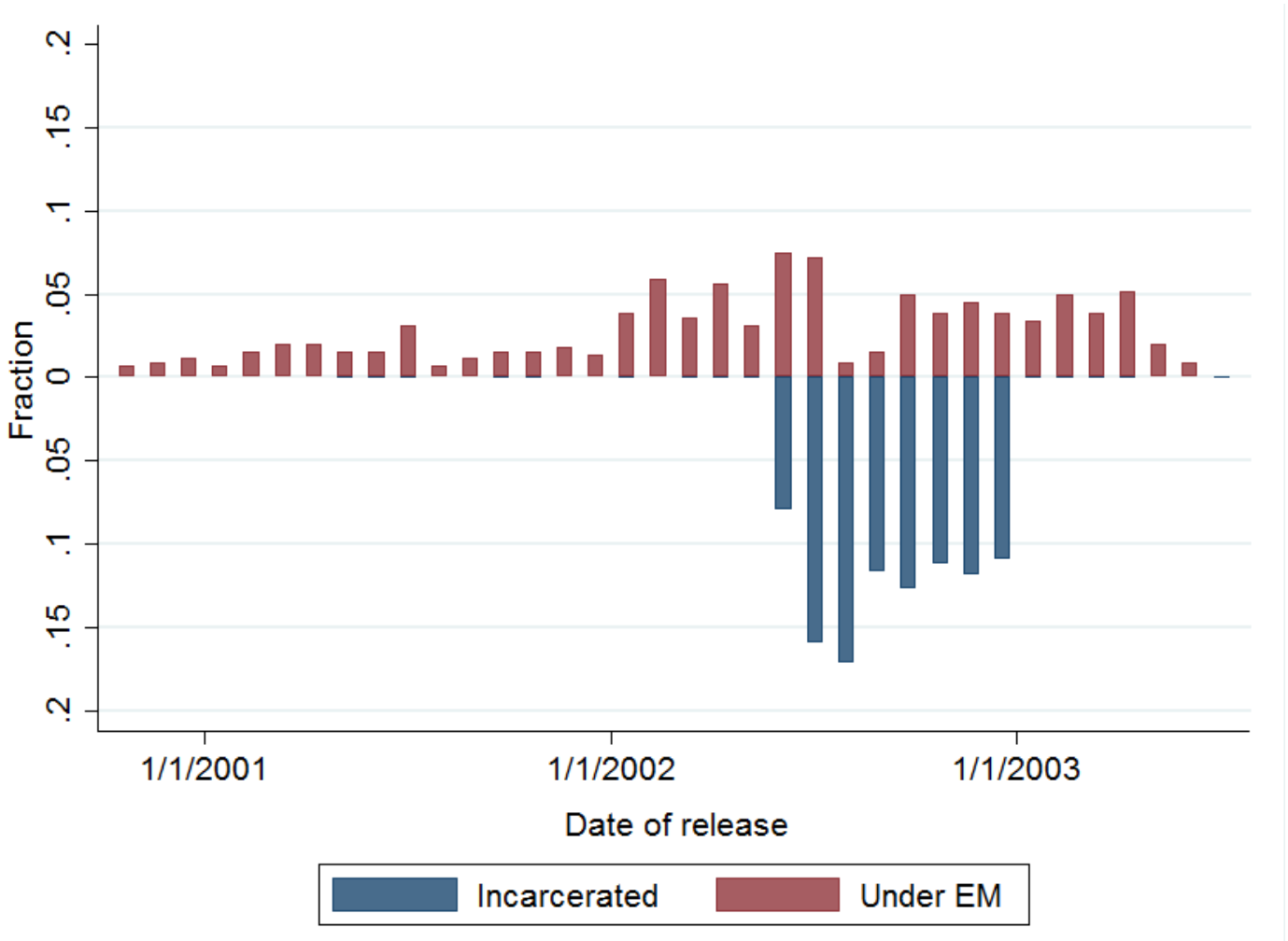
# Differences between Pilot and Other Courts 2/2

Figure: Crime rates



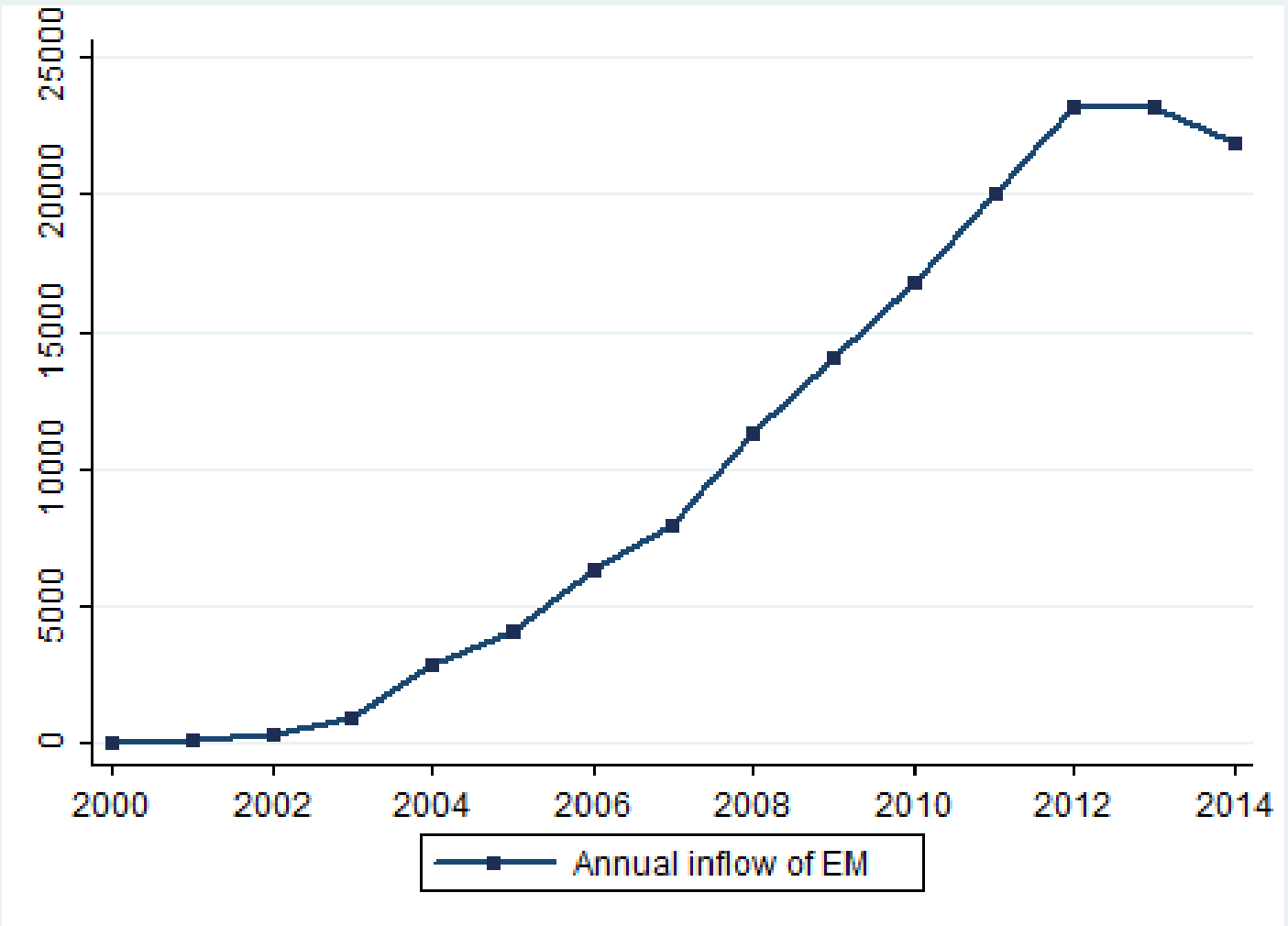
# Date of release

Figure: Density of dates of release in both samples



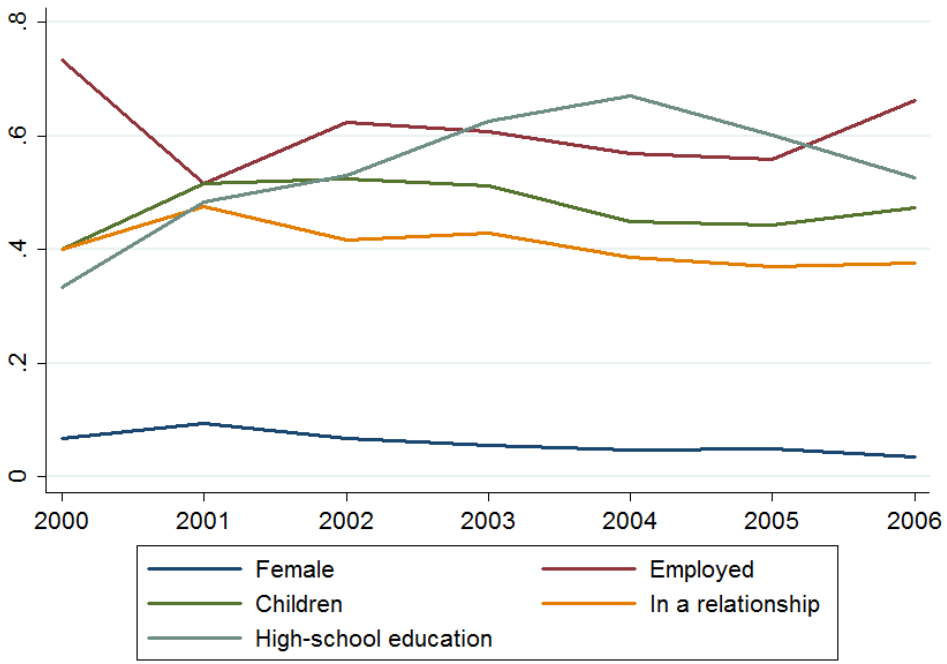
# The Boom in EM

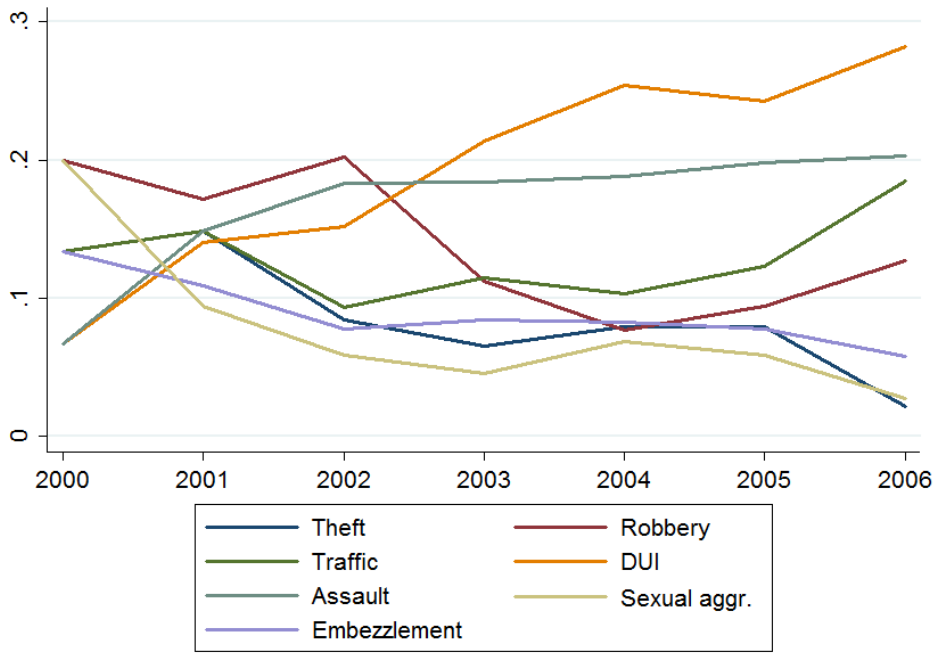
Figure: The massive development of EM in France since the 2000s



# Little change in the selection of EM offenders

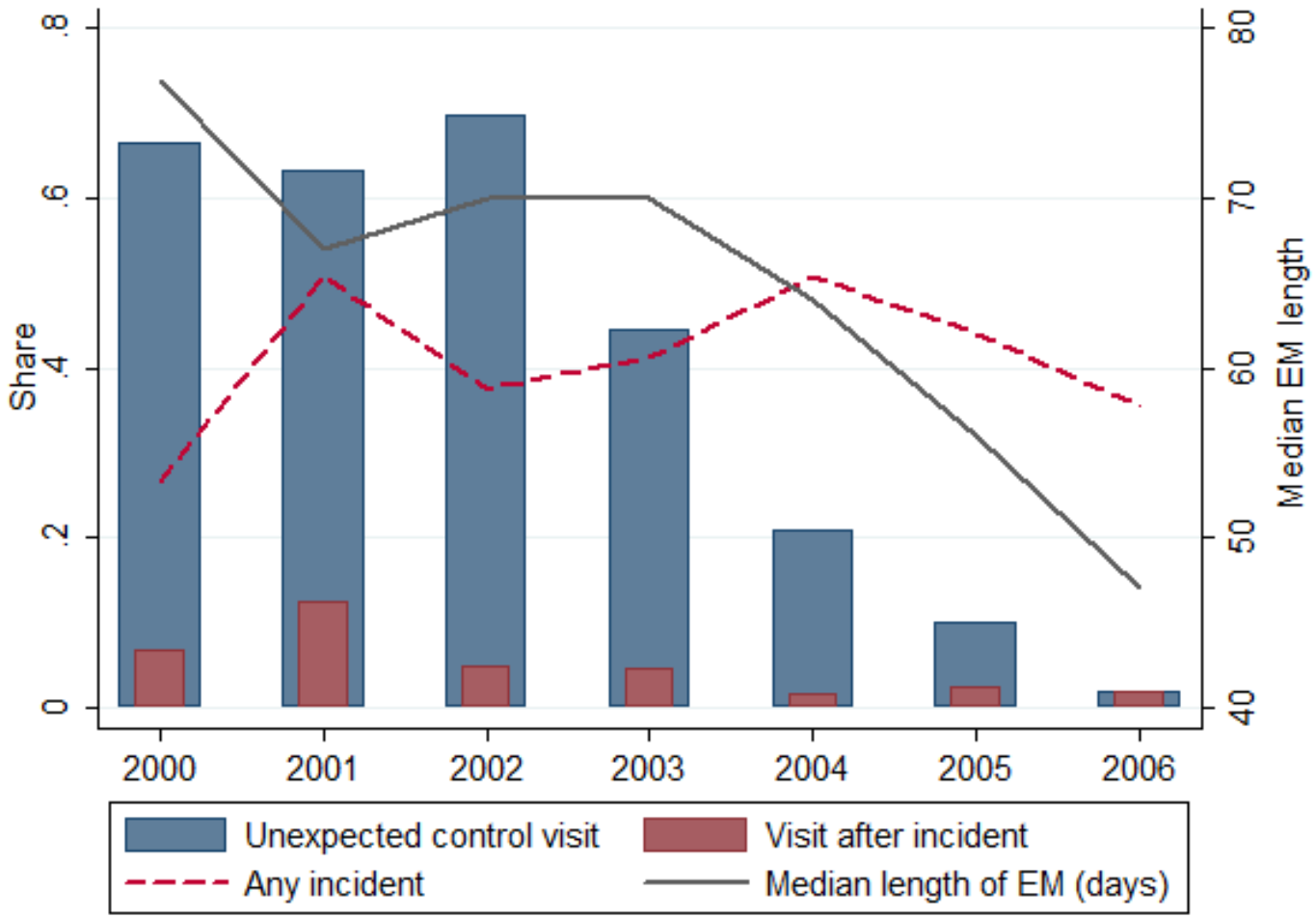
Figure: Observable characteristics of EM offenders



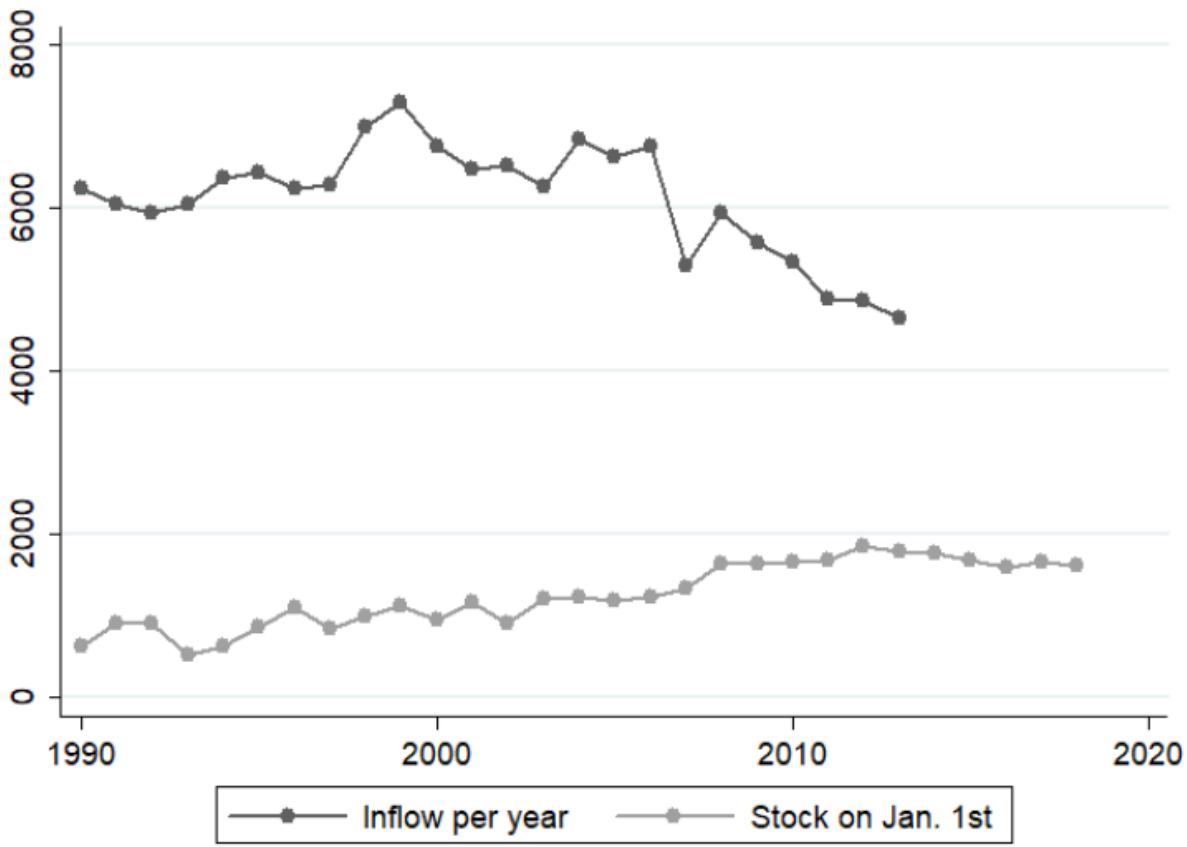
# Less Intensive Supervision

Figure: Supervision and Incidents under EM



# Semi-liberty

Figure: Number of Semi-Liberty Offenders in France from 1990 to 2018



# Research perspectives on other forms of sanctions

1. Halfway houses: work in progress with B. Monnery and F-C. Wolff
   - No credible instrumental variable
   - Selection-on-observable techniques + sensitivity analyses
   - Semi-liberty significantly reduces the instantaneous hazard of recidivism (no criminogenic effect)

2. Community service, parole or judicial supervision:
   - Launch of a new project beginning in spring 2019 on the French case, with B. Monnery
   - Access to a large and more recent database on criminal records

3. "Private prisons":
   - France has built new prisons run by private partners since the 1990s
   - Effects on recidivism are hard to assess; rather focus on costs and inmates experiences

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