Measuring the Causal Effects of Probation/Parole Officer Supervision on Labor Market Outcomes and Recidivism

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Abstract

Little is known about the effects of probation and parole officers on their clients, although there are a host of reasons to expect probation and parole officers to be profoundly important. This paper uses a unique dataset to pair all probation and parole officers and their clients in Denmark in 2002-2009, with the end goal of identifying causal effects of officer supervision on labor market outcomes and recidivism. In order to identify these causal effects, we rely on data from all probationers and parolees in the city of Copenhagen, Denmark where a rotational assignment process effectively randomizes clients to probation/parole officers. We show that the assignment is indeed random -- at least in regards to the vast majority of background characteristics that affect later outcomes --suggesting that we will be able to identify causal effects of probationer and parolee assignment on labor market outcomes and recidivism. As no previous study has yet to identify such causal effects, this study makes a novel contribution to the literature on the effects of criminal justice contact on the life-course. The results from our analyses suggest that probation and parole officers matter a great deal for these outcomes and that incorporating information on probation and parole officers into our models would dramatically enhance our understanding of the causes of poor outcomes for probationers and parolees.

Extended abstract

Probation and parole officers play a crucial role in supervising the safe reintegration of probationers and parolees into the community following a non-custodial sentence or an early release from prison. However, astonishingly little is known about the effects of this supervision on labor market outcomes and criminal recidivism, which are generally considered the key outcomes for individuals under criminal justice supervision. This gap in the literature is especially stymying as we know much about the consequences of other forms of criminal justice contact (such as incarceration) on the life-course and descriptive, qualitative, and historical research suggests that probation and parole officers may profoundly influence the outcomes of probationers and parolees (Erez, 2006; Seiter, 2002; West and Seiter, 2004; Lynch, 1998; Hanrahan, Gibbs, and Zimmerman, 2005; Augustus, 2012 [1852]).

The probation or parole officer performs various tasks to assist the probationer or parolee and also has distrectionary powers regarding whether or not to file reports on the probationer or parolee that is assigned to him or her (Glaser, 1969). It therefore seems likely that differences between individual probation or parole officers' attitudes towards their clients might matter for the treatment that each probationer or parolee gets. Empirical studies link probation/parole officer attitudes to pre-sentence recommendations (Katz, 1992; Rosecrance, 1985, 1987), job task selection (Clear and Latessa, 1993), acceptance of agency directives (Lynch, 1998; Sigler and McGraw, 1984), and supervision practices (Steiner et al., 2011; West and Seiter, 2004). These studies thus establish a link between officer attitudes and actions, yet recent studies have also made the link to probationer or parolee outcomes like criminal recidivism (Paparozzi and Gendreau, 2005; Bourgon and Gutierrez, 2012). The assignment of a particular probation/parole officer to a client is thus likely to shape the client's chances of achieving successful reintegration into the community.

Despite their likely importance for the life-course of probationers and parolees, no research that we know of has attempted to isolate a causal effect of probation or parole officers on probationer and parolee outcomes, a significant gap in the literature. In order to fill this gap, this paper pairs individual identifiers for all probation and parole officers with their clients in Denmark in 2002-2009 to produce a unique data set that allows us to identify causal effects of probation and parole officer assignment on various outcomes in a sub sample where a rotational assignment process effectively randomizes clients to officers. Consequently, the paper offers knowledge on the causal effects of probation/parole officer supervision on various outcomes -- labor market outcomes and recidivism -- just as it reveals the magnitude and nature of selection issues that hamper direct interpretations of the link between officers and their clients.

Data and Empirical Strategy

In Denmark, all residents have a unique personal identifier that identifies them in many transactions such as tax forms, dependency on public transfers, communications with the criminal justice system, and the like. Statistics Denmark gathers these data from various collecting agencies and makes them available for research purposes such that researchers may construct full-sample individual level panels that -- subject to the availability of each register -- go as far back as 1980. This paper couples data from the Danish Prison and Probation Service on all probation/parole officers and their clients in 2002-2009 with the full-sample administrative registers available from Statistics Denmark, and the full sample holds 18,593 probationers and parolees along with the 367 probation and parole officers that they are assigned to.

Looking at the national level in Denmark, the assignment of clients to probation/parole officers is far from random. In a small country with only few probation and parole cases per municipality per year, one or a few officers suffices to perform the needed supervision within a few municipalities. The assignment process is therefore typically based on municipality of residence. As a range of socioeconomic characteristics are correlated with municipality of residence, a direct comparison of officer assignment and client characteristics and client outcomes between municipalities will most likely express selection mechanisms of both officers and clients to municipalities. Put directly, most Danish municipalities have so few probation and parole officers that it is impossible to distinguish between the causal effects of residing in a specific municipality and being assigned a specific parole or probation officer. Thus, although analyses of the entire country of Denmark provide an important first step in considering the effects of probation and parole officers on client outcomes, they cannot provide an uncontaminated estimate of these effects.

In the capitol region of Copenhagen, however, there are far more cases than one (or a few) probation and parole officers could handle, meaning that if cases are randomly assigned in Copenhagen, we could potentially isolate a causal effect of probation or parole officers on client outcomes. In Copenhagen the assignment of cases follows a rotational process that the probation and parole officers (ideally) cannot influence. Thus, our analysis of Copenhagen allows us to generate an estimate of the causal effect of probation and parole officers on client outcomes, while the national analysis shows how different estimates using non-randomly assigned officers would be.

The empirical strategy follows three steps. First, we use the national sample to show how the inclusion of probation and parole officer fixed effects significantly improves the explanatory power of a statistical model to predict probationer and parolee labor market outcomes and recidivism. We

then show how much it matters for probationer and parolee outcomes which officer they are assigned to. This description will -- as pointed out -- most likely be subject to severe selection issues regarding the sorting of officers and their clients dependent on the area of residence. The first stage of the paper, therefore, documents how endogenous probation and parole officers are to other characteristics of their clients that may also shape client outcomes. Second, we restrict our sample to the Copenhagen region where a rotational assignment process randomizes clients to officers. We show that this assignment of clients to officers is indeed random and the rotational assignment process thus avoids problems related to selection and may be exploited to address the causal effect of officers on client outcomes. We show how also in the Copenhagen region the inclusion of probation and parole officer fixed effects significantly improves the explanatory power of a statistical model to predict probationer and parolee labor market outcomes and recidivism, and we show how much it matters for clients' outcomes which officer they are randomly assigned to. Third, we investigate differences between results from the national sample that are subject to selection issues and results from the Copenhagen sample that represent uncontaminated causal estimates of probation and parole officers on outcomes. This opens a discussion of the possibilities for extrapolating the uncontaminated estimates to the national level and hence investigate the macro-effects of the experimental estimates.

Tables and Figures

Table 1: Descriptive statistics

Variable	Mean	(Std. Dev.)
CONTROLS		
Supervision period (months)	18.859	(7.259)
On probation	0.744	(0.436)
On parole	0.256	(0.436)
Violence	0.255	(0.436)
Drug related crime	0.085	(0.279)
Property crime	0.093	(0.291)
Theft	0.394	(0.489)
Other crime type	0.173	(0.378)
Age	29.357	(10.522)
Female	0.125	(0.331)
Unmarried	0.869	(0.337)
Has children	0.295	(0.456)
Ethnic minority	0.143	(0.351)
Years of education	10.062	(1.999)
Earned income (in DKK 1,000) [a]	70.448	(106.842)
Unemployment degree	0.290	(0.364)
Social pension degree	0.186	(0.321)
Self support degree	0.524	(0.403)
Number of previous crimes	5.667	(7.185)
Previously arrested	0.572	(0.495)
OUTCOMES		
Earned income (in DKK 1,000) [a]	93.241	(124.590)
Unemployment degree	0.308	(0.381)
Social pension degree	0.227	(0.354)
Self support degree	0.465	(0.414)
Criminal recidivism rate	0.386	(0.487)
Re-arrest rate	0.337	(0.473)
PO N	367	
N	18,593	

[a] Incomes are deflated to 2005 levels.

Table 2: Model fit statistics

Outcome	PO excluded R sq.	F	PO included R sq.	F	F-test of excluded POs
Earned income	0.396	318.639 ***	0.411	25.967 ***	1.856 ***
Unemployment degree	0.317	387.548 ***	0.336	26.763 ***	1.562 ***
Social pension degree	0.296	316.987 ***	0.310	21.566 ***	1.307 ***
Self support degree	0.347	614.824 ***	0.365	43.504 ***	2.323 ***
Criminal recidivism rate	0.196	263.215 ***	0.213	18.234 ***	1.389 ***
Re-arrest rate	0.147	177.111 ***	0.166	13.199 ***	1.668 ***
DF (k-1; n-k-1)	(23; 18,569)		(389; 18,203)		(366; 18,203)

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3: Model predictions

Outcome	PO excluded All	PO included Lower quartile	Middle quartiles	Upper quartile
Earned income [a]	98.568	74.585	100.423	127.158
Unemployment degree	0.353	0.257	0.344	0.433
Social pension degree	0.209	0.142	0.211	0.306
Self support degree	0.438	0.335	0.441	0.534
Criminal recidivism rate [b]	0.288	0.179	0.283	0.423
Re-arrest rate [b]	0.224	0.131	0.216	0.335

[a] Incomes are reported in DKK 1,000 deflated to the 2005 level.
[b] Predictions of binary outcomes are made using the logit estimator.

Table 4: Descriptive statistics, full sample (excluding Copenhagen) vs Copenhagen subsample

Variable	Full sample ex. Copenhagen Mean (std.dev.)	Copenhagen Mean (std.dev.)	T-test p-value
CONTROLS			
Supervision period (months)	18.692 (7.165)	20.305 (7.888)	***
On probation	0.769 (0.422)	0.530 (0.499)	***
On parole	0.231 (0.422)	0.470 (0.499)	***
Violence	0.263 (0.440)	0.191 (0.393)	***
Drug related crime	0.084 (0.278)	0.092 (0.289)	
Property crime	0.089 (0.285)	0.127 (0.333)	***
Theft	0.393 (0.488)	0.404 (0.491)	
Other crime type	0.171 (0.376)	0.187 (0.390)	+
Age	29.253 (10.593)	30.263 (9.844)	***
Female	0.125 (0.330)	0.128 (0.334)	
Unmarried	0.867 (0.340)	0.889 (0.314)	**
Has children	0.306 (0.461)	0.204 (0.403)	***
Ethnic minority	0.125 (0.331)	0.305 (0.461)	***
Years of education	10.086 (1.990)	9.856 (2.057)	***
Earned income (in DKK 1,000) [a]	75.294 (109.425)	28.391 (67.803)	***
Unemployment degree	0.277 (0.357)	0.396 (0.398)	***
Social pension degree	0.188 (0.320)	0.171 (0.327)	*
Self support degree	0.535 (0.402)	0.433 (0.397)	***
Number of previous crimes	5.124 (6.388)	10.378 (10.990)	***
Previously arrested	0.549 (0.498)	0.778 (0.416)	***
OUTCOMES			
Earned income (in DKK 1,000) [a]	98.667 (126.797)	46.143 (90.765)	***
Unemployment degree	0.293 (0.374)	0.441 (0.418)	***
Social pension degree	0.227 (0.352)	0.225 (0.372)	
Self support degree	0.480 (0.414)	0.334 (0.389)	***
Criminal recidivism rate	0.369 (0.483)	0.533 (0.499)	***
Re-arrest rate	0.330 (0.470)	0.394 (0.489)	***
PO N	331	36	
N	16,672	1,921	

+ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 5: Investigation of PO assignment rule

Variable	Full sample ex. Copenhagen F-test value	Copenhagen F-test value
Supervision length	2.217 ***	1.182
On probation	3.796 ***	1.300
On parole	3.796 ***	1.300
Violence	1.557 ***	1.873 **
Drug related crime	1.490 ***	1.086
Property crime	1.365 ***	1.223
Theft	1.489 ***	0.985
Other crime type	2.692 ***	1.252
Age	1.899 ***	0.699
Female	1.137 *	0.942
Unmarried	1.133	1.147
Has children	1.363 ***	1.289
Ethnic minority	2.565 ***	1.473 *
Years of education	1.672 ***	0.867
Earned income	2.218 ***	1.284
Unemployment degree	1.689 ***	1.344 +
Social pension degree	1.307 ***	1.301
Self support degree	1.791 ***	1.508 *
Number of previous crimes	2.705 ***	1.231
Previously arrested	2.284 ***	1.120
DF	322	35
N	16,672	1,921

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Table 6: Model fit statistics for Copenhagen subsample

Outcome	PO excluded R sq.	PO excluded F	PO included R sq.	PO included F	F-test of excluded POs
Earned income	0.260	17.723 ***	0.268	7.768 ***	0.975
Unemployment degree	0.276	42.025 ***	0.293	19.653 ***	1.396 +
Social pension degree	0.372	61.657 ***	0.384	28.264 ***	1.748 **
Self support degree	0.295	46.208 ***	0.309	20.926 ***	1.514 *
Criminal recidivism rate	0.185	24.880 ***	0.200	12.824 ***	2.272 ***
Re-arrest rate	0.152	21.708 ***	0.170	13.063 ***	3.420 ***
DF (k-1; n-k-1)	(23; 1,897)		(58; 1,862)		(35; 1,862)

+ p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001

Table 7: Model predictions on Copenhagen subsample

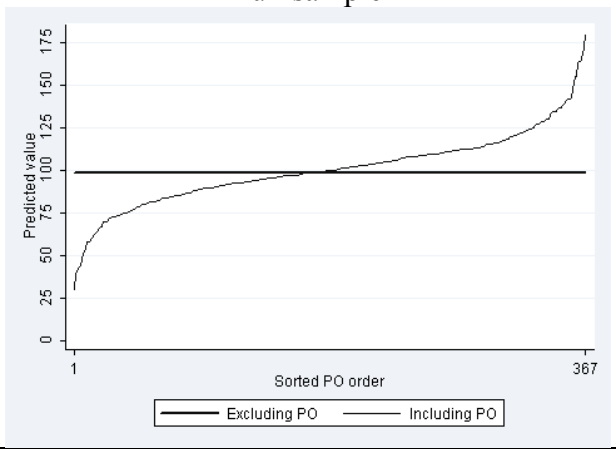
	PO excluded	PO included		
Outcome	All	Lower quartile	Middle quartiles	Upper quartile
Earned income [a]	49.818	34.958	49.663	66.521
Unemployment degree	0.398	0.295	0.406	0.477
Social pension degree	0.287	0.209	0.284	0.358
Self support degree	0.314	0.237	0.317	0.409
Criminal recidivism rate [b]	0.448	0.340	0.450	0.562
Re-arrest rate [b]	0.178	0.111	0.178	0.300

[a] Incomes are reported in DKK 1,000 deflated to the 2005 level.

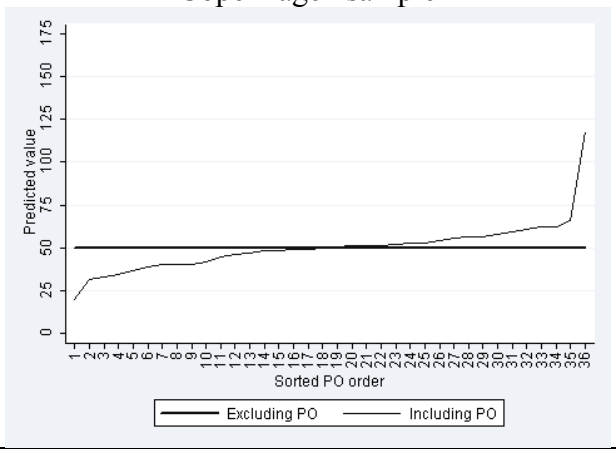
[b] Predictions of binary outcomes are made using the logit estimator.

EARNED INCOME

Full sample

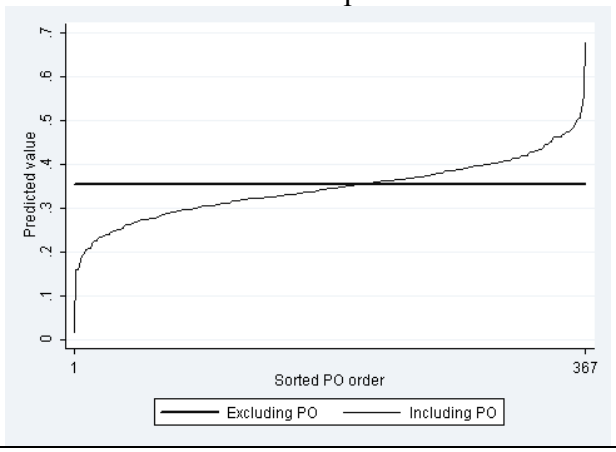


Copenhagen sample



UNEMPLOYMENT DEGREE

Full sample



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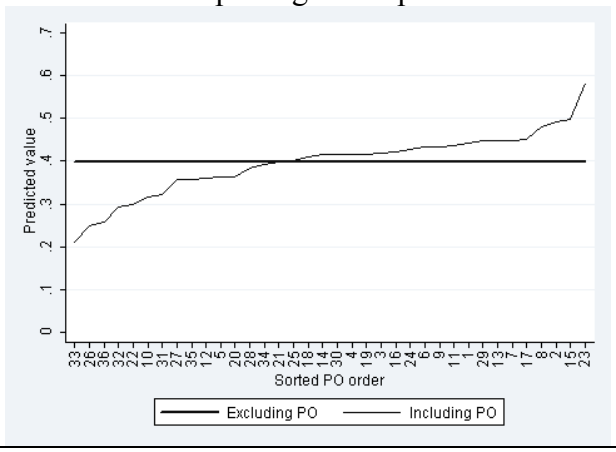
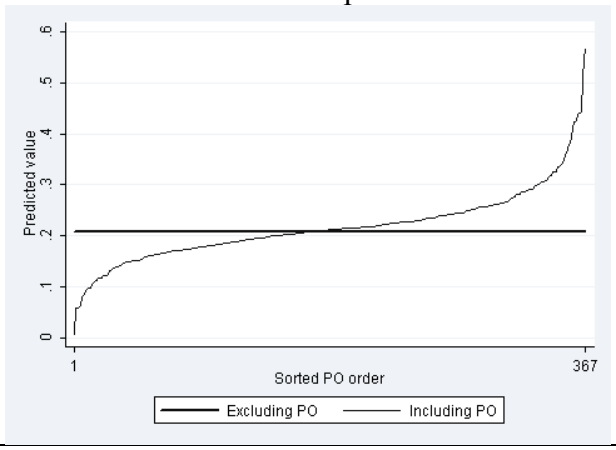


SOCIAL PENSION DEGREE

Full sample



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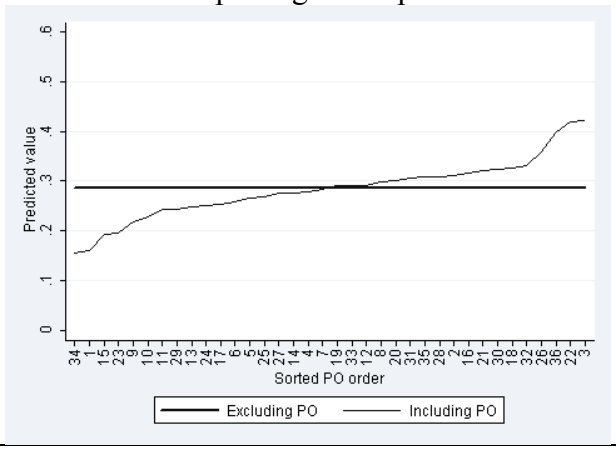
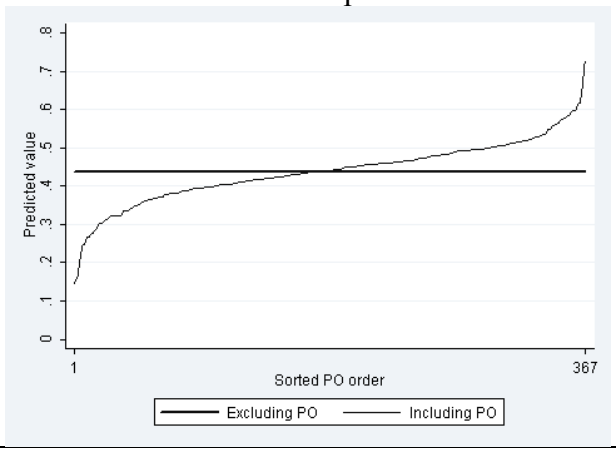


SELF SUPPORT DEGREE

Full sample



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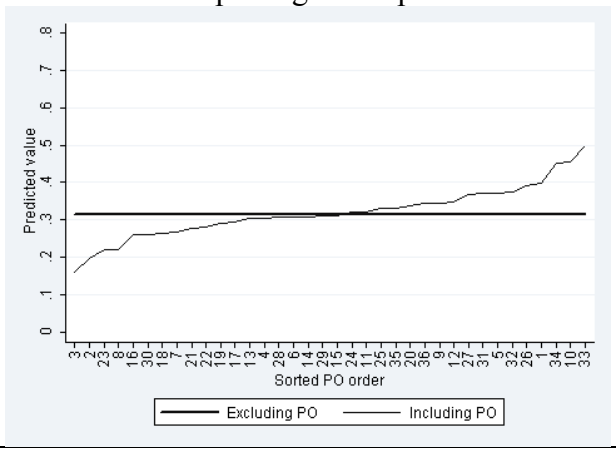
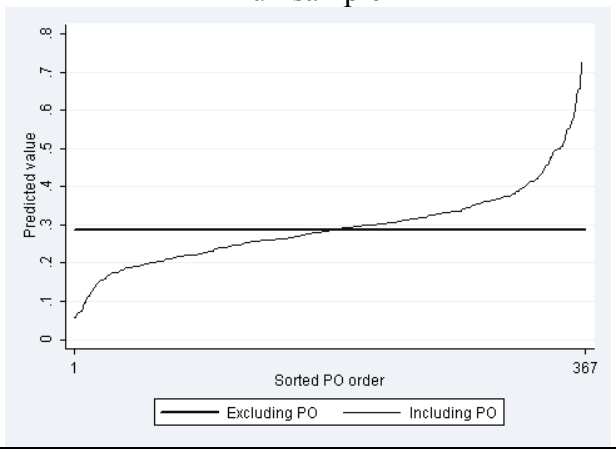


CRIMINAL RECIDIVISM RATE

Full sample



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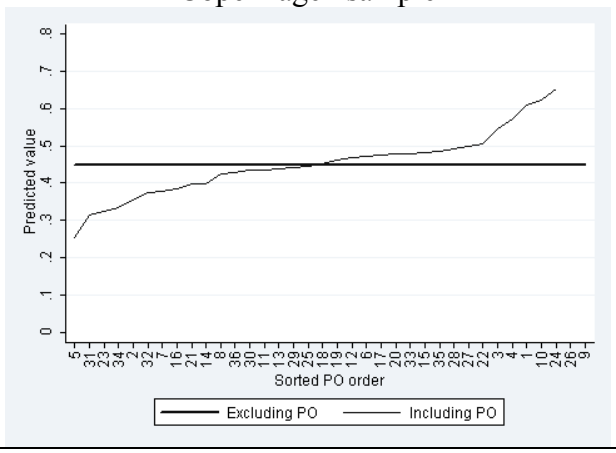
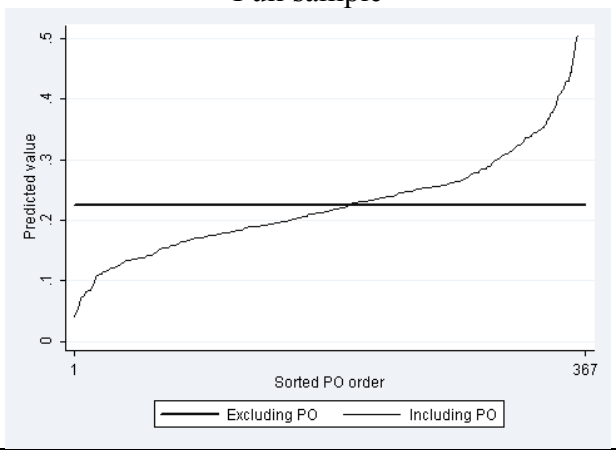


RE-ARREST RATE

Full sample



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