

(For Online Publication)

Appendix to

The Effects of Electronic Monitoring on Offenders
and their Families

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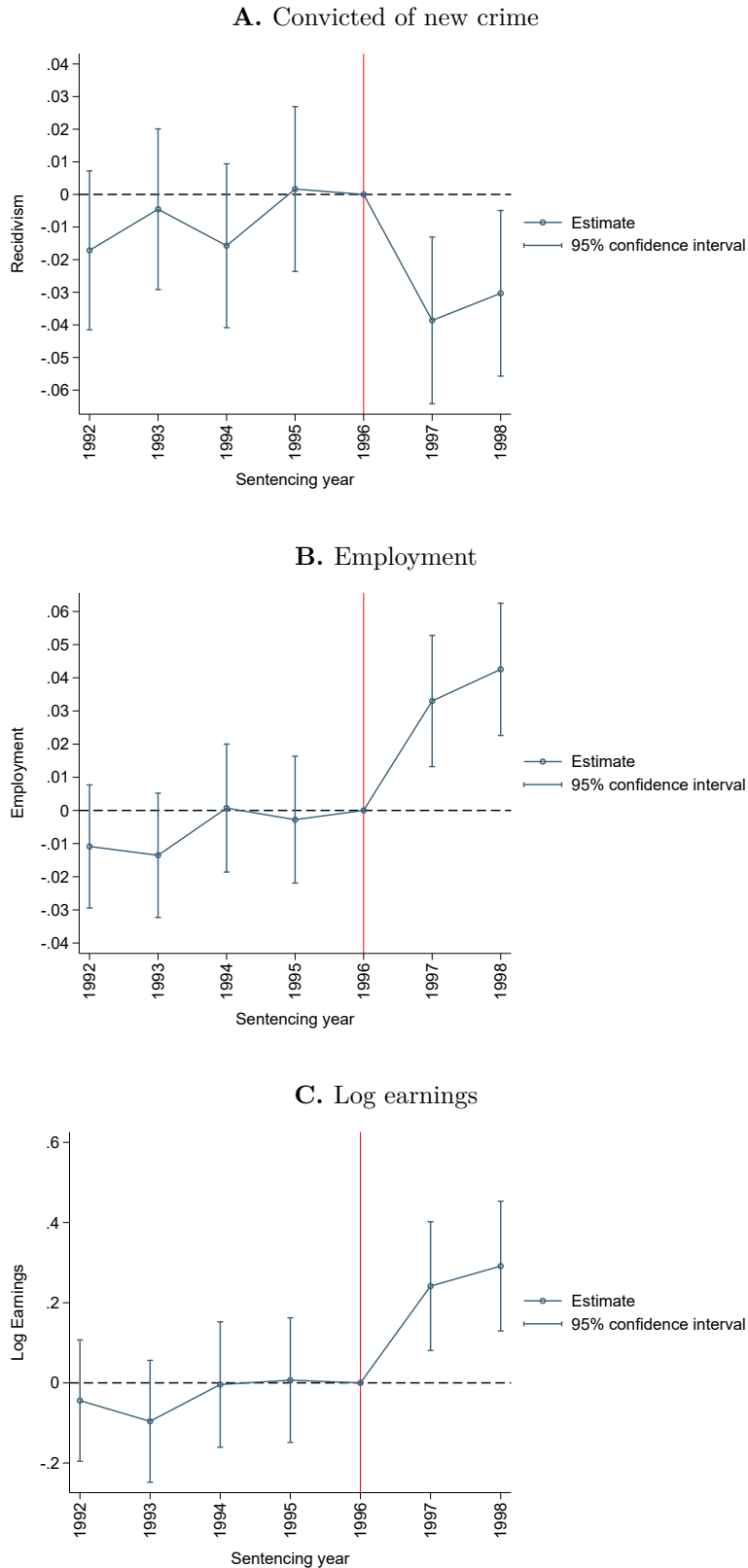


Figure A1 – Trends in Recidivism and Labor Market Outcomes, by Offender’s Treatment Status

Notes: The figure plots annual difference-in-differences estimates based on the model described by Equation (1). Panel A shows recidivism, Panel B employment, and Panel C (log) earnings. The estimates are relative to 1996, which is the last year before the reform. All outcomes are measured as averages over the three years following the trial. The p -values of F -tests assessing the joint significance of the pre-reform estimates are: 0.398 for recidivism, 0.418 for employment, and 0.619 for earnings.

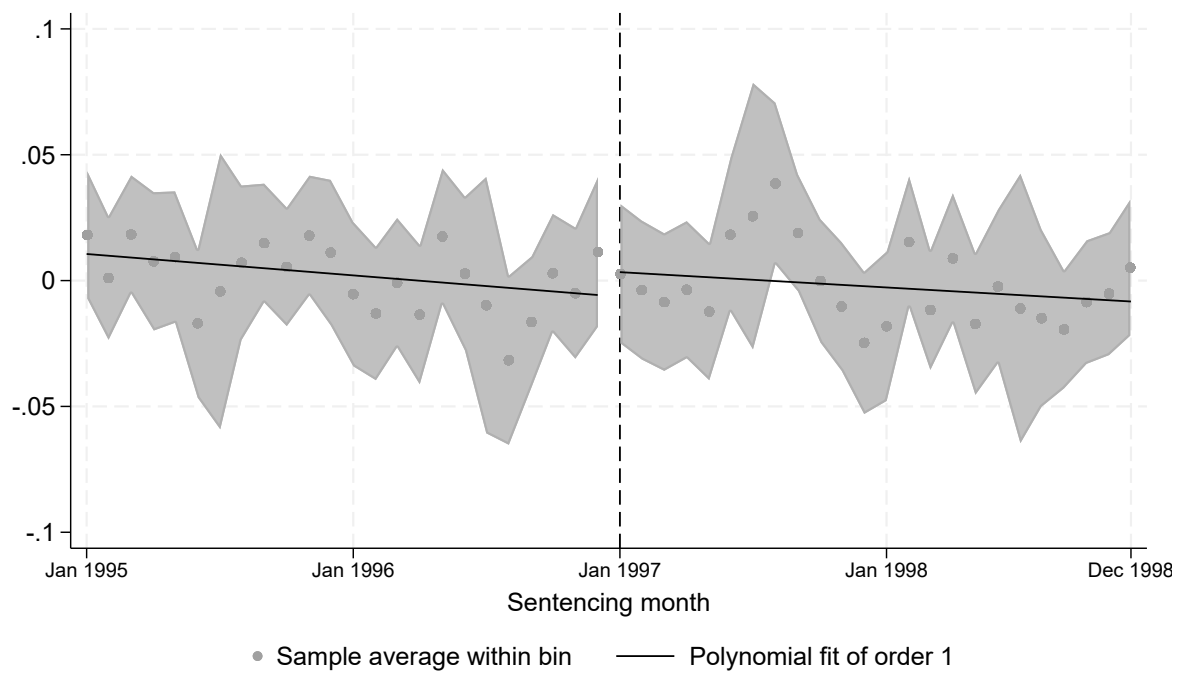


Figure A2 – Probability of Being Sentenced to up to Three Months in Prison among Offenders Sentenced to Prison terms of up to 12 Months, by Time-Distance to the EM Expansion Reform of 1997

Notes: The sample consists of offenders who received a prison sentence of up to 12 months between January 1st, 1995, and December 31st, 1998. The graph plots the probability of receiving a prison sentence of up to three months in our sample against a linear control in the month of the trial relative to the month of the reform (January 1997). The regression controls for seasonality in sentencing decisions through the inclusion of sentencing (calendar) month and crime type fixed effects. The shaded gray area represents the corresponding 95 percent confidence interval.

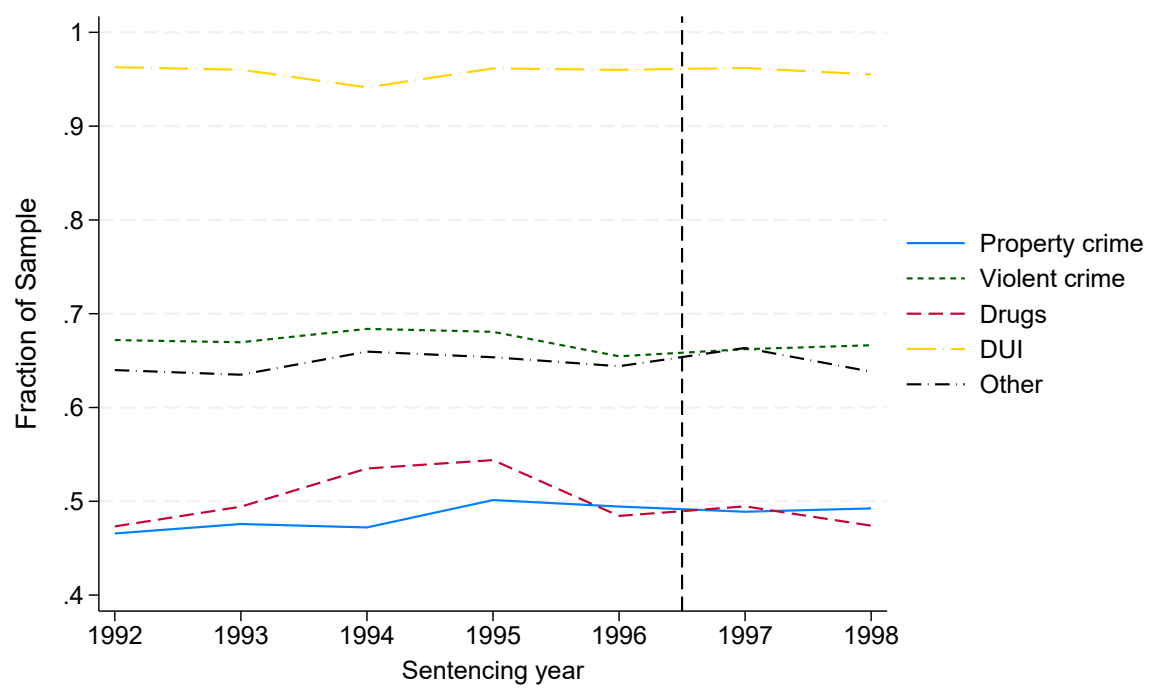


Figure A3 – Probability of Receiving a Prison Sentence of up to Three Months by Type of Crime

Notes: The figure plots, for offenders who were sentenced to prison terms of up to 12 months between 1992 and 1998, the share who received sentences of up to three months (i.e., the treatment group), separately by type of crime.

Table A1 – Offender Recidivism Outcomes One to Three years after the Trial

	Outcome mean	Difference-in-differences estimates			
	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Arrests</i>					
Arrest 1 year after trial	0.369 (0.482)	−0.089*** (0.008)	−0.086*** (0.007)	−0.087*** (0.007)	−0.084*** (0.007)
Arrest 2 years after trial	0.404 (0.491)	−0.060*** (0.008)	−0.056*** (0.008)	−0.056*** (0.008)	−0.054*** (0.008)
Arrest 3 years after trial	0.392 (0.488)	−0.010 (0.008)	−0.006 (0.008)	−0.006 (0.008)	−0.004 (0.008)
<i>Panel B. Convictions</i>					
Conviction 1 year after trial	0.421 (0.494)	−0.009 (0.008)	−0.005 (0.008)	−0.006 (0.008)	−0.004 (0.008)
Conviction 2 years after trial	0.417 (0.493)	−0.009 (0.008)	−0.005 (0.008)	−0.006 (0.008)	−0.003 (0.008)
Conviction 3 years after trial	0.389 (0.488)	−0.016** (0.008)	−0.013 (0.008)	−0.013* (0.008)	−0.011 (0.008)
<i>Panel C. Prison Sentences</i>					
Months sentenced to prison 1 year after trial	1.091 (4.621)	0.088 (0.083)	0.099 (0.083)	0.099 (0.083)	0.107 (0.083)
Months sentenced to prison 2 year after trial	1.628 (6.195)	−0.055 (0.116)	−0.039 (0.116)	−0.040 (0.116)	−0.023 (0.116)
Months sentenced to prison 3 year after trial	1.042 (4.868)	0.028 (0.098)	0.038 (0.098)	0.042 (0.098)	0.050 (0.098)
<i>Controls</i>					
Sentencing year FEs	–	Yes	Yes	Yes	Yes
Sentence length FEs	–	Yes	Yes	Yes	Yes
Demographic characteristics	–	Yes	Yes	Yes	Yes
Socioeconomic characteristics	–	–	Yes	Yes	Yes
Court FEs	–	–	–	Yes	Yes
Crime type FEs	–	–	–	–	Yes
N	80,986	80,986	80,986	80,986	80,986

Notes: This table reports OLS estimates for the difference-in-differences (DiD) model that we use to assess the impact of increased access to electronic monitoring on offender outcomes in the first three years after the trial. Column (1) reports the means and standard deviation of the outcomes of interest. Columns (2) to (5) present the coefficients on the interaction between the treatment group indicator and an indicator for the post-reform period. The treatment group (54,691 individuals) consists of offenders sentenced to prison for up to three months between 1992 and 1998, while the control group (26,295 individuals) consists of offenders sentenced to prison terms ranging from 4 to 12 months during the same period. “Arrest” is an indicator for having been re-arrested. “Conviction” is an indicator for having a new conviction. “Month sentenced to prison” is the length of prison sentences received, measured in months. The estimates in column (2) are from a model that controls for sentencing year fixed effects, sentence length fixed effects (in months), and pre-determined demographic characteristics (year of birth, gender, immigrant status). Column (3) additionally controls for socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial). Column (4) expands the set of controls to include court fixed effects. Column (5) further controls for crime type fixed effects. Robust standard errors are reported in parentheses. */**/** denote significant at the 10/5/1 percent level.

Table A2 – Offender Labor Market Outcomes One to Three years after the Trial

	Outcome mean	Difference-in-differences estimates			
	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Employment</i>					
Employment 1 year after trial	0.245 (0.430)	0.051*** (0.007)	0.045*** (0.006)	0.045*** (0.006)	0.042*** (0.006)
Employment 2 years after trial	0.274 (0.446)	0.041*** (0.007)	0.036*** (0.006)	0.035*** (0.006)	0.033*** (0.006)
Employment 3 years after trial	0.295 (0.456)	0.041*** (0.007)	0.036*** (0.007)	0.036*** (0.007)	0.033*** (0.007)
<i>Panel B. Earnings</i>					
Log earnings (100s SEK) 1 year after trial	2.577 (3.340)	0.287*** (0.052)	0.240*** (0.044)	0.235*** (0.044)	0.215*** (0.044)
Log earnings (100s SEK) 2 years after trial	2.774 (3.429)	0.317*** (0.055)	0.279*** (0.049)	0.275*** (0.049)	0.255*** (0.048)
Log earnings (100s SEK) 3 years after trial	2.913 (3.499)	0.324*** (0.057)	0.285*** (0.052)	0.278*** (0.052)	0.257*** (0.052)
<i>Controls</i>					
Sentencing year FEs	–	Yes	Yes	Yes	Yes
Sentence length FEs	–	Yes	Yes	Yes	Yes
Demographic characteristics	–	Yes	Yes	Yes	Yes
Socioeconomic characteristics	–	–	Yes	Yes	Yes
Court FEs	–	–	–	Yes	Yes
Crime type FEs	–	–	–	–	Yes
N	80,986	80,986	80,986	80,986	80,986

Notes: This table reports OLS estimates for the difference-in-differences (DiD) model that we use to assess the impact of increased access to electronic monitoring on offender outcomes in the first three years after the trial. Column (1) reports the means and standard deviation of the outcomes of interest. Columns (2) to (5) present the coefficients on the interaction between the treatment group indicator and an indicator for the post-reform period. The treatment group (54,691 individuals) consists of offenders sentenced to prison for up to three months between 1992 and 1998, while the control group (26,295 individuals) consists of offenders sentenced to prison terms ranging from 4 to 12 months during the same period. “Employment” is an indicator for being registered as formally employed. “Earnings” is total (log) annual labor earnings (in SEK). The estimates in column (2) are from a model that controls for sentencing year fixed effects, sentence length fixed effects (in months), and pre-determined demographic characteristics (year of birth, gender, immigrant status). Column (3) additionally controls for socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial). Column (4) expands the set of controls to include court fixed effects. Column (5) further controls for crime type fixed effects. Robust standard errors are reported in parentheses. */**/** denote significant at the 10/5/1 percent level.

Table A3 – Robustness Checks

	Control group 4–6 months (1)	Placebo reform in 1996 (2)	RD-DD model (3)
<i>Panel A. Crime</i>			
Arrested for new crime	−0.027*** (0.008) [0.597]	−0.007 (0.009) [0.614]	0.002 (0.017) [0.564]
Convicted of new crime	−0.016** (0.008) [0.612]	0.014 (0.009) [0.628]	−0.013 (0.017) [0.601]
<i>Panel B. Labor market outcomes</i>			
Employment	0.044*** (0.006) [0.286]	0.006 (0.007) [0.268]	0.059*** (0.015) [0.321]
Log earnings (100s SEK)	0.301*** (0.048) [2.876]	0.036 (0.053) [2.729]	0.481*** (0.109) [3.131]
Log disposable income (100s SEK)	0.061** (0.030) [6.477]	−0.005 (0.032) [6.420]	−0.099* (0.055) [6.530]
N	70,243	80,986	38,068

Notes: The table shows results from various robustness tests. In column (1), we narrow the bandwidth for inclusion in the control group from 4–12 months to 4–6 months. In column (2), we implement a “placebo” regression where we set the reform year to 1996 (i.e., one year prior to the actual reform) and re-estimate the model described by Equation (1) while controlling for the actual reform. In column (3), we restrict the sample to offenders in the treatment group and estimate a “difference-in-discontinuity” design (RD-DD), comparing individuals who received sentences of up to three months between January 1st and June 30th, 1997, with those who received similar sentences between July 1st and December 31st, 1996. To account for potential seasonality in sentencing decisions, we use earlier cohorts to control for the average discontinuity around the January 1st cutoff in pre-reform years. All regressions control for sentencing year and sentence length fixed effects (in months), pre-determined demographic characteristics (year of birth, gender, immigrant status), socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial), as well as court and crime type fixed effects. Robust standard errors (columns 1 and 2) and standard errors clustered at the court and individual level (column 3) are reported in parentheses. Mean outcomes are reported in square brackets. */**/** denote significant at the 10/5/1 percent level.

Table A4 – Results by Crime Type

	Property (1)	Violent (2)	Drugs (3)	DUI (4)
<i>Panel A. Crime</i>				
Arrested for new crime	−0.017* (0.009) [0.842]	−0.044*** (0.016) [0.583]	0.025 (0.023) [0.757]	−0.068*** (0.025) [0.379]
Convicted of new crime	−0.007 (0.009) [0.885]	−0.030* (0.016) [0.564]	0.028 (0.024) [0.772]	−0.045 (0.028) [0.384]
<i>Panel B. Labor market outcomes</i>				
Employment	0.015** (0.007) [0.097]	0.052*** (0.012) [0.319]	0.007 (0.016) [0.131]	0.079*** (0.019) [0.450]
Log earnings (100s SEK)	0.070 (0.063) [1.256]	0.421*** (0.091) [3.220]	0.106 (0.132) [1.575]	0.491*** (0.162) [4.216]
Log disposable income (100s SEK)	0.034 (0.047) [5.991]	0.066 (0.047) [6.629]	0.127 (0.097) [6.080]	0.095 (0.105) [6.863]
N	21,122	17,492	5,622	19,875

Notes: This table reports OLS estimates for the difference-in-differences (DiD) model that we use to assess the impact of increased access to electronic monitoring on offender outcomes. The results are stratified by different subgroups based on the type of crime for which the offenders received their prison sentence. The coefficients in columns (1) to (4) are on the interaction between the treatment group indicator and an indicator for the post-reform period. The treatment group consists of offenders sentenced to prison for up to three months between 1992 and 1998, while the control group consists of offenders sentenced to prison terms ranging from 4 to 12 months during the same period. All outcomes are measured as averages over the three years following the trial. Criminal recidivism is measured by an indicator for having been re-arrested and an indicator for having a new conviction. “Employment” is an indicator for being registered as formally employed. “Earnings” is total (log) annual labor earnings (in SEK). “Disposable income” is total (log) post-tax income from labor, capital, and transfers (in SEK). All regressions control for sentencing year and sentence length fixed effects (in months), pre-determined demographic characteristics (year of birth, gender, immigrant status), socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial), as well as court and crime type fixed effects. Robust standard errors are reported in parentheses and sub-sample means are reported in square brackets. */**/** denote significant at the 10/5/1 percent level.

Table A5 – Additional Subgroup Results

	Criminal History (1)	No Criminal History (2)	Less than HS degree (3)	At least HS degree (4)
<i>Panel A. Crime</i>				
Arrested for new crime	−0.014** (0.007) [0.758]	−0.049*** (0.017) [0.302]	−0.009 (0.009) [0.682]	−0.048*** (0.010) [0.542]
Convicted of new crime	−0.015** (0.007) [0.784]	0.003 (0.016) [0.292]	−0.004 (0.010) [0.699]	−0.024** (0.011) [0.555]
<i>Panel B. Labor market outcomes</i>				
Employment	0.032*** (0.005) [0.168]	0.017 (0.013) [0.487]	0.031*** (0.007) [0.220]	0.038*** (0.008) [0.332]
Log earnings (100s SEK)	0.207*** (0.044) [1.905]	0.117 (0.095) [4.518]	0.199*** (0.056) [2.306]	0.245*** (0.061) [3.290]
Log disposable income (100s SEK)	0.049* (0.029) [6.228]	0.045 (0.052) [6.838]	0.061* (0.037) [6.305]	0.067** (0.034) [6.626]
N	55,369	25,617	36,770	38,117

Notes: This table reports OLS estimates for the difference-in-differences (DiD) model that we use to assess the impact of increased access to electronic monitoring on offender outcomes, for different subgroups of individuals. The coefficients in columns (1) to (4) are on the interaction between the treatment group indicator and an indicator for the post-reform period. The treatment group consists of offenders sentenced to prison for up to three months between 1992 and 1998, while the control group consists of offenders sentenced to prison terms ranging from 4 to 12 months during the same period. All outcomes are measured as averages over the three years following the trial. Criminal recidivism is measured by an indicator for having been re-arrested and an indicator for having a new conviction. “Employment” is an indicator for being registered as formally employed. “Earnings” is total (log) annual labor earnings (in SEK). “Disposable income” is total (log) post-tax income from labor, capital, and transfers (in SEK). All regressions control for sentencing year and sentence length fixed effects (in months), pre-determined demographic characteristics (year of birth, gender, immigrant status), socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial), as well as court and crime type fixed effects. Robust standard errors are reported in parentheses and sub-sample means are reported in square brackets. */**/** denote significant at the 10/5/1 percent level.

Table A6 – Results for Offenders with Children

	Outcome mean	Difference-in-differences estimates			
	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Crime</i>					
Arrested for crime	0.634 (0.482)	−0.049** (0.019)	−0.044** (0.018)	−0.045** (0.018)	−0.040** (0.018)
Convicted of crime	0.634 (0.482)	−0.016 (0.020)	−0.011 (0.019)	−0.010 (0.019)	−0.004 (0.019)
<i>Panel B. Labor market outcomes</i>					
Employment	0.260 (0.386)	0.044*** (0.016)	0.037*** (0.014)	0.033** (0.014)	0.030** (0.014)
Log earnings (100s SEK)	2.575 (3.063)	0.355*** (0.129)	0.300*** (0.110)	0.261** (0.111)	0.236** (0.109)
Log disposable income (100s SEK)	6.525 (1.370)	0.117* (0.069)	0.105 (0.068)	0.101 (0.067)	0.097 (0.066)
<i>Controls</i>					
Sentencing Year FEs	–	Yes	Yes	Yes	Yes
Sentence length FEs	–	Yes	Yes	Yes	Yes
Demographic characteristics	–	Yes	Yes	Yes	Yes
Socioeconomic characteristics	–	–	Yes	Yes	Yes
Court FEs	–	–	–	Yes	Yes
Crime type FEs	–	–	–	–	Yes
N	10,660	10,660	10,660	10,660	10,660

Notes: This table reports OLS estimates for the difference-in-differences (DiD) model that we use to assess the impact of expanded access to electronic monitoring on offender outcomes, for the subset of offenders with children. Column (1) reports the means and standard deviation of the outcomes of interest. Columns (2) to (5) present the coefficients on the interaction between the treatment group indicator and an indicator for the post-reform period. The treatment group consists of parent offenders sentenced to prison for up to three months between 1992 and 1998, while the control group consists of parent offenders sentenced to prison terms ranging from 4 to 12 months during the same period. All outcomes are measured as averages over the three years following the trial. Criminal recidivism is measured by an indicator for having been re-arrested and an indicator for having a new conviction. “Employment” is an indicator for being registered as formally employed. “Earnings” is total (log) annual labor earnings (in SEK). “Disposable income” is total (log) post-tax income from labor, capital, and transfers (in SEK). The estimates in column (2) are from a model that controls for sentencing year fixed effects, sentence length fixed effects (in months), and pre-determined demographic characteristics (year of birth, gender, immigrant status). Column (3) additionally controls for socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial). Column (4) expands the set of controls to include court fixed effects. Column (5) further controls for crime type fixed effects. Robust standard errors are reported in parentheses. */**/***/ denote significant at the 10/5/1 percent level.

Table A7 – Two-Sample Two-Stage Least Square Estimates

	Convicted (1)	Employment (2)	Earnings (USD) (3)
Estimate ($\hat{\theta}$)	−0.047*** (0.001)	0.116*** (0.000)	4,503*** (432)

Notes: This table reports two-sample two-stage least squares (TS-2SLS) estimates of the effects of EM take-up on offender outcomes, where the first-stage and reduced-form estimates are based on two different samples. Denoting $\hat{\theta}$ the TS-2SLS estimate, the variance of $\hat{\theta}$ is computed using the delta method as $\text{Var}(\hat{\theta}) = \text{Var}(\hat{\beta}/\hat{\pi}) \approx [\hat{\pi}^2 \text{Var}(\hat{\beta}) + \hat{\beta}^2 \text{Var}(\hat{\pi})]/\hat{\pi}^4$, where $\hat{\pi}$ and $\hat{\beta}$ denote the first-stage and reduced-form estimates, respectively. The standard error of the TS-2SLS estimate is then calculated as the square root of $\hat{\theta}$, where the variances in the formula are replaced by their respective estimates. The treatment group (54,691 individuals) consists of offenders sentenced to prison for up to three months between 1992 and 1998, while the control group (26,295 individuals) consists of offenders sentenced to prison terms ranging from 4 to 12 months during the same period. All outcomes are measured as averages over the three years following the trial. Criminal recidivism is measured by an indicator for having a new conviction. “Employment” is an indicator for being registered as formally employed. “Earnings” is total annual labor earnings (in USD). All regressions control for sentencing year and sentence length fixed effects (in months), pre-determined demographic characteristics (year of birth, gender, immigrant status), socioeconomic characteristics (educational attainment, earnings and employment in the year before the trial), as well as court and crime type fixed effects. Standard errors computed using the delta method are reported in parentheses. */**/** denote significant at the 10/5/1 percent level.