

Do older female previous prisoners participate in the labour market?

Abstract:

We investigate the labour force participation of female ex-offenders who served a first sentence late in life. In particular, we investigate if labour market attachment differed before and after the imprisonment, and if employment helped avoiding or postponing recidivism (which we understand broadly as a comeback to prison any time after the first incarceration). We contribute by examining a very specific, yet disadvantaged group of workers in a longitudinal study by using administrative data from all public employment offices in Poland for the time span: 1 June 2004 – 31 December 2017. We study the correlation and causal relationship between employment and recidivism. We apply survival and sequence analyses and difference-in-differences approach. We find that older female ex-prisoners are in fact loosely attached to the labour market. Still, employment decreases the risk of second imprisonment by 90%. It also postpones recidivism. Multidimensionality of job quality matters as the unemployment benefit itself does not protect against recidivism. Being attached to the labour force seems to matter mostly for first ever convicted what should be taken into account in formulating social reintegration policies.

JEL classification: C41, C55, I39, J64, J88

Keywords: recidivism, incarceration, employment, unemployment, recurrent event data models, multi-state models

1. Introduction

The labour market involves various categories of workers. Although subject to similar general patterns, their behaviour may be substantially specific for workers belonging to certain categories. That may be a result of specific individual characteristics, or being subject to regulations or policies designed for the specific groups of workers, or being a result of specific previous working history. The latter is in the centre of this paper. In this paper we focus on labour market performance of older female former prisoners.

Women commit all types of crime, yet the most frequent ones are minor thefts, crimes resulting from poverty and addiction, spontaneous thefts committed when an opportunity arises or under the influence of alcohol. The literature points to a variety of factors leading to criminal behaviour. Yet, such actions are a direct consequence of their lifestyle. Female offenders are often people who have been living on the fringe of society for many years. They take up odd jobs and use social benefits regularly or occasionally. Being in prison often comes as a shock. Offenders stop being entitled to social benefits. Female offenders are often single parents and face family problems. Prison experience may trigger reflection over one's life and a change of the factors that had led to criminal behaviour and imprisonment. But, does imprisonment motivate to seek job or does the first punishment wind up a spiral of recidivism?

In this study we investigate if labour force participation differed before and after the imprisonment, and if employment helped avoiding or postponing recidivism (which we understand broadly as a comeback to prison any time after the first incarceration). We advance the literature by examining a very specific yet disadvantaged group of workers, that is female ex-offenders who were first ever convicted late in life. To our knowledge, such longitudinal study of the labour force participation of the former female prisoners is unique. We achieve our goal by using administrative data from all public employment offices in Poland for the time span: 1 June 2004 – 31 December 2017 (the period of relatively uniform legislative conditions).

Moreover, we contribute to the literature by identifying correlation and causal relationship between employment and recidivism. We apply multi-state models and sequence analysis tailored to longitudinal data that allow detailed duration analysis. Difference-in-differences approach allows us, in turn, to disentangle between employed and non-employed offenders.

We find that older female ex-offenders are in fact marginally (or loosely) attached to the labour market, either prior or after incarceration. Quantitative research indicates that employment decreases the risk of and postpones recidivism, but mostly in case of the second incarceration. Hence, being attached to the labour force seems to matter more the fewer imprisonment spells an individual has experienced. Collecting unemployment benefit does not protect against recidivism. This, in turn, suggests multidimensionality of the impact of job quality in successful social reintegration.

2. Research on female offenders

Literature and various reports indicate that women are a fast-growing criminal justice population (National Resource Center on Justice Involved Women 2016). Social and psychological disadvantages including racial/ethnic ones and discrimination are the foreground to understanding women's role in offending and challenges on parole (Huebner et al. 2010). Women experience employer prejudice and reluctance to being employed as former offenders. Females often break the law because of life challenges such as significant physical or behavioural health struggles, including those related to past histories of trauma, mental illness, or substance use. Emotional aspects also stand out, as the level of guilt and being ashamed is bigger for older and first-ever-in-prison women (Gorbanescu 2013).

Insufficient income, unemployment and resulting poverty are often a direct cause of turning to crime, as females want to provide for themselves and their children (National Resource Center on Justice Involved Women 2016; Looney and Turner 2018). Many have relied on public assistance, which is often unavailable after prison (Ramirez 2010). Some

females did not have any work experience prior to serving a sentence (Hamlyn and Lewis 2000). Those, who did work, were usually employed in low wage, entry-level positions; many had received social assistance (Swavola et al. 2016). Some females work in prison, but pre-prison employment helps more after release than in-prison work (Hamlyn and Lewis 2000), these employment opportunities offered to female prisoners do not meet requirements of the local job markets (Piacentini et al. 2018). If women's pre-prison employment is any predictor of their post-prison employment status, they are likely to go back to low-wage jobs. Females often anticipate being either unemployed or at home with domestic responsibilities after release. If employed, they expect to earn significantly less, and as they usually do not work full-time, they earn a little (Visher et al. 2004). They enter a vicious circle: they try to use employment as a way to reconstruct their lives after incarceration, but the low quality of jobs undo women's efforts to create positive future (Ortiz 2014). Why few women have a job to go to on release? Their employability is low, and so are their chances of finding employment that can stabilize financial situation of family. Most women who enter the criminal justice system are economically disadvantaged, with little education, few job skills, and sporadic employment histories (Schnappauf and DiDonato 2017). Some studies show that women are inadequately prepared for release from prison (Huebner et al. 2010).

Reasons why women commit crime in the first place and why they relapse into criminal behaviour are in certain ways unique. The strongest dynamic predictors of recidivism among female offender populations are employment and associates (Greiner et al. 2015). Additionally, women's unique risk factors for recidivism are mental health, self-esteem, parental stress (Ramirez 2010), substance abuse problems and antisocial peers/relationships (Erickson 2014). Around two third within five years, one third within a year and around a quarter of females recidivate within six months after release (National Resource Center on Justice Involved Women 2016). Quantitative studies indicate that women create unconventional

pathways to recidivism linked to their life experiences. For example, Huebner et al. (2010) on a sample of 244 female recidivists analysed demographic characteristics, criminal history and other factors such as drug abuse and programs participated in while in prison. Salisbury (2009), on a group of 304 women, examined such factors as childhood victimization, depression or anxiety, mental illness, substance abuse, educational strengths, relationship dysfunction, self-efficacy, employment and financial difficulties, family support.

Nowadays, females make 7% of the global prison population (Walmsey 2018). In Poland women make up less than 4% of all inmates. Most of them are in production age, they are young enough to participate in the market and not old enough to be eligible to receive pension benefits. From both individual and society perspectives it is expected and needed that these females refrain from committing another crime and be able to make on their own while successfully reintegrating with the labour market.

3. Older first in life time incarcerated females

An advantage of administrative data is that workers are incentivised to provide information on the preceding contributory spells including incarceration. In this study, we assumed the shorter imprisonment spells the less discouraged from labour market participation the person should be. We focused on females who had served a sentence not longer than two years before registering with the public employment office. This time censoring is based on the criminal code, as sentences for up to two years refer to non-violent crime, such as theft or burglary, an unintentional offence, or a minor, low-harm crime. Ex-offenders who committed major crimes were excluded from the analysis, as they were often antisocial and prone to violate social norms even before incarceration. These spells constituted 88.4% of all imprisonment spells observed in the given time span. Hence, we examined peculiar, but very precise group of old-age first ever convicted women and their labour force attachment.

In the final sample, we had 1,709 females and primary descriptive statistics are compiled in Table 1. These women were generally poorly educated, and started serving a first sentence on average at the age of 49. Around 43% of all females in the sample were at least once employed in the observation period, although we observed them on average for 7.7 years (the median equalled 8.2 years). In almost a half of cases these were simple works, and in subsequent quarter services and trade (one-digit indications of ISCO major groups). In almost 97% these were routine jobs (predominantly manual, but slightly less than 7 percentage points of indications concerned routine cognitive occupations)¹. Around 20% of the workers collected the unemployment benefit at least once, and 72% of them did it exactly once. The unemployment benefit was collected in 28.0% of unemployment spells.

Table 1. Descriptive statistics of the individuals' characteristics

	Mean	Std. dev.
Age at the beginning of the 1 st spell (in years)	46.0	4.4
Age at the beginning of the 1 st incarceration spell (in years)	49.0	4.6
Educational level (percentage distribution)		
primary	0.606	-
vocational	0.195	-
secondary vocational, general secondary, post-secondary and tertiary	0.199	-
Total tenure (in years)	11.3	9.4
Unemployment benefit duration (in months)	6.0	3.7

Notes: no. of observations (individuals) 1,709, no. of observations for education 1,705, no. of observations for total tenure 1,320.

Source: own elaboration.

We observed labour force attachment history between June 1st, 2004 and the end of 2017. We observed 20,227 complete spells of four types: employment (including active labour market programmes, ALMP), unemployment, incarceration, and non-participation. ALMP spells were scarce (0.8% of all spells), but if we split them from employment, they rarely resulted in transition to employment (less than 9% of cases). Table 2 provides descriptive statistics of the duration of particular types of spells. In all cases the distribution was right-

¹ Occupations unified according to international standard classification of occupations (ISCO-08) assigned to task content groups according to Acemoglu and Autor (2011) and adjusted to Polish labour market by Hardy et al. (2018).

skewed, as the median was (much) lower than the mean. What stands out is that in half of cases employment equalled 2.9 months.

Table 2. Descriptive statistics of the duration of particular spells (in months)

	Mean	Std. dev.
employment	6.6	10.8
unemployment	9.2	11.5
non-participation	6.7	11.2
incarceration	7.4	5.8

Notes: no. of observations: employment 1,917; unemployment 7,802; non-participation 8,567; incarceration 1,941.

Source: own calculation.

Out of the entire sample, 1,519 females experienced exactly one incarceration spell (89%) and 9% had two such spells. Hence, ca. 11% of females were recidivists and the mean interval between imprisonment spells equalled 1.7 years (median was 1.2 years). The average duration of incarceration period was 7.4 months, though the median equalled 6 months. Hence, the length distribution was right-skewed. Yet, among single-time ex-offenders a half had the longest incarceration spell at most six months long, while among recidivists this share equalled 30%. Incarceration was preceded in 45% by non-participation and in 50% by unemployment spells; on the other hand, incarceration was followed in 11% by unemployment, and in 88% by non-participation. These non-participation spells on averaged lasted 1.9 months, but in 50% of cases just 10 days, and in 97% of cases were followed by unemployment spells.

4. Labour force attachment of old-age offenders

We focused on labour force attachment of older female ex-offenders, and in particular on differences in this attachment before and after the imprisonment. To this end, we narrowed the sample to females who had at most three incarceration spells (99.6% of the sample). We took into account employment and the fact of collecting unemployment benefits. The latter indirectly expresses labour force participation since eligibility criteria include legal employment (for 365 days within 18 months prior to registration with the labour office). Registration itself does not necessarily mean active job search, but it is a prerequisite to obtain

various non-cash benefits, even for not job seekers. The most desired one is health care insurance.

Table 3 provides percentage shares of females who worked and/or collected the unemployment benefit prior and after the incarceration spell depending on its ordinal number and mean and median duration of these employment spells.

Table 3. Descriptive statistics of the duration of particular spells

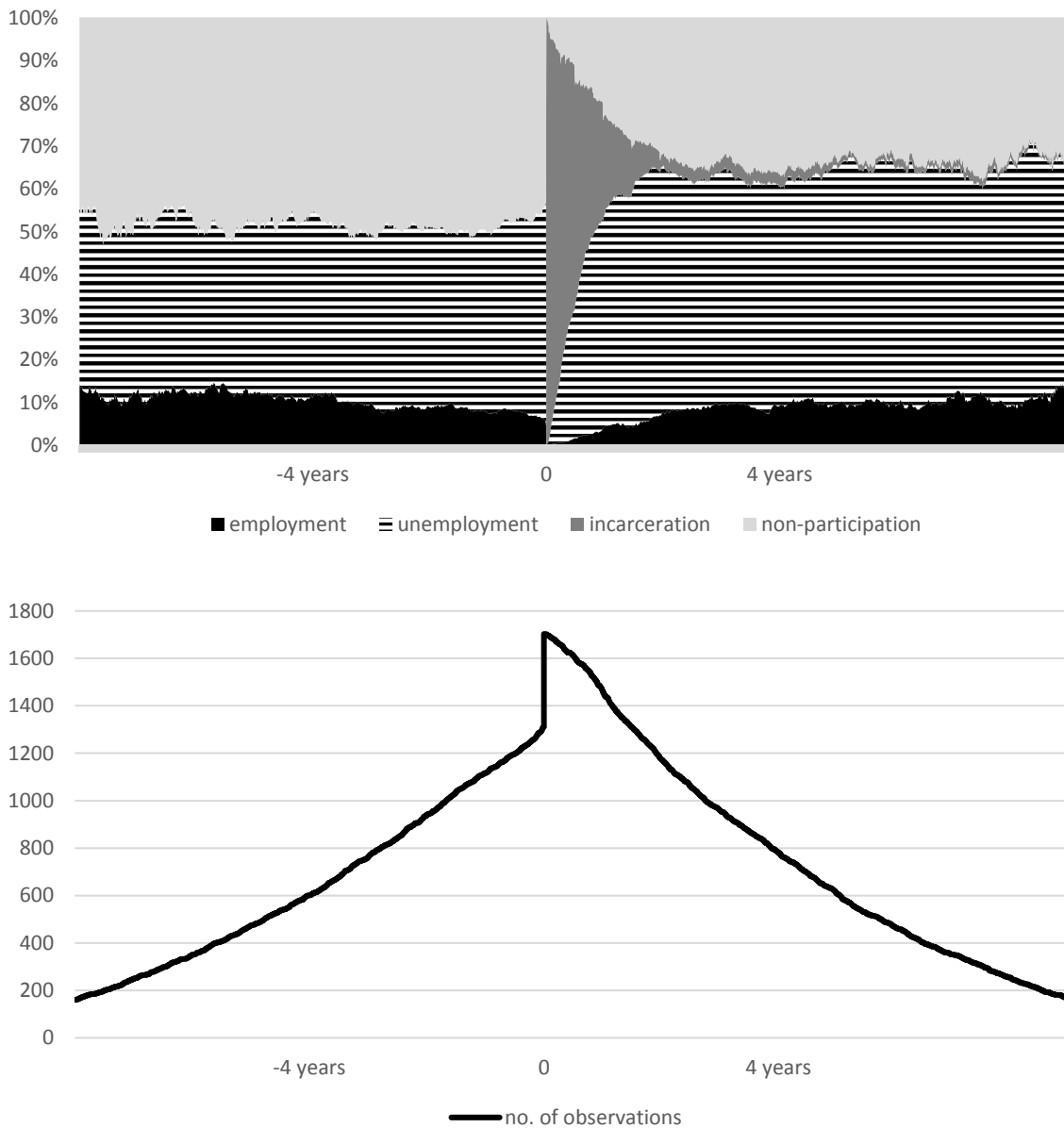
	no. of incarceration spells observed		
	one	two	three
no. of individuals	1,519	157	27
employment (% share)			
prior 1 st inc. spell	27.6	19.7	22.2
after 1 st inc. spell (and before 2 nd inc. spell)	25.7	10.2	7.4
after 2 nd inc. spell (and before 3 rd inc. spell)	-	19.1	11.1
after 3 rd inc. spell	-	-	11.1
employment (duration in months): mean (median)			
prior 1 st inc. spell	7.1 (3.0)	4.4 (2.0)	4.5 (2.6)
after 1 st inc. spell (and before 2 nd inc. spell)	6.6 (3.0)	4.2 (2.0)	5.4 (5.4)
after 2 nd inc. spell (and before 3 rd inc. spell)	-	6.0 (3.9)	0.9 (0.7)
after 3 rd inc. spell	-	-	1.8 (2.1)
unemployment benefit (% share)			
prior 1 st inc. spell	10.8	5.7	3.7
after 1 st inc. spell (and before 2 nd inc. spell)	13.3	7.0	3.7
after 2 nd inc. spell (and before 3 rd inc. spell)	-	7.6	0.0
after 3 rd inc. spell	-	-	0.0

Notes: no. of employment spells observed did not equal number of individuals employed, since, some of them had multiple employment spells, employment spells include ALMP (8% of the pool).

Source: own calculation.

Next, we identified the status in the labour market of each individual in each day of the observation period and centred the outcome around the beginning of each individual's incarceration spell. This exercise allowed us to compare the temporal distribution of labour market status prior and after imprisonment. In Figure 1 we present the results for the first incarceration spell, whereas Figures A1 and A2 in the Appendix display respective data for second and third incarceration spells.

Figure 1. Stacked tempogram of the shares of workers in a particular state in the labour market in the observation period prior and after the beginning of the first incarceration spell (upper part) and number of individuals observed (lower part)



Notes: the jump in frequency in zero comes for the fact that for 392 females the first observed spell was imprisonment; the observation period cut at the end of tails to account for at least ca. 10% of females in the sample

Source: own elaboration.

The share of employed females hardly ever exceeded 10%, either prior or after first incarceration. This share was retrieved after around three years since the beginning of the imprisonment. More females were unemployed after release than prior to conviction and this occurred at a cost of lower non-participation share. The overall shape of the figure was similar in the case of second and third incarceration. Yet, smaller share of females was employed either prior and especially after imprisonment.

5. The impact of employment on the risk of recidivism

We applied survival analysis to formally test the impact of labour force participation on the risk of recidivism. We directly accounted for the fact whether an individual was employed (dummy variable) and / or whether she was claiming the unemployment benefit (also a dummy variable). According to eligibility criteria, collecting the benefit confirms previous labour market attachment. The sample structure allowed us to disentangle the impact of employment and unemployment benefit on the risk of second incarceration spell (that is the first recidivism) and third incarceration spell (the second recidivism). By excluding censored observations, we were also able to identify the impact of employment and unemployment benefit on postponing the recidivism (compare Tripodi et al. 2010).

In the Cox proportional hazards model (Cox 1972), the hazard equals:

$$h(t) = h_o(t)e^{\beta_1x_1+\dots+\beta_kx_k}$$

The baseline hazard $h_o(t)$ is not directly estimated, but the estimates of β_1, \dots, β_k reflect the impact of particular covariates on the analysed risk. The data we used, included information on labour force attachment; we also controlled for age, level of education, and the length of longest incarceration spell an individual had. Nevertheless, we had limited information on other characteristics, so there was the risk of the omitted variable bias. We addressed this issue by accounting for the fact of unobserved heterogeneity, by including a frailty at the individual level (Austin 2017). A frailty is a latent random effect, α_i , that is multiplicatively added to the hazard function in the Cox model:

$$h_i(t) = h_o(t)\alpha_i e^{\beta x_i}$$

The frailties are unobservable positive quantities and are assumed to have mean 1 and variance θ , to be estimated from the data. The above formula can be expressed by:

$$h_i(t) = h_o(t)\alpha_i e^{\beta x_i + v_i}$$

Where $v_i = \log \alpha_i$, and here log frailties are analogous to random effects in linear models.

When estimation results proved insignificant for frailty, we accounted for the length of longest incarceration spell experienced by an individual as strata variable. In this case coefficients were estimated across strata, but each stratum was assumed to have a unique baseline hazard. In this case the hazard function became:

$$h_i(t) = h_{0i}(t)e^{\beta_1x_1+\dots+\beta_kx_k}$$

Estimation results are presented in Table 4.

Table 4. Survival analysis results

Variable / estimate	Parameter estimate (standard errors)		
	if labour force attachment postpones recidivism	if labour force attachment affects recidivism	
type of analysis		1 or 2	2 or 3
no. of incarceration spells	2*		
employment:			
no	-	-	-
yes	-0.7562*** (0.283)	-2.1720*** (0.322)	-0.9038 (0.615)
unemployment benefit:			
no	-	-	-
yes	-0.1637 (0.329)	-0.6136 (0.389)	-35.8127 (4.7 · 10 ⁷)
age	-	-0.1313*** (0.026)	-
longest incarceration up to 1 months	-	-	-
1 – 3 months	-	0.9209 (0.618)	-
3 – 6 months	-	1.1549* (0.609)	-
6 – 12 months	-	1.7180*** (0.584)	-
12 – 24 months	-	2.5121*** (0.590)	-
theta	-	3.0701 (2.112)	-
LR test for theta (p-value)	-	3.46 (0.031)	-
Log likelihood	-429.696	-1016.858	-122.111
Wald χ^2 (p-value)	9.03 (0.011)	97.47 (0.000)	6.81 (0.033)
No. of subjects	157	1,616	177
No. of failures	157	157	27

Notes: standard errors reported in parentheses, * - significant at the 10% level, ** - significant at the 5% level, *** - significant at the 1% level; * - the hazard function stratified by the variable: longest incarceration spell observed; the model for three incarceration spells (if labour force participation postpones recidivism) was not statistically significant according to Wald χ^2 .

Source: own calculation.

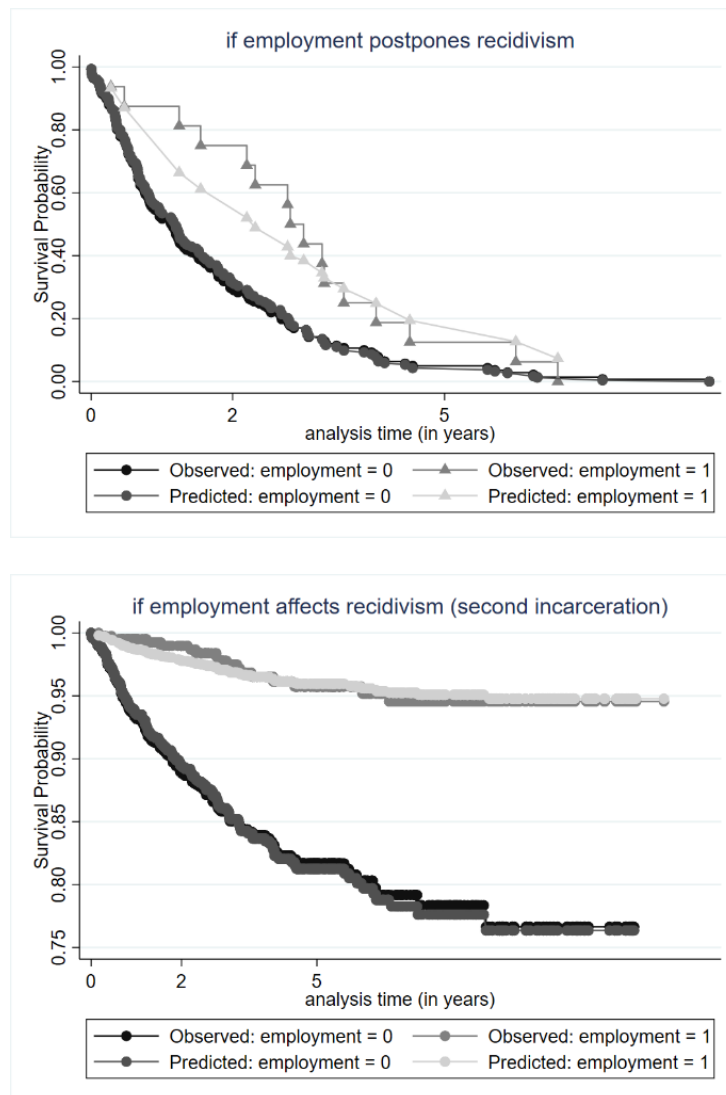
A general outcome of the analysis suggests that employment either reduces the risk of recidivism or delays it in time, though depending on the model specification the detailed results differ. Unobserved heterogeneity proved to be significant only in case of the second column

specification, that is omitted variables could have produced a bias if we referred to whether labour force attachment affected the likelihood of recidivism. In this case employment reduced the risk of second imprisonment by 90%. For those females, who already had two incarceration spells and were at risk of the third incarceration, employment reduced the risk by 60%, but the results were statistically insignificant². Finally, for those females who experienced second incarceration spell (the first column), the parameter on employment covariate should be interpreted if it accelerates or postpones recidivism. For this specification, we found no significant unobserved heterogeneity, though the model better fit the data when we stratified the hazard function over the covariate of the longest incarceration spell observed. The point estimate of the employment covariate significantly postponed the subsequent incarceration. Moreover, unemployment benefit was not statistically significant in any specification. Older females were less likely to recidivate, and so were those who served longer sentence.

Figure 2 presents the Kaplan–Meier observed survival and Cox predicted curves for the two models with significant estimates (the first and the second column). Among recidivists, the delaying effect of employment seemed to fade away after five years. Among those who were at risk of the subsequent imprisonment, the discrepancy between those who were or were not employed increased over time.

Figure 2. Kaplan–Meier observed survival and Cox predicted curves for each model

² If we excluded unemployment benefit from this specification the impact of employment would become significant at 10% significance level. The overall model specification remains significant at 10% as well.



Source: own elaboration.

In the last step, we looked for causal dependence between employment and recidivism and we employed a difference-in-differences method. We compiled the time spent outside of prison into non-incarceration spells and identified the labour force attachment therein. Employed ex-offenders were ‘treated’, and those who did not work were a ‘control’ group. The interaction term referred to those ex-offenders who were employed in the non-incarceration time (that preceded potential recidivism). Since we did not have an exogenous intervention that took place in a certain moment, we had, in fact, a quasi-causal framework (compare Ryan et al., 2015). In the analysis, we also accounted for the high-dimensional fixed-effects vector that

included the year of the first incarceration spell observed, the level of education, and the longest incarceration spell observed. The estimated equation was:

$$y_{it} = \beta_0 + \beta_1 \cdot treat_i + \beta_2 \cdot interact_i + \mu FE_{it} + u_{it}$$

where y_{it} is the outcome variable (i.e., whether the individual had a subsequent incarceration spell, or the time to reincarceration), $treat_i$ refers to whether the person was employed at any time in the observation period), $interact_i$ refers to whether the employment occurred in the non-incarceration spell the preceded potential reincarceration, and FE stands for fixed effects. β_2 is the coefficient of interest.

Table 5. Quasi difference-in-differences analysis results

Variable / estimate	Parameter estimate (standard errors)			
	whether employment postpones recidivism time to reincarceration		whether employment affects recidivism dummy on reincarceration	
type of analysis dependent variable				
no. of incarceration spells	2	3	1 or 2	2 or 3
treat	74.5481 (122.498)	-273.8526* (141.350)	0.0753*** (0.022)	-0.0315 (0.067)
interact	414.0751** (190.253)	759.467** (298.365)	-0.1395*** (0.023)	-0.0442 (0.076)
no. of observations	156	27	1,672	184
F (p-value)	3.30 (0.013)	4.83 (0.016)	5.52 (0.000)	0.76 (0.467)

Notes: standard errors reported in parentheses (clustered at the individual level), * - significant at the 10% level, ** - significant at the 5% level, *** - significant at the 1% level; some equations also included: age, education, longest incarceration spell observed (up to one month, 1-3 months, 3-6 months, 6-12 months, 12-24 months), and year of the first incarceration spell observed.

Source: own calculation.

Results, reported in Table 5, indicate that employment postponed subsequent convictions (columns 1-2) and the effect was stronger for the third imprisonment than for the second one (though the sample was unproportionally smaller). Moreover, employment reduced the risk of recidivism. Statistically significant result was found for the second imprisonment spell; for the third imprisonment spell the entire model was not statistically significant.

6. Discussion and concluding remarks

We analysed labour force participation, and employment in particular, of female workers who had their first incarceration spell late in their lifetime. Our study produced clear and consistent outcome that these women were loosely attached to the labour market. The sequence analysis and the shape of tempogram indicated no substantial difference in the share

of females employed either prior and after imprisonment; though the share of employed female ex-offenders was rebuilt after around 3 years since the beginning of a sentence. The higher share of those unemployed after a sentence than prior (at a cost of lower non-participation rate) may indicate that after serving a sentence these women looked for some help by means of public employment office. It is the duty of the prison services, often in cooperation with social welfare centres, to instruct prisoners leaving prison about their options for searching for a job. In large prisons, this kind of training takes place every week. Prisoners are informed about the importance of registering with the labour office in order to receive public health insurance, and about their options for obtaining support at social welfare centres (registration with employment office is often a requirement).

According to survival analysis results being employed reduced the risk of the second incarceration and postponed the second incarceration spell. No such effect was found for collecting the unemployment benefit. Difference-in-differences analysis hinted causal dependence – for reducing the risk of the second imprisonment and in postponing either second or third imprisonment spell; although causal relationship should be interpreted with caution. This finding suggests that recidivist are much more disadvantaged in the labour market and employment can mostly help reintegrate with the society first ever convicted females. Moreover, the low income, which is secured by unemployment benefit is a one simplified dimension of quality of (previous) employment. Our finding of the negligible impact of unemployment benefit on the risk of recidivism is in line with previous evidence that not all forms of employment prevent ex-offenders from committing criminal acts (Ramakers et al., 2017). This conclusion is also strengthened by the significant estimate of the frailty and clustered standard errors at the individual level, and stratified hazard function over the length of the longest sentenced served. Omitted variables indicate the need to account for a combination of many more characteristics, including social, psychological, family and

economic aspects when explaining the impact of employment on recidivism among older females, if possible.

Main limitations of our study concern representativeness of the sample. Yet, we claim that administrative data we used were the best source to examine labour market attachment of female ex-prisoners in Poland. We assumed that these women faced strong incentives to register with labour offices after release from prison, due to potential in-cash and non-in-cash benefits. Moreover, we compared the sample size with demographic data, labour force survey and penology data (irrespective of gender). According to census around 30% of people born in the 1940s and more than 50% of people born between 1950 and 1965, ever appeared in a public employment office registry. Between 1995 and 2016, on average 72% of the unemployed (according to the LFS) were registered with a public employment office. On the other hand, around 61% of those registered with a public employment office were unemployed, according to LFS. A coverage of incarceration spells as compared to penology data for 2004-2017 stands at around 2% of the stock of prisoners at the end of a given year, and on 3.5% of the inflow and 3.5% of the outflow during a given year. Even if these figures seem small, the time trends were similar, what is undoubtedly an advantage.

Our research let us conclude, that females who were in prison for the first time late in life were actually on the fringe of labour force even prior to incarceration. Still, employment seems to help in successfully reintegrating with the society former prisoners and protect them against recidivism. Nevertheless, former prisoners face labour demand constraints. Employers are reluctant to employ ex-offenders, and labour market policy instruments do not encourage either ex-prisoners or employers to actively search for a job or such job seekers. The recommendation emerges that, while accounting for many aspects of the job quality, the policy actions should be devoted to actions aimed at permanently attaching female offenders to labour market to achieve successful social reintegration.

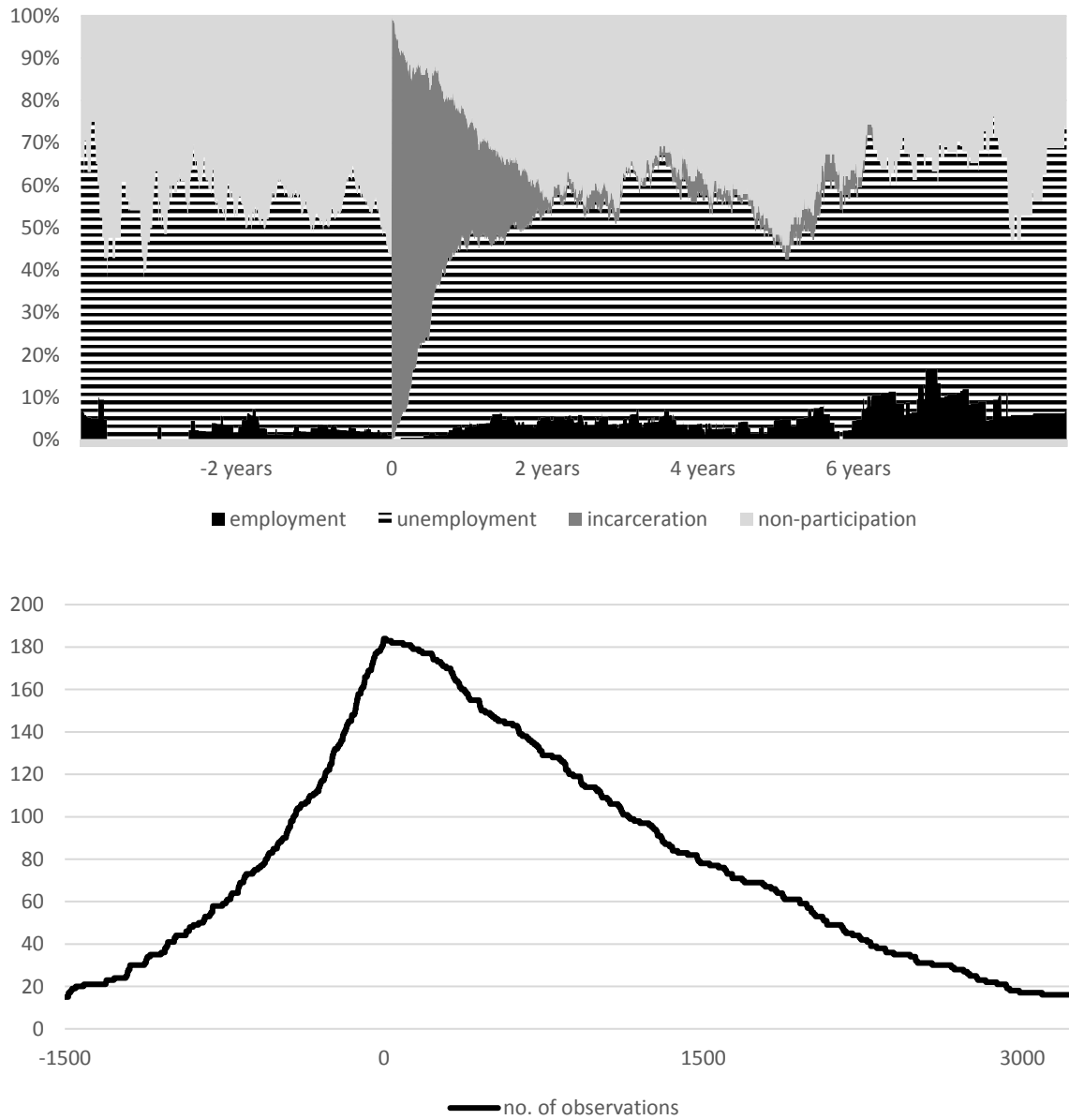
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Appendix

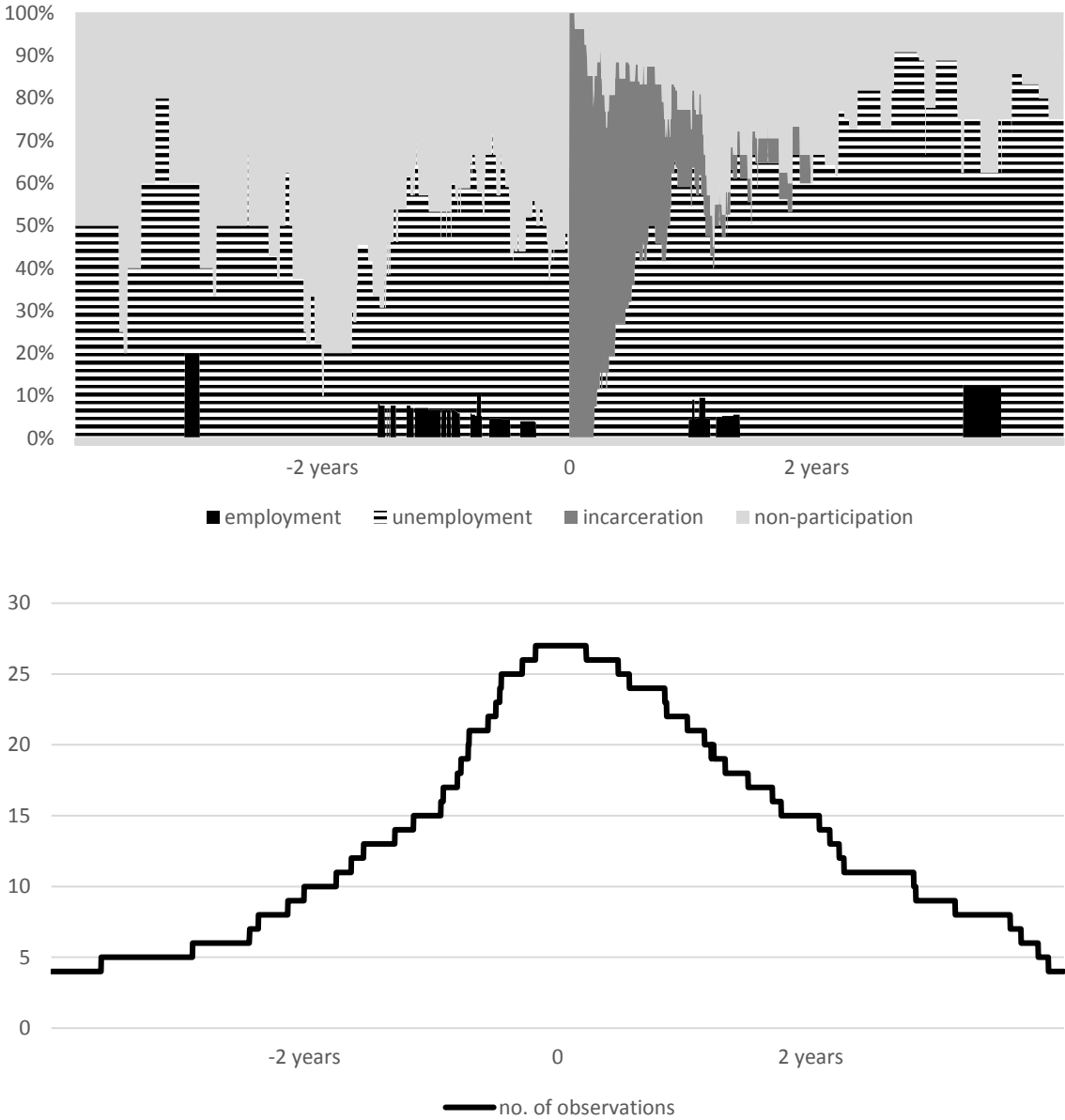
Figure A1. Stacked tempogram of the shares of workers in a particular state in the labour market in the observation period prior and after the beginning of the second incarceration spell (upper part) and number of individuals observed (lower part)



Notes: the observation period cut at the end of tails to account for at least ca. 10% of females in the sample

Source: own elaboration.

Figure A2. Stacked tempogram of the shares of workers in a particular state in the labour market in the observation period prior and after the beginning of the third incarceration spell (upper part) and number of individuals observed (lower part)



Notes: the observation period cut at the end of tails to account for at least ca. 14% of females in the sample

Source: own elaboration.