

The Impact of Prison Labor Programs on Recidivism: The Case of Chile

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Abstract

Research Summary

We estimate the effect of prison labor programs on recidivism using a nationwide census-based dataset of all prison inmates released in 2010 in Chile and tracked for two years after release. Because participation in prison labor programs is not random, we use an instrumental variables (IV) regression procedure to address endogeneity and to estimate whether there is a reduced probability of recidivism that can be attributed to participation in prison labor programs. The results indicate that once the endogeneity problem is addressed, participation in prison labor programs does not contribute to a statistical reduction in the odds of recidivism for the overall sample; however, the estimation of heterogeneous effects reported statistically significant effects for specific groups.

Policy Implications

This study contributes to increased efficiency in the use of public funds by assessing whether a social program is fulfilling the objectives for which it was created. Additionally, it provides information about the effect of prison labor programs on a specific groups of inmates.

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I. Introduction

About 40% of the population serving time in Chilean prisons are re-imprisoned within two years after release. In other words, of the nearly 20,000 inmates released every year (Gendarmería de Chile, 2013), about 8,000 return to prison within two years.² Because recidivism is a worldwide problem³, there is a dynamic public debate about how to reduce recidivism through the implementation of prison programs.

Among the most popular policies to reduce the probability of recidivism are labor programs in prison. Despite their popularity, the effect of such programs on recidivism remains uncertain (Bushway, 2003). In fact, research into the subject has produced opposing results (Hopper, 2013; Wilson, Gallagher & MacKenzie, 2000; Saylor & Gaes, 1997; Van Stelle, Lidbury, & Moburg, 1995). Additionally, with a few exceptions, studies generally present methodological weaknesses (Wilson et al., 2000). One of the most common methodological issues is failing to take endogeneity into account (Bohmert & Duwe, 2012).

Indeed, because participation in labor programs is in general voluntary, there is no random assignment of *treatment*; therefore, those treated may be systematically different from the non-treated, both in observable and non-observable variables. In that context, without an estimation strategy that addresses the endogeneity of labor program participation, we cannot know whether the differences in recidivism rates are the result of the participation in those programs, or are caused by unobservable characteristics of the participants that are correlated with both recidivism and participation in labor programs - for example, motivation to desist from crime.

² Chile ranks fifth in Latin America and second among OECD countries in its imprisonment rate, with 240 prisoners per 100,000 inhabitants (International Centre for Prison Studies, 2015).

³ According to the U.S. Sentencing Commission (USSC), nearly half (49.3%) of the 25,431 offenders followed for 8 years in 30 states were rearrested for either a new crime or a violation of the conditions of their probation or release (2016). Similarly, in the UK, the proven reoffending rate for adult offenders released from custody between April 2014 and March 2015 was 44.7% (Ministry of Justice UK, 2017).

In this paper, we study the effect of labor programs on the probability of recidivism, using Chilean census-based data, and we address the endogeneity problem through an instrumental variables (IV) regression, where the instrument is the prison where each person served his sentence. The choice of the instrument is based on the legal procedure for assignment to a prison. The prison where each person serves her sentence is based on the region where the crime was committed, not on the characteristics of the person (except gender) or the type of crime. This means that, conditional on the region where the crime was committed, the prison where each person serves her sentence can be thought of as exogenous, i.e., independent of any unobservable that is simultaneously related to the probability of committing a crime in the future and to the probability of participating in a prison labor program.

Our results indicate that, on average, evidence cannot support the idea that prison labor programs in Chile are effective. According to Bohmert & Duwe (2012), this could be explained by the fact that reentry programs that consist of a single component (in this case, a labor component) and are based on the period of imprisonment are proven to be less effective. Furthermore, the authors note that previous studies (MacKenzie, 2000; Wilson et al., 2000) showed that programs incorporating various services, both within the prison and post-imprisonment (e.g., drug addiction treatment, education, vocational training, assistance with job search and job maintenance), show a significant reduction in recidivism.

In addition to the estimation of the overall sample, we implement our estimation procedure on different samples. By doing so, we find a statistically significant reduction, with relevant magnitudes, in the probability of recidivism for a population with a long criminal history, for those convicted of crimes against property, and for those who serve sentences for more than six months. Regarding the first group, this could be explained by the fact that people with an extensive criminal history often have little or no work experience or qualifications, so they could benefit even from labor programs that focus on the most basic skills and habits. In other words, a small change in work experience could lead to a larger effect on recidivism. Regarding the type of crime, because there is a strong association between work and crime against property, it is possible to expect that labor programs have a larger effect on inmates serving sentences for crimes related to material goods than on inmates serving sentences for other crimes. Finally, regarding the length of sentence, it is plausible that work experience during imprisonment has a statistically significant effect on offenders serving longer sentences because it reduces the impact of a long period outside the labor market. Offenders who spend relatively long periods of incarceration generally lack up-to-date job skills or education to meet job demands after they are released (Lockwood & Nally, 2016). This puts them in a disadvantageous position in the labor market, possibly more so than those who served shorter

sentences, especially if those incarcerated for a longer time did not have any work experience during the whole period of imprisonment.

This paper makes four contribution to the literature. First, the sample is census-based, and as such considers all inmates in Chile released in 2010. This is an important innovation, because internationally there are currently no studies on this matter based on such a comprehensive sample as that which can be offered by census data. The second contribution is methodological: this is one of the few evaluations of prison labor programs that was designed to address the endogeneity problem inherent in non-experimental designs. Third, this research is novel both at the national level and for Latin America, as it is the first study conducted in the region to assess the impact of prison labor programs on recidivism using an instrumental variables regression. Finally, in terms of public policy, this study sheds some light on which groups have been more benefited by the current labor programs in prison.

The rest of the paper proceeds as follows. Section 2 reviews the literature. Section 3 describes the Chilean prison system, our data, and the methodological approach. Section 4 presents our findings on the impact of labor programs on recidivism. Section 5 concludes.

II. Literature Review

Labor programs constitute one of the strategies that has been used to reduce the probability of recidivism. According to Hull (2014), labor programs help prisoners develop good work habits and a strong work ethic, which allow them to maintain employment and distance themselves from criminal activities after release. Bohmert & Duwe (2012) concluded that labor programs strengthen both behavioral and occupational skills. They add that, during their research, former inmates reported that these new skills made them feel like they have a place in society. This sense of belonging is particularly relevant in a social context that often leads to stigmatization and marginalization of those who have been through the criminal justice system.

Regarding assessments of prison labor programs, results have not been conclusive. In their meta-analysis, Wilson, Gallagher & MacKenzie (2000) reviewed 33 studies which included experimental, quasi-experimental and non-experimental evaluations of prison labor and educational programs. They noted that most of these assessments were focused on educational programs; just a few examined labor programs. Moreover, they observed that the results of these studies tended to be based on extremely weak methodological procedures (Wilson et al., 2000). In particular, of the few studies evaluating labor programs, only three used statistically rigorous methodologies. Two of them had an experimental design (Lattimore, Witte & Baker, 1990, and Van Stelle, Lidbury & Moberg,

1995) and the third had a non-experimental design that used a propensity score matching procedure to address the endogeneity problem (Saylor & Gaes, 1997). Only one of the two experimental studies reported significant results, indicating a 20% decrease in the probability of recidivism (Lattimore et al., 1990, in Wilson et al., 2000). Furthermore, Saylor & Gaes (1997) found that those who had worked in the prison had a 24% lower probability of recidivism than those who did not work during their sentence. Drake (2003), who also used a propensity score matching procedure, observed a decrease of 7 percentage points in recidivism among offenders in Washington State who participated in labor programs during their sentences.

However, while Saylor & Gaes (1997) and Drake (2003) presented positive results, this was not the case for Bohmert & Duwe (2012). Using a propensity score matching procedure as well, the authors conducted an evaluation of the Affordable Homes Program - a labor program run in Minnesota prisons - and concluded that, although the participant group presented lower recidivism than the comparison group, the differences were not statistically significant.

The latter is consistent with statements by Uggen (2000), who notes that, although there is strong evidence supporting the positive effects of work in reducing adults' criminal activity (Sampson & Laub, 1993), most experimental efforts to reduce crime through labor programs have had a disappointingly small effect, or none at all (Piliavin & Gartner, 1981; Uggen, 2000).

However, Hopper's research (2013) presented more encouraging results. That research examined the effects of participation in the Prison Industry Enhancement Certification Program (PIECP) in the U.S. states of Indiana and Tennessee. The results indicated that PIECP reduced the probability of recidivism by 10%. Our current research is very similar to Hopper's paper, in both its objectives and the instrument used. Hopper used a two-stage instrumental variables regression to control for endogeneity associated with unobservable characteristics. The instrument used was whether the PIECP was available in specific prisons. Hopper evaluated the suitability of the instrument by discussing whether the variable was correlated with participation but not correlated with recidivism independently of participation (Hopper, 2013). Because there had to be a PIECP in the prison for the prisoner to participate, the instrument was correlated with participation. If inmates with higher abilities were being systematically sent to prisons with PIECP programs, then the instrument might be correlated with recidivism; if the inmate's facility assignment were random, then there should be no such correlation. According to both states' Departments of Correction (2012, 2011), the facility assignment is based on the inmate's security designation and the prison's capacity. With that information, it is possible to state that the criteria for a suitable instrument are satisfied. In the methodology section, we will show that we followed a similar logic to assess the suitability of our instrument.

III. Methodology

Chilean Context

Since 1981, Chilean prisons have incorporated labor programs in order to contribute to the social reintegration of inmates through the formation of labor skills by providing technical training and paid work (Gendarmeria de Chile, 2016). However, prison labor programs are not available for all inmates. Furthermore, inmates who are selected to be part of any labor program must fulfill the following requirements: have served two-thirds of the minimum length of their sentence, and shown a willingness to work, motivation to change, and very good or good behavior (Gendarmeria de Chile, 2016). Since some of these requirements refer to characteristics that we cannot observe from the data, we faced endogeneity problems that needed to be addressed. We return to this topic in the methodology section.

Currently, prison labor programs offer diverse labor activities oriented toward promoting the social reentry process of inmates. However, the number of spots available in each program tends to be small. According to our database, Chilean prisons have less than a quarter of their population enrolled in a labor program.

Table 1: Participation in Prison Labor Programs

	Frequency	Percentage
Participated at least once	4,620	23.20%
Never participated	15,291	76.80%
Total	19,911	100%

Data

The data used in the present study is drawn from a census-based database developed by the Gendarmería de Chile. This database contains information on all inmates released from Chilean prisons in 2010—19,602 people in total. All of them were subject to monitoring for recidivism over an observation period of two years. The database includes information for each individual regarding age, sex, region, educational level, marital status, religion, length of sentence, type of crime, criminal history (which is a proxy for criminal trajectory), recidivism, and our treatment variable: participation in prison labor programs.

Table 2: Descriptive Statistics

Variables	Categories	Preserved Sample	Excluded Sample	Difference	Z Test	P-Value
Recidivism	Relapsed	0,408	0,290	0,118	10,591	0,000
Work	Participated in labor program	0,250	0,085	0,165	17,132	0,000
Sex	Man	0,891	0,871	0,020	2,790	0,005
Age	18–29 years	0,426	0,471	-0,045	-3,994	0,000
	30–39 years	0,308	0,299	0,009	0,819	0,413
	40–49 years	0,182	0,169	0,013	1,456	0,146
	50 years or more	0,084	0,061	0,024	3,795	0,000
Educational Level	Never went to school	0,017	0,019	-0,003	-0,875	0,381
	Incomplete primary education	0,268	0,237	0,030	2,981	0,003
	Complete primary education	0,227	0,215	0,012	1,299	0,194
	Incomplete secondary education	0,264	0,289	-0,025	-2,498	0,012
	Complete secondary education	0,198	0,199	-0,001	-0,116	0,908
	Incomplete higher education	0,015	0,029	-0,014	-4,773	0,000
	Complete higher education	0,011	0,011	0,000	0,089	0,929
Marital Status	Married	0,191	0,191	-0,000	-0,023	0,982
	Cohabitator	0,086	0,058	0,028	4,453	0,000
	Separated	0,018	0,021	-0,002	-0,707	0,480
	Single	0,695	0,726	-0,032	-2,992	0,003
	Widower	0,010	0,004	0,006	2,600	0,009
Type of Crime	Torts	0,002	0,000	0,002	2,092	0,036
	Drug Crimes	0,147	0,181	-0,034	-4,105	0,000
	Fraud	0,013	0,017	-0,004	-1,530	0,126
	Faults	0,039	0,093	-0,055	-11,591	0,000
	Crimes Against Public Faith	0,013	0,008	0,005	2,042	0,041
	Labor Crimes	0,000	0,001	-0,001	-1,291	0,197
	Homicide	0,082	0,107	-0,026	-4,035	0,000
	Shoplifting	0,250	0,258	-0,008	-0,780	0,435
	Injuries	0,004	0,016	-0,013	-7,876	0,000
	Special Laws´ Crimes	0,046	0,032	0,013	2,865	0,004
	Crimes against Integrity	0,059	0,048	0,011	2,099	0,036
	Other Crimes	0,048	0,055	-0,007	-1,376	0,169
	Other Crimes Against Property	0,091	0,079	0,012	1,854	0,064
	Violent Robberies	0,182	0,081	0,101	11,791	0,000
	Non Violent Robberies	0,172	0,088	0,084	9,968	0,000
	Sexual Offenses	0,033	0,008	0,024	6,244	0,000
	Traffic Crimes	0,045	0,053	-0,008	-1,719	0,086
Length of Sentence	Less than 6 months	0,502	0,795	-0,293	-25,694	0,000
	Between 6 months and 1 year	0,063	0,035	0,029	5,252	0,000
	Between 1 year and a day and 3 years	0,189	0,089	0,099	11,354	0,000
	Between 3 years and a day and 5 years	0,110	0,041	0,069	9,895	0,000
	5 years and a day or more	0,136	0,040	0,097	12,739	0,000
Religion	Agnostic	0,004	0,006	-0,002	-1,182	0,237
	Atheist	0,014	0,028	-0,014	-4,811	0,000
	Catholic	0,502	0,540	-0,038	-3,292	0,001
	Evangelical	0,327	0,248	0,079	7,376	0,000
	Jewish	0,000	0,000	0,000	0,490	0,624
	Mormon	0,004	0,006	-0,002	-1,329	0,184
	Muslim	0,000	0,000	0,000	0,347	0,729
	None	0,142	0,166	-0,023	-2,911	0,004
	Orthodox	0,000	0,000	0,000	0,490	0,624
	Other	0,003	0,003	0,000	0,076	0,939
Jehovah´s Witness	0,002	0,003	-0,001	-0,563	0,573	

Observations with missing values were eliminated, leaving a final sample of 17,529 observations. This resulted in a loss of 9.4% of the sample, so it was relevant to assess whether the final sample and the eliminated sample share similar characteristics or are systematically different. To do so, a test of proportions was performed to establish whether the differences between these groups were statistically significant.

In Table 2, the Preserved Sample is the one kept for estimations, while the Excluded Sample consists of the observations that were eliminated. According to the results presented in Table 2, the groups present differences that are statistically significant for every variable. This means that the results of the estimations made with the Preserved Sample cannot be extrapolated to the entire population.

Prison Labor Programs in Chile: An Overview

There are at least 10 different kinds of labor activities available for inmates. As shown in Table 2, labor programs in Chilean prisons can be broken down into the following categories:

Table 3: Types of Prison Labor Programs

Categories	No. of Observations	Percent
Seasonal labor activities	331	5.30%
Design and/or implementation of education or training activities for other inmates	25	0.40%
Services for companies or organizations	147	2.37%
Construction services for the prison unit	326	5.26%
Manufacture of marketable products	2,971	47.99%
Formal or informal small-scale trade	32	0.51%
Labor in Education and Work Center (CET)	337	5.44%
Labor for private companies operating in the prison unit	160	2.58%
Labor in productive labor workshops of Gendarmería de Chile	285	4.60%
Other work activities approved by the technical adviser	1,576	25.46%
Total	6,190	100%

As can be seen in Table 3, the number of participants in each work category is quite low, with the highest concentration in the manufacture of marketable products and other work activities approved by the technical adviser. Therefore, for estimation purposes, all categories were grouped into a single binary variable, called Work, which equals 1 if people participated in any of these labor categories during their sentence and 0 if they did not. Although this binary variable renders it

impossible to discern the specific effect of engaging in each labor activity, it is useful in its ability to offer a general picture of the effect of prison labor programs overall.

Empirical Strategy: Instrumental Variable

We model the relationship between prison labor programs and recidivism given by these two equations:

$$R_i = \beta_0 + \beta_1 T_i + \beta_2 X_i + \varepsilon_i \quad (1)$$

$$T_i = \sum_{j=1}^J \gamma_{1j} Z_{j(i)} + \gamma_2 X_i + \epsilon_i \quad (2)$$

where R_i is a binary variable that equals 1 if individual i re-offends and 0 otherwise; T_i is a binary variable that equals 1 if individual i participates in the treatment (the labor program) and 0 otherwise; $Z_{j(i)}$ is our instrument, which is equal to 1 if i serves her sentence at jail j and 0 otherwise (J is the total number of jails); X_i is the set of controls included in Table 1, namely sex, age, educational level, marital status, type of crime, length of sentence, religion and region; and ε_i and ϵ_i are shocks.

We estimate this system of equations by two-stage least squares, with robust standard errors, which allows for correlation between ε and ϵ . In this context, the critical assumption to deliver causal effects is that, conditional on X_i , Z_i is independent from ϵ_i (Angrist & Pischke, 2009). This is our exclusion restriction. Regarding that, in the next section we describe why the process of innate allocation is consistent with this assumption, i.e., conditional on sex and region, Z_i is independent from ϵ_i . We also present statistical tests showing that our instrument meets the relevance condition, i.e., it is not a weak instrument.

Intuitively, the endogeneity problem arises because the participation indicator T is correlated with unobservable variables, such as prisoner motivation to desist from criminal activity. These unobservable variables would impact on the likelihood of recidivism, regardless of whether individuals participate in prison labor programs or not. Thus, what is sought by our empirical approach is to exploit an exogenous change in the probability of treatment, i.e., independent of these unobserved variables, that is delivered by the allocation to different prisons. This means that we obtain causal but local effects (Imbens & Angrist, 1994), namely, the average impact of labor programs on recidivism for those individuals whose labor program probability is changed by the

prison to which they were allocated, i.e., the average effect for the compliers (Angrist & Pischke, 2009).

Selected Instrument

Our instrument is very similar to the one used by Hopper (2013), which was the availability of a work program in the prisons studied. As we discussed in the previous section and in line with Hopper (2013), the suitability of the instrument requires that it is correlated with participation in the labor program, but not correlated with recidivism independently of participation.

The condition of relevance is evaluated by testing whether Z is a statistically significant predictor of the decision to participate. To accomplish this, Staiger & Stock (1997) proposed a “rule of thumb” that the instrument is weak if the F statistic is lower than 10. As Table 4 shows, the Test F is equal to 12.14, which fulfills the requirement for instrument relevance according to the rule. In addition, Table 4 presents the critical values of Stock and Yogo’s weak instrument test. As this table shows, the null hypothesis of weak instruments is rejected at 10% of maximal IV bias relative to OLS.

Table 4: Stock and Yogo’s Weak Instruments Test

Weak identification test	
Ho: equation is weakly identified	
Cragg-Donald Wald F statistic	12.144

Stock-Yogo weak ID test critical values: 5% maximal IV relative bias: 21.12; 10% maximal IV relative bias: 10.91; 20% maximal IV relative bias: 5.69; 30% maximal IV relative bias: 3.92.

To assess the exogeneity condition, we describe the procedures for inmates’ allocation to see whether it is reasonable to think that prison assignment is, conditional on the covariates, uncorrelated with the unobservable characteristics. For example, to do so, Hopper (2013) assessed the Indiana and Tennessee assignment systems and found out that the first consideration for facility assignment is the inmate’s security designation. After that, assignment decisions are based on capacity.

In our context, the court decides in which prison a person will serve her sentence, and that decision is based on the region where the crime was committed, not on the characteristics of the person:

"The courts are responsible for accusing, processing and condemning. And the court decides under its jurisdiction, which is where the crime was committed, where imprisonment [takes place] (M. Rodríguez, personal communication, Gendarmería de Chile, March 5, 2015). "

Moreover, we also asked in the interview when the evaluation of the inmates is performed. Through this question, we wanted to know whether the characteristics of the subjects have any impact on the decision of the judges. In this regard, the interviewee stated that the evaluation of the person's characteristics only begins once he has entered his designated prison, not before:

"When a person enters prison, he/she is evaluated with a scale to measure his/her criminal history, and that result is distributed within the same prison (M. Rodríguez, Gendarmería de Chile, personal communication, March 5, 2015)."

This confirms that the assessment of prisoners' characteristics is performed after their assignment to a prison and therefore has no impact on the assignment process. It is therefore reasonable to assume that the criterion of instrument exogeneity is satisfied.

IV. Results

Table 5: Probability of Reoffending

Independent Variables	OLS without control variables	Standard Error	OLS with controls	Standard Error	IV	Standard Error
Labor Program Participation	-0.141***	(0.008)	-0.061***	(0.0119)	-0.052	(0.075)
Observations	17,534		17,534		17,534	

Note: Control variables consider sex, age, educational level, marital status, religion, type of crime, length of sentence, and length of criminal history. Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

According to the information presented in Table 5, the results indicate that, when performing a regression without control variables, participation in labor programs decreases the likelihood of

recidivism by 14 percentage points (pp), while, after adding control variables⁴, the likelihood is decreased by 6 pp. However, when performing an instrumental variables regression, the results show that participation in labor programs does not contribute to a statistically significant reduction in the probability of recidivism. This could indicate that the two previous models were both overestimating the effects of labor programs on recidivism. However, the IV result could be influenced in part by the limits of the instrument itself. In other words, although the instrument meets the statistical criteria of both Test F and Stock and Yogo's test, it is close to the critical value.

Heterogeneous Effects

Because the results indicate that labor programs do not have a statistically significant effect on recidivism for the overall sample, we tested whether this result masks heterogeneities, by estimating the effects of participation in a labor program on specific groups. In particular, we estimated the effect on groups separated by age, criminal history, types of crimes, and length of sentence. We selected these groups for testing heterogeneities because international evidence suggests that labor programs could have different effects depending on age (Uggen, 2000), length of sentence (SCCJR, 2012), type of offense (Latessa et al., 2014) and subject's criminal commitment (Latessa et al., 2014).

Regarding age differences, we divided the sample into two groups: a group of 18–29 year old inmates (52.6% of the sample) and a second group aged 30 and older (47.4% of the sample). The results shown in Table 6 indicate that the effect is not statistically significant for either group. According to Uggen (2000), the implications of labor participation for criminal activity seem to differ according to the life cycle of the subject (Uggen, 2000). Moreover, a positive relationship has been observed between employment and criminal activity in young people (Bachman & Sschulenberg, 1993), while the relationship would be negative in the case of adults (Hagan & McCarthy, 1997). Considering this, we would expect to see a statistically significant effect for the second group, which was not the case.

⁴ We control for sex, region, age, educational level, marital status, religion, types of crime, length of sentence, and length of criminal history. For further information, see Table 10 in the Appendix.

Table 6: Probability of Recidivism According to Age

	18 to 29 Years Old		30 Years Old or More	
	IV	Standard Error	IV	Standard Error
Labor Program Participation	-0.06395	(0.0681)	-0.03289	(0.0781)
Observations per Group	9,345		8,411	

Note: Control variables consider sex, age, educational level, marital status, religion, type of crime, length of sentence, and length of criminal history. Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Secondly, regarding criminal history, the effects are estimated separately for each category, i.e., Short, Medium and Long criminal history. The sample breaks down to 28.8% of individuals with a long criminal history, 51.6% with a medium-length criminal history and 19.6% with a short criminal history. Unlike the previous results, the results shown in Table 7 indicate that the effect of participating in labor programs is statistically significant for the group with a long criminal history. In particular, a reduction of 21 pp is observed for this group.

Table 7: Probability of Recidivism According to Criminal History

	Short		Medium		Long	
	IV	Standard Error	IV	Standard Error	IV	Standard Error
Labor Program Participation	-0.0234	(0.0713)	-0.0395	(0.0811)	-0.2152**	(0.0937)
Observations per Group	3,405		9,076		5,053	

Note: Control variables consider sex, age, educational level, marital status, religion, type of crime, length of sentence, and length of criminal history. Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

This result is consistent with international evidence. According to Latessa, Listwan & Koetzle (2014), people with an extensive criminal history often have little or no work experience or qualifications, so they stand to benefit even from labor programs that focus on the most basic skills and habits.

Regarding Type of Crime, we separated the group into two samples, one serving sentences for crimes against property and the other group serving sentences for other crimes. According to the results presented in Table 8, we can observe statistically significant effects for the group convicted of property crimes. In particular, the results indicate that participation in labor programs decreases the probability of recidivism by 17 pp, which is significant at the 95% confidence level. In contrast, the group convicted of other offenses did not present statistically significant effects.

These results are reasonable if we consider that criminal behavior, in particular that linked to property crimes, is sensitive to changes in the labor situation (Bushway, 2003), and that legal income has a negative effect on illegal gains (Uggen & Thompson, 2003). Thus, it is to be expected that labor programs will have a greater effect on those convicted of offenses related to access to income than, for example, those convicted of crimes against persons, such as homicides, sexual offenses or injuries.

Table 8: Probability of Recidivism According to Types of Crimes

	Crime Against Property		Other Crimes	
	IV	Standard Error	IV	Standard Error
Labor Program Participation	-0.17091**	(0.0821)	0.06522	(0.0685)
Observations per Group	9,325		8,481	

Note: Control variables consider sex, age, educational level, marital status, religion, type of crime, length of sentence, and length of criminal history. Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Finally, regarding the length of the sentence, we divided the sample into two groups: a group of inmates with sentences of six months or less (50.1% of the sample) and a second group of inmates with sentences of more than six months (49.9% of the sample). Table 9 shows that the effect is not statistically significant for the first group, but it is statistically significant for longer sentences; indeed, for this group, participating in a labor program during their prison period decreases the probability of recidivism by 10.2 pp.

According to Lockwood, Nally and Ho (2016), offenders who spend relatively long periods of incarceration generally lack up-to-date job skills or education to meet job demands. Considering this information, it is plausible that having work experience during imprisonment has a statistically

significant effect on offenders serving long sentences because it reduces the impact of a longer period outside the labor market.

Table 9: Probability of Recidivism According to Length of Sentence

	6 Months or Less		More than 6 Months	
	IV	Standard Error	IV	Standard Error
Labor Program Participation	-0.07356	(0.2039)	-0.10175**	(0.0347)
Observations per Group	8,905		8,851	

Note: Control variables consider sex, age, educational level, marital status, religion, type of crime, length of sentence, and length of criminal history. Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

V. Discussion and Conclusion

In our research, we estimated the effect of prison labor programs on recidivism using an instrumental variables (IV) regression procedure to address endogeneity and to estimate the probability of recidivism attributable to participation in prison labor programs. Our results indicate that, once the problem of endogeneity is addressed, prison labor programs in Chile do not have a statistically significant effect on recidivism for the overall sample.

However, in addition to the estimation of the overall sample, heterogeneous effects were tested, and they reported statistically significant effects for specific groups. In particular, we found a statistically significant reduction in the probability of recidivism on the population with a long criminal history, on those convicted of crimes against property, and on those who served sentences of more than six months.

At first glance, and focusing on the average effect on the entire population, these results could lead to the conclusion that it would not be appropriate to continue implementing labor programs within prisons, or that they should only be implemented for those groups that show statistically significant results. However, as Latessa et al. (2014) point out, it is necessary to examine programs that have been successful before discarding this kind of initiative. As Bushway (2003) claims, it is not the mere existence of such work programs that generates a decrease in recidivism; the potential

lies in the specific characteristics of those programs, based on which certain labor programs may be more effective than others.

According to Bohmert & Duwe (2012), there are at least two possible explanations for non-significant results of evaluations of the effect of labor programs on recidivism. First, they claim that programs that consist of a single component (in this case, a labor component) and are limited to the period of imprisonment are less effective. This hypothesis is partly based on the fact that some of the studies that have shown positive results took into account the simultaneous effects of the work programs and other programs (such as vocational programs or psychological treatment) (Aos, Miller & Drake, 2006; MacKenzie, 2000; Seiter & Kadela, 2003). Furthermore, the authors note that previous studies (MacKenzie, 2000; Wilson et al., 2000) show that programs incorporating various services, both within the prison and post-imprisonment (e.g., drug addiction treatment, education, vocational training, assistance with job search and job maintenance), show significant reduction in recidivism.

Additionally, and according to the Scottish Centre for Crime & Justice Research (SCCJR, 2012), an approach aimed at reducing the amount of social damage caused by the repetition of crimes should at least involve: (1) applying the least severe penalties possible; (2) targeting investment in employment, education and family life; (3) recognizing and minimizing the destructive impact of passage through the justice system; (4) rethinking the concept of reintegration into broader levels of action and (5) framing the definition of success in positive rather than negative terms. That is, the focus should be placed not only on avoiding certain behaviors (such as committing new crimes), but also on the promotion and facilitation of life projects outside the criminal sphere.

In the context of the present study, although the results are encouraging only for specific subgroups of the prison population, this does not in any way imply that our findings about the other subgroups should be decisive for policy purposes. All persons serving a sentence should have the right to opportunities to gain experience, tools and skills that will facilitate their process of social reintegration and desistance from crime, and therefore it is the responsibility of all policy makers in this area to make such opportunities available.

Finally, regarding the limitations of our current research and suggestions for future work, we would like to highlight the following. First, we suggest that future research assess whether the results remain after using other instruments. Although our instrument meets the statistical criteria of both Test F and Stock & Yogo's test, it does so close to the critical values. Second, we suggest that future research incorporate information regarding the length of participation in labor programs, types of labor activities, wages and other labor conditions, and post-release conditions (besides recidivism) such as work status (employed/unemployed, income, type of contract, etc.).

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Appendix

A.1 All sample Estimation

Table 10: Probability of Reoffending

	OLS	Standard Error	OLS with Covariates	Standard Error	IVReg	Standard Error
Labor Program Participation	-0.1412***	(0.0081)	-0.0614***	(0.0119)	-0.0517	(0.0750)
Sex			-0.0260**	(0.0113)	-0.0210	(0.0242)
Age						
30-39 years			-0.0344***	(0.0083)	-0.0358***	(0.0114)
40-49 years			-0.0756***	(0.0104)	-0.0789***	(0.0146)
50 years or more			-0.1049***	(0.0145)	-0.1143***	(0.0142)
Educational Level						
Incomplete primary education			0.0277	(0.0274)	0.0236	(0.0211)
Complete primary education			0.0373	(0.0276)	0.0362	(0.0218)
Incomplete secondary education			0.0376	(0.0275)	0.0418**	(0.0208)
Complete secondary education			0.0531*	(0.0278)	0.0601***	(0.0165)
Incomplete higher education			0.0698*	(0.0389)	0.0843**	(0.0437)
Complete higher education			0.0488	(0.0416)	0.0475	(0.0286)
Marital Status						
Cohabitator			0.0391***	(0.0145)	0.0341*	(0.0181)
Separated			0.0627**	(0.0263)	0.0655***	(0.0228)
Single			0.0242**	(0.0098)	0.0279***	(0.0090)
Widow/Widower			0.0635*	(0.0353)	0.06120**	(0.0289)
Religion						
Evangelical			0.0149*	(0.0079)	0.0155	(0.008)
None			0.0052	(0.0099)	0.0040	(0.0099)
Other			-0.0326	(0.0350)	-0.0314	(0.0351)
Type of Crime						
Against People			-0.1438***	(0.0117)	-0.1433***	(0.0117)
Drug Crimes			-0.1641***	(0.0118)	-0.1653***	(0.0118)
Other Crimes			-0.1410***	(0.0113)	-0.1430***	(0.0114)
More than one category			-0.0193*	(0.0115)	-0.0187*	(0.0115)
Length of Sentences						
Between 6 months and 1 year			0.0112	(0.0144)	0.01439	(0.0146)
Between 1 year and a day and 3 years			-0.0343***	(0.0101)	-0.01152**	(0.0197)
Between 3 years and a day and 5 years			-0.0412***	(0.0142)	0.01443	(0.0435)
5 years and a day or more			-0.0664***	(0.0147)	0.00104	(0.0519)
Criminal History						
Medium			-0.2283***	(0.0083)	-0.22385***	(0.0126)
Short			-0.4155***	(0.0114)	-0.40820***	(0.009)
Observations: 17.756	Adjusted R-Squared:		0.1251	0.5767		

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

A.2 Heterogeneous Effects

Table 11: Probability of Recidivism According to Age

	18 to 29 Years Old	Standard Error	30 Years old or More	Standard Error
Labor Program Participation	-0.0639	(0.0681)	-0.0329	(0.0781)
Sex	0.0054	(0.0163)	-0.0542***	(0.0162)
Educational Level				
Incomplete Primary Education	0.0353	(0.0541)	0.0307	(0.031)
Complete Primary Education	0.0432	(0.0541)	0.048	(0.0316)
Incomplete Secondary Education	0.0482	(0.054)	0.0448	(0.0313)
Complete Secondary Education	0.031	(0.0544)	0.0963***	(0.0316)
Incomplete Higher Education	-0.0095	(0.0714)	0.1458***	(0.0456)
Complete Higher Education	-0.0084	(0.0884)	0.0789*	(0.0459)
Marital Status				
Cohabitator	0.0295	(0.0259)	0.0530***	(0.0189)
Separated	0.0655	(0.0734)	0.0521*	(0.0272)
Single	0.0099	(0.0208)	0.0448***	(0.0107)
Widow/Widower	-0.2129	(0.2092)	0.0446	(0.0345)
Religion				
Evangelical	0.0171	(0.0114)	0.0021	(0.0104)
None	0.0017	(0.0134)	-0.0003	(0.0144)
Other	0.0399	(0.0511)	-0.0328*	(0.0192)
Type of Crime				
Against People	-0.1196***	(0.0181)	-0.1452***	(0.012)
Drug Crimes	-0.1707***	(0.0189)	-0.1568***	(0.0175)
Other Crimes	-0.1171***	(0.0182)	-0.1385***	(0.0119)
More than one category	-0.0146	(0.0155)	-0.0131	(0.014)
Length of Sentence				
Between 6 months and a year	0.0191	(0.0211)	0.0114	(0.0166)
Between 1 year and a day and 3 years	-0.0184	(0.0234)	-0.0447**	(0.0207)
Between 3 years and a day and 5 years	-0.013	(0.0502)	-0.0613	(0.0509)
5 years and a day or more	-0.0331	(0.0613)	-0.0815	(0.0598)
Criminal History				
Medium	-0.2442***	(0.0124)	-0.1983***	(0.0127)
Short	-0.4499***	(0.0189)	-0.3712***	(0.0166)
Observations per Group	9,345		8,411	

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 12: Probability of Recidivism by Criminal History

	Short	Standard Error	Medium	Standard Error	Long	Standard Error
Labor Program Participation	-0.0660	(0.0775)	-0.0844	(0.0934)	-0.2802***	(0.1030)
Sex	-0.0381**	(0.0181)	-0.0235	(0.0155)	-0.0114	(0.0329)
Age						
30-39 years old	-0.0300*	(0.0159)	-0.0271**	(0.0122)	-0.0398**	(0.0158)
40-49 years old	-0.0387**	(0.0177)	-0.0660***	(0.0155)	-0.1164***	(0.0221)
50 years old or more	-0.1063***	(0.0209)	-0.0808***	(0.022)	-0.1419***	(0.0356)
Educational Level						
Incomplete Primary Education	0.0271	(0.0410)	0.0032	(0.0421)	0.0871	(0.0551)
Complete Primary Education	0.0090	(0.0419)	0.0201	(0.0423)	0.1060	(0.0555)
Incomplete Secondary Education	0.0129	(0.0413)	0.0232	(0.0421)	0.1057*	(0.0556)
Complete Secondary Education	0.0098	(0.0413)	0.0430	(0.0425)	0.1346**	(0.0569)
Incomplete Higher Education	0.0451	(0.0490)	0.0763	(0.0622)	0.0075	(0.1344)
Complete Higher Education	-0.0075	(0.0495)	0.0767	(0.0715)	0.1375	(0.2195)
Marital Status						
Cohabitator	-0.0005	(0.0269)	0.0474**	(0.0218)	0.0635**	(0.0280)
Separated	0.0164	(0.0327)	0.0844**	(0.0407)	0.1007	(0.0679)
Single	0.0092	(0.0146)	0.0243*	(0.0145)	0.0528**	(0.0218)
Widow/Widower	0.0219	(0.0431)	0.0967*	(0.0545)	0.0535	(0.0978)
Religion						
Evangelical	0.0106	(0.0146)	0.0220*	(0.0116)	0.0090	(0.0153)
None	0.0087	(0.0178)	0.0017	(0.0142)	0.0035	(0.0197)
Other	-0.0627	(0.0494)	-0.0016	(0.0528)	-0.0305	(0.0778)
Type of Crime						
Against People	-0.0481***	(0.0183)	-0.1710***	(0.0173)	-0.1749***	(0.0287)
Drug Crime	-0.0645***	(0.0196)	-0.1637***	(0.0173)	-0.2303***	(0.0288)
Other Crimes	-0.0688***	(0.0175)	-0.1657***	(0.0164)	-0.1495***	(0.0284)
More than one Category	0.0553**	(0.0255)	-0.0154	(0.0169)	-0.0466**	(0.0202)
Length of Sentence						
Between 6 months and a year	-0.0171	(0.0277)	0.0079	(0.0216)	0.0348	(0.0266)
Between 1 year and a day and 3 years	-0.0570*	(0.0337)	-0.0352	(0.0313)	0.0359	(0.0280)
Between 3 years and a day and 5 years	-0.0827	(0.0662)	-0.0442	(0.0673)	0.1322*	(0.0635)
5 years and a day or more	-0.0811	(0.0722)	-0.0807	(0.0833)	0.1307**	(0.0787)
Observations per Group		3,405		9,076		5,053

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 13: Probability of Recidivism by Type of Crime

	Crime Against Property	Standard Error	Other Crimes	Standard Error
Labor Program Participation	-0.1709**	(0.0821)	0.0652	(0.0685)
Sex	-0.025	(0.0165)	-0.0166	(0.0239)
Age				
30-39 years old	-0.0246**	(0.0119)	-0.0621***	(0.0196)
40-49 years old	-0.0627***	(0.0165)	-0.1152***	(0.0187)
50 years old or more	-0.0802***	(0.0284)	-0.1654***	(0.0201)
Educational Level				
Incomplete Primary Education	-0.0259	(0.0481)	0.0554***	(0.0201)
Complete Primary Education	-0.0267	(0.0482)	0.0874***	(0.0252)
Incomplete Secondary Education	0.0052	(0.0481)	0.0623***	(0.0219)
Complete Secondary Education	0.0212	(0.0486)	0.0846***	(0.0242)
Incomplete Higher Education	0.0667	(0.0678)	0.083	(0.0530)
Complete Higher Education	0.0509	(0.0851)	0.0476	(0.0302)
Marital Status				
Cohabitator	0.0427	(0.0220)	0.0148	(0.0249)
Separated	0.072	(0.0466)	0.0626**	(0.0269)
Single	0.0354**	(0.0161)	0.0236*	(0.0129)
Widow/Widower	0.1274**	(0.0646)	0.0298	(0.0323)
Religion				
Evangelical	0.02	(0.0114)	-0.0025	(0.0086)
None	0.0052	(0.0142)	0.0035	(0.0276)
Other	-0.0032	(0.0546)	-0.0555	(0.0437)
Length of Sentence				
Between 6 months and a year	0.0577***	(0.0208)	-0.0262	(0.0208)
Between 1 year and a day and 3 years	0.0107	(0.0280)	-0.0776***	(0.0209)
Between 3 years and a day and 5 years	0.0017	(0.0572)	-0.1128***	(0.0485)
5 years and a day or more	0.0245	(0.0682)	-0.1740***	(0.0550)
Criminal History				
Medium	-0.2168***	(0.0142)	-0.2295***	(0.0168)
Short	-0.4660***	(0.0550)	-0.3996***	(0.0262)
Observations per Group	9325		8431	

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 14: Probability of Recidivism by Length of Sentence

	6 Months or Less	Standard Error	More than 6 Months	Standard Error
Labor Program Participation	-0.0736	(0.2039)	-0.1018**	(0.0347)
Sex	-0.0288*	(0.0151)	-0.013	(0.0187)
Age				
30-39 years old	-0.0354***	(0.0120)	-0.0282**	(0.0119)
40-49 years old	-0.0467***	(0.0151)	-0.0989***	(0.0149)
50 years old or more	-0.1083***	(0.0220)	-0.0954***	(0.0202)
Educational Level				
Incomplete Primary Education	0.0238	(0.0428)	0.0257	(0.0355)
Complete Primary Education	0.0299	(0.0429)	0.0403	(0.0360)
Incomplete Secondary Education	0.0339	(0.0428)	0.036	(0.0360)
Complete Secondary Education	0.0413	(0.0431)	0.0662*	(0.0367)
Incomplete Higher Education	0.0843	(0.0563)	0.044	(0.0552)
Complete Higher Education	0.0301	(0.0612)	0.074	(0.0573)
Marital Status				
Cohabitator	0.0348*	(0.0208)	0.0473**	(0.0205)
Separated	0.0329	(0.0372)	0.1022***	(0.0375)
Single	0.0272*	(0.0142)	0.0205	(0.0135)
Widow/Widower	0.0754	(0.0523)	0.0453	(0.0478)
Religion				
Evangelical	0.0152	(0.0117)	0.0167	(0.0108)
None	0.0067	(0.0141)	0.0014	(0.0140)
Other	-0.0364	(0.0528)	-0.0331	(0.0467)
Type of Crime				
Against People	-0.1368***	(0.0167)	-0.1483***	(0.0168)
Drug Crimes	-0.1532***	(0.0220)	-0.1727***	(0.0146)
Other Crimes	-0.1326***	(0.0139)	-0.1806***	(0.0241)
More than one category	-0.0238	(0.0211)	-0.0202	(0.0137)
Criminal History				
Medium	-0.2125***	(0.0125)	-0.2340***	(0.0116)
Short	-0.4077***	(0.0169)	-0.4067***	(0.0179)
Observations per Group	8,905		8,851	

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

A.3 First Stage Estimations

Table 15: First Stage Regression IVReg

	Coefficient	Standard Error
Sex	0.0218**	(0.0109)
Age		
30-39 years old	0.0213***	(0.0052)
40-49 years old	0.0283***	(0.0065)
50 years old or more	0.0383***	(0.0092)
Educational Level		
Incomplete Primary Education	-0.0114	(0.0170)
Complete Primary Education	-0.0295	(0.0172)
Incomplete Secondary Education	-0.0199	(0.0171)
Complete Secondary Education	0.0155	(0.0173)
Incomplete Higher Education	0.0255	(0.0243)
Complete Higher Education	-0.0028	(0.0261)
Marital Status		
Cohabitator	-0.0045	(0.0091)
Separated	0.0119	(0.0165)
Single	-0.0093	(0.0062)
Widow/Widower	-0.0252	(0.0221)
Religion		
Evangelical	0.0056	(0.0052)
None	-0.0183***	(0.0062)
Other	0.0207	(0.0223)
Type of Crime		
Against People	0.0061	(0.0074)
Drug Crime	-0.0118	(0.0075)
Other Crimes	-0.0217	(0.0072)
More than one Category	0.008	(0.0072)
Length of Sentence		
Between 6 months and a year	0.0387***	(0.0090)
Between 1 year and a day and 3 years	0.2819***	(0.0061)
Between 3 years and a day and 5 years	0.6868***	(0.0074)
5 years and a day or more	0.8225***	(0.0071)
Criminal History		
Medium	0.0513***	(0.0053)
Short	0.0824***	(0.0073)

Observations: 17.756

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 16: First Stage Regression Heterogeneities by Age

	18 to 29 Years Old	Standard Error	30 Years of More	Standard Error
Sex	0.0243	(0.0161)	0.0095	(0.0208)
Educational Level				
Incomplete Primary Education	-0.0636*	(0.0378)	0.0062	(0.0354)
Complete Primary Education	-0.0426	(0.0377)	0.0126	(0.0355)
Incomplete Secondary Education	-0.0371	(0.0378)	0.0063	(0.0354)
Complete Secondary Education	-0.0224	(0.0381)	0.0282	(0.0356)
Incomplete Higher Education	-0.0627	(0.0493)	0.0434	(0.0443)
Complete Higher Education	-0.0647	(0.0696)	-0.0019	(0.0460)
Marital Status				
Cohabitator	-0.0269	(0.0197)	0.0013	(0.0153)
Separated	0.1253	(0.0848)	0.0373	(0.0293)
Single	-0.0183	(0.0166)	-0.0090	(0.0098)
Widow/Widower	0.0406	(0.0286)	-0.0985*	(0.0587)
Religion				
Evangelical	0.0033	(0.0079)	0.0041	(0.0088)
None	-0.0266***	(0.0089)	-0.0179	(0.0117)
Other	0.0423	(0.0373)	-0.0118	(0.0369)
Type of Crime				
Against People	-0.0023	(0.0129)	-0.0023	(0.0129)
Drug Crime	-0.0181	(0.0136)	0.0042	(0.0133)
Other Crimes	-0.0261**	(0.0122)	-0.0223*	(0.0123)
More than one Category	0.0101	(0.0110)	-0.0033	(0.0125)
Length of Sentence				
Between 6 months and a year	0.0313**	(0.0139)	0.0388**	(0.0159)
Between 1 year and a day and 3 years	0.2479***	(0.0093)	0.3027***	(0.0110)
Between 3 years and a day and 5 years	0.6481***	(0.0112)	0.6899***	(0.0132)
5 years and a day or more	0.7641***	(0.0139)	0.8470***	(0.0125)
Criminal History				
Medium	0.0555***	(0.0078)	0.0655***	(0.0092)
Short	0.0785***	(0.0122)	0.1105***	(0.0129)
Observations per Group		9,345		8,411

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 17: First Stage Regression Heterogeneities by Criminal History

	Short	Standard Error	Medium	Standard Error	Long	Standard Error
Sex	-0.0193	(0.0208)	0.0388***	(0.0140)	0.0163	(0.0295)
Age						
30-39 years old	0.02	(0.0123)	0.0188***	(0.0071)	0.017*	(0.0087)
40-49 years old	0.0131	(0.0138)	0.0131	(0.0090)	0.0558***	(0.0133)
50 years old or more	-0.0075	(0.0163)	0.0446***	(0.0131)	0.0683***	(0.0219)
Educational Level						
Incomplete Primary Education	0.0084	(0.0317)	-0.0177	(0.0245)	-0.0084	(0.0348)
Complete Primary Education	0.0102	(0.0324)	-0.0143	(0.0246)	0.0088	(0.0350)
Incomplete Secondary Education	0.0269	(0.0319)	-0.0067	(0.0245)	-0.0107	(0.0351)
Complete Secondary Education	0.0237	(0.0320)	0.0015	(0.0247)	0.0387	(0.0359)
Incomplete Higher Education	0.0446	(0.0378)	0.0003	(0.0362)	0.1118	(0.0851)
Complete Higher Education	0.0046	(0.0384)	0.0105	(0.0416)	-0.0915	(0.0616)
Marital Status						
Cohabitator	0.0132	(0.0209)	-0.0019	(0.0128)	-0.0321*	(0.0177)
Separated	0.0142	(0.0252)	0.0189	(0.0238)	-0.0185	(0.0230)
Single	-0.0152	(0.0113)	-0.0033	(0.0084)	-0.0261*	(0.0137)
Widow/Widower	-0.0816**	(0.0331)	-0.0154	(0.0318)	0.0915	(0.0616)
Religion						
Evangelical	-0.0096	(0.0114)	0.0044	(0.0068)	0.0095	(0.0097)
None	-0.0245*	(0.0140)	-0.0099	(0.0083)	-0.0211*	(0.0125)
Other	0.0166	(0.0384)	0.0238	(0.0307)	0.0220	(0.0493)
Type of Crime						
Against People	0.0499***	(0.014)	-0.0086	(0.0102)	-0.0033	(0.0184)
Drug Crime	0.0342**	(0.0153)	-0.0415***	(0.0098)	-0.0166	(0.0182)
Other Crimes	0.0249*	(0.0136)	-0.0118	(0.0096)	-0.0176	(0.0181)
More than one Category	0.0429**	(0.0197)	0.0170*	(0.0099)	-0.0032	(0.0129)
Length of Sentence						
Between 6 months and a year	0.0530**	(0.0212)	0.0371***	(0.0125)	0.0229	(0.0161)
Between 1 year and a day and 3 years	0.3662***	(0.1377)	0.3018***	(0.0081)	0.2014***	(0.0119)
Between 3 years and a day and 5 years	0.8065***	(0.0157)	0.6984***	(0.0101)	0.5689***	(0.0149)
5 years and a day or more	0.8920***	(0.0159)	0.8687***	(0.0103)	0.7251***	(0.0130)
Observations per Group	3,405		9,076		5,053	

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 18: First Stage Regression Heterogeneities by Type of Crime

	Against Property	Standard Error	Other Crimes	Standard Error
Sex	0.0213	(0.0140)	0.0247	(0.0173)
Age				
30-39 years old	0.0230***	(0.0066)	0.0176**	(0.0083)
40-49 years old	0.0332***	(0.0092)	0.0216**	(0.0095)
50 years old or more	0.0323**	(0.0161)	0.0314***	(0.0119)
Educational Level				
Incomplete Primary Education	-0.0118	(0.0273)	-0.0116	(0.0224)
Complete Primary Education	-0.0056	(0.0274)	0.0006	(0.0227)
Incomplete Secondary Education	-0.0035	(0.0274)	0.0002	(0.0225)
Complete Secondary Education	0.0208	(0.0276)	0.0085	(0.0228)
Incomplete Higher Education	0.0187	(0.0386)	0.0209	(0.0318)
Complete Higher Education	-0.0475	(0.0483)	-0.0113	(0.0321)
Marital Status				
Cohabitator	-0.0139	(0.0125)	0.0082	(0.0136)
Separated	-0.0277	(0.0265)	0.0362*	(0.0214)
Single	-0.0002	(0.0091)	-0.0175**	(0.0084)
Widow/Widower	-0.0151	(0.0368)	-0.0322	(0.0282)
Religion				
Evangelical	0.0040	(0.0065)	0.0059	(0.0077)
None	-0.0164**	(0.0081)	-0.0183*	(0.0096)
Other	0.0293	(0.0315)	0.0204	(0.0309)
Length of Sentence				
Between 6 months and a year	0.0253**	(0.0118)	0.0608***	(0.0138)
Between 1 year and a day and 3 years	0.2897***	(0.0083)	0.2891***	(0.0085)
Between 3 years and a day and 5 years	0.6606***	(0.0100)	0.7188***	(0.0106)
5 years and a day or more	0.7986***	(0.0092)	0.8638***	(0.0106)
Criminal History				
Medium	0.0493***	(0.0064)	0.0541***	(0.0088)
Short	0.0430***	(0.0111)	0.0980***	(0.0102)
Observations per Group	9,325		8,431	

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.

Table 19: First Stage Regression Heterogeneities by Length of Sentence

	Less than 6 Months	Standard Error	6 Months or More	Standard Error
Sex	0.0006	(0.0026)	0.1495***	(0.0299)
Age				
30-39 years old	0.0011	(0.0013)	0.0625***	(0.0125)
40-49 years old	0.0019	(0.0016)	0.0663***	(0.0159)
50 years old or more	-0.0001	(0.0024)	0.1107***	(0.0214)
Educational Level				
Incomplete Primary Education	-0.0118**	(0.0047)	0.0266	(0.0385)
Complete Primary Education	-0.0089*	(0.0048)	0.0539	(0.0390)
Incomplete Secondary Education	-0.0127***	(0.0047)	0.0392	(0.0389)
Complete Secondary Education	-0.0107**	(0.0048)	0.1326***	(0.0394)
Incomplete Higher Education	0.0051	(0.0063)	0.0934	(0.0600)
Complete Higher Education	-0.0071	(0.0068)	0.0335	(0.0622)
Marital Status				
Cohabitant	-0.0050**	(0.0023)	-0.0778	(0.0221)
Separated	-0.0006	(0.0041)	0.0334	(0.0407)
Single	-0.0045	(0.0015)	-0.0013	(0.0147)
Widow/Widower	-0.0058	(0.0058)	-0.0625	(0.0520)
Religion				
Evangelical	0.0017	(0.0013)	0.0146	(0.0118)
None	0.0000	(0.0015)	-0.0512	(0.0151)
Other	0.0101	(0.0059)	0.0455	(0.0509)
Type of Crime				
Against People	-0.0047**	(0.0018)	0.0482***	(0.0183)
Drug Crime	-0.0012	(0.0024)	-0.0479***	(0.0158)
Other Crimes	0.0020	(0.0015)	-0.2676***	(0.0230)
More than one Category	-0.0017	(0.0023)	-0.0003	(0.0149)
Criminal History				
Medium	0.0005	(0.0014)	0.0796***	(0.0121)
Short	0.0003	(0.0019)	0.1920***	(0.0173)

Observations per Group

8,905

8,851

Note: Standard errors in parentheses; * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level. We cluster standard errors by prison.