

PREVENTIVE EFFECTS OF PENAL SANCTIONS*

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Abstract

Based on sanction and recidivism data alone, it looks like that the probability of recidivism is much higher after a prison sanction than after a fine. This article examines whether this is a result of the criminal sanctions themselves, or whether other factors are involved. To achieve this, data from three offense groups (theft, fraud, burglary) that can be punished with different criminal sanctions (prison, suspended prison sentence, or a fine) are examined. Based on a bivariate combination of criminal sanctions and recidivism, offenders who spend time in prison are more likely to reoffend than offenders who receive a suspended prison sentence or a fine. However, further analysis shows that when a range of other variables are taken considered, the apparent sanctioning effect does not arise from the nature of the criminal sanction, but rather from the offenders' criminal past. Other factors have a far greater effect on reconviction. In particular, a person's previous criminal history strongly influences the likelihood of recidivism.

1. INTRODUCTION

One of the most important goals of criminal sanctions is to reduce crime by providing a deterrent to both the commission and recommitment of offenses. Accordingly, a criminal sanction should fulfil its preventive purpose. Based on a bivariate combination of criminal sanctions and recidivism, offenders who spend time in prison are more likely to reoffend than offenders who receive a suspended prison sentence or a fine. This article examines whether this is a result of the criminal sanctions themselves, or whether other factors are involved. To achieve this, data from a range of offenses that can be punished with different criminal sanctions (prison, suspended prison sentence, or a fine) are examined.

The analysis uses data from the German recidivism study.¹ With the data from this study it is – for the first time in Germany – possible to analyze the impact of criminal sanctions on recidivism using a very large pool of convictions.

The analysis takes a quasi-experimental design. Courts in Germany do not provide uniform sanctions for the same types of crime with factually similar conditions: across the country, different sanctions for similar crimes are possible. On this basis, several types of offenses that can theoretically be sanctioned in a number of ways, such as a monetary fine or a prison sentence, are analyzed to see if, based on the same legal preconditions, different sanctions produce different recidivism rates. The aim is to test whether the type of criminal sanction has an effect on recidivism.

2. THE IMPACT OF CRIMINAL SANCTIONS

Beginning in the 1970s, the use of fines to settle criminal proceedings (almost 80% of adult offenders in Germany are nowadays fined) significantly increased interest in the assessment of the impact of different criminal sanctions. Albrecht (1982) conducted a study on the preventive efficiency of fines compared to suspended prison sentences and imprisonment. His study took into account a range of factors, such as prior criminal record, marital status, age, occupation etc. (Albrecht 1982, p. 236), and concluded that the relationship between sanction (excluding control variables) and recidivism (measured by re-conviction rates) is considerably overestimated (Albrecht 1982, p.227).

Over a decade later, Böhm (1996) found that all sentences have the same rate of success, so long as key recidivism features – such as gender, age, criminal bias, level of education, recreational habits, and work behavior – are considered. According to his findings, persons who are not likely to reoffend will seldom reoffend, regardless of the sanction (imprisonment, fine, etc.) they receive (Böhm 1996, p. 274).

Heinz (2007) noted that, according to the current state of research, the deterrent effects of threats and punishment are, in general, low (Heinz 2007, p. 5). Indeed, in the case of mild and moderate crimes, the severity of punishment has no measurable preventive effect.

In discussing the effectiveness of sanctions in the German criminal justice system, Streng (2007) noted that sanctions are largely interchangeable: more severe sanctions have no greater preventive effect than less severe sanctions (Streng 2007, p. 72). He nevertheless argued that good reasons exist for the use of severe sanctions to deal with certain offender groups (Streng 2007, p. 72). According to Streng, sanctions must make it clear that certain behavior is not tolerated. However, when different sanctions can be chosen to do this, the least severe option should, in general, be selected. This approach is better for the offender and better for society (Streng 2007, p. 81).

The influence of sanctions on renewed criminal behavior has been studied in other countries, too. Wermink et al. (2015) describe three Dutch studies, which conclude that imprisonment does not result in lower rates of recidivism compared to suspended prison sentences or monetary fines (Wermink et al. 2015, p. 137). In Switzerland, Killias (2006) conducted a study comparing the preventive effects of community service and short-term prison sentences. The recidivism rates between both groups hardly differed, though over the longer term, the former

¹ Legalbewährung nach strafrechtlichen Sanktionen (Jehle et al. 2013 und 2016)

prisoners were slightly more integrated in society. These findings are, however, not generalizable due to the study's small sample size (Fink 2016, p. 179).

Killias and Villetaz (2007) produced a systematic literature review on whether (short-term) imprisonment or so-called "alternative penalties" have a more favorable effect on recidivism rates. The majority of the studies they reviewed showed no significant correlation between the type of sanction and the likelihood of criminal relapse. In the studies that found a significant correlation, the result were largely in favor of alternative penalties. Furthermore, the authors carried out a meta-analysis of five experimental investigations: the results were unable to attribute a significantly more favorable effect to alternative punishments (Killias and Villetaz 2007, p. 207).

In 2007, a new sentencing system entered into force in Switzerland. As Fink (2015) notes, this new system provides courts with greater sentencing flexibility for crimes that would have previously resulted in automatic short-term imprisonment. Due to differences in the sentencing practices between Switzerland's 26 cantons, it was possible for the author to compare whether different sanctions result in different recidivism rates. The author found that for minor crimes, both fines and prison sentences are equally effective (Fink 2015, p. 314). This corresponds with previous that suggests the almost interchangeable nature of fines and prison sentences for minor crimes in terms of their impact on future recidivism (Fink 2009, p. 26). Despite differing sentencing practices in the 26 cantons, no effect on cantonal recidivism rates was observable (Fink 2016, p. 182).

3. DATA

As mentioned, the data for the present analysis stem from the German reconviction study, which was realized by researchers at the University of Göttingen and the Max Planck Institute for Foreign and International Criminal Law (Jehle et al. 2013 und 2016). The data are from the German Central Register (*Bundeszentralregisters* (BZR)) and include all judicial registrations in Germany, which were recorded in the register at three different dates: April 2008 (first wave), April 2010/2011 (second wave) and April 2013/2014 (third wave). Using a personal cryptic key, an individual's data can be combined from across the waves.

Included in the data are all convicted German citizens, aged 18 and over², who were sentenced by a criminal court and either fined or given a suspended prison sentence in 2007, or were released from prison in 2007 (the reference year). Only German citizens are included: the data for non-citizens could not be correctly recorded as they may not remain in Germany following a conviction (voluntary departure or deportation), meaning reconviction rates cannot be monitored. In addition, the data do not include cases where juvenile law was applied by the courts, as sanctions for juveniles do not allow for a comparison between fines, suspended sentences, and imprisonment.

Of the 528,273 persons who committed a crime or were released from prison in 2007, 3.9% were imprisoned, 13.7% received a suspended prison sentence, and 82.4% were fined (Table 1). Of the sample, 80% were male and 20% female. Nearly 60% were previously convicted, and

² Only a handful of adolescents (age 18 to 20 years old) are included in the data, because most of them were convicted and sentenced according to juvenile law.

one-third, in fact, were previously convicted three or more times.

Table 1: Frequencies, percentages and rate per 100,000 population of basic decision sanctions (reference year 2007)

Basic Decision Sanction	n	%	Rate per 100,000 population
Imprisonment*	20,536	3.9	35
Suspended Prison	72,281	13.7	122
Fine	435,456	82.4	732
Total	528,273	100	888

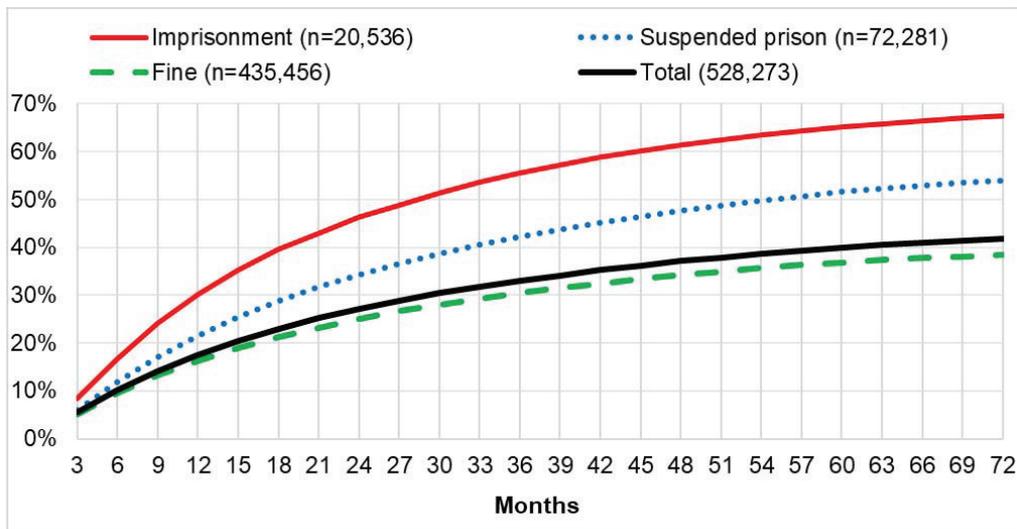
* Release from prison occurred in 2007. When no release or parole date was provided, the date was calculated using the length of the original sentence.

The offenses involved vary greatly and include hundreds of different criminal activities. As a judicial decision recorded in the German Central Register often consists of multiple offenses, the most serious offense (based on the range of the sentence) is considered the reference decision for the present analysis.

Recidivism is defined as any reconviction (recorded in the German Central Register) after the reference decision or after release from prison in 2007. The reconviction offense and the reference decision offense do not have to be the same or related: all offenses, minor or major, are considered to amount to a criminal relapse. The recurrence period is the time between the reference decision – date of court sentence or release from prison – and the date of the first subsequently (recorded) offense.

Figure 1 shows the cumulative recidivism rate by penalty type over a six-year period from the reference year 2007. The black line shows the relapse rate for all adult German offenders. 33% relapsed within three years, 42% within six years. The top line shows the recidivism rate for those who were already imprisoned and released from prison in 2007. Here, 56% relapsed within three years, 67% within six years. The dotted blue line shows the recidivism rate of those who received a suspended prison sentence. Forty-two percent relapsed within three years, 54% within six years. The reconviction rate was significantly lower for those who received a fine, as indicated by the green dashed line. Thirty-one percent relapsed within three years, 39% within six years. Thus, when only the type of sanction is considered, the recidivism rate is significantly higher when more severe sanctions are involved.

Figure 1: Cumulative Recidivism Rates per Base Sanction (2007 – 2013)



4. THE IMPACT OF CRIMINAL SANCTIONS: ANALYSIS OF SEVERAL OFFENSE GROUPS

The effect of different sanctions on recidivism is investigated by using a quasi-experimental approach. For this purpose, variations in sentencing that exist in individual cases, but also systematically between different regions of Germany, are used (Grundies 2016). This enables an examination of whether different sanctions result in different recidivism rates under the same conditions. For each of the offenses examined – theft, fraud, and aggravated theft – the law allows judges to apply numerous types of sanctions.

4.1. Theft and Unlawful Appropriation (StGB §§ 242, 246, 248 b, 248 c)

The first offense group examined are those who were sentenced for a reference offense of theft or unlawful appropriation. Under German law, those found guilty of theft or appropriation be sentenced to imprisonment (suspended or non-suspended) or fined.

Table 2: Composition of the offense group „Theft“ (reference year 2007)

Offense of Basic Decision	n	%	Range of Sentences
Theft (§ 242)	59,780	90.1	up to 5 Years or Fine
Unlawful Appropriation (§ 246 (1))	3,964	6.0	up to 3 Years or Fine
Unlawful Appropriation (§ 246 (2))	1,673	2.5	up to 5 Years or Fine
Unauthorized use of a vehicle (§ 248 b)	279	0.4	up to 3 Years or Fine
Abstraction of electrical Energy (§ 248 c)	642	1.0	up to 5 Years or Fine
Total	66,338	100	

Figure 2: Cumulative Reconviction Rates per Base Sanction - Theft (2007 – 2013)

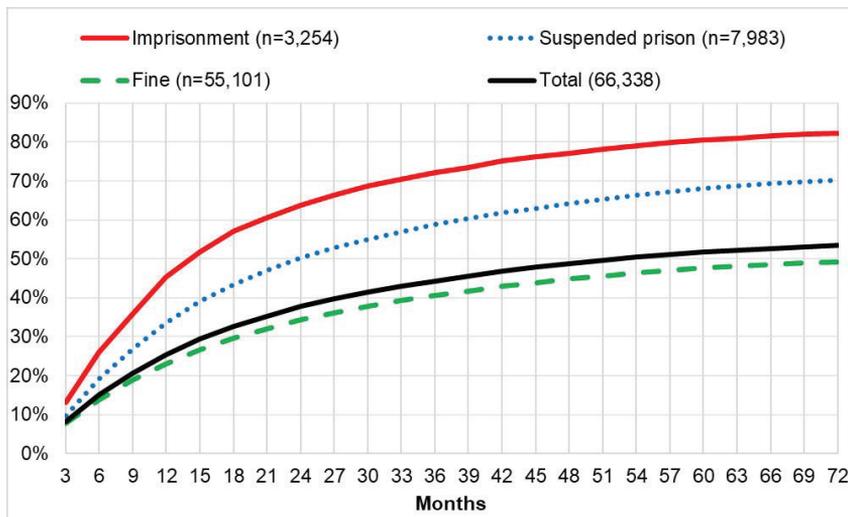


Table 2 outlines the composition of the theft offense group. In total, the group is comprised of 66,338 offenders. Of these, roughly 60,000 (90%) committed theft and were sentenced by a judge or released from prison in 2007 (§ 242 StGB). A sentence for theft can range from the imposition of a fine to imprisonment (up to five years). Of the offender group, 69% are male, 31% female. The proportion of female offenders in this group is higher than average. The proportion of offenders with a prior criminal record is also above average: over 70% of the offenders from the theft offense group have a prior criminal record, 45% are repeat offenders (three or more prior convictions).

The vast majority of the offenders in the group (83%) received a fine for their reference offense. Of the remainder, 12% received a suspended prison sentence and 5% a non-suspended prison term. Figure 2 shows the cumulative recidivism rate for those convicted of theft during the six-year period from 2007-2013. The black line shows the recidivism rate of all offenders from the theft group. As can be seen, 45% of the offenders who were convicted or released in 2007 for theft relapsed within three years, 53% within six years. The recidivism rate for the theft group was higher than the recidivism rate for all offenders (Figure 1). The highest line (red line) shows the recidivism rate of those imprisoned, 72% relapsed within three years, 82% within six years. The dotted blue line shows the recidivism rate of those who received suspended prison sentences: 59% relapsed within three years, 70% within six years. The dashed green line shows the cumulative recidivism rate for theft offenders who received a fine. The recidivism rate is considerably lower: 41% relapsed within three years, 49% within six years. Thus, for the theft offense group, if only the type of sanction is considered then it would appear that more severe sanctions lead to higher recidivism rates: imprisonment (served or suspended) resulted in a recidivism rate of 73.8% within six years, whereas the recidivism rate was 49.3% within six years after the issuance of a fine.

By calculating the likelihood of recidivism within six years as follows:

$$\text{Chance}_{rf} = \frac{\text{Probability}_{rf}}{\text{Probability}_{no\ rf}}$$

$$\text{Chance}_{rf} \text{ after prison sentence (served or suspended)} = \frac{73,8}{26,2} = 2.82$$

$$\text{Chance}_{rf} \text{ after a monetary fine} = \frac{49,3}{50,7} = 0,97$$

One arrives at an Odds Ratio of $\left(\frac{2,82}{0,97}\right) = 2.9$. That is, when considering only the bivariate relationship between sanction and relapse, after imprisonment the likelihood of recidivism is 2.9 times greater than after a fine.

This difference raises the question of whether this is caused by the type of sanction itself or by other factors: that is, are specific sanctions more likely to be applied to specific offenders (a so-called “selection effect”) and, thus, the increase in recidivism could be traced back to the selection effect. In order to test for this, a logistic regression³ analysis is needed to test for other factors that may influence recidivism.

The factors included in the logistic regression analysis are:

- Sanction: imprisonment / fine
- Sex: male / female
- Age of the person in 2007
- Range of sentences of the reference decision
- Concurrence of offenses (StGB § 52)
- Multiplicity of offenses (StGB § 53)
- Further offenses
- Mitigating circumstances (StGB § 49)
- Aiding (StGB § 27)
- Abetting (StGB § 26)
- Co-offenders (StGB § 25 Abs. 2)
- Diminished responsibility (StGB § 21)
- Intoxication (StGB § 323 a)
- Attempt (StGB § 22)
- Theft and unlawful appropriation of objects of minor value (StGB § 248 a)
- Criminal record:
 - Number of total previous convictions
 - Number of corresponding previous convictions
 - Number of sanctions according to Juvenile Law (JGG)
 - Number of previous fines
 - Number of previous suspended sentences
 - Number of previous imprisonments
 - Accumulated number of previous daily fine rates
 - Cumulative duration of time spent in prison before the reference decision.

The length of a sentence or the size of a fine cannot be included as this information is directly

linked to the sanction. Other variables that could contribute to an explanation of differences in reconviction rates – such as education, marital status, occupation, and financial status – are not available for the analysis.

*Table 3: Logistic Regression of Reconviction within 6 Years. Base Offense Theft in 2007.
 (Extract of the result, the logistic regression was made with all presented variables.)*

Variables		Odds Ratio	Std. Error	p> z	n
Sanction	Fine (ref.)				55,101
	Prison Sanction	1.14	0.03	0.000	11,237
Sex	Female (ref.)				20,561
	Male	1.09	0.02	0.000	45,777
Age	18-20 (ref.)				1,588
	21-24	0.80	0.05	0.000	9,359
	25-29	0.73	0.04	0.000	9,641
	30-34	0.68	0.04	0.000	6,864
	35-39	0.58	0.04	0.000	7,375
	40-44	0.48	0.03	0.000	7,701
	45-49	0.44	0.03	0.000	7,186
	50-59	0.39	0.02	0.000	9,342
	60+	0.30	0.02	0.000	7,282
	Range of Sentences	< 5 Years (ref.)			
< 3 Years		0.82	0.03	0.000	4,214
Concurrence of Offenses		0.85	0.05	0.007	1,932
Multiplicity of Offenses		1.07	0.03	0.014	11,020
Further Offense		1.22	0.06	0.000	4,905

Co-Offender		0.83	0.03	0.000	6,015
Theft of objects of minor value		1.08	0.02	0.000	35,994
Number of previous convictions	0 (ref.)				19,391
	1	1.47	0.06	0.000	10,091
	2	1.95	0.10	0.000	6,748
	3, 4	2.40	0.13	0.000	8,621
	5+	2.91	0.20	0.000	21,487
Variables		Odds Ratio	Std. Error	p> z 	n
Number of corresponding previous convictions	0 (ref.)				32,531
	1	1.14	0.03	0.000	11,910
	2	1.25	0.04	0.000	6,572
	3, 4	1.30	0.05	0.000	6,986
	5+	1.58	0.08	0.000	8,339
Number of previous imprisonments	0 (ref.)				55,668
	1	1.16	0.06	0.002	3,699
	2	1.21	0.08	0.003	2,009
	3, 4	1.47	0.10	0.000	2,359
	5+	1.45	0.10	0.000	2,603
Number of previous suspended sentences	0 (ref.)				46,370
	1	0.85	0.05	0.012	8,472
	2	0.88	0.06	0.085	4,792
	3, 4	0.82	0.06	0.012	4,590

	5+	0.79	0.07	0.011	2,114
Number of previous fines	0 (ref.)				26,646
	1	1.08	0.09	0.348	12,294
	2	1.06	0.11	0.560	8,080
	3, 4	1.05	0.12	0.652	9,567
	5+	1.17	0.15	0.220	9,751
Number of previous youth sanctions	0 (ref.)				50,083
	1	1.01	0.04	0.864	4,819
	2	1.12	0.05	0.018	3,948
	3, 4	1.26	0.06	0.000	4,892
	5+	1.47	0.10	0.000	2,596
Total	Pseudo R ² = 0.12				66,338

The logistic regression (Table 3) shows that after imprisonment (served or suspended), recidivism is 14% more likely than after a fine. This result is highly significant. The following results are also highly significant: (1) within six years, males relapse 9% more often than females, (2) the probability of relapse decreases with age, and (3) concerning appropriation, if the sanction is imprisonment for up to three years, then recidivism is less likely than for a sanction of up to five years imprisonment.

The factual circumstances of the reference decision also influence recidivism. If another offense was sanctioned in the same decision, such as trespass or obtaining by fraud, relapse is 22% more likely in comparison to reference decisions without additional offenses. If the offense was committed with accomplices, recidivism is more seldom than with individual offenders. The recidivism rate is strongly influenced by prior criminal history, especially the number of prior convictions. If there were two convictions before the reference decision, relapse is twice as likely. With five or more previous convictions, it is three times more likely. The number of prior convictions for closely related crimes (to the reference decision) also increases the probability of recidivism, though the effect is not as strong as it is with prior convictions in general.

The number of previous fines has no significant impact on recidivism. Nor does the total number of daily fines or the cumulative duration of time spent in prison before the reference decision (not shown in the table). Other circumstances of the reference decision – mitigation, intoxication, attempt – do not affect relapse behavior.

Because of the reduced effect of the type of sanction under control of other variables, it is obvious that there will be a selection effect in addition to the effect of the sanction itself. To neutralize this selection effect, a counterfactual approach is used. (Sampson et al. 2006) The aim of this approach is to “turn off” the selection effect of the sanction.

In a first step, the propensity score (PS) is estimated by a logistic regression with the dependent variable type of sanction and all existing independent variables (pseudo $R^2 = 0.39$).⁴ The propensity score is the probability of being imprisoned and is determined by the existing factors. In a second step, the propensity score is used to calculate the *inverse probability of treatment weighting* (IPTW).

Table 4: Logistic Regression with Counterfactual Approach of Reconviction within 6 Years. Base Offense Theft in 2007 (extract)*

Variables		Odds Ratio	Std. Error	p> z
Sanction	Fine (ref.)			
	Prison Sanction	0.95	0.05	0.311
Sex	Female (ref.)			
	Male	1.10	0.05	0.044
Age	18-20 (ref.)			
	21-24	1.04	0.23	0.843
	25-29	0.91	0.20	0.648
	30-34	0.79	0.18	0.301
	35-39	0.65	0.15	0.058
	40-44	0.53	0.12	0.005
	45-49	0.46	0.10	0.001
	50-59	0.34	0.08	0.000
	60+	0.35	0.09	0.000
Number of previous convictions	0 (ref.)			
	1	1.91	0.22	0.000
	2	2.71	0.31	0.000

	3, 4	3.31	0.39	0.000
	5+	4.07	0.55	0.000
Number of corresponding previous convictions	0 (ref.)			
	1	1.20	0.08	0.008
	2	1.24	0.09	0.002
	3, 4	1.32	0.09	0.000
	5+	1.66	0.13	0.000
	Total		n = 66,338	Pseudo R ² = 0.15

* The logistic regression was made with all presented variables.

In calculating the IPTW, each person is assigned the sanction probability associated with his/her actual sanction as a statistical weight: A person sanctioned to imprisonment receives the statistical weight $1/PS$. A Person sanctioned with a fine receives the weight $1/(1-PS)$. Thus, a person sanctioned to imprisonment with a low propensity score (high probability of fine) will have a high weighting. Likewise, a person sanctioned to a fine and a high propensity score (high probability of imprisonment) will also have a high weighting. Individuals whose actual sanction and probable sanction match receive a low weighting. The sanction effect is then evaluated with a logistic regression that uses, in addition to the independent variables, the individual's statistical weight.

Table 4 shows an extract from the results of the logistic regression with counterfactual approach (pseudo $R^2 = 0.15$). The results show that the probability of relapse after a prison sanction is not significantly different than after a fine. For the offense of theft, the type of sanction has no influence on recidivism. Males relapse 10% more frequently than females ($p = 0.044$). The influence of the number of prior convictions is again highly significant and increases even more when using a counterfactual approach.

If only the Odds Ratio of sanction and recidivism is considered, the likelihood of recidivism after a prison sanction is 2.9 times higher than after a fine (Table 9). If other factors are included via logistic regression, recidivism after a prison sanction is more likely by a factor of 1.14 when compared to a fine. If the influence of covariates is adjusted by a counterfactual approach, it follows that the type of sanction has no influence on the probability of recidivism.

4.2. Fraud (StGB §§ 263, 263 a, 264, 265, 265 b, 266, 266 a, 266 b)

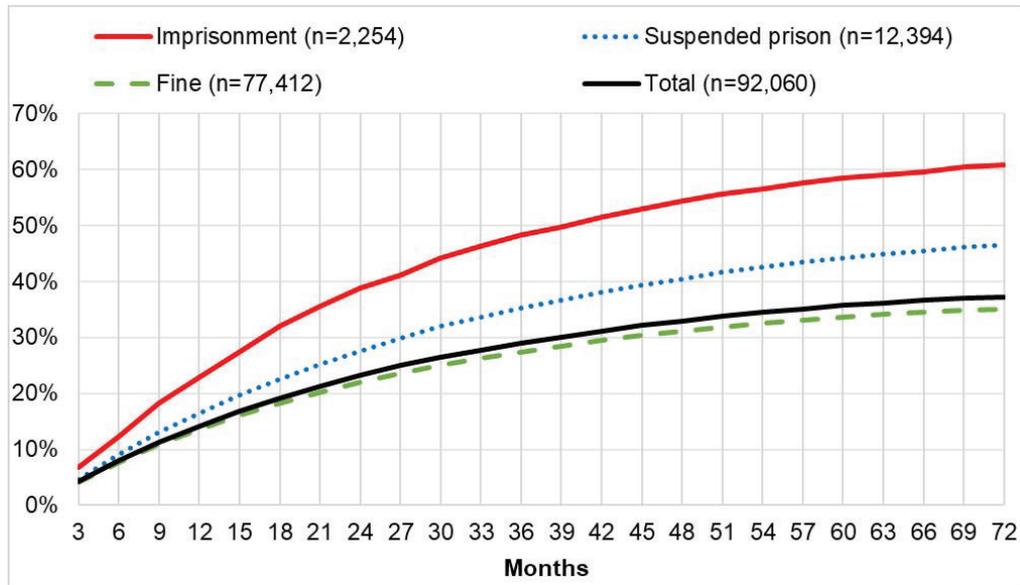
The second offense group to be examined in order to ascertain the impact of the type of sanction on recidivism is fraud and embezzlement (hereafter, the "fraud" group). The details of the fraud group are shown in Table 5. Slightly more than 92,000 offenders from this group were sentenced in 2007 or left prison in 2007 for fraud. Fraud and embezzlement can be sanctioned

with imprisonment (up to five years) or a fine. Obtaining services by deception (fare dodging) (§ 265 a StGB) is not included in this group as it is a less severe offense and is therefore considered a separate offense group. Of the fraud group, 88% of the offenders (81,000 persons) were convicted for fraud (§ 263 StGB), including computer fraud (§ 263 a StGB) and subsidy fraud (§ 264 StGB) and were sentenced with imprisonment up to five years, a suspended sentence, or a fine. Males comprise 67% of the fraud group, females 33%. Thus, the proportion of females in this group is, compared to all offenses, above average (and higher still than for the theft group). Fifty-four percent of the offenders from the fraud group have prior convictions, 28% three or more convictions. Compared to all offenses, the proportion of prior convictions is below average (and significantly lower than for the theft group).

Table 5: Composition of the offense group „Fraud“ (reference year 2007)

Offense of Basic Decision	n	%	Range of Sentences
Fraud (§§ 263, 263 a, 264)	81,162	88.2	up to 5 Years or Fine
Aggravated Fraud (§§ 263 (3), 264 (2))	2,734	3.0	from 6 Months up to 10 Years
Fraud, gang (§§ 263 (5), 264 (3))	111	0.1	from 1 Year up to 10 Years
Other Fraud (§§ 265, 265 b, 266 b)	96	0.1	up to 3 Years or Fine
Embezzlement (§ 266)	1,930	2.1	up to 5 Years or Fine
Withholding of salaries (§ 266 a)	6,027	6.5	up to 5 Years or Fine
Total	92,060	100	

Figure 3: Cumulative Recidivism Rates per Base Sanction - Fraud (2007 – 2013)



77,412 offenders from the fraud group (84%) received a fine, 12,394 (13.5%) a suspended prison sentence, and 2,254 (2.5%) were imprisoned. Figure 3 shows the cumulative recidivism rates for the group over the following six-year period (2007-2013). The black line shows the recidivism rate for all offenders in this group. Twenty-nine percent relapsed within three years, 37% within six years. Thus, the relapse rate is lower than the recidivism rate for all offenses. The red line (the highest rate of recidivism) is the recidivism rate of those released from prison in 2007 for a fraud offense. Nearly half of this group (49%) relapsed within three years, 61% within six years. The dotted line shows the recidivism rate of those who received a suspended prison term. Thirty-five percent relapsed within three years, 47% within six years. As with the theft group, the recidivism rate for those who received a fine is significantly lower, with 28% relapsing within three years and 35% within six years. Taking only sanction and relapse into account, the likelihood of recidivism within six years of imprisonment is 1.8 times greater than within six years of a fine.

As with the theft group, a logistic regression for the fraud group concludes that it is not the sanction – but rather other factors – that affect the recidivism rate (pseudo $R^2 = 0.12$). When an inverse probability of treatment weighting is also carried out (pseudo $R^2 = 0.14$), the results again show that the type of sanction has no impact on relapse for the fraud group.

An excerpt from the logistic regression with counterfactual approach is shown in Table 6. Gender affects recidivism, with males 26% more likely to relapse than females within six years. This result is highly significant. Recidivism also decreases with age. This too is highly significant. The relapse rate of those aged 40 to 44 is half of those aged 21 to 24. If additional offenses exist in addition to the reference decision (e.g., counterfeiting or theft), recidivism is 33% more likely than for fraud alone.

Once again, recidivism is strongly influenced by criminal history. Those with a prior criminal conviction are 56% more likely to relapse. While the number of fraud-specific prior convictions impacts recidivism, it is not as strong as the impact of overall prior convictions. No significant influence is able to be attributed to the factual circumstances of the offense, such as aiding, abetting, or inciting.

Table 6: Logistic Regression with Counterfactual Approach of Reconviction within 6 Years. Base Offense Fraud in 2007 (extract)*

Variables		Odds Ratio	Std. Error	p> z	n
Sanction	Fine (ref.)				77,412
	Prison Sanction	1.02	0.04	0.623	14,648
Sex	Female (ref.)				29,999
	Male	1.26	0.06	0.000	62,061
Age	18-20 (ref.)				10,441
	25-29	0.74	0.06	0.000	15,810
	30-34	0.59	0.05	0.000	12,052
	35-39	0.54	0.04	0.000	12,697
	40-44	0.50	0.04	0.000	12,645
	45-49	0.42	0.04	0.000	10,354
	50-59	0.31	0.03	0.000	12,398
	60+	0.21	0.03	0.000	4,476
	18-20	0.53	0.30	0.259	1,184
	Further Offense		1.33	0.12	0.002
Number of previous convictions	0 (ref.)				42,399
	1	1.56	0.16	0.000	15,453
	2	2.31	0.25	0.000	8,284
	3, 4	2.74	0.30	0.000	9,494
	5+	3.38	0.45	0.000	16,430

Number of corresponding previous convictions	0 (ref.)				65,250
	1	1.26	0.07	0.000	14,378
	2	1.27	0.09	0.000	5,585
	3, 4	1.32	0.10	0.000	4,270
	5+	1.69	0.18	0.000	2,577
Total	Pseudo R ² = 0.14				92,060

* The logistic regression was made with all presented variables

The results of the logistic regression (with and without counterfactual approach) show that the type of sanction has no influence on subsequent recidivism. Both the fraud and theft offense groups confirm this. Looking only at sanction and recidivism (Table 9), the likelihood of recidivism after imprisonment is 1.8 times higher than after a fine. However, if other factors are included in the analysis, the type of sanction has no influence on recidivism. What does have a major influence is the number of prior criminal convictions.

4.3. Aggravated Theft (StGB §§ 243, 244, 244 a)

The final offense group investigated is aggravated theft. As the name implies, this group is comprised of criminals who committed theft with aggravating circumstances in their reference decision: a breakdown of these aggravating circumstances is provided in Table 7. In 2007, 6,893 aggravated theft offenders received a suspended prison sentence or were released from prison. Seventy-nine percent (5,413) were convicted of aggravated theft (StGB § 243), 19% (1,340) for aggravated theft with a weapon, and 2% (140) for aggravated gang theft. Aggravated theft offenses can only be sanctioned with imprisonment (suspended or non-suspended). Thus, in the case of aggravated theft, the effect studied is whether a difference exists between suspended and non-suspended sentences.

Adolescents who commit aggravated theft are usually sentenced according to juvenile law and very rarely under general criminal law. Therefore, the aggravated theft analysis is carried out without their data.

Ninety-four percent of the offenders from this group are male, 6% female. The proportion of males compared to all offenses is above average. More than 90% have a criminal record and more than three-quarters have three or more prior convictions (this is significantly above the average for all offenses).

Of the offense group, 2,488 offenders (36%) were released from prison in 2007, and 4,405 offenders (64%) received a suspended prison sentence in the same year. Figure 4 shows the cumulative recidivism rates of the aggravate theft offense group (2007-2013). The solid black line shows the recidivism rate for all offenders in this group. Sixty-one percent relapsed within

three years, 72% within six years. The rate is significantly higher than the average recidivism rate for all offenses. The dashed red line is the recidivism rate of those released from prison for aggravated theft in 2007. Of this group, 71% relapsed within three years, 82% within six years. The dotted blue line is the cumulative relapse rate of those who received a suspended sentence: 55% relapsed within three years, 66% within six years.

Table 7: Composition of the offense group „Burglary“ (reference year 2007)

Offense of Basic Decision	n	%	Range of Sentences
Aggravated Theft (§ 243)	5,413	78.5	from 3 Months up to 10 Years
Theft with weapons (§ 244)	1,340	19.4	from 6 Months up to 10 Years
Aggravated Theft, gang (§ 244 a)	140	2.0	from 1 Year up to 10 Years
Total	6,893	100	

Figure 4: Cumulative Reconviction Rates per Base Sanction - Burglary (2007 – 2013)



Recidivism is 2.2 more likely after a non-suspended prison sentence than after a suspended prison sentence. However, as with the other two offense groups (theft and fraud), it is not immediately apparent whether the recidivism results are due to the type of sanction or whether other factors are responsible. Thus, further analysis is warranted.

Using a logistic regression to take into account other factors that influence recidivism (e.g., gender, age, number of prior convictions in general, number of prior convictions for aggravated theft, penalties, further offenses in the reference decision, mitigation (§ 49 StGB), assistance,

complicity etc.), the likelihood of recidivism after a non-suspended prison sentence compared to a suspended prison sentence is revalued to 1.17 times more likely ($p = 0.046$). Accordingly, while recidivism after a non-suspended sentence is more likely, the difference is no longer as extreme. As with the other offense groups, a significant factor for future recidivism is the number of prior criminal convictions.

Table 8: Logistic Regression with Counterfactual Approach of Reconviction within 6 Years. Base Offense Burglary in 2007 (extract)*

Variables		Odds Ratio	Std. Error	$p > z $	n
Sanction	Suspended prison (ref.)				4,405
	Imprisonment	1.16	0.12	0.168	2,488
Sex	Female (ref.)				409
	Male	1.29	0.21	0.126	6,484
Age	18-20 (ref.)				1,313
	25-29	0.82	0.12	0.198	1,881
	30-34	0.55	0.10	0.001	1,204
	35-39	0.46	0.10	0.000	949
	40-44	0.33	0.07	0.000	729
	45-49	0.18	0.05	0.000	398
	50-59	0.21	0.05	0.000	317
	60+	0.63	0.68	0.670	102
Further Offense		0.93	0.17	0.690	398
Mitigation		0.57	0.14	0.025	247
Number of previous convictions	0 (ref.)				599
	1	2.13	0.76	0.033	501
	2	3.10	1.00	0.000	409
	3, 4	3.02	0.96	0.001	908
	5+	3.73	1.22	0.000	4,476
Total	Pseudo $R^2 = 0.16$				6,893

* The logistic regression was made with all presented variables

Table 8 depicts an extract from the logistic regression with counterfactual approach for aggravated theft. Here, when comparing non-suspended prison sentences with suspended prison sentences, the type of sanction does not significantly influence relapse. There are no significant differences concerning gender either: when relapse occurs within six years, the relapse behavior of females from the offense group corresponds with that of males. Age does, however, influence recidivism: the 25 to 29 year-old age group does not differ significantly from the 21 to 24 year-old age group, but from the age of 30 onwards, the likelihood of relapse begins to decrease.

Additional crimes included in the reference offense (e.g., assault) do not lead to higher recidivism rates. However, if mitigating circumstances (§ 49 StGB) were cited into the reference decision, recidivism is only half as likely in comparison to those reference decisions without mitigating circumstances.

Once again, the number of prior convictions has a significant influence on recidivism. More prior convictions result in more rapid relapse. Recidivism is twice as likely for those with prior convictions compared to those without. The number of prior convictions for aggravated theft has no influence on recidivism. Likewise, circumstances such as assistance, incitement, or complicity have no significant impact on recidivism. Therefore, the analysis shows that the type of sanction has no influence on recidivism and that it is the number of prior convictions that is the most crucial recidivism variable.

4.4. Summary

Based on sanction and recidivism data alone, it is clear that for all three offense groups – theft, fraud, and aggravated theft – that offenders who receive more severe sanctions are more likely to reoffend when compared to offenders who receive less severe sanctions. However, further analysis shows that when a range of other variables are taken considered (e.g., gender, age, prior convictions and sanctions, mitigating circumstances, complicity, incitement) the apparent sanctioning effect does not arise from the nature of the criminal sanction, but rather from the offenders' criminal past.

Table 9 shows different Odds Ratios for the impact of the type of sanction on recidivism for theft, fraud, and aggravated theft. The second column provides information on the Odds Ratio when only sanction and recidivism are included; the third and fourth columns contain other factors (in addition, the fourth column is with inverse probability of treatment weighting). If only the sanction type and likelihood of recidivism is taken into account, the recidivism Odds Ratio increases with sanction severity: for theft, recidivism is 2.9 times more likely after a prison sanction than after a fine; for fraud, the ratio is 1.8. For aggravated theft, recidivism is 2.2 more likely after a non-suspended vs. suspended prison sentence.

Table 9: The Impact of the type of the Sanction on Recidivism

Offense	Odds-Ratio of the Type of Sanction (no inclusion of other factors)	Odds-Ratio of the Type of Sanction under control of other Factors	Impact of the type of sanction with IPTW* under control of other factors
Theft (Fine – Prison Sanction)	2.9	1.14 (p=0.000) (Pseudo R ² = 0.12)	No significant Impact (p=0.311) (Pseudo R ² = 0.15)
Fraud (Fine – Prison Sanction)	1.8	No impact (Pseudo R ² = 0.12)	No Impact (Pseudo R ² = 0.14)
Burglary (Suspended Prison - Imprisonment)	2.2	1.17 (p=0.046) (Pseudo R ² = 0.13)	No significant Impact (p=0.168) (Pseudo R ² = 0.16)

* IPTW: Inverse Probability of Treatment Weighting

If other factors are taken into account, the Odd-Ratios for the type of sanction are different. If theft is sanctioned with imprisonment (suspended or non-suspended), recidivism is 1.14 times more likely than after a fine. When, through a counterfactual approach, sanction-related selection effects are eliminated, no significant sanction effect exists.

In the case of fraud, no significant sanction effect exists when additional factors (with or without IPTW) are included. The different recidivism rates are not a result of the sanction itself, but rather the different composition of the groups (imprisonment vs. fine).

For the aggravated theft group, the effect of different prison sanctions are compared (suspended vs. non-suspended). When other factors are included, relapse after time spent in prison is 1.17 times more likely ($p = 0.046$) than after a suspended prison sentence. If the selective impact of the sanction is adjusted via a counterfactual approach, no significant sanction effect is found.

5. CONCLUSION

As the above analyzes show, for the offense groups theft, fraud, and aggravated theft, it is not the type of sanction that results in different recidivism rates. There is no causal link between the type of sanction and reconviction rates. Other factors have a far greater effect on reconviction. In particular, a person's previous criminal history (measured by the number of prior convictions) strongly influences the likelihood of recidivism: the longer the criminal record, the greater the probability of recidivism. Thus, it is concluded that sanctions are largely interchangeable within the legal limits for the examined offense groups and, in accordance with the thesis posited by Kaiser, when two different sanctions are likely to lead to the same result, the less severe sanction should be favored (1996, p. 978). Tougher sanctions will not lead to lower recidivism rates.

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