

The Impact of Direct Democracy on Sentencing Behavior

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Abstract

This paper aims to gain insight into how political institutions affect the sentencing behavior of courts under different political systems. In generalization of hypotheses developed in the tax compliance literature, it is assumed that in more direct democratic systems an implicit contract based on mutual trust exists between the citizen and the state, in contrast to a command and control structure in a more representative political system. It is therefore conjectured that in more direct democratic cantons punishment of severe infractions should be significantly harder than in more representative systems, but punishment of less severe offenses might be more in favor of a fast re-integration into society of the convicted. Using data on 40 000 cases of Swiss first offenders who were found guilty of drunk driving between 1994 and 2001, empirical analyses at the individual and cantonal level seem to support these hypotheses.

Key Words: direct democracy, economic model of crime, implicit contract

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1 Introduction

The literature on tax evasion in Switzerland has shown that there exists an implicit psychological contract between tax administration and tax payer based on a mutual relationship of trust in more direct democratic cantons (Feld and Frey 2002). Extending this idea to a general societal level, a linkage between the severity of punishment and the shape of political institutions should exist (Frey 1997). According to the tax evasion literature, in direct democratic cantons a more favorable treatment of (tentative) tax evaders was hypothesized and actually observed, but equally a harsher punishment of those tax evaders who were detected (Feld and Frey 2002). For this reason, it is hypothesized that in more direct democratic political systems for any infringement a harder punishment of more severe offenses should be observed, whereas less severe offenses should be punished more gratefully.

These hypotheses are empirically tested using a unique dataset on 40 000 Swiss first offenders of the mass felony drunk driving from 1994 to 2001. Switzerland is particularly suitable for such an empirical test as it consists of 26 cantons which differ in their political systems and also have all levels of criminal courts¹. To my knowledge, this is the first paper trying to empirically demonstrate the existence of this linkage for an offense outside the tax evasion field.

Equally, this paper contributes to the international discussion on reforming political institutions. It sheds light on the interconnectedness between institutions and different societal equilibria between the citizenry and the state, so that a reform of any political institution might call for accompanying measures which aid maintaining the new equilibrium. To the Swiss reader, the question of institutional determinants of differing sentencing practices might be important as there is an ongoing effort of the Swiss Supreme Court to harmonize sentencing practices between Swiss cantonal courts. This paper might provide arguments why a complete harmonization is either not achievable or might be even counterproductive.

¹ Only very few criminal cases are decided by the Swiss Supreme Court. There is no federal criminal court.

2 Context and hypotheses

Political institutions can shape people's behavior and how they view the government; on the other hand, the relation between the citizen and the state determines what type of institutions is chosen by the electorate and how these institutions evolve over time. For these reason, in this paper it is assumed there that exists a link between political institutions and the quality of the relationship between citizens and the state, as suggested by e.g. Pommerehne and Weck-Hannemann (1996). In line with Frey (1997) and analogously to the theoretical literature on tax evasion in Switzerland (Feld and Frey 2002), it is believed that more representative political systems have a more paternalistic view of their citizens and tend to treat them as subjects whose obedience and compliance is maintained through devices of command and control ('constitution for knaves', Frey 1997). In the same literature, it is, however, equally conjectured that more direct democratic political systems are shaped by a relationship of mutual trust between government and citizens, a so-called psychological contract. In such equilibrium, trust is signaled by the government through giving citizens stronger popular rights and a looser control of their activities. The existence of these two equilibria has been indirectly empirically corroborated in various tax evasion studies, showing that tax morale was linked to voter participation rights (Weck-Hannemann & Pommerehne 1989, Weck-Hannemann & Pommerehne 1996, Feld and Frey 2002, Torgler 2005).

Based on these preliminary thoughts, it is obvious that punishment of citizens deviating from equilibrium behavior must be handled differently in these two political systems. In the equilibrium of the command-and-control-type, the government anticipates the citizens to pursue their own selfish and 'knaveish' goals only, including rule breaking through criminal activities, as part of their rational utility maximizing behavior (Frey 1997). According to the economic model of crime (Becker 1968), punishment is optimal if the (future individual) gains from an infringement are 'eaten up', and severity of punishment rises with the gains from such criminal activity. A higher level of control of the citizenry translates into a greater probability of detection, so that the government in a more representative political system needs only a medium level of punishment in order to maintain its societal equilibrium state². Trust between citizenry and government plays only a negligible role.

² In the economic model of crime, the potential offender weights the expected gains with the expected costs of her criminal activity. The expected costs consist of the probability of detection multiplied with the probability of conviction multiplied with the severity of punishment. Hence, more control can substitute for a less strict sentencing.

In a society based on an implicit contract, the government's reaction to a citizen's deviation from the equilibrium behavior has to take into account two goals: on the one hand, the deterrence of future infringements of law by punishment, but, on the other hand, the future maintenance of the societal trust basis, the 'civic virtues', necessary for the equilibrium (Frey 1997). To maintain this implicit contract, the government signals its trust through a lower level of control than in a purely command-and-control equilibrium. Indeed, in more direct democratic cantons police expenditure and the number of policemen per capita (proxying the clear-up rate) were found to be considerably lower than in more representative political cantons (Schaltegger 2001; Fischer 2005). Equally, the identical observation was made with respect to the control intensity of tax payers through opening up the tax register (Feld and Frey 2002).³ In consequence, according to the economic model of crime (Becker 1968), the severity of punishment then must, *ceteris paribus*, be higher than in the alternative equilibrium with more government control if an equally high level of crime in society shall be achieved. Moreover, since an infringement of law triggers additional costs to society in form of jeopardizing the mutual trust basis (see Frey 1997), the punishment had to be harder even if the same level of police control was exerted. Based on these thoughts, in a political system with stronger people's rights a stricter sentencing should be observed for deviations from the cooperative equilibrium behavior.

A severe punishment, however, comes at a psychological cost for society: a hard punishment of particularly *minor* deviations from the equilibrium might undermine the trust base of the societal equilibrium. In particular, it destroys the intrinsic motivation which is needed to sustain such a relational contract (Frey, 1997). Therefore, the law and its application should always acknowledge the citizens' basic goodwill. Indeed, in their study Feld and Frey (2002) have revealed that tax administrations in more direct democratic cantons do treat (potential) tax evaders more respectfully than in more representative political cantons, signaling that the offense was taken as some kind of unintentional 'mistake'. Hence, a mild punishment of small deviations signals 'reciprocal good faith' (Frey 1997) on part of the government, which honors the psychological contract and maintains it so.

³ A similar conclusion was made for a simulated economy under two political systems (Pommerehne et al. 1994).

Based on these preliminary thoughts and generalizing similar hypotheses on tax evasion described in Feld and Frey 2002, the following hypotheses can be formulated:⁴

Hypothesis 1:

In more direct democratic political systems we should observe a more severe punishment of criminals than in more representative political systems, if the rule breaking was severe.

Hypothesis 2:

In order to maintain the trust basis of the equilibrium, a milder punishment of less severe infractions can be observed in more direct democratic political systems.

3 Data

These hypotheses will be tested with annual cantonal data on about 40,000 Swiss first offenders⁵ having been convicted for drink driving between 1994 and 2001⁶. Only those cases are kept in which drunk driving was the sole crime committed. Drunk-driving is one of the rare so-called mass crimes which are committed so frequently that a sufficient number of observations per canton and year exist. The dataset contains information on the gender, age and nationality of the convicted, an identification variable of the court which also indicates the canton, two variables for the main punishment and two variables measuring the duration of the prison time and the total amount of the fine. Originally, these data were collected to control the work of courts, not to investigate determinants of sentences; for this reason there is no information on the personal income and the blood alcohol level of the convicted. Art. 91 Abs 2 of the Swiss Traffic Law (SVG) defines drink driving the following:

Wer in einem angetrunkenen Zustand ein Motorfahrzeug führt, wird mit Gefängnis oder mit Busse bestraft.

⁴ Feld and Frey (2002) are able to corroborate their hypotheses with cross-sectional data on the treatment of tax evaders in Switzerland.

⁵ A first offender is defined as someone who was not convicted of drunk driving in the last ten years (Trechsel, 1997, art. 41 Rdnr. 16, page 178)

⁶ The data used in this paper are strictly confidential. I thank Dr. Fink and his collaborators for providing me with this dataset.

Thus, drink driving can be punished with a fine or a prison term, which can be suspended. The severity of punishment follows the rules laid down in the Swiss Criminal Code (StGB). By criminal law, prison sentences are regarded as more severe punishments, whereas fines constitute a less severe form. Suspending the prison sentence is an act of grace which aims to enhance a fast social re-integration of the offender into society, but are, legally, at the 'same' level of severity as unsuspended sentences⁷. Most of the offenders receive both a main and a minor punishment; for this reason, combinations of fines and prison terms exist. In rare cases, also a so-called measure sentence can be given. Such a punishment targets persons in need of a medical or psychological treatment. During the period of investigation, according to the StGB, fine sentences were not given in daily installments, but only the total amount had to be indicated⁸. The amount of the fine should reflect both the offender's personal income, her family situation, but also her guilt (StGB art.48 Abs. 2. Satz 2).

Offenders of an age older than 80 years, younger than 16 years (3 observations), or with a sentence period longer than 365 days have been dropped as outliers.⁹ In addition, one observation with a full measure sentence has been deleted in the dataset, whereas all the other cases of measures combined with prison sentences were kept. This procedure resulted in 39'647 remaining observations. Additional controls at the cantonal level were obtained from the Federal Statistical Office (BFS), the Federal Tax Administration, the Swiss Household Panel and own calculations. Fines and other monetary variables have been deflated to the year 1990 based on the BIP deflator provided by the SECO. The following section gives an overview of the descriptive statistics of the sentence types.

4 Descriptive statistics of sentences

1) Main sentence

The dataset contains two variables which define the main sentence, which partly overlap: one indicates whether a prison term, a measure, a fine or a combination of prison term and

⁷ This ranking of the types of punishment is completely based on the stipulations of the criminal law. It is, however, widely known in the criminological literature that suspended sentences are viewed as almost equal to a non-punishment in the population. Based on these citizens' perceptions of sentences, fining would be the second-hardest punishment.

⁸ Through the successful revision of the Swiss criminal code in 2003 the sentences with daily installments will be introduced, as it is already common in Northern and Middle European countries.

⁹ According to Dr. Fink, prison terms over 1 year are extremely unlikely and most probably a case of miscoding.

measure was given. The second variable shows whether a fine, a suspended prison sentence, and unsuspended prison sentence or a measure sentence was given. Cross tabulation of the two variables reveals the following distribution and combinations in the dataset:

Table 1: Types of main sanction

Main sanction	Fine	Measure	Suspended sentence	Unconditional sentence	Total
prison sentence	0	0	23,678	5,692	29,370
Fine	9,814	0	0	0	9,814
Prison term and measure	0	414	0	49	463
Total	9,814	414	23,678	5,741	39,647

Of the first offenders of drink driving between 1994 and 2001, 29’370 persons (74% of all convicted) received a prison sentence as a sole punishment, out of which 5’692 (19, 4%) were cases were of the unconditional type whereas the rest was in the suspended form. About 9’815 convicted had to pay a fine (24, 7%). In 414 cases (1.04%), the main sanction was a measure combined with a prison term, hinting at mental problems or addictions which needed to be medically treated. In 49 cases (0.12%), the prison sentence was unconditional with a measure accompanying it. In order to keep things as simple as possible, we have excluded these 49 cases from further analysis. The table is then simplified to the following:

Table 2: Type of main sanction

Main sanction	Fine	Measure	Suspended sentence	Unconditional sentence	Total
	9,814 (24.78%)	414 (1.05%)	23,678 (59.80%)	5,692 (14.37%)	39,598 (100%)

2) Additional fines (minor sentence)

In many cases, the prison sentence or measure as the main sentence was combined with the payment of a fine as minor punishment. This concerns 29'784 out of 39'598 cases (75.22%). In case the fine was the main sentence, it remains the sole and main punishment (9'814 cases).

Table 3 provides some descriptive statistics for the amount of fines (in 1990 Swiss Francs) for the various sub-populations of convicted grouped by their main punishment (fine, measure, suspended or unsuspended prison term). It shows that most of the convicted, whose main punishment was not fining, also were sentenced to a fine in addition. The percentage of those not being fined equals to about 15% of all convicted. Of those who were sentenced to a measure, only 22.7% had to pay a fine in addition, whereas about 90% of those with a suspended sentence were also fined. About 60% of persons sentenced to an unsuspended prison sentence, however, had to pay no fine. As expected, the maximum fine and the biggest mean of the whole dataset can be found in the subgroup of those for whom fining was the main sanction; the standard deviations of the fines, however, differ less between the subgroups than one would expect.

Table 3: Distribution of fines according to main sentence

Main sanction Further sanction	Fine	Measure	Suspended sentence	Unsuspended Sentence	Total
obs.	9,814 (24.78%)	414 (1.05%)	23,678 (59.80%)	5,692 (14.37%)	39,598 (100%)
No fine	0 (0%)	320 (77.29%)	2,268 (9.96%)	3,409 (59.89%)	5,997 (15.15%)
Fine: Statistics	Mean 1,035.1 Min 16.82 Max 26,064.29 St.dev. 849.41	Mean 269.67 Min 0 Max 8,628.13 St.dev. 733.53	Mean 863.24 Min 0 Max 21,312.87 St.dev. 713.91	Mean 376.25 Min 0 Max 7,333.91 St.dev. 580.34	Mean 829.63 Min 0 Max 26,064.29 St.dev. 762.59
No sentence term	9,814 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Length of sentence: Stats.	Mean 0 Min 0 Max 0 St.dev. 0	Mean 113.72 Min 8 Max 365 St.dev. 65.27	Mean 21.42 Min 1 Max 304 St.dev. 18.74	Mean 39.15 Min 3 Max 304 St.dev. 32.28	Mean 19.62 Min 0 Max 365 St.dev. 25.48
Corr (length, fine)	Rho = n.e.	Rho = -0.04	Rho = 0.02**	Rho = -0.13**	Rho = -0.15**

** = significance at the 1% level

Table 3 also displays some information on the observed sentence terms, which are measured in days. Comparing the means and standard deviations of prison terms for the various subpopulations, it should be noted they appear substantially higher for those persons sentenced to a measure as their main sanction than the ones observed for the remaining two groups. This might be due to the specific nature of a measure. We will take this into account by estimating the model with and without this particular group. The mean of the term length for suspended sentences is higher than that for unsuspended sentences; duration of prison term seems to depend on whether a suspended or unsuspended sentence is given: For this reason, we will also control for the type of main sentence in the model.

Finally, comparing the statistical distribution of fines and prison terms it becomes eminent that suspended sentences seem to be accompanied by higher fines, whereas unsuspended sentences are combined with lower fines, on average. Indeed, the signs of the correspondent correlation coefficient for the subpopulation of unsuspended sentences and the overall dataset point to the expected direction.

3) A joint measure of the severity of punishment

It would be useful to be able construct one single variable comprising both prison and fine sentences in order to obtain an overall measure of punishment. This is only possible if one type of sentence can be converted into the other type. According to Swiss Criminal Law, the fine should not only reflect the degree of guilt of the offender but also her income (and her family status) (StGB art.48 Abs. 2. Satz 2). As information on income is missing in the dataset, a conversion of the fine (given in total amount) into hypothetical daily installments is not possible.¹⁰ On the other hand, StGB art 49 Abs. 3 Satz 2 stipulates that in case that a fine is not paid on time by the convicted, the judge has to transform this fine into a prison sentence, which, according to the same law, should not exceed a duration of 3 months. The transformation rate is set at one day in prison per 30 SFr of unpaid fine. Based on these stipulations, it was possible to convert actual fines into hypothetical prison terms. For 538 observations the term length had to be cut off at the maximum of 90 days. Equally, a fine of zero was transformed into a prison term of zero days. The following table gives information

¹⁰ In those countries where daily installments are known, one day of payment shall be equal to one day in prison, which is one day of forgone income beyond the subsistence level.

on converted fine and total (hypothetical) prison terms, the last equaling the sum of the actual prison sentence and the converted fine:

Table 4: Converted fines and total prison terms

Main sanction	Fine	Measure	Suspended sentence	Unsuspened Sentence	Total
Obs.	9,814 (24.78%)	414 (1.05%)	23,678 (59.80%)	5,692 (14.37%)	39,598 (100%)
Converted fine: statistics	Mean 33.00	Mean 8.04	Mean 27.98	Mean 12.38	Mean 26.77
	Min .561	Min 0	Min 0	Min 0	Min 0
	Max 90	Max 90	Max 90	Max 90	Max 90
	St.dev. 17.49	St.dev. 18.08	St.dev. 18.18	St.dev. 18.40	St.dev. 19.22
Total prison term: statistics	Mean 33.00	Mean 121.76	Mean 49.40	Mean 51.52	Mean 46.40
	Min .56	Min 10	Min 3	Min 3	Min .56
	Max 90	Max 394	Max 342.11	Max 321.33	Max 394
	St.dev. 17.49	St.dev. 66.15	St.dev. 26.23	St.dev. 34.91	St.dev. 28.65

4) Correlations between direct democracy and the severity of punishment

Finally, it might be interesting to investigate the simple correlations between direct democracy and the severity of punishment prior to the econometric analysis. Table 5 displays the correlation coefficients for the individual data (39'598 observations). At the individual level, a strong and significant positive correlation between the degree of direct democracy and the severity of punishment can be observed (at the 1 % level of significance). Only for those persons sentenced to a measure a different impact of direct democracy appears present: it is positively correlated with the fine, but negatively with the duration of the prison term. But, as already stated before, the measure sentence is a very special punishment which is rarely used and affects only 1% of the convicted in the data set. In a second step, the data have been aggregated at the cantonal level (excluding those who have received a measure sentence). The correlation coefficients between the cantonal means and the index of direct democracy reveal no relation for the average duration of a prison sentence ($\rho = 0.0240$), but a significant positive relation for the average fine and the total (hypothetical) prison term ($\rho = 0.3463^{**}$, and 0.3251^{**} , respectively)¹¹.

Obviously, this issue calls for an analysis using a multivariate regression method which clearly must be preferred to looking at pure correlations. The next section introduces the model to be estimated.

¹¹ The spearman rank correlations are -0.0230 , 0.3444^{***} , and 0.2596^{***} , respectively, and thus very similar.

Table 5: Correlation between the degree of direct democracy and the severity of punishment; 39'598 observations

Sentence type	Amount of fine (deflated)	Length of prison term	Total prison term (30 Sfr = 1 day)
Main sanction			
Fine	0.1148**	Non existent	0.1625**
Measure	0.2729**	-0.0983*	0.0042
Suspended sentence	0.1009**	0.0193**	0.0900**
Unsuspending sentence	0.3228**	0.1537**	0.3173*
Total ¹²	0.1256**	0.0281**	0.1233**
	** = significance at the 1% level	* = significance at the 5% level	

5 Model and methodology

1) Individual level

To investigate the impact of direct democracy on sentencing behavior at the individual level, the following model will be estimated:

$$y = f(\text{direct democracy, individual characteristics, cantonal characteristics, cantonal dummies, year dummies})$$

The dependent variable y is either duration of prison term, amount of fine or total (hypothetical) prison term, as defined in the previous section. The model exploits fully the available individual information in the data by including the age of the offender at the time of conviction and her gender. The degree of direct democracy is measured by an index which ranges from 1 (lowest level) to 6 (highest level).¹³ Also included is the type of main sanction, as it might proxy the severity of the offence (determined by the blood alcohol level); it is known that fines solely are given to less severe offences whereas unconditional sentences are

¹² The correlation coefficients for the individual data when the persons sentenced to a measure are excluded are 0.1278**, 0.0182**, and 0.1218*, respectively.

¹³ See Stutzer (1999) for its construction.

awarded to the most severe infringements. Second, table 3 seems to reveal that persons with a fine as main punishment might have to pay significantly more than persons with a (un)suspended prison sentence. For this reason, the severity of punishment of the additional (minor) sanction, the fine, is also employed as a control variable. Moreover, it is conjectured that a more conservative ideological position in the population is in favor of a harder punishment whereas a more leftist position prefers a fast re-integration into society. For this reason the net share of conservative parties in the cantonal government is also included. It is possible that judges respond to the political preferences of the local population either because they are elected by them or because they usually have grown up among them. The log of the number of policemen per capita in a canton ought to proxy the probability of detection. It can be conjectured that a lower clear-up rate might be compensated by a somewhat harder punishment according to the economic model of crime (Becker 1968). Finally, cantonal fixed and year fixed effects complete the model specification. Cantonal fixed effects filter out cultural traits and other time-invariant unobserved factors, and, more importantly, institutional differences in the criminal procedural codes which differ substantially between the 26 cantons in the period under investigation.¹⁴

This model is then estimated as a pooled OLS and clustering by cantons in accordance with the Moulton-critique (1990), which also accounts for heteroscedasticity of the residuals. Since the data are at the individual level, all cantonal characteristics are exogenous to the single convicted. Due to the lacking of a suitable individual instrument, no Heckman selection model accounting for the ‘selection’ into indifferent types of punishment or political regimes can be estimated. A regression with the type of punishment as regressande and direct democracy as regressor, however, showed that direct democracy was no significant predictor for either fining or (unconditional) prison term.¹⁵ Thus, different political regimes do not appear to prefer specific types of punishment. As additional remedy, the hypothetical total prison term variable was constructed, and types of main sentence are included as controls in the model (see above). For reasons explained in the section on data description, this model will be estimated with the individual data both including and excluding the sub-population of those who received a measure as punishment.

¹⁴ In all the regressions with the individual panel, the comprehensive model specification also included the log of cantonal population, the degree of urbanization, the log of the cantonal national income, and a measure of geographic interaction between cantonal populations, which never proved significant. For these reasons these determinants were excluded from the final model specification.

¹⁵ Estimation results are available on request.

2) Cantonal level

In a second step, the identical model is estimated with aggregate(d) data at the cantonal level. Aggregation was obtained per canton and year with the cases of measure sentences excluded. The reason for estimating a model at the cantonal level is that missing individual data on personal income, family status and blood alcohol levels can partly be substituted with additional aggregate measures. Since, however, the distribution of blood alcohol level of the convicted should be quite equal across cantons due to a sufficient number of observations for each year and canton leading to a normal distribution¹⁶, an omission of this invariant variable can be justified.

$$y = f(\text{direct democracy, aggregated individual characteristics, cantonal characteristics, cantonal dummies, year dummies})$$

The dependent variable y is either the average duration of prison term, the average amount of fine, or the average hypothetical prison term at the cantonal level. Furthermore, also cantonal averages of the gender and the age of the convicted are employed. In addition to the determinants of the individual level version of the model, further cantonal characteristics are included which control for the cantonal income and its distribution (the log of the per capita income, a measure of income distribution). Finally, I have also added an indicator of the size of the canton (log of cantonal population) and a measure of geographical interaction between cantonal populations as well as the degree of urbanization both which account for traffic richness.

Using only variables at the aggregate level leaves us with 207 observations, 26 cantons between 1994 and 2001 (Appenzell Innerrhoden is missing in 1994). In contrast to using individual data, endogeneity might be present in this model: the severity of punishment might impact the (future) occurrence of this delict which, again, might influence the control probability, measured by the log of policemen per capita. Running various auxiliary regressions, however, with the conviction rate (in the population) and further fiscal-political and economic controls known from the public finance literature as regressors on the log of the policemen per capita, however, showed that the occurrence of drunk driving does not

¹⁶ Personal communication with Dr. Fink, Federal office for statistics (BFS) (personal communication).

(significantly) relate to the measure of control probability¹⁷. For this reason, employing a 2SLS procedure was not deemed necessary.

6 Estimation results

1) Duration of prison terms

The results for the duration of the prison sentences for all 39000 observations are given in table 6. Persons, whose main sentence was a fine and thus did not receive a prison term, have been coded with a zero-value in the dependent variable. In the whole sample (excluding measure sentences) (column 2), in the sub-sample containing only prison term sentences (column 3), and in the sub-sample of the unsuspended sentences (column 5), a duration rising influence of direct democracy can be detected (varying between the 10% and 1% level of significance). Since duration of prison terms is measured in days, and the index of direct democracy varies between 1 and 6 points, the estimated coefficients indicate that prison terms rise by a maximum of 12 days in column (2), by 17 days in column (3), and by about 35 days in column (5). For the sub-sample of only suspended sentences and for the whole sample (columns 5 and 1), the sign of the coefficients on the political institutions is positive, although not significant. As already observed in the descriptive statistics part, measure sentences appear to be special cases. The coefficient of direct democracy is significant at the 1% level, but exerts a duration reducing impact, contrasting its effect on the other subpopulations. The size of the coefficient is about 28, so that the reduction ranges between 28 and 168 days.

For both the total population and the subpopulations, we find that male offenders are more severely punished than female ones. Furthermore, we also observe a (potential) non-linearity in age (except for the measure sentence): both young convicted (below the age of 35) and older ones (more than 66 years old) receive significantly higher prison terms than persons of a middle age. The number of policemen per capita does not appear to influence the duration of prison terms of either total or any subpopulation; only the duration of measure sentences in combination with prison terms are negatively influenced (at the 5% level).

¹⁷ It might well be that there is a link in reality which remains opaque because the bad quality of the proxy for the control effort.

Table 6: Dependent variable: Duration of Prison Terms, 1994 – 2001

	(1)	(2)	(3)	(4)	(5)	(6)
	All obs.	Measures excluded	Only prison terms (U and S)	Only Measures	Unsuspending sentences (U)	Suspended sentences (S)
Direct Democracy	1.425 (1.31)	1.960(*) (1.98)	2.847* (2.37)	-27.287** (3.66)	5.853** (3.10)	1.245 (0.83)
Male	1.323** (3.79)	1.215** (4.05)	1.396** (3.64)	11.264** (3.57)	4.875** (4.50)	0.653 (1.71)
Age 18-25	-4.166** (5.52)	-4.728** (5.06)	-6.443** (5.64)	40.679* (2.59)	-11.195** (4.70)	-6.028** (4.13)
Age 26-35	-1.465* (2.34)	-1.965* (2.68)	-2.003* (2.49)	25.289** (7.23)	-4.252(*) (1.84)	-2.339* (2.09)
Age 36-45	0.729 (1.29)	0.159 (0.25)	0.556 (0.74)	30.531** (7.47)	-0.799 (0.33)	0.157 (0.19)
Age 46-55	0.940(*) (1.75)	0.506 (0.98)	0.873 (1.33)	15.264** (5.72)	-0.676 (0.26)	0.628 (1.06)
Age 56-65	-0.098 (0.20)	-0.587 (0.89)	-0.525 (0.64)	24.280* (2.68)	-3.824 (1.45)	-0.501 (0.56)
Age > 65	-2.262** (3.59)	-2.668** (3.67)	-3.590** (3.53)	12.967 (0.89)	-7.155* (2.21)	-3.126* (2.36)
Log (policemen per capita)	3.838 (0.98)	4.694 (1.17)	4.747 (0.91)	-126.031* (2.52)	4.477 (0.44)	3.536 (0.66)
Conservative Parties	4.578 (1.20)	4.672 (1.15)	3.566 (0.59)	1.893 (0.08)	4.086 (0.48)	4.726 (0.88)
Suspended prison term	-83.176** (6.46)	21.019** (7.82)	-19.806** (5.26)	. (.)	. (.)	. (.)
Fine	-104.225** (6.84)	. (.)	. (.)	. (.)	. (.)	. (.)
Unsuspending prison term	-64.564** (5.97)	39.568** (6.68)	. (.)	. (.)	. (.)	. (.)
Amount of Fine	-0.001 (0.56)	-0.001 (0.61)	0.001 (1.53)	0.004* (2.25)	0.003(*) (1.75)	0.002(*) (1.71)
Constant	125.050** (4.26)	24.49 (0.86)	59.735 (1.59)	-639.222* (2.15)	23.15 (0.39)	30.755 (1.00)
Observations	39598	39184	29370	414	5692	23678
Adjusted R-squared	0.49	0.42	0.31	0.35	0.40	0.23

Robust t statistics in parentheses

(*) significant at 10%; * significant at 5%; ** significant at 1%

A conservative ideology of the government does not appear important at all. For identifying the effects of the proxies of the blood alcohol level it is best to analyze the outcomes of columns 2 and 3: Offenders with a medium level of blood alcohol, proxied by the dummy of a suspended sentence, are punished less severely in comparison with a

convicted with a very high blood alcohol level (proxied by the dummy of an unconditional sentence). Reference category in columns (2) and (3) are persons with a fine as their main sentence, who supposedly had the lowest blood alcohol level measured. Again, we observe a somewhat different pattern if the 414 measure cases are included in column (1). In this case, those sentenced with a measure constitute the reference category. The dummy for persons with a fine indicates that they receive a significantly lower prison term sentence (which is obvious), but persons with a suspended prison term appear to have a longer prison term than those with an unsuspended sentence in comparison with the measure subpopulation. The amount of fine to be paid as an additional fine is positively (weakly) associated with the duration in prison for the subpopulation of measure, unsuspended and suspended prison sentences (columns 4 through 6). In other words, those persons with the harder main sentence also have to pay a higher fine; fines are not used as substitutes for the number of days in prison. In the total population and the one of the prison term only population, however, this link vanishes completely (columns 1, 2 and 3).

Overall, it appears that in more direct democratic cantons convicted drunk drivers receive considerably longer prison terms, in particular in case of unsuspended sentences, which are reserved for those with the most severe infringement of the law. In addition, those offenders with a longer duration of prison terms also receive a harder punishment with respect to the minor sentence, the fine. These findings are perfectly in line with hypothesis 1. The somewhat contrasting effect observed for the 1% of the convicted receiving a measure sentence does not substantially alter this outcome, as in the total population (excluding the measure cases) the prison term increasing impact of direct democracy prevails¹⁸.

2) Amount of fine

Table 7 displays the results for the amount of the fine as dependent variable. Offenders who were given a prison term or measure sentence only were given a zero-value in the dependent variable. For the overall population of the convicted, including and excluding measure cases (columns 1 and 2), the degree of direct democracy within a country is associated with a lower level of fine (columns 1 and 2). As the coefficients indicate, the financial impact of direct democracy is quite substantial: For the total population, it ranges between about 110

¹⁸ Significance level is just slightly below the 5% level.

Swiss Francs and 660 Swiss Francs. A fine reducing influence of political institutions is also observed for those receiving a prison sentence, a measure, or a suspended sentence, but not for those with an unsuspended sentence or those only having been fined. The coefficients reveal that the financial influence is the biggest for measure cases (maximum is about 2000 Swiss Francs), still quite big for the suspended prison term cases (maximum is about 900 Swiss Francs), and the smallest for the sub-sample of prison term cases with a maximum of 840 Swiss Francs.

Again, male persons are more severely punished than female persons. As regards age, in general, young persons have to pay a substantially lower fine. As the fine is also based on income and income rises with age, this finding is not surprising. For the total sample, also retired persons are fined with a significantly smaller amount, which equals 136 Swiss Francs. As already observed in table 6, the coefficients of the policemen per capita are not significant. A more conservative government is associated with higher fines in the subpopulation of persons only being fined, but also for those given a measure sentence. In the total sample, persons only being fined and those with a suspended sentence appear to be fined substantially higher than the reference group (of measure sentences), whereas being an unsuspended case is not a decisive determinant for the dependent variable. In the subpopulation of the prison term sentences (column 4), persons with a medium alcohol blood level had to pay a higher fine than those with a very high blood alcohol level. Only for the measure subpopulation (column 5), a positive relation between the duration of the prison term and the total amount of fine is detected; in all other cases these two variables appear completely uncorrelated.

In sum, these estimation results show that the effect of direct democratic institutions differs according to the type of main sentence: for persons with a minor and for those with a severe infringement, no significant impact can be observed. For persons with a medium level of deviation, however, a fine decreasing influence of direct democracy can be observed. In other words, those with a middle deviation are punished milder in comparison with the ones with a very big deviation. A harsher punishment with respect to fining, however, also occurs with those only fined, the mildest form of punishment. For this reason, hypothesis 1 can again be corroborated, whereas hypothesis 2 has to be partly rejected based on the results for the fined only.

Table 7: Dependent variable: Total amount of fines, 1994 – 2001

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	all obs.	Measures excluded	Fines	Prison terms (U and S)	Measures	Unsuspen- ded sentences	Suspended sentences
Direct Democracy	-110.777* (2.26)	-108.352* (2.15)	-23.282 (0.60)	-137.852* (2.55)	-330.309** (2.85)	-36.792 (0.81)	-153.966** (2.98)
Male	206.161** (7.08)	206.503** (7.02)	232.439** (4.83)	185.245** (5.70)	121.731** (3.36)	69.496* (2.27)	194.214** (5.78)
Age 18-25	-408.406** (5.80)	-415.752** (5.67)	-501.999** (3.78)	-357.249** (5.08)	46.294 (0.64)	-50.756* (2.37)	-408.847** (5.16)
Age 26-35	-235.300** (4.17)	-242.023** (4.15)	-319.427** (2.93)	-222.321** (3.57)	-4.541 (0.07)	8.217 (0.31)	-265.836** (3.69)
Age 36-45	-153.068** (3.05)	-159.869** (3.10)	-179.697* (2.40)	-160.317** (2.80)	68.955 (1.47)	26.548 (0.98)	-195.602** (2.93)
Age 46-55	-84.635(*) (1.90)	-91.047(*) (2.00)	-79.13 (0.93)	-103.517(*) (2.00)	202.964** (2.96)	52.879 (1.47)	-132.190* (2.15)
Age 56-65	-56.764 (1.28)	-62.42 (1.36)	-42.958 (0.43)	-77.971 (1.50)	124.216* (2.31)	26.356 (0.79)	-96.211 (1.60)
> age 65	-135.996* (2.49)	-143.549* (2.70)	-106.702 (1.15)	-143.922 (1.66)	357.682 (1.50)	11.569 (0.29)	-177.940(*) (1.80)
Log (policemen per capita)	-54.374 (0.50)	-50.225 (0.45)	115.642 (0.47)	-120.564 (1.00)	-1,597.981 (1.17)	135.897 (0.55)	-147.184 (1.13)
Conservative Parties	97.565 (0.85)	94.926 (0.82)	194.752(*) (1.77)	94.318 (0.80)	889.939** (2.87)	6.593 (0.05)	65.18 (0.53)
Suspended sentence	500.651** (3.08)	-119.41 (0.99)	. (.)	522.579** (4.42)	. (.)	. (.)	. (.)
Fine	623.085** (4.41)	. (.)	. (.)	. (.)	. (.)	. (.)	. (.)
Unsuspen- ded sentence	24.679 (0.25)	-592.016** (3.60)	. (.)	. (.)	. (.)	. (.)	. (.)
Length of prison term	-0.733 (0.57)	-0.90 (0.61)	. (.)	1.358 (1.51)	0.556* (2.39)	0.738 (1.55)	2.54 (1.59)
Constant	835.315 (1.26)	1,480.944* (2.21)	3,900.771* (2.60)	562.716 (0.80)	-8,329.302 (1.00)	881.98 (0.62)	1,547.700* (2.56)
Observations	39598	39184	9814	29370	414	5692	23678
Adjusted R- squared	0.20	0.19	0.18	0.27	0.24	0.59	0.22

Robust t statistics in parentheses

(*) significant at 10%; * significant at 5%; ** significant at 1%

3) Total hypothetical sentence term

Table 8 shows the results for the hypothetical total sentence, in which the fine was transformed into a hypothetical period in prison and added to the actual prison term. As regards the political institution, for the total population of offenders no significant impact can be detected (columns 1 and 2). Looking at the various sub-populations by sentence type reveals a different picture: direct democracy is irrelevant for those being fined, but is severity of punishment-increasing for offenders with an unsuspended sentence (column 6), and severity lowering for those who received only a suspended sentence (column 7). On those receiving a measure sentence, a severity lowering impact can be detected. Again, persons with an unsuspended sentence appear to be punished harder than those with a suspended sentence in more direct democratic cantons, whereas the sub-population of those receiving a fine is not affected. Again, hypothesis 1 is supported by the data, whereas hypothesis 2 is only partly corroborated.

4) Results at the cantonal level

Table 9 displays the results of the analysis at the cantonal level. Again, it is observed that direct democracy increases the duration of average prison terms (column 1 and 2). On the other hand, it substantially decreases the average amount of fine to be paid (column 3 and 4). The overall effect on the hypothetical compound measure of punishment, however, appears very weak and non-existent if outliers are excluded (columns 5 and 6). The estimation results imply that fines as the mildest form of punishment are, *ceteris paribus*, lower in more direct democratic cantons, whereas prison terms for the more severe cases are increased in duration. This finding is consistent both with hypothesis 1 and hypothesis 2.

Table 8: Dependent variable: hypothetical total sentence, 1994 – 2001

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	all obs.	measures excluded	Fines	Only prison terms (U and S)	Measures	Unsuspened sentences (U)	Suspended sentences (S)
Direct							
democracy	-1.574 (1.17)	-1.035 (0.69)	-0.345 (0.28)	-1.166 (0.77)	-37.278** (4.19)	4.731** (2.79)	-3.322* (2.27)
male	7.412** (9.11)	7.312** (8.86)	6.581** (6.43)	7.526** (8.48)	14.578** (4.24)	7.450** (6.42)	7.162** (7.23)
Age 18-25	-13.644** (9.17)	-14.313** (9.43)	-12.221** (5.31)	-15.614** (8.92)	43.203* (2.80)	-13.332** (4.90)	-16.806** (9.97)
Age 26-35	-5.563** (4.97)	-6.174** (5.64)	-6.435** (3.67)	-6.306** (5.15)	25.577** (10.11)	-4.072 (1.55)	-7.727** (6.06)
Age 36-45	-1.499 (1.57)	-2.194* (2.44)	-3.478* (2.43)	-1.972(*) (1.98)	32.693** (7.34)	0.108 (0.04)	-3.149** (2.97)
Age 46-55	0.49 (0.47)	-0.057 (0.06)	-0.865 (0.67)	-0.046 (0.04)	20.746** (8.40)	0.955 (0.36)	-0.811 (0.74)
Age 56-65	-0.24 (0.26)	-0.842 (0.95)	0.258 (0.24)	-1.435 (1.38)	29.236** (3.27)	-3.023 (1.01)	-1.785(*) (1.74)
> age 65	-5.928** (3.94)	-6.484** (4.58)	-3.454(*) (1.89)	-7.702** (4.70)	25.125 (1.16)	-6.884* (2.14)	-8.328** (5.04)
Log (policemen per capita)	1.588 (0.32)	2.349 (0.44)	-1.619 (0.25)	1.761 (0.25)	-149.799* (2.78)	10.212 (0.63)	-0.262 (0.04)
Conservative Parties	8.851 (1.54)	8.861 (1.47)	6.045* (2.06)	8.629 (1.02)	28.623 (1.34)	4.305 (0.37)	9.548 (1.12)
Suspended sentence	-65.375** (4.52)	17.169** (7.56)	0 (.)	-3.186 (0.59)	. (.)	. (.)	. (.)
Fine	-82.582** (6.12)	. (.)	. (.)	. (.)	. (.)	. (.)	. (.)
Unsuspened sentence	-62.280** (5.79)	20.234** (3.96)	. (.)	. (.)	. (.)	. (.)	. (.)
Constant	137.965** (3.70)	58.463 (1.58)	42.565 (1.09)	78.665 (1.58)	-595.779(*) (1.93)	59.286 (0.64)	84.062* (2.09)
Observations	39598	39184	9814	29370	414	5692	23678
Adjusted R-squared	0.30	0.25	0.32	0.2	0.31	0.36	0.23

Robust t statistics in parentheses

(*) significant at 10%; * significant at 5%; ** significant at 1%

Table 9: Regression at cantonal level, measure sentences excluded, 1994 – 2001

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Prison term (U + S)	prison terms, NV	Fines (all sentences)	Fines, NV	total hypothetical. prison term	total prison, NV
Direct Democracy	2.484* (2.55)	1.759* (2.45)	-224.070** (2.91)	-148.823* (2.37)	-3.200(*) (1.88)	-2.41 (1.34)
Share of male convicted	-11.254 (1.59)	-13.025** (2.72)	199.968 (0.50)	-55.365 (0.16)	-6.609 (0.48)	-8.316 (1.13)
Mean age of convicted	6.303 (1.38)	4.596* (2.46)	169.024 (1.43)	143.357 (1.64)	10.89 (1.57)	4.371 (1.42)
Mean age squared	-0.074 (1.30)	-0.056* (2.40)	-1.754 (1.19)	-1.512 (1.38)	-0.121 (1.40)	-0.042 (1.13)
Log (policemen per capita)	-4.823 (0.58)	6.017(*) (1.79)	299.473 (1.06)	-27.396 (0.16)	0.973 (0.11)	6.954 (1.33)
Conservative Parties	1.309 (0.41)	0.768 (0.35)	148.58 (1.05)	83.095 (0.62)	8.168(*) (1.87)	9.748** (2.81)
Share of fined	0.001 (0.38)	0.001 (0.52)				
dummymain2	12.657** (2.97)	16.088** (7.21)	-177.422 (1.02)	-301.114* (2.45)	8.077 (1.15)	7.243(*) (1.90)
dummymain4	35.343** (4.56)	37.400** (8.04)	-154.12 (0.53)	-243.134 (1.02)	28.439* (2.27)	17.725** (2.71)
Size of population	-19.692 (0.94)	-31.516* (2.44)	-1,148.017 (1.22)	-917.065 (1.15)	-52.885 (1.53)	-43.866(*) (1.80)
National income	-9.598(*) (1.84)	0.008 (0.00)	-409.956 (1.27)	-58.414 (0.25)	-23.838** (2.77)	-15.715** (3.00)
Income inequality	-1.158 (0.94)	-0.783 (1.08)	68.397 (1.02)	37.075 (0.85)	0.214 (0.10)	-1.582 (1.25)
urbanization	0.371 (0.28)	-1.326(*) (1.68)	-38.012 (0.57)	-113.009* (2.24)	-0.457 (0.19)	0.175 (0.12)
interaction	0.021 (0.07)	0.211 (0.86)	-41.429* (2.02)	-39.608* (2.23)	-1.012(*) (1.85)	-0.617 (1.34)
Mean prison term			1.821 (0.40)	6.311(*) (1.70)		
Constant	67.391 (0.27)	306.629* (2.05)	14,222.107 (1.29)	24,101.418* (2.08)	435.894 (1.16)	705.696(*) (1.86)
Observations	207	197	207	200	207	197
Adjusted R-squared	0.86	0.94	0.79	0.88	0.79	0.91
F-test (age variables)	2.48	3.34	6.84	7.42	7.54	17.13

Robust-t statistics in parentheses. NV = normal distribution of residuals
 (*) significant at 10%; * significant at 5%; ** significant at 1%.

7 Conclusion

This paper tested the impact of political institutions on sentencing behavior of courts. Based on the tax evasion literature, it was conjectured that the quality of the relation between citizens and their government is linked to the type of political system, and that the quality of this relation leads to differences in the sentencing behavior of courts. These thoughts were finally concluded with two hypotheses: first, in more direct democratic systems a harder punishment of severe infractions of law shall be observed, and second, minor infringements shall be punished milder than in more representative political systems.

Using data of about 40'000 Swiss first offenders of drunk driving from 1994 to 2001, these hypotheses are tested both at the individual and (in aggregated form) at the cantonal level. The regressions outcomes reveal that the first hypothesis can be corroborated both with the individual and the aggregated individual data, indicating that in more direct democratic cantons offenders are more severely punished in case their infraction was more severe. The second hypothesis of a significantly milder punishment of minor infringements, however, was strongly supported with data at the cantonal level. At the individual level, however, no punishment-reducing impact of direct democracy for small deviations could be observed. Overall, however, the evidence presented in this paper rather confirms than rejects the two hypotheses.

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