Public Choice by Referenda or Delegation. An Experimental Comparison of Direct and Indirect Democracy*

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January 13, 2004

Abstract

Direct democracy with its use of referenda avoids the prototypical principal-agent problems of delegation in indirect democracies, especially since elected representatives are usually not committed by law to keep their promises. Sequential or more complex referenda may, however, result in an inferior combination of realized policy measures. Thus, it is an open question which type of institution (direct or indirect democracy) will be more efficient. Our experimental study explores this issue and finds that direct democracy seems to perform better.

JEL Classification: C91, D71, D72

Keywords: referenda, delegation, experiment

*Financial support from the Center for Experimental Economics at the University of Innsbruck (sponsored by *Raiffeisen-Landesbank Tirol*) is gratefully acknowledged.

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1 Introduction

Most currently existing democracies are representative or indirect ones, allowing elected representatives to take decisions on behalf of the country's inhabitants. Only a few political jurisdictions - like Switzerland or a number of States in the U.S. - can be classified as directly democratic, meaning that citizens can decide directly by referenda or initiatives on legislation and other important political issues.[1]

Numerous existing studies provide evidence that direct democracies can have desirable political and economic side-effects. Leaving aside political arguments concerning, for instance, voter turnout or the level of political participation of citizens, direct democracy seems to lead to lower taxes and public expenditures (Feld and Matsusaka, 2003; Matsusaka, 1995), lower public debt (Feld and Kirchgässner, 1999; Kiewiet and Szakaly, 1996) and even higher levels of personal happiness or well-being (Frey and Stutzer, 2000a,b) compared to indirect democracies.[2]

Indirect democracy with its delegation of decision-making power to representatives, however, is often regarded as less prone to a status-quo bias in legislation and institutions (Ingberman, 1985). Furthermore, referenda as instruments of direct democracy may entail two drawbacks. First, since they are typically run on a case-by-case basis, they may fail to exploit efficiency gains possible from the bundling of initiatives. Second, referenda impose considerable informational demands (Christin, Hug, and Sciarini, 2002), which may actually overburden many voters. Hence, the delegation of decision-making power may lead to better, i.e. more efficient decisions within a society.

Obviously, weighing such pros and cons of direct and indirect democracy is a delicate task. So far it has been approached in different ways without really yielding definite conclusions. In this paper, we would like to compare the behavioral incentives of direct and indirect democracy under controlled laboratory conditions. This approach is in the spirit of "problem-driven experimentation" (Frey and Bohnet, 1996) and sheds new light on how political institutions actually shape behavior of political agents as well as voters and how they affect economic efficiency and distributive justice in society.

In particular, we are going to compare the economic efficiency of two different implementations of both, referenda and delegation, in a stylized voting experiment, in which three voters can implement two measures independently, jointly or not at all. In our two treatments with referenda, subjects decide either simultaneously or sequentially about the implementation of the two possible measures. The sequential setting resembles the typical case-by-case referendum, whereas the simultaneous setting allows for the bundling of issues. Indirect democracy is implemented experimentally as the delegation

[1] In recent years, direct democratic instruments like referenda have also gained importance in traditionally indirect democracies. For instance, there have been nationwide referenda on EU-accession in all countries entering the EU in 2004. Likewise, some current EU-member states (Denmark, Ireland, Portugal, the Netherlands and Spain) have announced that they will definitely be holding referenda on Europe's new constitution.

[2] See Frey and Stutzer (2003) for a recent overview of arguments in favor of direct democracy.

of ruling power to temporary dictators who are selected among group members.[3] The two analyzed treatments differ in the extent of this dictatorial power.

Experimental research concerning the influence of voting rules on the efficiency or distributive justice of resulting outcomes started off with the classic experiment by Fiorina and Plott (1978). Since then, a rather extensive body of literature on voting experiments has emerged, showing that voting rules influence the outcome of a group decision-making process as predicted by public choice theory. Furthermore, voting rules have been shown to influence efficiency by more or less properly aggregating individual preferences into a group decision (Fiorina, 1997; Hoffman, 1997). However, we are not aware of any study that addresses our central research question, namely the relative efficiency of public choice by referenda or delegation.

The remainder of the paper is laid out as follows: Section 2 describes our experimental design. Results are presented in section 3. Section 4 concludes.

2 Experimental design

2.1 General structure

Three members (X, Y, and Z) of a group have to decide on the implementation of two different initiatives, A and B. The procedure of implementing a given initiative depends upon whether direct or indirect democracy applies. Let us denote the successful implementation of initiative $j \in \{A, B\}$ as $I_j = 1$. If the implementation fails, we have $I_j = 0$. In the status quo, denoted by $(0, 0)$, both initiatives are not implemented. The set S of possible final states (I_A, I_B) concerning initiatives A and B, respectively, is therefore given as $S = \{(0,0), (0,1), (1,0), (1,1)\}$, where $(0, 1)$, for instance, indicates that the implementation of initiative A has failed, whereas the one of initiative B has been successful.

The three group members X, Y and Z evaluate the different elements in the set S in the following way, where the cardinal utilities are normalized by setting the utility of the most (least) preferred alternative equal to 1(0):

$$1 = u_x(0,1) \succ u_x(1,1) = x_{1,1} \succ u_x(0,0) = x_{0,0} \succ u_x(1,0) = 0$$

$$1 = u_y(1,1) \succ u_y(0,0) = y_{0,0} \succ u_y(1,0) = y_{1,0} \succ u_y(0,1) = 0$$

$$1 = u_z(1,0) \succ u_z(1,1) = z_{1,1} \succ u_z(0,0) = z_{0,0} \succ u_z(0,1) = 0$$

Table 1 provides an overview of how payoffs (u_i for $i = X, Y, Z$) have been determined in the experiment, depending upon the combination $I = (I_A, I_B)$ of initiatives. Clearly,

[3] All actual indirect democracies grant temporary dictatorial power, albeit usually not to an individual but rather to small groups of individuals.

Voter	Payoffs as depending on initiatives $\delta = (\delta_A, \delta_B)$			
	$(0,0)$	$(1,0)$	$(0,1)$	$(1,1)$
X	0,5	0,25	1	0,75
Y	0,75	0,5	0,25	1
Z	0,5	1	0,25	0,75
ALL	1,75	1,75	1,5	2,5

Table 1: Individual Payoffs.

all voters prefer the implementation of both initiatives, i.e. state $(1,1)$, over the status quo what can be described by the unanimous collective preference

$$(1,1) \underset{\{X,Y,Z\}}{\succ} (0,0)$$

On the other hand, no single initiative is preferred by a majority of (at least two) voters to the status quo since

$$(0,0) \underset{\{X,Y\}}{\succ} (1,0) \quad \text{and} \quad (0,0) \underset{\{Y,Z\}}{\succ} (0,1)$$

If, however, one initiative has already been passed, implementing the second one has to be expected due to

$$(1,1) \underset{\{X,Y\}}{\succ} (1,0) \quad \text{and} \quad (1,1) \underset{\{Y,Z\}}{\succ} (0,1)$$

2.2 Treatments

Initiatives A and B can be implemented either by direct or indirect democracy. The *direct democracy*-case is rather obvious since it uses simple majority as voting rule. That means that $I_j = 1$ if and only if at least two group members vote for initiative j, and $I_j = 0$ otherwise. To compare comprehensive and supposedly simpler sequential referenda we distinguish two implementations of direct democracy, namely the two treatments:

- **AB** - In the comprehensive referendum **AB**, voters have to vote on initiatives A and B simultaneously, by casting votes on A and B in one ballot. Voters need not vote the same way on both initiatives. An initiative is implemented if a simple majority of voters supports it. Group members are informed about the outcome only after they have cast their votes on both initiatives. Given the analysis of voters' preferences in the subsection above, we should expect a simple majority for the implementation of both initiatives.[4] Hence, the expected final state is $(1,1)$.

- **A/B** - In the sequential referenda **A/B**, voters decide, first, on initiative A (yielding either $I_A = 1$ or $I_A = 0$). Knowing the outcome on initiative A they, secondly, vote on initiative B. In both cases, the simple majority rule is applied. Given the

[4]There exists, of course, a rather large multiplicity of (other) equilibria which is a pathology of majority voting (Güth and Selten, 1991). Our ad hoc idea of equilibrium selection is that of unanimity.

sequential structure, we should expect subjects to reject both initiatives, as argued above when discussing voters' preferences.[5] Hence, the expected final state is the status quo $(0, 0)$.

Indirect democracy is quite a different mechanism. In view of the anonymity of voters and to exclude confounding effects of communication, e.g. when electing a representative for choosing $(I_A, I_B) \in S$, we rely on delegation of ruling power via random dictatorship.[6] With a probability of $1/3$, each voter becomes the dictator who has to choose $(I_A, I_B) \in S$. Clearly, each random dictator will want to substitute the status quo $(0, 0)$. However, only voter Y values the (overall most efficient) state $(1, 1)$ highest. Voters X and Z, respectively, have their highest preference for $I = (0, 1)$, respectively $I = (1, 0)$. Thus random dictatorship very likely (with probability $2/3$) ends with just one measure passed, which is socially inefficient.

To cover a greater extent of possible environments, we distinguish two treatments of indirect democracy, namely:

- **D** - In this treatment, the random dictator just chooses $(I_A, I_B) \in S$. This should lead to $(0, 1)$, $(1, 1)$ and $(1, 0)$, respectively, depending upon whether X, Y, or Z is the dictator. In the experiment, all group members have to choose one element from the set S. Only after this decision, it is determined by a chance move which group member actually becomes the random dictator. His choice from S is then implemented.

- **T** - In addition to the conditions in treatment **D**, the random dictator can levy a tax on the income of group members from the implementation of a given state I. The tax rate is denoted by τ, with $0 \leq \tau \leq 1$. Choosing a tax rate τ implies that the dictator receives the share τ from the non-dictators' payoffs in the implemented state I. Assuming selfish payoff-maximization of dictators, we should expect any group member to choose $I = (1, 1)$ and to set a tax $\tau = 1$ in order to generate the highest total payoff and to appropriate it completely.

Altogether, we thus rely on four different institutional rules, comprehensive and sequential referenda as forms of direct democracy as well as random dictatorship with and without taxation power to capture the more or less discretionary power of representatives with temporary dictatorial power.

[5] Again if all three voters would always approve of both measures, no single voter can gain by deviating unilaterally, i.e. the pathological multiplicity of equilibria due to majority voting applies here, too. Here of course, we rely on backward induction when selecting an equilibrium.

[6] Clearly, modelling representative democracy by random dictatorship instead of using an explicit candidate election can only be considered a first step. Richer and more realistic models that include the election stage (Besley and Coate, 1997; Osborne and Slivinski, 1996) may be desirable but difficult to implement in the laboratory. A distinct advantage of our design is that by delegation of ruling power via random dictatorship the two treatments differ only with respect to the implementation procedure of initiatives A and B. Hence, we are able to disentangle the undistorted effects of different voting institutions on voting behavior and resulting efficiency.

2.3 Experimental protocol

For each treatment, we ran two sessions with 18 participants each, where subjects were randomly partitioned into 3 matching groups.[7] The experiment had 15 rounds. In every round each matching group was partitioned randomly into two groups with three members each that were randomly assigned the role of X, Y, or Z. Payoffs from the possible states after voting are given in Table 1 and denoted in Euro.

Experimental sessions were run in November 2002 in the laboratory of the Center for Experimental Economics at the University of Innsbruck, Austria. A total of $4 * 2 * 18 = 144$ students participated, who were recruited from a mailing list of almost 2000 students who had expressed their interest in participating in economic experiments. The experiment was fully computerized (through z-tree by Fischbacher, 1999) and lasted less than one hour. Average total payoffs were 11.5 Euro.

3 Results

3.1 Simultaneous versus sequential referenda

Before turning to the comparison of referenda (resp. direct democracy) and delegation (resp. indirect democracy) let us first explore whether there are any differences between treatments **AB** and **A/B**, respectively between **D** and **T**. We start with the direct democracy treatments. Our findings can be summarized as follows:

Result 1 *The two referendum (direct democracy) treatments (**AB** and **A/B**) do not yield significant differences in the implemented initiatives or in voting behavior.*

	Referendum		**Delegation**	
Relative frequencies of final states	**AB**	**A/B**	**D**	**T**
$\mathbf{I} = (\mathbf{0}, \mathbf{0})$	0.03	0.03	0.03	0.06
$\mathbf{I} = (\mathbf{1}, \mathbf{0})$	0.04	0.06	0.22	0.14
$\mathbf{I} = (\mathbf{0}, \mathbf{1})$	0.03	0.01	0.26	0.08
$\mathbf{I} = (\mathbf{1}, \mathbf{1})$	0.90	0.92	0.49	0.72
Average earnings π	12.08	12.18	10.28	11.36
Standard deviation of earnings π	0.69	0.79	1.19	4.48

Table 2: Relative frequency of final states and average earnings

Regarding efficiency, we can focus on (i) the frequency of implementing the most efficient state $I = (1, 1)$ or (ii) the average payoff π of group members. The left-hand side of Table 2 shows data for the referendum treatments. Note that in each treatment we have 180 realizations (12 groups voting in each of the 15 rounds) out of the set S of states (I_A, I_B). Given that we have random rematching of groups after each round and given that the relative frequencies of realized states do not change significantly in the

[7] Participants were not aware of the restricted form of rematching to limit repeated game effects. To avoid further stochastic differences between sessions we used the same matching protocol in all sessions.

course of the 15 rounds, we have decided to aggregate our data over all 15 rounds.

There is obviously no significant difference in the relative frequency of choosing the state $I = (1, 1)$ between **AB** (162 times out of 180 cases) and **A/B** (165 times out of 180 cases). Furthermore, average payoffs are not significantly different. The former result is somehow surprising since we would have expected subjects to choose $I = (1, 1)$ in treatment **AB**, but the status quo $I = (0, 0)$ to prevail in the sequential referenda treatment **A/B**, because any single initiative in treatment **A/B** does not get a simple majority of votes, as explained in section 2.

However, in section 2 we have also shown that the implementation of both initiatives is preferred by a majority to the implementation of only a single initiative in any case. Therefore, the crucial vote in the sequential treatment **A/B** is the first one on the implementation of initiative A. If subjects anticipate correctly that initiative B will be implemented by simple majority, *once* initiative A is accepted, it is even rational for member X or Y to vote for initiative A (instead of the status quo) in the first referendum. This is what is happening. There is a strikingly low share of votes for maintaining the status quo, both in treatment **AB** and **A/B**, as can be seen in the upper part of Table 3. About one quarter of subjects votes exclusively for one initiative, either *A or B* , and about half of the subjects vote for both initiatives. Note that in the sequential treatment **A/B** we have subsumed a subject's voting behavior under $(1, 0)$, for instance, if this subject has voted for initiative A in the first referendum, but against initiative B in the second referendum, irrespective of the outcome of the first referendum.[8]

	Relative frequency of subjects accepting state				**Total votes**
Treatment	$(\mathbf{0}, \mathbf{0})$	$(\mathbf{1}, \mathbf{0})$	$(\mathbf{0}, \mathbf{1})$	$(\mathbf{1}, \mathbf{1})$	
AB	0.03	0.25	0.24	0.48	540
A/B	0.01	0.32	0.24	0.43	540
D	0.02	0.23	0.25	0.50	540
T	0.06	0.12	0.11	0.71	540

Table 3: Voting behavior

We can therefore conclude that there is no significant difference between the outcomes of the two referendum treatments in terms of implemented initiatives. More importantly, people are sufficiently forward-looking and therefore almost always achieve the collectively efficient implementation of both initiatives. Hence, the sequential performance of referenda does not seem to constitute a real disadvantage of direct democracy (compared to representative democracy, where the bundling of issues seems to be much easier).[9]

[8]Recall from Table 2 that initiative A is implemented in 98% of cases. We have only 5 (out of 180) cases, where initiative A has been rejected. These are too few observations for a clean statistical test of differences in voting behavior on initiative B, depending upon whether initiative A has been accepted or not.

[9]One driving force for our result of no significant differences between simultaneous and sequential referenda might be the fact that we have employed a full information environment, which may be less likely in the field, when referenda occur sequentially.

3.2 Random dictatorship and the power to tax

In our treatments of representative democracy, implemented by random dictatorship with or without the power to tax, we find the following:

Result 2 *The power to tax (in treatment **T**) increases the votes for $I = (1, 1)$ significantly, compared to treatment **D** (see the lower part of Table 3), but leads also to a very high degree of expropriation, since the average tax rate amounts to 85.7% of revenues. The relative frequency of full exploitation ($\tau = 100\%$) is even 74%.*

As expected (and discussed in section 2), subjects most often choose the state $I = (1, 1)$ in treatment **T**, because it generates the largest total payoff for the whole group. In fact, the number of subjects supporting $I = (1, 1)$ in treatment **T** (380 votes) is significantly larger than in treatment **D** (273 votes) according to a χ^2-test. The high surplus is, then, almost fully exploited by random dictators by average tax rates of almost 86%. Tax rates are, however, not correlated significantly with any role (X, Y, or Z). This is not surprising since subjects in any role fare best when implementing $(1, 1)$ and choosing a very high tax. The situation is different in treatment **D**, where subjects can determine their most preferred state I, but have no additional power to tax other group members. Since the most preferred state is actually implemented if a subject is randomly selected as dictator, subjects' roles affect the chosen state I significantly. In particular, we find the following:

Result 3 *Members X choose their individually profit-maximizing state $(0, 1)$ in 68.3% of the cases and the joint profit maximizing state $(1, 1)$ in 27.2% of the cases. Members Y have their highest payoff from state $(1, 1)$ and choose it in 91.1% of the cases. Members Z choose state $(1, 0)$, which is individually profit-maximizing for them, in 61.7% and the welfare maximizing state $(1, 1)$ in 33.3% of the cases.*

Given our payoff structure, selfish, money-maximizing subjects should choose state $(1, 1)$ only if they are in the role of member Y, i.e. in 33.3% of all cases in treatment **D**, where dictators have no power to tax. In fact, we observe a much larger share of $(1, 1)$-choices (namely 50.6%) which indicates a considerable degree of benevolence among dictators based either on altruistic preferences or on a strong concern for overall efficiency.

Finally, comparing behavior across treatments **D** and **T** reveals that there is a highly significant treatment difference concerning the states I chosen by members X, respectively Z ($\chi^2 > 50$ both for X and Z; $p < 0.01$; $df = 3$). There is no such difference between treatments **D** and **T** for members Y. The reason for these results becomes immediately clear by looking at Table 1: For members X and Z the individually and collectively profit maximizing states do not coincide, whereas this is the case for members Y. Given the opportunity to impose a tax in treatment **T**, it is reasonable and profitable for members X and Z to choose the joint profit-maximization state more often in treatment **T** than in treatment **D**.

3.3 Referenda versus delegation

As is evident from Table 2, the relative frequency of implementing state $(1,1)$ is much lower in our delegation treatments with random dictatorship (either **D** or **T**) than in our referenda treatments (**AB** or **A/B**). Whereas the welfare-maximizing state $(1,1)$ is realized in about 90% of the cases by referenda, random dictatorship leads to state $(1,1)$ only in 50% (**D**), respectively 72% (**T**). The difference between referenda and delegation is clearly significant ($p < 0.05$, χ^2-test).

Interestingly, however, we find that the number of subjects choosing state $(1,1)$ is not significantly different between treatment **D** and the referenda treatments, but significantly *higher* in treatment T than in the referenda treatments. Nevertheless, the welfare-maximizing state $(1,1)$ is *less* often realized in **T** than in **AB** or **A/B**. At first sight, this may seem paradoxical, but it is a consequence of the respective decision-making procedure. In a referendum, it suffices to have two out of three group members supporting $(1,1)$ to realize it. With random dictatorship, however, the third member, not supporting $(1,1)$ has an equal chance to be selected as dictator. Hence, a referendum is more likely to select the welfare-maximizing state. As a consequence, average payoffs are significantly larger with referenda (**AB** or **A/B**) than with delegation (**D** or **T**) ($p < 0.05$ in pairwise comparisons, Mann-Whitney U-test). Hence, we can summarize as our final result:

Result 4 *Both treatments with referenda (**AB** and **A/B**) lead to a higher efficiency in choosing the welfare maximizing state (1,1) and to higher payoffs for group members than the treatments with delegation of ruling power to random dictators (**D** and **T**).*

4 Conclusion

There are many arguments in favor of and against direct democracy, which avoids the agency problem of delegation, as well as in favor of and against indirect democracy, which allows for a divison of labor in ruling by granting temporary dictatorial power to specialists (members of parliament). We do not claim that our experimental scenario captures all the crucial aspects. It, for instance, neglects completely the role of political parties whose influence should be much stronger in indirect than in direct democracy.

Field studies have to take care of a variety of reasons why (in)direct democracy may be preferable, whereas an experimental study like ours has the advantage of being able to capture specific issues and to deliberately exclude others. The advantage of experiments is that in a controlled environment unambiguous (monetary) preferences can be induced and institutional details can be varied without difficulties. In this vein, we have varied the agenda of referenda (simultaneous versus sequential) and the power to tax in case of delegation in addition to contrasting referendum (direct democracy) and delegation (indirect democracy).

One might argue that implementing delegation in the form of temporary dictatorship is a bit extreme and renders it procedurally unfair. In the case at hand one third of

the voting body can dictate the combination of policy measures. But let us imagine a two-party parliament where party A occupies 51% of the seats and the opposition 49% and where strict party discipline is imposed. Assume now that 26% of party A's 51% representatives favor a measure, whereas the remaining 25% of party A and all representatives of party B are against it. Majority voting in party A will lead to a decision in favor of the measure, and via party discipline the measure will be implemented also in parliament. Thus, although 74% of all representatives are opposed to the measure, it will nevertheless be implemented. Compared to such a scenario our way of implementing delegation appears less extreme except for the fact that the ruling minority is usually a group of delegates rather than just one individual.

Our main and partly surprising findings from our experiment are:

i) even when referenda, like the sequential agenda **A/B**, allow for strategic voting this is rarely observed,

ii) delegates can hardly resist the temptation to exploit, and

iii) referenda, compared to delegation, are efficiency-enhancing by implementing the welfare-maximizing policy mix more often.

Because of (i) and (ii) agenda manipulation and exploitation are minor concerns in case of direct democracy whereas they are very crucial in case of delegation with(out) the power to tax. Most importantly, the agency problem seems to be very serious in face of our results concerning the levels of expropriation. Finally (iii) assigns the burden of proof to those propagating indirect democracy. Thus, for the case of indirect democracy rigorous evidence should be provided in order to know better in which cases and circumstances temporary delegation is efficiency-enhancing. At least the case of Switzerland with its high standard of living shows that the superiority of direct democracy might not only hold in the laboratory, but may also prevail in the field.

References

Besley, T., and S. Coate (1997): "An Economic Model of Representative Democracy," *The Quarterly Journal of Economics*, 112, 85–114.

Christin, T., S. Hug, and P. Sciarini (2002): "Interests and Information in Referendum Voting: An Analysis of Swiss Voters," *European Journal of Political Research*, 41, 759–776.

Feld, L., and G. Kirchgässner (1999): "Public Debt and Budgetary Procedures: Top Down or Bottom Up? Some Evidence from Swiss Municipalities," in *Fiscal Institutions and Fiscal Performance*, ed. by J. Poterba, and J. von Hagen, pp. 151–179. Chicago: Chicago University Press.

Feld, L., and J. Matsusaka (2003): "Budget Referendums and Government Spending: Evidence from Swiss Cantons," *Journal of Public Economics*, 87, 2703–2724.

Fiorina, M. P. (1997): "Voting Behavior," in *Perspectives on Public Choice*, ed. by D. C. Mueller, pp. 391–414. Cambridge: Cambridge University Press.

Fiorina, M. P., and C. R. Plott (1978): "Committee Decisions under Majority Rule: An Experimental Study," *The American Political Science Review*, 72, 575–598.

Frey, B. S., and I. Bohnet (1996): "Experiments, Theory - and Reality," *Jahrbuch Ökonomie und Gesellschaft*, 13, 340–359.

Frey, B. S., and A. Stutzer (2000a): "Happiness, Economy and Institutions," *Economic Journal*, 110, 918–938.

——— (2000b): "Maximizing Happiness?," *German Economic Review*, 1, 145–167.

——— (2003): "Direct Democracy: Designing a Living Constitution," Institute for Empirical Research in Economics, University of Zürich, Working Paper 167.

Güth, W., and R. Selten (1991): "Majority Voting in the Condorcet Paradox as a Problem of Equilibrium Selection," in *Game Equilibrium Models, Vol. II: Methods, Morals, and Markets*, ed. by R. Selten, pp. 7–40. Berlin: Springer-Verlag.

Hoffman, E. (1997): "Public Choice Experiments," in *Perspectives on Public Choice*, ed. by D. C. Mueller, pp. 415–426. Cambridge: Cambridge University Press.

Ingberman, D. E. (1985): "Running against the Status Quo - Institutions for Direct Democracy. Referenda and Allocations over Time," *Public Choice*, 46, 19–43.

Kiewiet, D., and K. Szakaly (1996): "Constitutional Limitations on Borrowing: An Analysis of State Bounded Indebtedness," *Journal of Law, Economics and Organization*, 12, 62–97.

Matsusaka, J. (1995): "Fiscal Effects of the Voter Initiative: Evidence from the Last 30 Years," *Journal of Political Economy*, 103, 587–623.

Osborne, M. J., and A. Slivinski (1996): "A Model of Political Competition with Citizen-Candidates," *Quarterly Journal of Economics*, 111, 65–96.

Appendix

Instructions

In the following we provide a translation of the instructions that we used in this experiment. The instructions for the four treatments only differ with respect to the "Implementation of Measures" and the "Experimental Procedures" Section. We provide these sections separately for the different treatments.

Instructions

This experiment focuses on economic decision-making. You can earn real money, which is paid out to you in cash at the end of the experiment. In the course of the experiment, you and the other participants will be asked to take decisions. Your own decision as well as the decisions taken by the other participants determines your payoff according to the rules which will be explained to you in the following. The experiment will take about one hour. If you have any questions after having read the instructions, please raise your hand. One of the experimenters will then come to your place and answer your questions privately. All participants have received identical instructions. Also the announcements made on the computer screens will be the same for all participants.

Groups

The experiment consists of 15 rounds. In each round you will form a group with two other, randomly determined participants. After each round the groups will be randomly reconfigured. It is not possible that you will be in a group with the same two other participants in two consecutive rounds.

Decision

In each round you vote, which of two possible measures (A and/or B) should be implemented. More precisely, you vote

- whether the status quo denoted by (0,0), is replaced by measure A only (1,0),
- whether the status quo denoted by (0,0), is replaced by measure B only (0,1) or
- whether the status quo denoted by (0,0), is replaced by both measures A and B (1,1) or
- whether to keep the status quo (0,0), meaning that neither measure A nor measure B is implemented.

The precise rules according to which the status quo is replaced or maintained are described in the following. Before that we explain how each of the three group members evaluates the four alternative implementation possibilities of the two measures, i.e., the combinations (0,0), (1,0), (0,1) and (1,1).

At the beginning of each round, each group member is randomly assigned a role. The three possible roles are denoted by X,Y and Z. As the role assignment is renewed at the beginning of each round, it is very likely that each participant will be assigned different roles in the course of the experiment. The roles only differ with respect to the payoffs that people in these roles obtain for the four possible implementations of the two measures. The payoffs (in Euro) that the members in the respective roles obtain, if a given combination of the two measures A and B is implemented, is summarized in the following table:

Role	**Implemented combination of the two measures A and B**			
	$(0,0)$ *no measure implemented, status quo maintained*	$(1,0)$ *only measure A implemented*	$(0,1)$ *only measure B implemented*	$(1,1)$ *both measures implemented*
X	0,5	0,25	1	0,75
Y	0,75	0,5	0,25	1
Z	0,5	1	0,25	0,75

If, for instance, only measure B would be implemented, i.e, the combination (0,1) would be realized, the group member which has been assigned role X for this round earns the maximal payoff of 1 Euro. Group members Y and Z in this case only attain a payoff of 0,25 Euro. On the other hand, if only measure A is implemented, i.e. the combination (1,0) is realized, group member X attains a payoff of 0,25 Euro, group member Y earns 0,5 Euro and group member Z receives 1 Euro.

Implementation of Measures

Treatment: Sequential Referendum

In each round each group member in a first step votes whether measure A should be implemented. Measure A is implemented if a simple majority (2 voters) has voted accordingly, i.e., if at least 2 group members have voted that measure A should be implemented, measure A is in fact realized and the initial status (0,0) is replaced by (1,0). If the majority votes against the implementation of measure A, the initial status quo (0,0) is maintained.

Given the result of the first vote concerning measure A, in a second step you vote whether measure B should be implemented or whether the status that prevails at the end of the first voting stage should be maintained. Again, a majority within the group is needed to pass measure B. If at least two group members have voted in favor of implementing measure B it is actually finalized.

If the members of a group have for example first decided to implement measure A and there also has been a majority voting for the implementation of measure B afterwards, both measures will be implemented resulting in (1,1) as final outcome. If on the other hand there is no majority for measure B after measure A has been implemented previously (as before), the state (1,0) results as final outcome. If measure A is not finalized in the first step, measure B can be implemented if there is a majority of two votes. If there is no majority, the initial status (0,0) is ultimately maintained.

Treatment: Simultaneous Referendum

In each round each group member votes for the two measure simultaneously, i.e., he votes whether

- measure A should be implemented

- measure B should be implemented

A measure is in fact implemented if there is a simple majority within the group (2 votes) in favor of this. If at least two group members have voted for the implementation of measure A it is implemented. Otherwise, measure A is rejected. Analogously, measure B is implemented if at least two group members have voted for measure B and it is rejected otherwise. The initial status (0,0) is under these conditions only maintained, if both measure A and measure B have been rejected, i.e., if there has been no majority for either of them. Otherwise, the status (1,0) results if measure A has been implemented and measure B rejected, status (0,1) results if measure B has been implemented whereas measure A has been rejected and status (1,1) results, if both measures have been implemented, i.e. have attained a majority of votes.

Treatment: Delegation without tax

Each of the three group members announces in each round, which of the four possible combinations of the two measures she would implement, were she the only one that had to decide about this. Possible decisions are of course to maintain the initial status (0,0) and not implement any of the two measures A and B, to only implement measure A, i.e., to implement the status (1,0), or to only implement measure B and thus implement the status (0,1) or to implement both measures A and B and thus attain the status (1,1). After each group member has entered which of these four alternative implementations he would realize one of the group members is chosen randomly and her decision gets implemented. All group members are chosen with equal probability as 'decisive member'. For example, if the group member which has been assigned the role X is chosen in a given round, her preferred status is implemented for the group.

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This status does not finally determine the monetary payoffs of the three group members, as the group member who is randomly determined as decisive can ask a fee from the other group members. More concretely, this member can, for any actually implemented status, ask for a fraction of the other members' payoffs, where the fraction asked from the others' payoffs is the same for all. This fee, which we in the following denote by a, can be set at any value between 0 and 1, where 0 and 1 are also possible. Given this, the decisive member in addition to his individual payoff which results from the actually realized status (as specified in the payoff table) attains the sum of the fees he asks from his two group members (for each of the two group members the fee is given by the a-fraction of their original payoffs). The two non-decisive members each attain the payoff announced in the table net of the fee they have to pay, i.e., they attain a fraction of $(1 - a)$ of the payoff announced in the table.

Experimental Procedures

At the beginning of each round the groups are randomly composed and the roles randomly assigned.

Treatment: Sequential Referendum

After that you vote for or against the implementation of measure A (first step). After all group members have entered their vote, the result of the first vote (provisional status) is announced on the screens. After that you vote for or against the implementation of measure B (given the result of the first step). Once all votes have been collected the result of the second vote and the final status is announced on the screens. Additionally, you are informed about your individual payoff resulting from the final status. Herewith a round ends. Overall, this experiment consists of 15 rounds, which all comply to the just explained rules.

Treatment: Simultaneous Referendum

After that you enter your vote concerning the implementation of measure A and/or B. After that the outcome of the vote and the resulting implemented combination of measures is made knows together with the individual payoff implied. Herewith a round ends. Overall, this experiment consists of 15 rounds, which all comply to the just explained rules.

Treatment: Delegation without tax

After that each member enters which of the four possible combination of measures she would implement were she decisive. Then one of the three members is randomly determined (where all are chosen with equal probability) and her decision gets implemented. All group members get informed about which group member has been chosen, which measures have been implemented and which individual payoff results from this. Herewith a round ends. Overall, this experiment consists of 15 rounds, which all comply to the just explained rules.

Treatment: Delegation with tax

After that each member enters which of the four possible combination of measures she would implement were she decisive. Then one of the three members is randomly determined (where all are chosen with equal probability). The chosen member is asked to determine the rate of a, i.e., the fraction of the others' payoffs that she wants to claim. After that all group members get informed about which group member has been chosen, which measures have been implemented, what the size of a is and which individual payoff results from this. Herewith a round ends. Overall, this experiment consists of 15 rounds, which all comply to the just explained rules.

Payment

Your total payoff is given by the sum of all payoffs attained in the 15 rounds. Your payoff is paid out to you under anonymous conditions at the end of the experiment.

Anonymity

Neither during nor after the experiment will you know with whom you have been in a group in the different rounds. The other participants will also at no point in time attain any knowledge about the roles you have been assigned or the payoff you have attained. This experiment's data are only analyzed in the aggregate and names are never associated with data. At the end of the session we will ask you to sign a receipt for the payoff you earned. This receipt is used for internal billing only.