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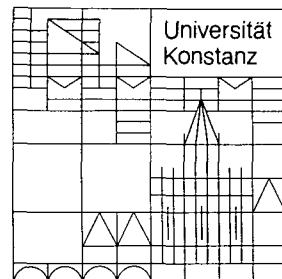
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PROTECTIONISM IN DIRECT DEMOCRACY*

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Abstract

Public choice theory provides arguments to explain why protectionism is prevalent all over the world. In this paper it is argued that even when citizens have the possibility to decide on trade barriers in direct democracy, tariffs are maintained or even increased. This result is traced to the process of drafting the proposal, the individual decision to participate in the vote and the efforts to become informed properly about the alternatives put to the vote. As first an empirical investigation is made to test the theoretical hypotheses about protectionism in direct democracy by using data for referendums in Switzerland.

Zusammenfassung

Die ökonomische Theorie der Politik ermöglicht zu erklären, wie sich protektionistische Interessen im politischen Entscheidungsprozess einer repräsentativen Demokratie durchsetzen. Auch in einem System der direkten Demokratie, in dem die Bürger im Rahmen von Volksabstimmungen mitentscheiden können, kann die inländische Handelspolitik zugunsten von spezifischen Interessen beeinflusst werden. Möglichkeiten hierzu bestehen auf drei Ebenen des politischen Entscheidungsprozesses: im Vorbereitungsprozess der Gesetzes- bzw. Abstimmungsvorlage; bei der individuellen Entscheidung, sich an der Abstimmung zu beteiligen; und bei der Entscheidung der Abstimmenden, sich für oder gegen die Vorlage auszusprechen. Die Bestimmungsgründe, die in der direkten Demokratie zu zunehmender Protektion und der Wahl spezifischer protektionistischer Instrumente führen, werden diskutiert und erstmals anhand von Referenden in der Schweiz empirisch überprüft.

I. Introduction

There is a wide consensus that the political decision-making process and rent-seeking behavior by interest groups have to be taken into account, in order to explain the prevalence of protectionism all over the world. Recently Krugman, a protagonist of the economic theory of international trade, stated in a survey of new developments in international trade theory that, because trade interventions affect the distribution of income as well as its level, the political process at domestic level turns out to be essential (Krugman 1987).

International political economics, in applying public choice theory to international economic relationships, explains persisting trade interventions as the outcome of the interaction between the demand and supply sides of the political market for protectionism (Baldwin 1982, Frey 1984). The level and structure of trade interventions are determined endogenously by the model, i.e. the political market for protection. In this model institutional conditions are decisive in determining the outcome of the political decision process. In a representative democracy special interest groups influence the election result by their votes and/or offer financial support to the party considering their wishes. In addition, the government and the public bureaucracy are provided at least partially with discretionary power enabling them to ignore voter preferences in favor of their own interests. In contrast, in a system of direct democracy voters are empowered to vote on subject matters directly, thus reducing the influence of representatives and special interest groups due to the deficiencies of the institutional setting in representative democracies. In a system of direct simple majority rule in an assembly, the median voter is decisive. He is expected to cast his vote in favor of free trade (i.e. the pareto-optimum) because he either gains directly or he is compensated for potential losses by potential gainers. Additionally, if he has to decide about the means of protectionism, he is expected to prefer the most efficient trade policy measure (in the sense of a second-best strategy).

Yet, the median voter model is based on a set of assumptions that in important respects do not represent reality. In this paper it will be argued that even when citizens have the possibility to decide on trade policy by ballot, tariffs and non-tariff barriers could be maintained or even be increased. This result is traced to differing interests and incentives by the various actors who take part

in political activities. Furthermore, it is taken into account that there are differing ways in which the individual actors may affect the political decision process. The influence is attributed to three levels: the process of drafting the proposal, the individual decision to participate in the vote and the efforts to become informed properly about the alternatives put to the vote.

Previous empirical studies have focused exclusively on protectionism in the framework of representative democracy. Until now trade policy legislation in a direct democracy has not been subjected to empirical investigation. The analysis of referendums on trade policy issues in Switzerland provides a means to closing this gap: The empirical investigation is made by using data for referendums on both, the choice of free trade versus protectionism and the choice of the means of protection. First, a proposal to impose tariffs on manufactured goods of agriculture (processed foods) put to the vote in 1975 is evaluated. And second, the choice of trade policy measures is analyzed by a poll held in 1986 referring to the sugar market.

The paper is organized as follows: In **part II** the economic theory and the political economy of protectionism are reviewed briefly. Various studies modeling endogenous tariff theory are discussed. In **part III** special emphasis is laid on the literature concentrating on protectionism in the framework of direct democracy. Potential gainers and losers of protectionist measures, their interests, incentives and various possibilities to influence the political outcome are identified in **part IV**, and theoretical hypotheses about their voting behavior with respect to the level and the means of protectionism are derived. In **part V** these theoretical hypotheses are subjected to empirical testing in the case of the political system of direct democracy in Switzerland. And finally, a summary and evaluation of the empirical findings are given in **part VI**.

II. Economic Theory and Political Economy of Protectionism

There is an obvious and well-known discrepancy between real-life observation and economic theory concerning international economic relationships. Traditional theory of international trade argues that free trade leads to the most efficient allocation of resources. This result holds not only for the world economy as a whole but also for individual countries. There are several reasons given in the literature which may explain the anomaly of persistent government intervention in trade. For example, it is stressed that tariffs and non-tariff barriers may be

used in order to achieve nationwide goals, such as the support of infant industries or self-sufficiency. However, these arguments are not conclusive as these 'national goals' are better attainable by other measures than trade restriction. According to Johnson (1969, p.186), "the only valid argument for protectionism as a means of maximizing economic welfare is the optimum tariff argument". But optimal tariff theory also fails to account for tariffs being observable all over the world: tariffs are maintained not only by large countries with a monopolistic or monopsonistic position in the world market. Trade restrictions are prevailing in small countries and in sectors which are not qualified as price-setters in international trade relations as well. Furthermore, welfare gains by imposing optimal tariffs can be achieved only at the expense of the economic welfare of the trading partners. This provides an incentive for retaliation and the outcome may well be a general increase of tariffs and a general decline of welfare. As a line of reasoning the optimal tariff argument is regarded as "largely irrelevant to tariff policy in the developed countries" (Ethier 1983, p. 194).

New developments in international trade theory again try to explain deviations from free trade policy. They call into doubt the extent to which actual trade can be explained by comparative advantage; instead increasing returns to scale and imperfect competition are emphasized (Krugman 1987). Strategic trade theory holds that government interventions such as export subsidies and import restrictions may be used to raise national income at other countries' expense as they tilt the terms of oligopolistic competition to shift excess returns from foreign to domestic firms. However again, these new arguments are confronted by economic criticisms. According to Siebert (1988) the question put by Flam and Helpman (1987) "whether the particular policy is beneficial in all or most relevant environments.." has to be answered in the negative. The models are shown to be very sensitive with respect to their assumptions. Moreover in considering the contribution of political economy Krugman comes to the conclusion that "free trade is not passe, but it is an idea that has irretrievably lost its innocence. Its status has shifted from optimum to reasonable rule of thumb" (1987, p.132).

International trade theory also reveals an efficiency-based ranking of trade-policy instruments. It is shown that there is a fundamental equivalence of quotas and tariffs in a competitive market setting (Bhagwati 1965). In the case of a non-competitive structure of the domestic market, however, the equivalence of the two trade policy instruments fails. Taking into account rent-

seeking behavior results in tariffs being superior to quotas (Tullock 1967, Krueger 1974). But when revenue-seeking behavior is considered as well, the welfare effects again turn out to be ambiguous (Bhagwati/Srinivasan 1980, Anam 1982).¹⁾

However, in stressing efficiency and global deadweight costs, both trade policy measures, tariffs and quotas, are dominated by tax/ subsidy instruments (Deardorff 1987). In the case of a production tax cum subsidy an additional deadweight loss, the consumption cost of the tariff, is avoided. All individuals are better off, given that income is redistributed solely through trade policy-induced factor price changes (Mayer and Riezman 1987). As a zero consumption tax and a lump-sum financed production subsidy is to the advantage of both gainers and losers from the government induced redistribution, it is to be expected that this instrument is adopted as a second-best policy.

In contrast to these fundamental propositions of international trade theory, i.e. Pareto-superiority of free trade and tax/subsidy instruments, reality shows that trade restrictions in the form of tariffs and non-tariff barriers are prevalent all over the world at any given time. The political economy of protectionism provides an explanation of why departures from socially optimal policies are to be observed. It focuses on the domestic political process and domestic redistributive motives. Trade policy is decided in a political market where interventionist policies are demanded by particular groups of voters, firms and associated interest groups or parties, seeking to gain the rents from state interventions in trade policy. On the other hand, protection is supplied by politicians and civil servants pursuing their own (e.g. ideological) goals subject to various constraints. In representative democracy voters do not have the chance to vote on specific issues. Instead elections are fought over the range of government policy, in most countries and time periods they are dominated by internal economic and political issues (Frey 1984). This results in discretionary power which the government and the public bureaucracy may use to their own advantage, e.g. to enforce protectionism in order to maintain revenues from tariffs. On behalf of the interest groups it pays to invest resources in order to gain rents from protection (rent-seeking) and/or to appropriate the monetary revenues from tariffs or subsidies (revenue-seeking). Differences in lobby activities are traced back to asymmetries in the degree of concern and in organizational costs. Pro-protectionist groups have a strong incentive to stand for their interests as they are affected directly and strongly via their incomes. Moreover, organizational problems are more easy to manage relative to generalized (consumer) free

trade interests as the latter are weak and more difficult to organize due to the free-rider problem (Olson 1965). Endogenous tariffs may arise as a result of other asymmetries (Magee 1984): asymmetric distribution of wealth (Mayer 1984), asymmetric intensities of preferences enforcing log-rolling /vote trading (Baldwin 1976), asymmetric distribution of information (e.g. Brock and Magee 1978), and of asymmetries in the representation of economic interests within government organization (Messerlin 1981).

TABLE 1

Table 1 presents various studies explicitly modeling endogenous tariffs. The economic and the political parts of the model are distinguished. There are two ways to describe the economic system: the Heckscher-Ohlin model views the economy as endowed with two intersectorally mobile factors, whereas the Ricardo-Viner model allows for the presence of industry-specific factors. The former is more likely to account for long-run trade policy adjustments, and the factor-specific multisectoral model is more appropriate for studying short-run interests seeking to influence trade policy. Taking into account that interests in general take a short-run perspective and are organized along industries rather than along factors²⁾ the Ricardo-Viner rather than the Heckscher-Ohlin model appears to be more appropriate (Mayer 1984, Hillman 1989).

The political system distinguishes between two institutional settings: direct and representative democracy. According to the classification used by Ursprung (1987) three kinds of costs are considered in table 1: information costs, bargaining costs and voting costs. In representative democracy all three kinds of distortions are present. They state the grounds for the phenomenon that special interests may succeed in gaining trade protection. Various authors have tried to analyse the process of tariff determination in the framework of representative democracy: Findlay and Wellisz (1982) in a general equilibrium approach have modeled two interest groups representing two fixed factors of production and contesting for free trade and protectionism, respectively. Their paper was very important but also rather rudimentary because neither parties nor voters are introduced. In a different approach Feenstra and Bhagwati (1982) have modeled a lobby pursuing a tariff, but being opposed by a beneficent government. The most advanced studies which take into account political parties explicitly maximizing their own interest (or at least probabilities of reelection)

Table 1: Endogenous tariff models.

Economic System	Direct democracy (no information costs)		Representative democracy (positive information costs)	
	no bargaining costs	bargaining costs prohibitive		
	no voting costs	positive voting costs		
Heckscher-Ohlin	Ideal model (BALDWIN 1985)	MAYER (1984) (part 1)		FEENSTRA/BHAGWATI (1982) FINDLAY/WELLISZ (1983; part 2) YOUNG/MAGEE (1986) MAGEE/BROCK/YOUNG (1988)
Ricardo-Viner			MAYER (1984) (part 2)	FINDLAY/WELLISZ (1982) HILLMAN (1982) FINDLAY/WELLISZ (1983; part 1) HILLMAN/URSPRUNG (1988)

Source: Based on Ursprung (1987, table 1).

are provided by Magee, Brock and Young in a Heckscher-Ohlin framework and by Hillman and Ursprung in a Ricardo-Viner model. However, in all these studies voters are not modeled explicitly in an optimizing framework. That may pass in a political system of representative democracy in which citizens have almost no (direct) influence on external political and economic issues. However, in direct democracy where trade policy is (at least partially) decided by direct referendum, voters' behavior has to be encompassed in a model in order to be appropriate.

III. Protectionism in Direct Democracy

In an ideal world with majority voting and none of the costs mentioned above (i.e. information costs, bargaining costs and voting costs) a country will choose free trade as its policy due to the welfare-maximizing behavior of the median voter. However, the political system of direct democracy is not a sufficient condition for free trade to be the optimal policy choice. As was already suggested by Baldwin (1976) the ideal assumptions underlying the median voter model have to be modified in various respects to reflect reality³⁾.

In his study Mayer (1984) assumes that bargaining costs are not negligible in a majority voting framework. Redistributions which are necessary to compensate prospective losers from (Pareto-superior) trade-liberalizing measures are impeded or even prevented. In the first part of his study Mayer attempts to evaluate the dependence of actual tariff rates on factor-ownership distribution and voter eligibility in a Heckscher-Ohlin type economy. In the case of majority voting with no voting costs, the median factor owner's optimal tariff rate is found to be equal to the actual tariff rate. If the median voter has a greater endowment of labor per unit of capital than the country as a whole, the political equilibrium will display positive tariffs given that the country imports labor-intensive goods (and vice versa).

More realistically Mayer presents, in the second part of his paper, a multi-industries model with specific factors and positive voter participation costs. These modifications explain the phenomenon that a single industry succeeds in raising tariffs on its product, even though the vast majority of eligible voters do not benefit from such a policy.

The weakness of this second explanation is grounded in a theoretical and empirical shortcoming. The argument that protectionism dominates free trade is

based solely on the citizens' rational decision to participate in the direct democratic process. At the same time, however, public choice theory states that rational self-interested voters have little incentive to participate in elections altogether, because the positive costs of voting clearly exceed the expected benefits of participation (the probability that the individual has an effect on the outcome of the vote is in general near zero in elections). Thus it is to be expected that rational voters do not vote at all. In contrast to this theoretical hypothesis voter participation is substantial, or at least substantially higher in reality than is suggested by economic theory. This results in the (empirically founded) puzzle which is referred to as the paradox of voting. At least there is some evidence for the economic theory to account for differences in voter participation due to differing institutions and differing costs and benefits. Nevertheless: altogether it has to be concluded that economic theory does not explain voter participation in modern democracies very well (Mueller 1989).

Positive bargaining costs and voting costs are only two of several important modifications and extensions which have to be considered. The prospective losers from protectionism not only have less incentive to participate in elections. They also have less incentive to inform themselves and to organize and support a pressure group than do gainers. Information costs are also not negligible in direct democracy - and therefore pressure groups should not be neglected when analysing plebiscites.

Interest groups try to influence the political decision process by providing information to the (rationally ignorant) voters. In the framework of a politico-economic model for Switzerland it has been shown that recommendations (paroles) made by the most important economic pressure groups to the voters have a statistically significant impact on the election outcomes (Schneider and Naumann 1982). Again it may be argued that pro-protectionist groups of voters have a stronger incentive to provide and also to collect adequate information. Therefore it is expected that gainers from protectionist measures pursue more systematically their self-interest in voting than do losers; the latter are expected to be more influenced by chance when casting their votes.⁴⁾

Another way in which interest groups may affect the outcome of majority voting is via log rolling, or vote trading. Vote trading may happen if groups of voters have unequal preference intensities for different issues put to the vote. This is very likely to be the case when protectionist measures are concerned. Pressure groups representing the specific interests of a domestic import-competing sector

only, are often small in (member) size. Nevertheless they may be successful in gaining the majority of the vote by combining their votes in favor of protectionism. Yet it has to be noted that vote trading is beneficial only in the case when the total level of protectionism can be raised by the strategy of vote trading. Once the political market is in equilibrium and the optimal (i.e. the maximum) level of trade restrictions is reached, an increase in protectionism proposed by one group of the voters can be attained only at the expense of a trade liberalizing policy being imposed on another group. In addition, vote trading in direct democracy is expected to be very limited (compared to legislative choice) due to high transaction costs and secret ballots.

The outcome of majority voting may also be influenced on another level, the process of drafting the proposal. In a referendum citizens usually are not allowed to decide simultaneously on the whole range of possible alternatives but only on one proposal and the status quo. Hence it follows that the outcome can be partially controlled by the agenda-setting people (Romer and Rosenthal 1978). Moreover, given that the relevant policy choice space is multi-dimensional, i.e. the proposal encompasses various aspects or individuals are affected by a policy instrument in various ways such that individual preferences are not single-peaked, majority voting generally does not lead to an equilibrium (Kramer 1973). In such situations the role of the persons who can control voting procedures also becomes very crucial (McKelvey 1976).

Agendas are controlled mainly by politicians and civil servants in public administration. Furthermore, interest groups may have some influence in the agenda-setting process by putting forward petitions and taking part in hearings as e.g. institutionalized by the "Vernehmlassungsverfahren" in Switzerland. Additionally, public officials exert an influence in their capacity as voters. As their costs of information and political participation are relatively low they are more likely to participate and to vote more significantly to their own advantage in polls being of special interest for themselves.⁹⁾

IV. Interests and incentives influencing referendums on trade policy issues: theoretical hypotheses

In the following the interests and the incentives of various actors influencing the political decision process, subject to constraints, are identified and followed up explicitly. With respect to referendums on trade policy issues two positions are distinguished:

- (i) the choice between trade liberalization and increasing protectionism; and
- (ii) the choice of the means of protection, especially tax/subsidy instruments in relation to tariffs.

Furthermore, five groups of actors can be identified:

- consumers,
- tax-payers,
- producers/factor owners in import-competing industries (capital owners, employers and employees),
- producers/factor owners in export-oriented industries (capital owners, employers and employees),
- politicians and public bureaucrats.

A sixth group, foreigners living in the country, may belong to the group of consumers, tax-payers, producers and/or public officials, respectively. However, their influence in the political process is weak as they are not eligible nor entitled to vote in most western democracies.⁶⁾

In table 2 the interests and the expected influence exerted by the various groups of voters are summarized.

TABLE 2

According to economic theory free trade is favored above protectionism by all citizens in their capacity as consumers. Moreover, as to the means of protectionism, consumers prefer subsidies financed by income taxes to tariffs in order to avoid excessive domestic prices. This preference is better defined if the marginal propensity to consume the protected goods is higher than average.⁷⁾ On the other hand, the incentive to become well-informed and to participate in the vote is rather weak. Thus the impact of consumers on the outcome of referendums is expected to be small.

Table 2: Interests and incentives to influence the political decision process by various groups of voters.

	Interests		Incentives/ expected influence
	free trade versus protectionism	Subsidies versus tariffs	
consumers	free trade	subsidies	weak
tax-payers	protectionism (tariffs only)	tariffs	weak
export-oriented industries	free trade	subsidies	middle
import-competing industries	protectionism	subsidies	strong
politicians/ civil servants	protectionism	?	middle

Tax-paying voters are not effected directly by the choice between increasing or decreasing protectionism. But their preferences differ substantially with respect to alternative trade policy measures. Tariffs are preferred to subsidies as in the case of the latter tax-payers must consider that they will carry the financial burden. On the other hand, tariffs provide additional revenues for the government and the budget constraint is eased. The more the income tax system is biased, the more high income-tax-payers will prefer tariffs. The incentive to become active in the political process is weak again as the benefits and the costs are fairly invisible and take place in the future.

The main group supporting trade-liberalizing policies and opposing protectionism are export-oriented industries, aside from consumers. They have to fear that increased protectionism at home may lead to retaliation by foreign countries, threatening their sales. The more transparent, or the more conspicuous a trade policy instrument is in its protective effects, the more likely retaliatory measures are taken abroad. For this reason export-oriented firms are expected to prefer subsidies to tariffs as a second-best strategy.

Domestic firms using imported inputs for their production are also interested in low trade barriers. However, as these firms often belong to the import-competing sector as well, their political position may become equivocal (Frey 1984).

Pro-protectionist interests are advocated mainly by import-competing industries. They are well-informed about the advantages of trade restrictions which are substantial. They have a strong incentive to participate in the vote and to act strictly according to their own interests. Preferences relating to alternative trade policy instruments are not as evident. In general, subsidies are preferable to tariffs. In addition, international commitments as e.g. within the GATT may give reason to prefer non-tariff trade barriers as well. It is also argued that tariffs have the nature of a public good from the perspective of an individual firm in the import-competing industry whereas firm-specific subsidies are assigned on an individualistic property rights basis. Therefore it is expected that lobbying is more likely to be observed in order to obtain firm-specific subsidies than to seek tariffs (Rodrik 1986). However, if subsidies are related to the prices of the protected good the free rider effect may appear as in the case when tariffs are enforced.

Politicians and civil servants have a considerable influence on the supply side of protection by preparing, formulating and implementing trade policy proposals. Their main influence is revealed on these levels of the political process.

Besides, public bureaucrats may also seek to influence the outcome of referendums by above-average participation in the vote and by casting their vote to their own advantage. Due to self-interest, public officials tend to vote in favor of trade restrictions and in favor of such instruments which are under their own control. They are expected to prefer non-tariff barriers providing them with discretionary power to general tariffs. On the other hand, additional public revenues are raised by tariffs whereas financial resources are necessary to dispose subsidies. Moreover, the redistributive effects of tariffs are less visible to the voters than tax financed subsidies.⁸⁾ The potential source of revenue and the different transparencies suggest that tariffs are politically more feasible in times when the budget constraint is restrictive. In this case public bureaucrats are expected to be more in favor of tariffs than otherwise. However, as state revenues may have the character of a public good from the perspective of the individual civil servant the support of tariffs may be not strongly marked. Altogether it must be concluded that the interest of public officials in the means of protectionism is equivocal depending on whether the budget constraint is binding or not.

V. Empirical Analysis of Trade Policy Referendums

The hypotheses suggested by the political economy of protection have been the subject of several empirical studies.⁹⁾ Most research focuses on the differences of trade restrictions between industries linking the level of incidence of protection to arrays of industry characteristics. Some authors have inquired into the structural determinants of the overall level of protection across countries. And in time-series studies the cyclical development of trade policies has been analysed referring to the macroeconomic determinants of the overall level of protectionist pressure or of protection. More recently, also some efforts have been made to identify the determinants of the behavior of members of parliament and of their patterns of votes on trade policy legislation by using econometric methods.

So far trade policy legislation in a direct democracy has not been subjected to empirical investigation. In most countries citizens are not asked to decide on trade policy issues directly. Switzerland presents a unique case. Swiss electors are entitled to take a plebiscite on trade policy issues even though the possibilities are very limited. In the last 15 years a referendum was enforced at least twice: first, a proposal to impose tariffs on processed foods was carried

through in 1975. And second, in 1986 a bill concerning the sugar market and the replacement of subsidies with tariffs was put to the vote. The referendum in 1975 on protection of the food industry was accepted by a majority of 52.0% of the effective votes. On the other hand, the proposal about the means of protectionism that was put to the vote in 1986 was rejected by a distinct majority: 61.8% casted their votes against the bill, and the purpose of higher tariffs in exchange for a reduction of subsidies was accepted only by 38.2%. In both referendums voters' participation was rather low: in 1975 only 34.9% and in 1986 even less (31.1%) of the electorate casted their vote. On average voter participation in swiss referendums exceeds 40%.

Voter participation and the acceptance of the bills vary considerably on the cantonal level. Voter participation is the highest in the canton Schaffhausen in which non-participation is penalized by state law; usually about 70% of the electors take part in the vote in this canton. On the contrary, in some french-speaking cantons voter participation is far below average: in 1975 only 18% in the canton Vaud and 15% in the canton Geneva casted their vote. In 1986 the canton Geneva with 19.5% showed the lowest participation rate. The rate of affirmative votes varies between 35% and 67% in 1975 and between 17% and 59% in 1986.

The two referendums provide a means to test the hypotheses derived for the interests and the influence of various groups of voters on trade policy issues in direct democracy empirically. The analysis of the impact refers to two levels: (a) the individual decision to participate in or to abstain from the vote; and (b) the individual decision to agree to or to reject the actual proposal.

The individuals' voting decision has been analysed in the framework of a utility maximizing choice model.¹⁰⁾ These theoretical considerations lead to the following specification of the estimation equations:

$$(1) \quad \ln \left\{ \frac{F(\text{PAR})_j}{1 - F(\text{PAR})_j} \right\} = a + b \bar{X}_j + u$$

$$(2) \quad \ln \left\{ \frac{F(\text{YES})_j}{1 - F(\text{YES})_j} \right\} = c + d \bar{Z}_j + v$$

where $F(\text{PAR})_j$ is the fraction of voters in canton j who actually participated in the vote; $F(\text{YES})_j$ is the fraction of those voters in canton j who said YES; X_j and Z_j are the vectors of means of the characteristics of X and Z determining the individual voting decision; and u and v are the error terms. As no micro

(individual) data are available for referendum outcomes, the empirical analysis has to rely on aggregate data on the cantonal level. The aggregates used are 25 cantons in 1975 and 26 cantons in 1986, respectively.¹¹⁾ The appropriate procedure is a weighted logit multiple regression.¹²⁾

(a) The 1975 referendum: tariffs on processed foods.

Agricultural production is probably protected in all countries of the world. This results in distortions within the food processing industry which in return are countered by additional state interventions in many countries. In 1974 the Swiss parliament also claimed for an adjustment in the form of tariffs on processed foods by officially putting forward the argument of "a fight with equivalent lances". The referendum was raised by a wholesaler organization which was mainly supported by the consumers' interest group in order to reject the bill. The plebiscite took place on December 7, 1975 and the bill was adopted with a bare majority.

In general, economic theory suggests variables which might influence individual behavior in a specific direction. As an approximation, the economic theory of protectionism allows us to identify groups of voters which are affected by the proposed policy change in a positive or negative way. To capture such effects, the proportions of voters in the affected groups are included among the explanatory variables. The main hypotheses about the theoretical variables, and the empirical proxies used, are as follows:¹³⁾

Determinants generally influencing voters' decision:

- Voters' participation varies between cantons due to various determinants which are not specific to the referendums analysed here. For example, voters' participation in the canton Schaffhausen turns out to be significantly higher due to the penalty system applied. In order to capture these non-specific influences a lagged endogenous variable is included in the equation to explain voter participation: the average level of voters' participation in referendums held in the last five years. In addition, the incentive to vote is expected to be higher, *ceteris paribus*, when citizens vote on local cantonal political issues as well as on protectionist measures. This effect is represented using a dummy variable. It takes the value 1 in the case of additional cantonal proposals and 0 otherwise, and it is expected to be positive.

Referendum-specific determinants:

- Citizens in their capacity as consumers are expected to vote down bills which increase protectionism. This impact is captured by the constant term in the approval rate equation which is expected to be rather small. In addition, high-income people are expected to be less affected by any increase in the prices caused by increased tariffs. Thus, it is hypothesized that the higher the mean income (per capita) in a canton, *ceteris paribus*, the less likely that a tariff bill is rejected. However, the statistical significance of the estimated coefficient may be rather low, and voter participation is expected not to be particularly high, due to the weak incentives of relatively wealthy consumers to participate in the vote and to inform properly.
- Citizens may be aware that tariff revenues tend to reduce their individual tax burden. Thus, it is reasonable to expect that the higher the mean burden of federal income taxes in a canton, *ceteris paribus*, the higher the expected approval rate on the 1975 referendum. Again, voter participation and the fraction of affirmative votes are expected to be influenced only slightly due to weak incentives to vote.
- The higher the proportion of voters working in the food processing industry in a canton, the higher the expected approval rate of the referendum. Since incentives to influence the political outcome are very strong within this group of voters, their participation rate is expected to be particularly high and their influence on the referendum outcome is expected to be pronounced.
- The higher the proportion of voters engaged in agriculture, the higher the demand for local production and the expected degree of approval. The impact on voter participation and on the election outcome is expected to be statistically significant.
- It is an open question whether voters working in other import-competing industries, apart from the food processing sector and agriculture, have incentives to vote in favor of the bill due to log-rolling. Thus, expectations with respect to the sign of the influence of the proportion of voters working in the textile and clothing industries are ambiguous.
- The higher the proportion of voters working in the export-oriented industries, i.e. the chemical industry and machinery manufacturing mainly,

the less likely the proposal is to be accepted. Voter participation and the impact on the referendum outcome is expected to be substantial but less pronounced compared to voters working in the food processing industry.

- The higher the proportion of voters employed in the federal public administration, the higher the expected approval rate. The estimated coefficients of this variable are expected to be positive and statistically significant in both equations, the estimate of voter participation and of affirmative votes.

Estimates of the effects of these variables on the approval rate for processed foods are given in tables 3 and 4.

TABLES 3 and 4

Table 3 shows that about 90% of the variance in voter participation can be explained by the variables included. However, only three out of ten explanatory variables have a statistically significant influence.¹⁴⁾ Voter participation falls as more high-income people are entitled to vote, and it increases as the fraction of federal civil servants among electors increases. It should be noted that the negative influence of higher income is not due to the effect of opportunity costs. This impact already is captured by the lagged dependent variable which is statistically highly significant. The variance of voter participation among cantons is mainly determined by the average level of voter participation in recent years.

Altogether it must be concluded that voter participation can be hardly seen as to be determined by the variables which have been identified to have a specific influence in this referendum. Neither the notion of import-competing industries nor export-orientation have a statistically significant impact on this level of political engagement. Protectionism can not be explained very well by differing incentives to participate in this particular referendum.

The empirical estimates referring to the logit of the affirmative votes are summarized in table 4. The relatively large coefficient of determination, about 80%, indicates that the major influences are captured. As theoretically expected, the fraction of voters working in the food processing industry has the strongest influence, followed by the fraction of voters working in the chemical industry and agriculture. A high share of federal civil servants also increases the

Table 3: Determinants of the participation rate.
Referendum on tariffs on processed foods, december 1975.
Weighted LOGIT estimates.

Expected influence				
(*** strong				
(**) middle				
(*) weak		(1)	(2)	(3)
Constant term		1.65	1.25	1.03
Income per capita (ln)	(*)	-0.939* (-2.6)	-0.724** (-3.2)	-0.548** (-4.1)
Federal tax burden (average)	(*)	0.071 (0.5)	--	--
Food processing industry ^{a)}	(***)	0.033 (0.5)	0.021 (0.4)	--
Agriculture ^{a)}	(**)	-0.004 (-0.4)	--	--
Textile/clothing industry ^{a)}	(*)	0.009 (0.2)	0.006 (0.2)	--
Chemical industry ^{a)}	(**)	0.036 (1.6)	0.029 (1.6)	--
Machinery manufacturing ^{a)}	(**)	0.029 (0.9)	0.024 (1.0)	--
Federal civil servants ^{a)}	(**)	0.407** (3.2)	0.402** (3.3)	0.387** (3.5)
Participation rate (average level)	(***)	1.012** (5.6)	1.034** (6.7)	1.196** (12.9)
Dummy: Referendums on cantonal level	(***)	0.132 (1.6)	0.113 (1.5)	--
R^2		92.4	92.1	89.4
R^2		87.9	88.1	87.9
F-value		17.0	23.2	58.8
d.f.		14	16	21

^{a)} Sectoral employees, in percent of citizens entitled to vote.

The figures in parantheses below the estimated coefficients are the t-values; an asterisk in parantheses means that the variable has a significant influence at the 90% level of confidence (one asterisk: 95%; two asterisks: 99%; two-tailed tests). R^2 is the coefficient of determination; R^2 is the R^2 corrected for the degrees of freedom (d.f.); the F-value indicates whether in total the independent variables have a significant impact on the dependent variable.

Table 4: Determinants of the YES-votes.
Referendum on tariffs on processed foods, december 1975.
Weighted LOGIT estimates.

Expected sign and significance		(1)	(2)	(3)
Constant term		-1.23	-1.44	-0.35
Income per capita (ln)	(+)	0.215 (0.5)	0.398 (1.2)	--
Federal tax burden (average)	(+)	0.090 (0.6)	--	--
Food processing industry ^{a)}	(+++)	0.076** (5.0)	0.075** (5.3)	0.072** (5.1)
Agriculture ^{a)}	(++)	0.007* (2.6)	0.007* (2.8)	0.005* (2.5)
Textile/clothing industry ^{a)}	(?)	-0.000 (-0.0)	--	--
Chemical industry ^{a)}	(--)	-0.019* (-2.7)	-0.021** (-3.6)	-0.016** (-3.9)
Machinery manufacturing ^{a)}	(--)	-0.013 (-1.2)	-0.017(*) (-1.9)	-0.011 (-1.4)
Federal civil servants ^{a)}	(++)	0.076(*) (1.8)	0.076(*) (1.9)	0.085* (2.1)
R^2		84.6	84.3	83.0
R^2		77.0	79.0	78.5
F-value		11.0	16.1	18.5
d.f.		16	18	19

^{a)} Sectoral employees, in percent of citizens' effective votes.
For further footnotes see table 3.

approval rate in a statistically significant way. However, income per capita and the mean burden of federal taxes have no statistically significant impact. In addition it turns out that vote trading does not induce voters working in the textile and clothing industry to support the proposal. On the other hand they also do not oppose increasing protectionism.

The coefficients of the weighted logit estimation can not be interpreted directly. A transformation has to be done to show the relative impact of the statistically significant variables. A statistical decomposition analysis based on equation (3) in table 4 results in the disposition shown in table 5.¹⁵⁾

TABLE 5

By ignoring all explanatory variables the referendum would have been affirmed still by 42% of the citizens participating in the vote. This result points out that consumers were not as unfavorably disposed towards the proposal as economic theory would suggest. However, the bill would not have been accepted by a majority. Additionally taking into account the influence of the import-competing industries and federal civil servants only, this would have resulted in an increase of about 18% of Yes-votes, and the bill would have passed by a distinct majority of 60%. The negative impact of the export-oriented industries again lead to a decrease in YES-votes by about 4%. In total, the simulated approval rate takes 55.7% which is quite near to the actual value, i.e. 55.4%.

(b) The 1986 referendum: means of protection in the sugar market.

In Switzerland agricultural cultivation and stock-farming has been protected by state interventions for a long time. After World War II, in 1957, a fundamental proposal was accepted by referendum assuring the agricultural sector of protective measures. Since then sugar production has been subsidized by the swiss federal state in the way that delivery of a fixed amount of sugar-beets is accepted at production cost. At first, the loss resulting from the difference between production costs and the selling-price at the world market price level was defrayed entirely by the federal state. During the late 60's the financial burden of the grants grew rapidly as a result of decreasing world sugar prices and increasing domestic production. This resulted in a proposal being accepted by the electorate which provided for partition of the costs out to consumers, by

Table 5: Impact of the determinants influencing the outcome of the referendum on tariffs on processed foods, december 1975.
Statistical decomposition analysis.

Approval rate not explained
by the explanatory variables
(approval rate of consumers):

42.2% YES-votes

Affirmative votes:

- food processing industry
- agriculture
- federal civil servants

+ 9.8%

+ 6.2%

+ 1.8%

in total: + 17.8% YES-votes

Negative votes:

- chemical industry
- machinery manufacturing

- 2.1%

- 2.2%

in total: - 4.3% YES-votes

Simulated approval rate:

55.7% YES-votes

Actual approval rate:
(mean of cantonal rates)^{a)}

55.4% YES-votes

a) The approval rate shown here deviates from the actual value (52%) as the statistical decomposition analysis is based on the (unweighted) means of the cantonal data.

adopting tariffs, to producers and to the federal state. The resolution was renewed several times. Yet at the same time the production limit was extended continuously, and the increasing burden of protectionism was shifted slightly towards consumers. However, each time the bill passed without objection from the electorate. In the early 80's the budget constraint became decisive. A proposal providing for an increase in public revenues had been rejected by the constituency. Therefore, politicians and federal civil servants had to look for a way to decrease expenditures effectively. In 1984 a bill was drafted asking for reduced federal state subsidies. Instead, protection was supposed to be provided by substantially increasing import duties. A referendum was called for and it was rejected.

Various groups of voters are affected by the choice of means of protectionism. In order to test the respective impacts empirically, the following variables are included in the regression equation. (The expected sign of the estimated coefficients are subject to the usual *ceteris paribus* assumption.)

- The mean rate of voter participation again captures all influences on voters' participation which are not specific to the referendum held on September 26, 1986. Likewise a dummy variable is included taking into account whether or not local cantonal proposals were voted on the same poll.
- Citizens employed at cultivating or refining sugar are expected to prefer subsidies to tariffs. However, because the agenda proposal also increases production, there is a strong incentive to support the proposal. Therefore it is expected that the higher the fraction of voters engaged in sugar production, the higher the rate of voter participation and the higher the degree of approval tend to be.
- Consumers are expected to vote against the replacement of subsidies with tariffs. This becomes apparent in a low constant term. High-income earners are assumed to be less concerned about increasing prices, so mean income per capita is expected to have a positive but weak influence on the approval rate. On the other hand, the higher the mean burden of federal income taxes, the more affirmative votes are to be expected.¹⁶⁾
- The sugar treatment industry is also at a disadvantage because the proposed replacement of subsidies with tariffs tends to increase prices of sugar. However, this added expense is paid only in the case where the sugar products produced are exported. In the case of exportation, full

compensation is allowed for the loss. Whereas confectionery is consumed mainly at home, chocolate is one of the main export goods of Switzerland. It is reasonable to assume that the higher the fraction of voters dealing with the processing of sugar into confectionery, the lower the expected approval rate. On the other hand, voters dealing with chocolate treatment are expected not to reject the bill. On the contrary: they may be interested in an expanded domestic sugar production and therefore may support the proposal. However, their engagement in political activities is expected to be weak.

- Protectionism in the form of tariffs increases the risk of retaliation by foreign countries. Therefore it is expected that the higher the proportion of voters working in the export-oriented industries (i.e. the chemical industry and machinery manufacturing), the more negative votes will be casted. The influence is expected to be evident but not particularly marked.
- The influence of the proportion of voters being employed in the federal public administration is ambiguous. In general, civil servants are expected to favor subsidies. However, they might cast their vote for tariffs in order to increase public revenues. The empirical analysis reveals which of these influences prevails.

In tables 6 and 7 the estimation results for the weighted logit regression are shown for the referendum on the means of protectionism in the sugar market.

TABLES 6 and 7

Again, voter participation is not significantly influenced by the variables which capture the specific politics of this referendum. The variance in voter participation with respect to cantons is predominantly explained by the average level of voter participation in the past. Only taxation seems to have an additional statistically significant impact: voter participation falls as the mean burden of federal income taxes increases.

As in table 7, the approval rate for the referendum on subsidies versus tariffs can be explained quite satisfactorily by the variables included in the regression equation. The R^2 comes to about 90%. As expected, the fraction of voters active in the sugar production sector turns out to have a positive and highly significant impact on the approval rate. In addition, the proposal was strongly

Table 6: Determinants of the participation rate.
Referendum on the means of protectionism (replacement of
subsidies with tariffs) in the sugar market, september 1986.
Weighted LOGIT estimates.

	Expected influence			
	(***) strong			
	(**) middle			
	(*) weak	(1)	(2)	(3)
Constant term		0.11	0.69	0.46
Income per capita (ln)	(*)	0.221 (0.5)	--	--
Federal tax burden (average)	(*)	-0.338(**) (-1.8)	-0.277(**) (-1.9)	-0.184* (-2.4)
Sugar production ^{a)}	(***)	0.138 (0.7)	0.154 (0.9)	--
Sugar treatment: confectionery ^{a)}	(**)	2.791 (0.8)	3.299 (1.0)	--
Sugar treatment: chocolate ^{a)}	(**)	-0.469 (-1.2)	-0.401 (-1.1)	--
Agriculture ^{a)}	(**)	-0.010 (-0.6)	-0.010 (-0.7)	--
Chemical industry ^{a)}	(**)	0.005 (0.2)	0.011 (0.5)	--
Machinery manufacturing ^{a)}	(**)	0.018 (0.4)	0.016 (0.4)	--
Federal civil servants ^{a)}	(**)	-0.065 (-1.2)	-0.070 (-1.3)	--
Participation rate (average level)	(***)	0.976** (4.8)	1.013** (5.4)	1.163** (10.0)
Dummy: Referendums on cantonal level	(***)	0.082 (0.9)	0.074 (0.8)	--
R ²		88.2	87.9	83.6
R ²		78.1	79.3	82.1
F-value		8.8	8.8	56.0
d.f.		13	14	22

^{a)} Sectoral employees, in percent of citizens entitled to vote.
For further footnotes see table 3.

Table 7: Determinants of the YES-votes.
Referendum on the means of protectionism (replacement of subsidies with tariffs) in the sugar market, september 1986.
Weighted LOGIT estimates.

	Expected sign and significance	(1)	(2)	(3)
Constant term		-1.19	-1.36	-1.58
Income per capita (ln)	(+)	-0.061 (-0.2)	--	--
Federal tax burden (average)	(+)	0.171 (1.4)	0.157 (1.7)	0.190* (2.2)
Sugar production ^{a)}	(+++)	0.341** (6.3)	0.340** (6.6)	0.338** (6.5)
Sugar treatment: confectionery ^{a)}	(--)	-2.669* (-2.6)	-2.694* (-2.7)	-2.770* (-2.8)
Sugar treatment: chocolate ^{a)}	(+)	0.154(*) (2.0)	0.152* (2.1)	0.152* (2.1)
Agriculture ^{a)}	(++)	0.016** (5.6)	0.017** (6.3)	0.018** (7.9)
Chemical industry ^{a)}	(--)	-0.021** (-3.5)	-0.021** (-4.0)	-0.020** (-3.9)
Machinery manufacturing ^{a)}	(--)	-0.012 (-1.0)	-0.012 (-1.0)	--
Federal civil servants ^{a)}	(?)	0.072 (1.5)	0.074 (1.6)	0.072 (1.6)
R^2		91.7	91.6	91.1
R^2		86.7	87.5	87.5
F-value		18.3	21.9	24.9
d.f.		15	16	17

^{a)} Sectoral employees, in percent of citizens' effective votes.
For further footnotes see table 3.

Table 8: Impact of the determinants influencing the outcome of the referendum on the means of protectionism (replacement of subsidies with tariffs) in the sugar market, september 1986. Statistical decomposition analysis.

promoted by a high proportion of voters engaged in agriculture. Federal income taxation, engagement in manufacturing chocolate, and employment in the federal civil service also increases the rate of approval, although these affects are not all statistically significant. Support for the proposal falls as voter employment in the chemical industry increases. The coefficient of the variable referring to the other important export-oriented industry, i.e. machinery manufacturing, certainly has the expected negative sign, but is not statistically significant.

The influence of the various factors determining the referendum outcome can be seen more clearly by applying statistical decomposition-analysis to equation (3) in table 7. The results are given in table 8.

TABLE 8

In comparison to the referendum on tariffs on processed foods, the proposal on the means of protectionism in the sugar market is more weakly supported by the general electorate, i.e. the consumers. Without the other explanatory variables, the approval rate would have been only 9%. Moreover, the share of affirmative votes would hardly exceed 25% after the impact of high income-tax-payers is allowed. Including consideration of the influence of the import-competing industries and that of federal civil servants, the approval rate would not exceed 41%; thus there would not be a majority in favor of the bill, even when opposing groups are neglected. Altogether, the simulated approval rate is 38.6% which is quite close to the actual value of 39.2%.

VI. Summary

Special interests are hypothesized to bring about protectionism in a political system of direct democracy, just as in the case of a representative legislature. However, pro-protectionist interests do not gain acceptance via differing incentives to participate in the vote, as was stressed by Mayer (1984). The empirical analysis of Swiss referendums on trade policy issues shows that voters' participation is determined by factors which apply to all referendums in the past and are not specific for the choice of trade intervention versus free trade and the choice of means of protectionism. Groups of voters which are supposed to seek for protection and to derive considerable advantage from trade

interventions being imposed are not found to be more likely to participate in the vote than are other citizens.

However, citizens working in the protected sector have a highly significant influence on the referendums outcome because of the way they cast their votes. The results suggest that employees of the agricultural sector vote in order to strengthen the position of the food processing industry and sugar production and refining industries. Log-rolling, on the other hand, is not significant as import-competing industries, e.g. textile and clothing manufacturing, do not support the efforts of other tariff-seekers. Export-oriented industries oppose the proposals, but the rate of approval is reduced only slightly.

Public bureaucrats also tend to vote in favor of their own interests. Federal civil servants support protectionist measures. As to the choice of means, they prefer tariffs to subsidies. In addition, federal civil servants are able to influence the referendum outcome via the agenda setting process. In combining two issues, i.e. the replacement of subsidies with tariffs and the expansion of sugar production, they succeed in obtaining support from the protected sector for their proposal.

On the other hand, the claim for higher agricultural output may have made citizens more suspicious and led more of them to oppose the proposal. In the 80's surpluses in the agricultural production became obvious in all industrial countries. Citizens in their capacity as consumers are expected to turn down trade intervention measures and especially tariffs in any case. However, rational ignorance about the incidental benefits and costs may lead them to support protectionism at least partially. The proposal put to the vote in 1975 was adopted with the approval of consumers apart from those employed in import-competing industries and federal civil servants. In 1986, however, when excess supply in agricultural products could no longer escape citizens' notice, support on their part was less evident. In previous years no referendum had been called for, even though subsidies were replaced by tariffs, and the production ceiling was increased modestly and several times. But the bill put to the vote in 1986 was rejected by a distinct majority. The changing conditions in the world market for agricultural products may have led citizens to revise their vote decision. Perhaps, in a similar way as is pointed out by Frey (1983) in a more general context, the protectionist pressure could be opposed by offering information to consumers in order to reduce information costs.

Notes

- 1) References to the literature on the equivalence or nonequivalence of tariffs and quotas are given by Cassing and Hillman (1985).
- 2) Empirical evidence is provided by Magee (1980).
- 3) For an early critique and a discussion of the relevance of the median voter model see also Romer and Rosenthal (1978) and Pommerehne (1978).
- 4) It has been pointed out that the assumption of strict rationality not only implies that individuals have no incentive to participate in the vote. They also have no incentive to act according to their self-interest when actually casting their vote in the polling booth. Brennan and Buchanan (1984) argue that there is no strict logical connection between rational behavior and citizens' voting in accordance to their preferences over outcomes. However, as an empirical proposition the impact of self-interest on voters' participation and the approval rate may be subjected to empirical evaluation and potential refutation.
- 5) The voting power exerted by public officials in determining government policy has been found to be significant in empirical studies; for a survey see Frey and Pommerehne 1982.
- 6) The influence of foreign interest groups through the financing of political campaigns is studied in the case of representative democracy by Hillman and Ursprung (1988). However, in direct democracy the impact of monetary support by interest groups is expected to be of minor importance because citizens and not representatives vote on subjects.
- 7) In contrast to their main result, i.e. pareto-superiority of tax/subsidy instruments versus tariffs, Mayer and Riezman (1987, 1988) concede that tariffs might become the social choice when it is acknowledged that voters not only differ with respect to factor ownership, but also with respect to consumption preferences and income tax treatment. For a discussion of the arguments see also Hillman (1989).
- 8) Transparency and information assymetry are stressed by Hillman (1989), along with institutional influences, property rights to rents and revenues, and terms of trade uncertainty, as determinants of political-support motives and lobbying incentives and therefore the choice of trade policy instruments.
- 9) For surveys see Baldwin (1984), Frey (1984) and Marks and McArthur (1990).
- 10) E.g. Rubinfeld (1977), McFadden (1976) and Deacon and Shapiro (1975). For a survey see Pommerehne (1987).

- 11) Between 1975 and 1986 the canton Jura has been newly constituted.
- 12) The logit estimates are made using an OLS estimation procedure, where each observation is multiplied by the weights, respectively
eq.(1): $1/(n_j/n(\text{PAR})_j \cdot (n_j - n(\text{PAR})_j))^{1/2}$
eq.(2): $1/(n(\text{PAR})_j/n(\text{YES})_j \cdot (n(\text{PAR})_j - n(\text{YES})_j))^{1/2}$
with
 n_j = number of citizens entitled to vote in canton j,
 $n(\text{PAR})_j$ = number of citizens' effective votes in canton j,
 $n(\text{YES})_j$ = number of voters who said YES in canton j.
- 13) Details about the data used and the sources are given in the Appendix.
- 14) As the mean income per capita and the mean burden of federal income taxes are highly correlated ($r=0.60$), the less significant variable is omitted in the empirical regressions in order to avoid problems of multicollinearity.
- 15) See Theil (1972). The ordinary least squares estimates do not differ particularly from the weighted logit estimates given in table 4. Therefore, as an approximation, the statistical decomposition analysis is based on the OLS estimates.
- 16) Again the income variable and the mean federal tax burden are highly correlated ($r=0.69$) and therefore the former is excluded in the regressions (equations 2 and 3).

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Appendix

		Year	Mean	Minimum Value	Maximum Value	Source
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<u>Dependent variables:</u>						
Participation rate	Citizens actually voting in percent to citizens entitled to vote	1975 1986	32.4 36.1	14.6 19.5	69.8 69.7	Bundesamt für Statistik: Statistisches Jahrbuch der Schweiz. Bern, 1976 and 1987.
Approval rate	Citizens voting YES in percent of citizens' effective votes	1975 1986	55.4 39.2	35.9 17.2	71.6 59.1	
<u>Independent variables:</u>						
Income per capita (ln)	National Income, per capita, in 1000 SFr.	1975 1985	17.7 30.4	11.4 23.8	32.8 50.4	Schweizerische Bankgesellschaft: Die Schweiz in Zahlen. 1976 and 1987.
Federal tax burden (average)	Federal income taxes, in percent of taxable income	1973/74 1984/85	2.5 3.0	1.8 2.4	3.6 4.4	Bundesamt für Statistik: Eidgenössische Wehrsteuer. Bern, 1978 and 1988.
Food processing industry	Employees (swiss) in the food processing industry, in percent	1975 ^{a)} 1975 ^{b)}	2.1 7.0	1.0 3.4	3.5 13.6	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975.
Sugar production	Employees (swiss) in sugar production and refining, in percent	1985 ^{a)} 1985 ^{b)}	0.2 0.4	0.0 0.0	1.0 2.3	Bundesamt für Statistik: Eidgenössische Betriebszählung 1985.
Sugar treatment: confectionery	Employees (swiss) in the confectionery industry, in percent	1985 ^{a)} * 1985 ^{b)}	0.01 0.02	0.0 0.0	0.04 0.1	Bundesamt für Statistik: Eidgenössische Betriebszählung 1985.
Sugar treatment: chocolate	Employees (swiss) in the chocolate industry, in percent	1985 ^{a)} 1985 ^{b)}	0.1 0.3	0.0 0.0	0.5 2.2	Bundesamt für Statistik: Eidgenössische Betriebszählung 1985.
Agriculture	Employees (swiss) in agriculture, in percent	1975 ^{a)} 1975 ^{b)} 1985 ^{a)} 1985 ^{b)}	11.9 38.7 8.9 26.3	0.1 0.5 0.1 18.1	30.0 111.7 22.3 82.4	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975 and 1985.
Textile/clothing industry	Employees (swiss) in the textile/clothing industry, in percent	1975 ^{a)} 1975 ^{b)}	1.5 4.6	0.1 0.7	5.4 18.0	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975.
Chemical industry	Employees (swiss) in the chemical industry, in percent	1975 ^{a)} 1975 ^{b)} 1985 ^{a)} 1985 ^{b)}	1.3 4.8 1.2 3.6	0.0 0.0 0.02 0.1	12.8 51.6 12.2 38.4	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975 and 1985.
Machinery manufacturing	Employees (swiss) in machinery manufacturing, in percent	1975 ^{a)} 1975 ^{b)} 1985 ^{a)} 1985 ^{b)}	4.3 13.6 2.5 6.8	0.7 2.5 0.5 1.6	11.5 35.6 6.0 14.1	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975 and 1985.
Federal civil servants	Federal civil servants, public administration, in percent	1975 ^{a)} 1975 ^{b)} 1985 ^{a)} 1985 ^{b)}	0.2 0.5 0.1 0.4	0.0 0.0 0.0 0.0	1.0 2.9 0.9 2.7	Bundesamt für Statistik: Eidgenössische Betriebszählung 1975 and 1985.
Participation rate (average level, logit)	Average participation rate in referendums of the past five years	1970-75 1981-86	43.9 39.6	32.4 31.5	73.9 70.8	Bundesamt für Statistik: Statistisches Jahrbuch der Schweiz. Bern.
Referendums on cantonal level	Dummyvariable: =1, if have to vote on cantonal proposals, otherwise 0	1975 1986	0.4 0.6	0.0 0.0	1.0 1.0	Forschungszentrum für schweizerische Politik an der Universität Bern: Schweizerische Politik im Jahre 1975/ 1986. Bern 1976/1987.

^{a)} Employees, in percent of citizens entitled to vote.

^{b)} Employees, in percent of citizens' effective votes.