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Self-Interest or Solidarity?

The Referendum on Fiscal Equalisation in Switzerland

Abstract: This article puts the self-interest hypothesis to an empirical test by analysing the 2004 referendum on fiscal equalisation in Switzerland. That vote put forth a series of reforms which created regional winners and loser in terms of having to pay or receiving unconditional funding. Although Switzerland is usually portrayed as a paradigmatic case in terms of inter-regional solidarity and national integration, we show that rational and selfish cost-benefit calculations strongly mattered for the end-result. We rely on a multi-level model with referendum and other data on more than 2700 municipalities and all 26 cantons. More broadly, our findings confirm that rational choice theory works well for voting on straightforward monetary issues with a clearly defined group of winners and losers. However, symbolic interests such as party strength and cultural predispositions against state intervention and in favour of subsidiarity also matter and need to be taken into account alongside.

1 Introduction

This article aims to combine insights from the literature on rational choice as regards self-interested voting behaviour with the federal question of fiscal equalisation between different territorial units. Fiscal equalisation – or inter-regional solidarity, more broadly – is of central importance to any kind of multi-layered political system (Eichenberger 1994: pp. 404–405; Beramendi 2012: p. 3). It lies at the heart of regionalist vindications in countries such as Spain, Belgium, Italy and Germany, with Catalonia, Flanders, Northern Italy and Bavaria, respectively, all demanding a decrease in fiscal solidarity. More recently, the costs and benefits associated with membership (cf. also Verhaegen et al. 2015) have also come to characterise the British debate on whether to leave or remain in the EU. But despite their prevalence, surprisingly little is known about how citizens themselves stand

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on fiscal equalisation; also, that element is often used to cover more fundamental, political questions.[1] In taking profit of the unique character of Switzerland as both a federal and a direct-democratic system, we will be able to draw lessons on the connections between self-interest and solidarity and between cost-benefit calculations and "symbolic attitudes" (Lau and Heldman 2009) in determining voting behaviour.

Rational choice regards citizens as individualist human beings, assuming that they are able to rank-order their preferences and act in a way that maximises their self-interest (Downs 1957; Feldman 1982; Braun 1999). Nowhere can this operating principle be observed more prominently than when it comes to straightforward pocketbook decisions (Deacon and Shapiro 1975; Blöchliger and Spillmann 1992; Vatter 1994; Tedin et al. 2001). These are most likely cases to confirm the importance of rational self-interest for political behaviour. By extension, if applied to fiscal equalisation as a distinct set of monetary transfers from richer and poorer regions,[2] we would expect citizens benefitting from such payments to be in favour of such a policy, while prospective losers (i.e. net contributors) should be opposed. This prediction, however, is faced with the counter-argument that the very *raison d'être* of federations is unity in diversity, solidarity, and cross-regional support (Burgess 2006: p. 258; Béland and Lecours 2014). In other words, if fiscal equalisation is the price to pay for keeping the polity together and for allowing compatriots living in relatively deprived regions to enjoy similar public services (Watts 2008: p. 108f.), then individual costs should not influence decision-making in these situations. After all, the inter-personal solidarity principle is successfully at work in most welfare state policies (Companje et al. 2009; Beramendi 2012) and the very success of nation-states hinges on creating that peculiar sense of communality and familiarity in the absence of direct contact between all co-nationals (Anderson 1991).

In this article, we will subject the rational self-interest hypothesis to a triple test. All three profit from the fact that Switzerland radically reformed its fiscal equalisation system through a set of constitutional amendments which needed direct-democratic approval, granted in 2004 by a popular majority of 64.4% and

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1 For example, the real problem of those wishing the UK to leave the EU is arguably not so much related to monetary transfers but rather to parliamentary sovereignty, immigration and the nature of the EU as above all an economic union itself.

2 We leave aside, for the purpose of this article, that also the central government often covers a significant amount of fiscal transfers (vertical payments as opposed to horizontal payments between regions). However, even such payments by the central government can in theory be shown to come from its constituent regions, e.g. in the form of tax yield, so were are back to a contrast between richer and poorer regions and all that entails for territorial solidarity (cf. Balcells et al. 2015: p. 1326).

23 out of 26 cantons, and in force since 2008.[3] First, we will analyse whether voters undertook a rational, selfish cost-benefit analysis when they were given the chance to directly decide. Were the losers of fiscal equalisation against and its beneficiaries in favour? Or did collective feelings of national solidarity and/or other symbolic attitudes override individualist calculations? Second, we will test whether it was the change from the old to the new system of fiscal equalisation or rather the overall effect of the federal reform that mattered most in determining decisions. Third and finally, we also provide an answer to the criticism that voters, were they really acting rationally, should not even have bothered to turn out (Shabman and Stephenson 1994: p. 1176) by analysing the effect of *the size* of the expected cost *or* benefit.

The next section briefly recalls the central theoretical premises to be tested here. In essence, the explanatory contest is one between self-interested rationality on the one hand and culture, structure and social norms on the other. Section three offers further details on the 2004 referendum and explains why it offers an ideal case for empirical analysis. Section four discusses our method and results before we conclude.

2 Explaining Vote Choice: Self-Interest vs. Symbols and Solidarity

Why do people vote the way they do? Theories explaining voters' choices can draw on a long history. They are commonly grouped into sociological, socio-psychological and individualist approaches. However, for our purposes the main verdict to be rendered is whether, in voting on a monetary and redistributive policy such as fiscal equalisation, citizens rationally make cost-benefit calculations in their own favour and act accordingly – or not. That is, we are not so much interested in the precise role of cleavages (Lipset and Rokkan 1967), socio-economic status (Lazarsfeld et al. 1944) or party identification (Campbell et al. 1954, 1960), but rather in their collective weight against the individualist dimension: are voters rationality-driven self-interest maximisers, or culturally determined social agents and/or mere party followers? According to rational choice theory,

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3 Although the 2004 reform also comprised a separation of several tasks between Confederation and cantons, the fiscal equalisation component was by far the most important issue for voters (Hirter and Linder 2004: p. 9; Cappelletti et al. 2014). Moreover, even the task separation aspect contained clearly quantifiable redistributive effects (see below, Method and Data Section), so although complex (Hessami 2016) the reform was in fact easily reducible to costs and benefits.

a voter is a citizen who makes use of existing democratic rights to maximise her very own interests. These interests are first rank-ordered into preferences; she then chooses that option with the highest probability to lead to the realisation of her top preference. Diametrically opposed are theories that give precedence either to structure over strategy, culture over calculus, or ideas over interest. We first discuss rational choice scholarship before treating the other theories as rivalling explanations.

2.1 Rational Choice: Voters as Rational Self-Interest Maximisers

In rational choice approaches, individuals form the heart of the analysis (Hessami 2016: p. 264: cf. also Downs 1957; Deacon and Shapiro 1975; Feldman 1982). Since it is them who ultimately decide whether and how to cast their ballot, theoretical reflections on what motivates them must stay at that level, too. Inspired by a world-view in which everything has both costs and benefits attached to it, a first core assumption is that individuals possess full (or at least good enough; cf. Lupia 1994) *knowledge* about the payoffs associated with different decisional options. Such knowledge is most likely to be possessed in the presence of straightforward economic decisions – in other words, when "politics […] offers them [the citizens] large sums of money for a particular behaviour" (Lau and Heldman 2009: p. 524). This was precisely the case of the 2004 Swiss referendum on fiscal equalisation that defined which cantons ought to receive or contribute how much. Ours thus is a weak test, which means that showing that rational behaviour did not even obtain in *this* context would prove damning for public choice theory indeed.

At the same time, while different individuals may possess different policy preferences, and while for each a different transitive and hierarchical relationship between those preferences exists, all of them rank maximising *their own*, personal self-interest first (Lewin 1991: p. 45). Thus, given both knowledge and rank-ordered preferences, individuals will choose that option which best contributes to realising their top preference, since "reasons [are] causes." (Lichbach 2003: p. 21) The goal of every individual, therefore, is to maximise her own self-interest, and voting is merely one way to achieve this. In order to distinguish that approach from "symbolic attitudes" (Lau and Heldman 2009), the limits of such self-interest are usually understood to be *specific*, that is pecuniary at most and quantifiable at the minimum rather than diffuse and abstract; *immediate* rather than in some distant future; as well as *self-centred*, that is including benefits which the voter can directly profit from, either as an individual or member of

a clearly identifiable group (Vatter 1994; Milic et al. 2014: p. 215; Hindmoor and Taylor 2015: pp. 228–289).

Given that party manifestos usually contain a multitude of promises, this restriction of self-interest to specific and immediate self-centredness may be difficult to operationalise as regards elections (Shabman and Stephenson 1994: p. 1174). Even broad all-in or -out referenda (Brexit) contain a plethora of issues – some economic, others cultural, historic, psychological or simply partisan. Hence, self-interest is more easily applied to issue-specific popular votes (referenda), where by definition matters to be decided are restricted to a single question with only two answers, yes or no. This applies even more to referenda with easy to understand implications and questions. Hence, previous studies have shown rational choice theory to work particularly well for infrastructural projects with individual payoffs for a territorially defined set of beneficiaries, in Switzerland (Vatter and Nabholz 1995: p. 493; cf. also Blöchliger and Spillmann 1992; Vatter and Heidelberger 2014) as much as elsewhere (e.g. Deacon and Shapiro 1975; Shabman and Stephenson 1994; Tedin et al. 2001). The same conditions apply to the 2004 fiscal equalisation referendum in Switzerland, which clearly identified the prospective "winners" and "losers" at regional level (see below). We thus hypothesize that

> *H1a: The higher the anticipated financial benefits, the stronger the approval of the 2004 reform.*

> *H1b: The higher the anticipated financial costs, the stronger the disapproval of the 2004 reform.*

In splitting this first hypothesis into two separate variants, we assume payoffs to be symmetric. In other words, unlike for elections where often it was found that voters punished the government under worsened economic conditions but did not reward it during upswings (e.g. Feldman 1982: p. 452), the rationality of economic self-interest is here more closely tied to the actual political choice: voters could hardly attribute more or less fiscal equalisation payments to their own performance.[4] As we discuss below, there are two concrete ways to calculate these benefits: cross-sectionally, that is with regards to other cantons, and temporally, that is as the change from the old to the new system. Both represent valid ways to conceive of self-interest – to receive more than others or more than before – so we shall test for the influence of both.

Next to outcome, rational choice also makes predictions about participation. Under normal circumstances, the "paradox of voting" holds that if cost-benefit

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4 In fact, the purpose of the reform was precisely to uncouple the amount of fiscal payments from regional economic performance and centre on the tax potential and objective needs instead.

calculations were at play at all times, in large electorates one should simply decide *not* to vote as the likeliness to cast the decisive vote is close to zero (cf. e.g. Riker and Ordeshook 1968; Falter and Schön 2005: p. 261). However, the market-driven competitive logic counters that the size of the anticipated benefit, or the extent of the change to the status quo, may very well outweigh the cost of voting (Brennan and Hamlin 1998). Kirchgässner and Schulz (2005: p. 42), studying popular votes over 20 years, also provide evidence that the higher the stakes, the higher turnout. In other words, the motivation to vote is higher for those who can expect to win *or* lose much more than for those whose situation would change only little. To restate this in the form of a falsifiable hypothesis:

> H2: The higher the projected benefit or loss, the higher the participation in the 2004 referendum.

We now turn to rivalling explanations that do not argue along self-centred and interest maximising, rational individuals. What they all have in common is that individual reflections are either denied to exist, downgraded to mere following, or turned into altruism.

2.2 Rivalling Explanations: Culture, Solidarity and Ideology

One counter-argument to rational choice is that instead of rational cost-benefit calculations, in certain moments the "irrational" (if rationality is understood in the narrow terms outlined above) takes over and dictates decisions. Such irrationality can come in various forms, each questioning one of rational choice theory's core assumptions. At the most general, Lipset and Rokkan's (1967) cleavage theory would argue that not the "winners vs. losers"-dimension but other constellations are more dominant. More specifically, various cleavages have produced different social, territorial and/or cultural groups that each possesses a different set of political preferences. These are determined by one's social background and are rather stable and static, in stark contrast to the fluid and flexible decisions that are the product of rational cogitation (Lau and Heldman 2009).

Which cultural factors can we reasonably expect to have influenced the 2004 referendum on fiscal redistribution across territories? The reform was widely regarded as cementing the status quo in that it allowed even the smallest cantons to continue their lives as quasi-sovereign entities (Braun 2009). However, by providing for a large amount of unconditional transfers, a decentralising thrust was present, cemented by the cultural ideas of fiscal competition and subsidiarity. Hence, given that the cultural predisposition for decentralisation is strongest

among German-speakers (Mueller and Dardanelli 2014; Mueller 2015), a cleavage theorist would expect German-speaking areas to be most in favour of the reform.

Apart from language, religious differences are the other main cultural divide that has historically marked Swiss politics. The 1848 Federal Constitution for example is the direct result of the defeat of the catholic cantons by the protestant ones. Catholic areas remained however isolated in the subsequent decades (Linder et al. 2008), and a state-sceptic view has continued to influence political trends (cf. also Selb 2005: p. 62). Although decentralising in character, Catholics would thus regard the 2004 reform as further intervention by the central government and reject it, whereas Protestants would embrace it as the logical consequence of the federal compromise. At the same time, however, the exact opposite may very well hold in that Protestants, with their belief in individualist redemption through hard work, are less inclined to subsidize the less productive members of society, whereas Catholics are more collectively oriented and thus in favour of welfare redistribution and hence fiscal equalisation (Castles 1994; Davis and Robinson 2012; Siroky et al. 2017).

A second alternative to rational choice centres on social milieus that are primarily determined by residence and socio-economic status (SES) (Lazarsfeld et al. 1944: p. 26). Unlike for macro-sociological theories, however, a mechanism at the individual level is provided in that voters are informed by their most trusted opinion leaders and/or through their ideologically homogenous networks. Voting, in other words, "is essentially a group experience: people who work or live or play together are likely to vote" the same (*ibid.* 137) – again in stark contrast to rational choice, where voting is an isolated individual act. Accordingly, factors such as education, income and age – in addition to or in combination with the cultural attributes outlined already – should have had a significant impact on the 2004 referendum outcome. A micro-sociologist would particularly expect highly-educated and older regions to have voted in favour, since it is them that would identify most with the statement that

> Creating fairly equal living conditions in the different regions is vital if collective values of local cultures are to be maintained and if people continue to feel emotionally attached to their place of origin. (Linder 2010: p. 72)

A third and final alternative to rational choice argues that voters do neither have the time nor the capacity to think for themselves to an extent that is necessary to make self-centred calculations (Downs 1957; Schumpeter 2006 [1942]). The comparatively cheapest option to know how one "should" vote is to follow one's preferred political party (Campbell et al. 1954, 1960). A democratic minimalist would expect that the vote in a given region corresponds to the recommendations of its

dominant political party *despite* individualist calculations pointing into different directions (parties themselves might in turn act rationally, of course). A second possibility is to follow the advice of one's own national government as the most impartial (or, in Switzerland: the collegial, consensual and comprehensive) political body. Hence, one could also expect voting to take place along degrees of trust in the national government, since the reform had emerged as the government's proposal in the first place (cf. also Tedin et al. 2001: p. 279). In any case, what matters is that while there may be rationality in following the advice of others, since in this way a seemingly reliable decision is reached with minimum effort, the ensuing vote choice must not necessarily contribute to maximising one's *own* preferences. All these possibilities will next be tested.

3 Context: The 2004 Referendum on Fiscal Equalisation Reform

Switzerland is a federation with extensive regional and local autonomy. The 26 cantons in particular can raise their own taxes to fund their own policies. While this creates ideal conditions for inter-regional fiscal competition, "[t]he idea is that of a commonwealth of all regions, and of mutuality." (Linder 2010: p. 69) Accordingly, almost since Switzerland's inception in modern form in 1848 have equalisation payments from the Confederation to the cantons and also among the cantons played an important role (Lehner 1971: p. 18). The principle of inter-territorial solidarity remains a core element of Swiss federalism to date, and together with widely shared beliefs in small-scale government and subsidiarity creates a tight cultural web (Braun 2009: p. 334). Linder (2010: pp. 67, 70 and 72) even categorically states that

> Swiss federalism means regional solidarity, not competition. […] This concept of cooperative federalism is different from other ideas of federalism. […] In contrast with the US, the Swiss culture of federalism is not based on competition, nor on voting with one's feet by migrating. By compensating for existing inequalities, Swiss federalism makes it possible for people to stay in their own region.

In other words, without fiscal equalisation there would simply be no Swiss federalism. Over the decades, however, a complicated system of revenue sharing, reimbursements, block grants, and conditional grants and horizontal payments among cantons with and without an equalisation component had emerged (Dafflon 2007). The 28 November 2004 referendum proposed to simplify most of these vertical and (often hidden) horizontal payments into a standalone fiscal

Expected annual changes by canton [CHF/inhabitant]
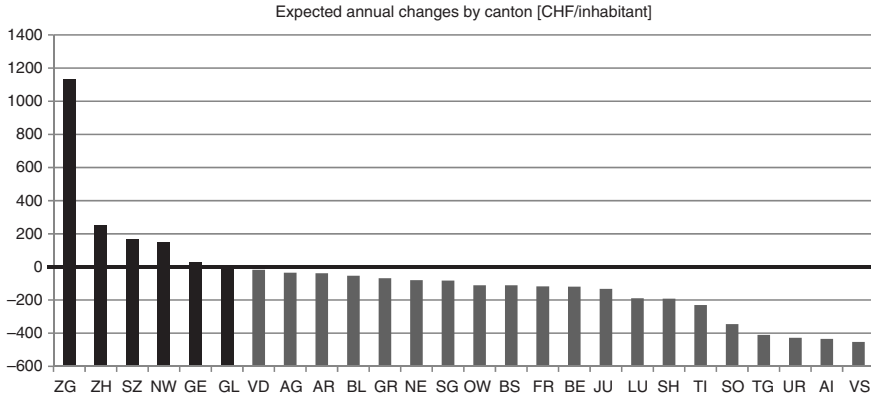
Figure 1: First projection of expected winners and losers.
Note: Calculations are from BR (2001: p. 2500) and include various functional dis-entangle-
ments, adjusted federal direct tax sharing, abolition of old equalisation transfers, and the new
resource equalisation, cost compensation and cohesion fund payments, all based on 1998/99
data. For later data, see Figure 2.

equalisation system. The core issue to be decided that day proposed to categorise
all 26 cantons according to their resource potential[5] and create, in essence, two
groups: net beneficiaries and net contributors, that is those below vs. those above
the nation-wide average. The ranking of cantons and their expected payments
(as recipients or contributors) were publicized well ahead of the 2004 vote and
not generally disputed in their veracity. Figure 1 shows the extent of expected
changes in terms of annual per capita payments to be made (>0) or received (<0)
for each canton (BR 2001: p. 2500). These figures would later change only little.

However, the reform of 2004 did not merely replace one fiscal equalisa-
tion system with another, but brought with it also a different allocation of tasks
(nationalisation of some, cantonalisation of others), all of which entailed a verti-
cal shift of costs and revenue in one or the other direction (BR 2001: pp. 2336–
2337; Braun 2009; Cappelletti et al. 2014). The new fiscal equalisation system
itself consisted of three funds:
1.   Under *resource equalisation*, each canton whose wealth in any given year fell
      below the Swiss average would be entitled to receive payments, while those

5 The resource potential is based on the sum of personal taxable income, personal wealth,
and taxable corporate profits, divided by the number of inhabitants of a canton. To control
for the different rules on deductions in the 26 cantons, the standards of the federal direct tax
law are applied (cf. Art. 3 of the Federal Act on Fiscal Equalisation and Cost Compensation of 3
October 2003, status as of 1 January 2012, at https://www.admin.ch/opc/fr/classified-compila-
tion/20012239/index.html [June 2016]).

above had to contribute. Most payments into that first fund, however, were to be financed by the Confederation (1.4 of a total of 2.4 billion CHF, that is 58.3%; BR 2001: p. 2384).

2. Through *cost compensation*, the special position of cities and mountain areas was taken into consideration. This fund was entirely financed by the Confederation, amounting to a total of 550 million CHF per year (BR 2001: p. 2390).

3. Finally, through the *cohesion fund* those financially weak cantons losing out in the transition from the old to the new system were to be compensated with an additional 430 million CHF per year, of which two thirds paid for by the Confederation and one third by the cantons based on their population sizes (BR 2001: p. 2413).

At the same time, to cover the Confederation's bill the cantons' share in the federal direct tax was reduced from 30 to 17% and all wealth-dependent subsidies were abolished or replaced with population-dependent distribution formulae (BR 2001: pp. 2388–2390). However, both ways to conceive of the reform – as an all-encompassing federal reform or merely as a fiscal equalisation change – produced fairly similar sets of winners and losers, as shown in Figure 2. Here, the annual per capita gains for each canton are projected backwards into the year 2002. But because of the different calculations they entail, these two ways
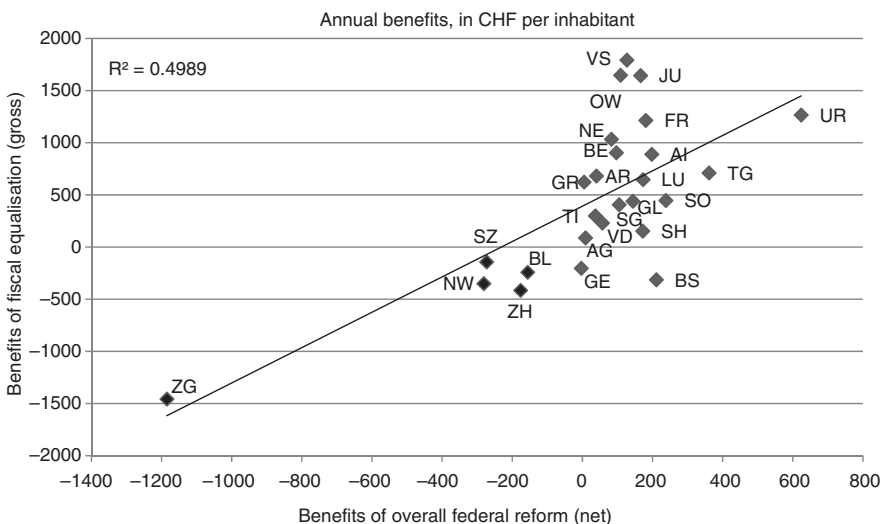
Figure 2: Final projection of net and gross winners and losers.
Note: Own calculations based on data from Fivaz and Ladner (2005: p. 92), BR (2005) and BFS (2016), all for the year 2002.

to appreciate the benefits of the 2004 reform shall be constructed to mean net benefit (=overall gain) and gross benefit (gains only from the fiscal equalisation funds). Henceforth, positive values indicate benefits and negative ones costs.

All these numbers and rankings were widely published and debated before the vote (most authoritatively in BR 2004: p. 9). And because the people eventually had to decide, this reform is an ideal case to test for the relative influence of easy-to-understand monetary benefits versus culturally induced, partisan, and/or value-based preferences for national cohesion and inter-regional solidarity. In particular, all but one[6] of the four parties in government were in favour of the reform (APS 2004), so we can also test for the influence of party recommendations. Switzerland practices a form of semi-direct democracy that combines regular parliamentary elections with an extensive use of issue-specific popular votes. These range from mandatory constitutional amendments through optional vetoes on Parliamentary Bills to binding citizen initiatives on an almost limitless list of issues (Linder and Wirz 2014). This obviates the plebiscitary character referenda have in other countries.

It does not mean, however, that the actors and institutions of representative democracy are redundant. For at the end of the day, still only 7% of all decisions by the Swiss parliament are subjected to an optional referendum (Milic et al. 2014: p. 53). Moreover, the Swiss government is appointed by the two parliamentary chambers, and not popularly elected, and although all constitutional amendments have to be approved by a popular and cantonal majority, they often remain abstract principles that call for an implementing bill to be enacted by parliament. So political parties retain their importance, party competition thrives (Mueller and Dardanelli 2013), and one can reasonably expect for voting to take place along partisan lines. Finally, Switzerland also possesses different cultural groups with often distinct political preferences, particularly as regards state intervention and redistribution (e.g. Kriesi et al. 1996; Linder et al. 2008). In sum, then, the Swiss situation offers an opportunity to shed new light on the explanatory potential of the self-interest hypothesis. We now proceed to the analysis.

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6 The only governing party that recommended a no-vote ahead of the 2004 referendum were the Social-Democrats (SP), for reasons having to do not with the fiscal equalisation per se, but because the party a) feared that by cantonalising social welfare, cantons would "race to the bottom" in terms of service delivery; and because b) their preferred option was material tax harmonisation, not continued tax competition (BR 2004: p. 9). However, six cantonal branches of the SP recommended a yes-vote whereas two more branches issued no recommendation (Hirter and Linder 2004: p. 9). Of the national-conservative SVP, only five cantonal parties contradicted the national party, of the Christian-Democrats (CVP), two, and of the Liberals (FDP), one (APS 2004).

4 Analysis

In this section, we first outline our method and data, explain our operationalisation choices and then present and discuss our findings.

4.1 Method and Data

To estimate the relation between the outcome of and participation at the 28 November 2004 referendum (dependent variables), on the one hand, and rational as well as symbolic factors, on the other, we rely on a hierarchical model. In this hierarchy, the 2764 municipalities – which are both autonomous communes as well as constituencies at the same time – are nested in any one of the 26 cantons. The reason for using a multilevel model is that our core independent variable, the projected benefit from the reform, is tied to the context-level: the units of analysis for all three fiscal equalisation funds are the 26 cantons, while voting takes place in the municipalities. To what extent this allows for socio-tropic voting (Kramer 1983) will be discussed later on. Hence, our varying intercept models assume the coefficients to vary across both cantons and municipalities (cf. Gelman and Hill 2007: p. 237). All models are estimated using *lmer* in *R*.

Accordingly, the data for referendum approval (share of yes-votes from total valid votes) and participation (share of voters from total electorate) are available for each locality and are drawn from Swissvotes (2016). Because their values can only be positive, we have chosen the natural logarithm (Gelman and Hill 2007: p. 59) of both approval and turnout figures. The data necessary for rational cost-benefit calculations (independent variable) are available for the context-level only, i.e. the 26 cantons. They come in different forms: total annual projected benefits or costs per canton in absolute terms, change in the annual benefit or loss in the move from the old to the new system in absolute terms, and both of these on a per capita basis. To make the data comparable, we shall rely on per capita figures and construct two variables:

1. In terms of change, already the first draft bill of the Federal Council (BR 2001) listed the expected beneficiaries and losers of the overall reform (that is, including competence re-allocation). Per capita payments calculated in this way represent the net benefit or cost of the reform. These figures, for the year 2002, include the fiscal consequences of the re-allocation of tasks between the federal and cantonal level (see above and x-axis in Figure 2).

2. While certainly a valid indicator for self-interest as regards the temporal dimension, a second way to measure costs and benefits centres on cross-sectional differences. Here, we look at the fiscal equalisation scheme in

narrower terms – that is, resource equalisation, cost compensation and cohesion fund – and calculate the per capita payments to be received annually by each canton. These represent the gross benefit or cost of the reform (y-axis in Figure 2).

Both have been used in the media by neutral observers and political actors arguing for or against the reform alike.[7] Data are from BR (2005: p. 6280) and Fivaz and Ladner (2005: pp. 61, 81 and 92) for cantonal payments and from BFS (2016) for population statistics.

Rivalling explanations are tested through data on mean income (logged), age, and education; a dummy for the share of German-speaking residents (1 if >50% because of bimodal distribution); the share of Catholics; and the strength of the four governing parties measured through their local-level results in the 2003 federal parliamentary elections (National Council, elected using proportionality). Trust in government, another important "shortcut", we assess through the mean share of yes-votes in eight low-conflict referenda held between 2001 and 2003 (listed in Table A2; cf. also Milic 2008). For more details and data sources, see Table A1. As control variables for which we have data at the local level, we use the logged values of total local population in 2004 and the share of people working in the service economy, commuters and foreigners. These are meant to take into account the urban-rural divide in Swiss politics (e.g. Kübler et al. 2013). At the regional level, we control for the fact that in canton Schaffhausen voting is mandatory through a separate dummy (Bühlmann and Freitag 2006). Table A3 lists descriptive data for all these variables. We next present our results.

4.2 Results

By way of introduction to our findings, the top of Figure 3 shows the distribution of cantons by approval rates of the 2004 fiscal equalisation reform (y-axis) and gross benefits expected at the time of the vote. The bottom graph shows the same by expected net benefits. Already at this level very high bi-variate correlation coefficients can be observed.

Moving on to multivariate estimations, Table 1 shows the results of our first set of models explaining the outcome of the 2004 referendum. Model 1

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7 Total balances, for example, were cited transparently in the NZZ of 26 October 2004, p. 15, and of 9 November 2004, p. 15. Political actors in favour and against debated in the NZZ of 17 November 2004, p. 16, for example.
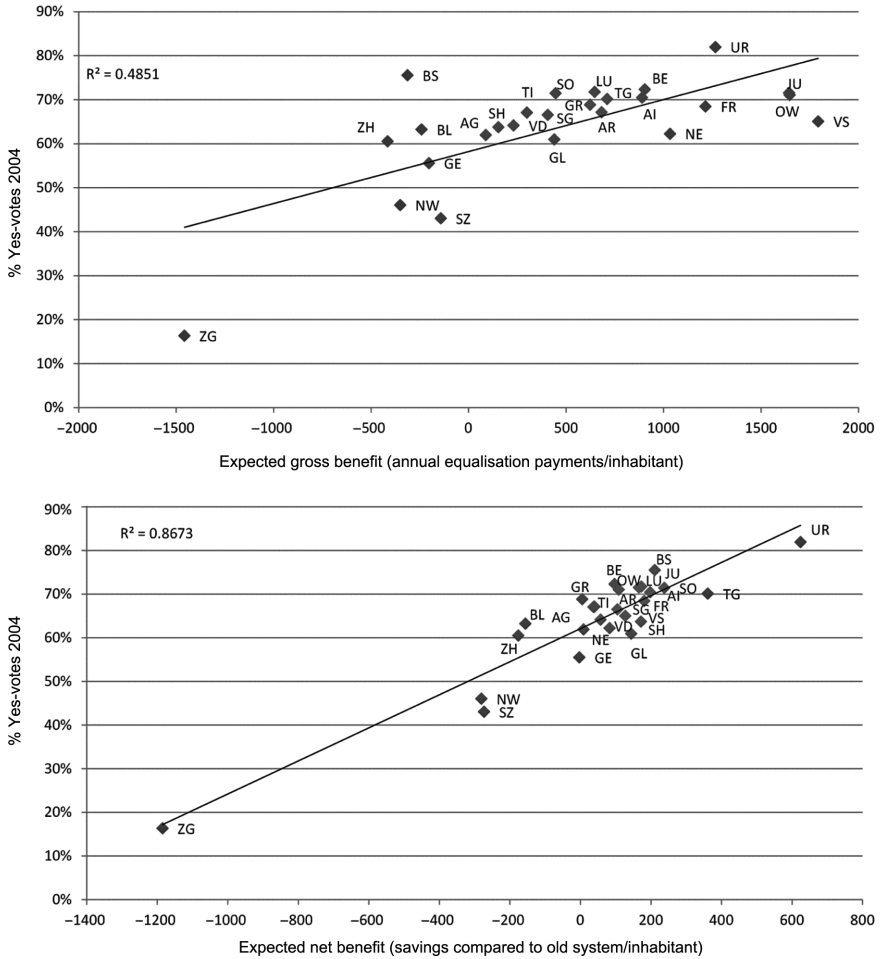
Figure 3: Approval rates in 2004 by expected gross (top) and net (bottom) benefit.
Source: Swissvotes (2016), BFS (2016) and Fivaz and Ladner (2005).

includes only variables measured at the local level. We then include projected net
(model 2) and gross benefits (model 3) of the reform as our core explanatory vari-
ables at context level. We can see that including these core explanatory factors
significantly improves the base model: the more a canton had to gain from the
reform, the more its citizens voted in favour. We also find evidence that trust in
government, education, the share of German-speakers, commuters and of people
working in the service economy, population size, and the strength of the three
main parties (SVP, FDP and CVP) that nationally recommended a yes-vote helped

Table 1: Multilevel models for referendum outcome.

Variable	Model 1	Model 2	Model 3
Constant	3.2125*** (0.2344)	3.1506*** (0.2253)	3.0560*** (0.2323)
Income (log.)	−0.0044 (0.0211)	−0.0020 (0.0210)	−0.0037 (0.0211)
Government trust	0.0099*** (0.0006)	0.0099*** (0.0006)	0.0099*** (0.0006)
FDP	0.0010* (0.0005)	0.0010* (0.0004)	0.0010* (0.0005)
CVP	0.0017*** (0.0005)	0.0018*** (0.0005)	0.0017*** (0.0005)
SVP	0.0011** (0.0004)	0.0011** (0.0004)	0.0011** (0.0004)
SP	−0.0029*** (0.0005)	−0.0028*** (0.0006)	−0.0029*** (0.0005)
Education	0.0028*** (0.0006)	0.0028*** (0.0006)	0.0028*** (0.0006)
German	0.0620*** (0.0102)	0.0581*** (0.0101)	0.0623*** (0.0102)
Population (log.)	0.0160*** (0.0029)	0.0156*** (0.0029)	0.0160*** (0.0029)
Age	0.0003 (0.0003)	0.0003 (0.0003)	0.0004 (0.0003)
Catholics	−0.0006** (0.0002)	−0.0007** (0.0002)	−0.0006** (0.0002)
Service economy	0.0004** (0.0001)	0.0004** (0.0001)	0.0004** (0.0001)
Commuters	0.0004* (0.0002)	0.0004* (0.0002)	0.0005* (0.0002)
Foreigners	−0.0006 (0.0004)	−0.0006 (0.0004)	−0.0006 (0.0004)
Net benefit/100	–	0.1048*** (0.0080)	–
Gross benefit/100	–	–	0.0325*** (0.0069)
SD cantons	0.3488	0.1208	0.2545
SD residuals	0.1174	0.1174	0.1174
AIC	−3543	−3586	−3549
J cantons	26	26	26
N communes	2701	2701	2701

Gross and net benefit variables have been divided by 100 to produce a meaningful scale.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (calculated using the normal approximation).

approval, while the no-vote recommendation by the Socialists and the share of Catholics had a negative impact. No significant influence could be discerned for income, age and the share of foreigners.

Whether one's own canton benefited from the reform, trust in the federal government and a significantly weaker level of support among SP sympathisers were also shown to have mattered the most in the representative post-vote survey (Hirter and Linder 2004: pp. 10–12). As hypothesised, rational cost-benefit calculations thus seemed to have mattered at least partially *and* in controlling for rivalling cultural, structural and ideological factors.

However, to fully interpret our findings we have to take into account that the dependent variable has been logarithmised; this can now be undone through exponentiating the regression coefficients with *e*. Applied to the coefficient for "Net Benefit/100" in model 2, this results in $e^{0.1048} = 1.1105$. In other words, the share of yes-votes in a canton would increase by 11.05% for every additional 100 CHF net benefit per inhabitant. For coefficients close to 0, the values can also

directly be interpreted as the size of relative change: For example, in model 2 the difference between German- and French-speaking municipalities is around 5.8%, all else equal. Note, however, that because the dependent variable is measured in percentages, the resulting coefficients cannot be summed but must be multiplied by the mean approval rate (65.8%). So for every increase in 100 CHF net benefit per inhabitant, approval rises by 7.27%,[8] and for every 100 CHF gross benefits by 2.17% – and this in controlling for income, government trust, party strength, education, language, size, age, religion and socio-demographic composition. Given the straightforward monetary implications carried by the 2004 reform proposal, this result may seem trivial. However, the fact that it is robust to the inclusion of several variables that commonly dominate voting behaviour (notably education and income, but also cultural factors such as language and religion) is still good news for scholars struggling to find such connections in electoral and/or survey analyses (Lewin 1991: p. 58; Lau and Heldman 2009: p. 535).

Nevertheless, because of their different nature and scale, the various independent variables cannot be directly compared to each other based on Table 1 alone. Also, the *p*-values of the coefficients were calculated using one of many methods (normal approximation) and are thus subject to debate. The first problem can be addressed through standardisation (Gelman and Hill 2007: p. 56), while a simulation of the model enables the graphic display of coefficients and standard errors. Figure 4 shows the result of a 1000-fold simulation of models 2 and 3 with all variables standardised. We can now more clearly appreciate the strong explanatory power of the projected benefits from the reform, more so even for equalisation payments alone (gross benefit) than for overall gains (net benefit), although for the former also the confidence intervals are much larger. Government trust comes a distant second, closely followed by party strength (especially of the CVP and SP), language, religion, education, and population size.

At this point it is also worth remembering that even some Socialists party branches – namely those located in net-recipient cantons such as Uri, Thurgau or Berne – had recommended a yes, whereas the branches of FDP, CVP and SVP located in Zug (by far the strongest net contributor) had all recommended a no. We regard this as another sign that rational cost-benefit calculations mattered not only more than party ideology, but that also parties *themselves* are subject to similar cost-benefit rationalities.

Our second hypothesis on participation is tested next: is turnout driven by either very large benefits or costs? To test for this curvilinear effect, the square of our two core independent variables, gross and net benefit, is included in models 5 and 6, after model 4 which only comprises local data (see Table 2). Nevertheless,

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8 That is, $e^{0.1048} * 65.80 - 65.80 = 7.27$ and $e^{0.0325} * 65.80 - 65.80 = 2.17$, respectively.
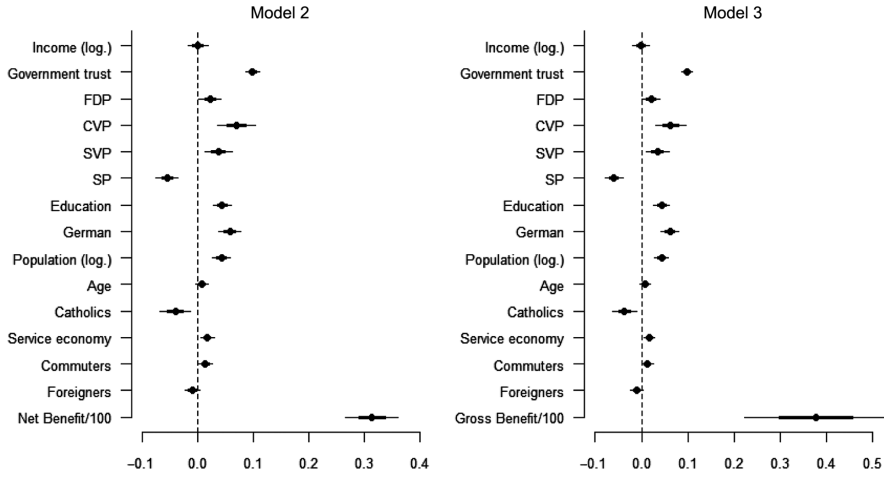
Figure 4: Simulated coefficients and standard errors for models 2 and 3 (outcome). Note: Dots mark the estimation of models 2 (left) and 3 (right) with 68% (thick line; ±1 standard error) and 95% confidence intervals (thin line; ±1.96 standard errors).

**Table 2:** Multilevel model for referendum participation.

Variable	Model 4	Model 5	Model 6
Constant	2.2592*** (0.3321)	2.2218*** (0.3320)	2.2254*** (0.3331)
Income (log.)	0.1224*** (0.0314)	0.1213*** (0.0314)	0.1209*** (0.0315)
Education	0.0094*** (0.0008)	0.0095*** (0.0008)	0.0094*** (0.0008)
Population (log.)	−0.0367*** (0.0043)	−0.0365*** (0.0043)	−0.0365*** (0.0043)
Age	0.0037*** (0.0004)	0.0037*** (0.0004)	0.0037*** (0.0004)
Catholics	0.0000 (0.0003)	0.0000 (0.0003)	0.0000 (0.0003)
Service economy	0.0005* (0.0002)	0.0005* (0.0002)	0.0005* (0.0002)
Commuters	−0.0004 (0.0003)	−0.0004 (0.0003)	−0.0004 (0.0003)
Foreigners	0.0004 (0.0006)	0.0004 (0.0006)	0.0004 (0.0006)
German	0.0145 (0.0149)	0.0131 (0.0147)	0.0145 (0.0147)
Compulsory voting		0.5072*** (0.1345)	0.5331*** (0.1332)
Net benefit/100		0.0044 (0.0116)	
Net benefit/100²		0.0028* (0.0013)	
Gross benefit/100			−0.0088* (0.0044)
Gross benefit/100²			0.0009** (0.0003)
SA cantons	0.1671	0.1271	0.1249
SA residuals	0.1803	0.1803	0.1803
AIC	−1362	−1351	−1348
J cantons	26	26	26
N communes	2701	2701	2701

Gross and net benefit variables have been divided by 100 to produce a meaningful scale.

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$ (calculated using the normal approximation).

here the results are less meaningful than for outcome. Although variation across cantons decreases by 44% and 42% in models 5 and 6,[9] most of that effect is driven by the compulsory-voting dummy. But at least a U-shaped relationship between projected gains/losses and participation can be demonstrated to exist. The standard variables predicting turnout all point in the right direction and remain unaffected by the context variables, thus testifying to the robustness of our models.

As before, to gauge the relative importance of all of these factors, Figure 5 displays the result of a 1000-fold simulation with standardised variables. Here, we see that the square of expected benefits from the fiscal equalisation schemes (gross benefit) exerted almost as strong an effect as compulsory voting. Income, education, age and population size, all continue to point in the correct direction. The same effect of age and education was confirmed by a representative post-vote survey (Hirter and Linder 2004: p. 7). However, apart from education and population size, in our models they all clearly rank *after* gross benefits squared in terms of relative importance. To conclude this section we can, in paraphrasing Lau and Heldman (2009: p. 524),[10] state that putting a gun to citizens' heads is as effective in making them turn out to vote as offering them large sums of money.
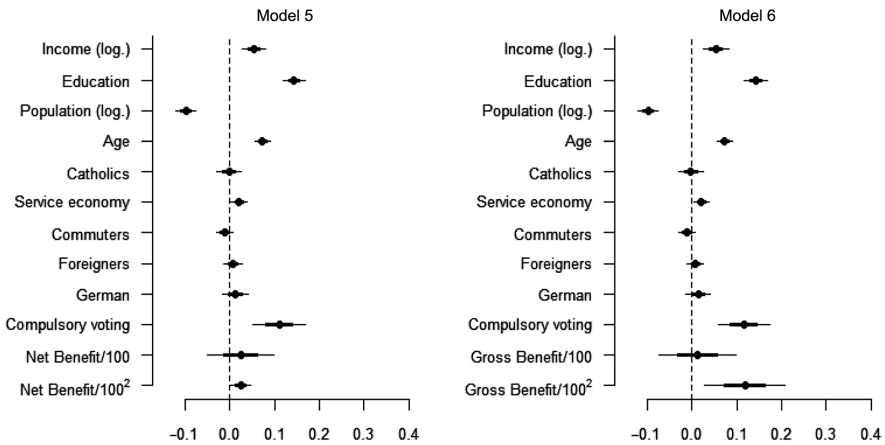
Figure 5: Simulated coefficients and standard errors for models 4 and 5 (turnout).
Note: Dots mark the estimation of models 5 (left) and 6 (right) with 68% (thick line; ±1 standard error) and 95% confidence intervals (thin line; ±1.96 standard errors).

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9 That is, $1-0.1271^2/0.1671^2 = 0.4215$ and $1-0.1249^2/0.1671^2 = 0.4413$, respectively.
10 Their original statement, alluded to above already, reads as follows: "In modern democracies, politics rarely puts a gun to citizens' heads or offers them large sums of money for a particular behaviour."

5 Discussion and Conclusion

Federations are faced with the task of maintaining unity while upholding diversity. One way to do so is through fiscal equalisation, which should help disadvantaged regions achieve levels of public service delivery similar to richer areas (Beramendi 2012). This makes fiscal equalisation a cardinal element of inter-regional solidarity and, hence, of nation-building and societal integration, particularly in a country such as Switzerland that lacks a single, common language or religion (Braun 2009: p. 334; Linder 2010: p. 67). On could therefore assume that, given a chance to vote on such an important element of federalism, selfish considerations are relegated by the primacy given to "feelings of country-wide togetherness and solidarity" (Béland and Lecours 2014: p. 313).

In Switzerland, the fiscal equalisation reform of 2004 was approved by a clear popular majority of 64.4% and 23 cantons against only three: Schwyz, Nidwalden and Zug. Although the vote also included other issues, most notably a cantonalisation of social welfare opposed by left-wing circles, the monetary component was its central aspect.[11] Our analyses have shown that the outcome of the vote is no coincidence, since the three opposing cantons were also the ones for whom the reform entailed the highest net costs (see Figure 2 above). In Zug in particular, where approval was lowest (16.3%) and turnout highest (52.4% – almost as high as in Schaffhausen with 57.2%, where voting is compulsory), each inhabitant had to shoulder an additional 1500 CHF per year in payments to other cantons. By contrast, in canton Uri 81.9% voted yes – hardly surprising, as each inhabitant of that canton was to receive 1266 CHF per year in unconditional payments.

Our multilevel analyses, performed with data from both the local and the cantonal context level, have confirmed the significant impact of such straightforward cost-benefit cogitations. The effect of rational self-centredness not only holds against cultural, social, or partisan factors but has even shown itself more important: A 100 CHF increase (decrease) in net per capita payments was likely to lead to an increase (decrease) in cantonal approval by 7.27%. What is more, also voting participation seems to be driven by cost-benefit calculations: the size of the expected gross benefit or cost has positively stimulated participation to quite a large extent – in fact, almost equivalent to compulsory voting. We also found other factors to matter for outcome and turnout, namely: government trust, party cues, language and religion for outcome; income, age and compulsory voting for turnout; and education and size for both. However, rational cost-benefit projections almost always clearly outweigh these factors, to the extent that even some

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11 Note that even this re-distribution of powers between Confederation and cantons was expressed in monetary terms at the time of the vote and is included in our operationalisation of net benefit.

cantonal party branches in rich or poor areas have deviated from the national party in how they recommended voters to behave *in the theorised direction.*

A critical reader should by now have objected two crucial aspects of our analysis. First, are we not committing an ecological fallacy by drawing individualist inferences from data on municipalities? Second, are our findings really evidence of rational self-interest, or is not also a certain degree of socio-tropic behaviour in place (cf. also Verhaegen et al. 2015), given that the benefits (costs) of the reform take place at the context level, i.e. the cantonal polity? The first objection can partly be countered by drawing on the cited post-vote survey-evidence, where expected reform benefits and trust in the federal government equally emerged as significant predictors. While surveys are obviously fraught with other kinds of problems (social desirability bias, especially as regards selfish monetary benefits; over-reporting; lack of representativeness; or the fact that attitudes do not correspond to behaviour), in this case the one survey available and our own findings are at least largely congruent: both at the aggregate and at the individual level, self-interest was present.[12]

But what about the requirement that only *self-centred* benefits count as rational choice as defined above and not also public-regarding rationality (Shabman and Stephenson 1994: p. 1175)? Socio-tropic behaviour, even if fully rational, would be present if voters behaved in a certain way because they thought the community at large was to benefit, and not (or at least not exclusively) they themselves (Tedin et al. 2001: p. 277). If that community is the country as a whole (Kramer 1983: p. 93), then socio-tropic voting is not present in our case; however, can we speak of socio-tropic voting in the case of *cantonal* benefits? We do not think so, for three reasons: first, before the referendum the costs and benefits were always spoken of in per capita terms, meaning that even if voters thought about what was best for their canton, the structure of the vote forced them to make the individualist connection. Second, given Switzerland's highly decentralised structure, notably but not only in the fiscal sphere, increased unconditional transfers to the cantonal level automatically mean personal benefits, either via better public services or lower tax burdens. And third, even if voters thought more strongly about their canton than their own person, given the small average size of those polities and their stability, one could still argue that they represent a "clearly identifiable group" as we have defined above (cf. also Kramer 1983: p. 106).[13]

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12 A further downside of survey designs that is specific to the object studied here is lack of territorial differentiation: due to typically small sample sizes, surveys can only inadequately take profit of the full variation present in actual electoral results (cf. also Vatter and Heidelberger 2013; Stadelmann et al. 2014).

13 The pejorative term for this behaviour, in Swiss vernacular, is "Kantönligeist" – literally, cantonal spirit, or *cantonalism* (Mueller 2013).

So where does all this leave us? While fiscal equalisation is the price to pay for maintaining diversity within unity, our analyses suggest that to succeed, this public good must be sold as a private benefit. Of course, this is only possible if the circle of beneficiaries is drawn wide enough to produce a majority. This was, after all, the reason for creating the cohesion fund that would lift several cantons into the positive figures (Cappelletti et al. 2014). At the same time, having different funds from which different cantons would profit enabled most of them to claim benefits from one and/or the other. This logic resembles the package deal invoked in a recent analysis by Hessami (2016: p. 266).

However, we should be careful not to overstate the importance of rational self-ishness. While the only three cantons that rejected the reform were prospective net contributors, our analyses suggest that they did so also because they are predomi-nantly Catholic (i.e. sceptic of any kind of state intervention) but despite being Ger-man-speaking (i.e. in favour of subsidiarity). Also party strength, government trust, size, education and economic structure were significant factors. So while both the prospective winners and losers acted rationally and in their own interest, it would be naive to claim that this happened in isolation of cultural or other influences.

Appendix

Table A1: Codebook.

Variable	Operationalisation	Source
Dependent variables		
%-yes votes (log.)	Share of yes-votes in the fiscal equalisation referendum of 28 November 2004	Swissvotes (2016)
Turnout (log.)	Share of valid votes from total of votes cast in the fiscal equalisation referendum of 28 November 2004	Swissvotes (2016)
Independent variables (local level)		
Income (log.)	Mean per capita income of resident population; year 2003	ESTV (2016)
Age	Share of people above 65 years old; year 2000	BFS (2016)
Education	Proportion of people with tertiary education from total resident population between 26 and 65 years old; year 2000	BFS (2016)

Table A1 (continued)

Variable	Operationalisation	Source
German	1 if the share of German-speaking resident is 50% or higher, else 0; year 2000	BFS (2016)
Catholics	Share of roman-catholic residents; year 2000	BFS (2016)
Party strength	Votes shares (FDP, CVP, SP and SVP) at the 2003 federal parliament elections (National Council)	BFS (2016)
Trust in government	Meany yes-share in 8 low-conflict referenda voted between 2001 and 2003 (see also Table A2)	Milic (2008), Swissvotes (2016)
Population (log.)	Total resident population; year 2004	BFS (2016)
Services	Share of people working in the service sector, year 2001	BFS (2016)
Commuters	Share of commuters from total of resident workforce and students, year 2000	BFS (2016)
Foreigners	Share of foreign residents; year 2000	BFS (2016)
Independent variables (regional level/context)		
Net benefit	Absolute difference in CHF between old and new federal system per canton divided by its population	Fivaz and Ladner (2005), BR (2005)
Gross benefit	Expected payments arising out of the new fiscal equalisation system, in CHF per cantonal inhabitant	Fivaz and Ladner (2005), BR (2005)
Compulsory voting	1 for Schaffhausen, where voting is compulsory, 0 for all other contexts	Bühlmann and Freitag (2006)

Table A2: Low-conflict referenda, 2001–2003.

No.	Date	Title	Pro-Government (%)
475	4.3.2001	Citizen's initiative "For lower-priced medicines"	69.1
479	10.6.2001	Federal decree of 15 December 2000 on withdrawal of the duty to have permission to create new bishoprics	64.2
488	2.6.2002	Citizen's initiative "For mother and child – protection of the unborn child and assistance for mothers in need"	81.8
490	22.9.2002	Federal law on the electricity sector	47.4
493	9.2.2003	Federal decree on amendment to citizens' rights	70.4
494	9.2.2003	Federal law on adjusting canton's contributions to hospital costs	77.4
495	18.5.2003	Amendment to the Federal law on army and military administration	76.0
496	18.5.2003	Federal law on civil defence	80.6

Source: Milic (2008), English titles from http://www.c2d.ch/ [October 2016].

Table A3: Descriptive statistics.

Variable	*n*	Min	Max	Mean	Median	SD
%-yes votes (log.)	2764	2.2	4.6	4.2	4.2	0.2
Turnout (log.)	2764	2.3	4.4	3.6	3.6	0.2
Income (log.)	2730	10.4	12.5	11.0	11.0	0.2
Age	2764	4.1	19.3	25.5	24.1	9.8
Education	2764	0.0	60.0	18.5	17.3	7.6
German	2764	0	1	0.6	1	0.5
Catholics	2764	0.5	100.0	43.4	34.1	28.5
Population (log.)	2764	3.0	12.7	6.9	6.9	1.3
FDP vote share	2764	0.0	90.8	17.0	15.3	10.9
CVP vote share	2764	0.0	88.3	17.0	9.3	18.6
SVP vote share	2764	0.0	93.0	29.5	28.8	15.9
SP vote share	2764	0.0	88.0	19.9	19.2	10.2
Trust in government	2764	32.8	66.7	69.4	70.0	5.0
Services	2710	0.0	100.0	46.6	45.5	20.9
Commuters	2763	1.1	95.7	61.7	64.3	14.5
Foreigners	2764	0.0	53.6	11.4	8.9	8.8
Gross benefits/100	26	−14.57	17.93	5.46	4.47	5.77
Net benefits/100	26	−11.85	6.24	0.67	0.57	1.49
Compulsory voting	26	0	1	0.0	1	0.1

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