

Trouble in paradise: polarisation and the popular vote in Switzerland

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In the wake of the June 2016 Brexit vote, European politicians of all stripes were suddenly made aware of the polarizing power of the popular referendum. Several of them have, in recent years, attempted to harness its power, with varying success: Catalan autonomists lost in a 2017 independence vote deemed illegal by the Spanish government, while Hungarians voted by 98 to 1 to forbid resettlement of refugees by the EU – albeit with a legally insufficient turnout of 44

One country initially escaped notice: Switzerland. With more than a century's worth of popular votes, on matters trivial and vital alike, the Swiss confederation (*Confoederatio Helvetica*, abbr. CH) continues to hold such votes four times a year while maintaining a bicameral parliament of representatives. To eager then-populists and those who fear them, one question came naturally: what makes Swiss semi-direct democracy tick?

Swiss politics traditionally follows a very strict rule of consensus called collegiality: the seven members of the Federal council which make up the executive branch of government are bound to stick by a decision once it is taken. This means issues which are too decisive to reach consensus, like immigration or religion, are often taken up as initiatives and referendums instead, mechanisms which allow the Swiss people to directly propose changes to the constitution or decide on matters debated in Parliament. The Swiss People's Party (SVP) in particular has become proficient at the use of these tools, to the detriment of bilateral EU-Swiss relations.

The quarterly popular votes usually concern 1 – 5 objects on the federal level, plus cantonal and municipal issues (which we set aside for this analysis). For example, last year, Swiss people were asked to decide (among other things): whether to extend existing laws on gambling to the internet (final result: 72.9% in favour); whether to limit the practice of de-horning cows (54.7% against); and whether to build a second lane in the Gotthard tunnel through the Alps, connecting Uri and Ticino cantons (57% in favour).

While asking the entire population to vote so frequently on seemingly mundane matters can seem unnecessary, what happens when the same electorate is presented with a 'polarising' vote? One measure of polarisation proposed in Sigelman and Yough [1978] is the polarisation score (PS), which combines voter participation (as a share of all registered voters) and univocity, that is, how far the highest vote share is from 50%:

$$PS = \text{Participation} \times (1 - 2U)^2, \quad (1)$$

where

$$U = \text{Highest vote percentage} - 50\%$$

The polarisation score is measured between 0 and 1 and increases as votes become more evenly matched and if voter participation increases. For example, the cow dehorning initiative which mobilised 48% of registered voters would get a $0.48 \times (1 - 2(0.547 - 0.5))^2 \approx 0.01$ polarisation score. Another recent initiative, which would protect married couples – specifically defined as involving a man and a woman – from excessive taxation, achieved a high PS of $0.63 \times (1 - 2(0.491 - 0.5))^2 \approx 0.61$.

The polarisation score works well when voter participation is similar over time, but Switzerland’s 100 years of votes have seen a varying degree of voter enthusiasm. In the 19th century, plebiscites were obligatory by law in many cantons, with offenders fined the equivalent of 30\$ for each failure to vote. Later, during the tumultuous period of war and revolutions at the beginning of the 19th century, voter participation was also high. During wartime, on the other hand, the number of initiatives and voter participation markedly decreased, perhaps as part of a strategy to close ranks in the face of external threats. Overall, participation dropped in the years following the second World War but has steadily climbed through the 1990s and 2000s.

To get a better overall look, it seems reasonable to compare participation rate in a given vote to the average rate over a decade. More precisely, we first scale the participation rate by subtracting the decade mean and divide by the decade standard deviation. The result, Z , of this scaling is then transformed back to a percentage by computing $\Phi(Z)$, where Φ is Student’s t distribution function with one degree of freedom. The quantity $\Phi(Z)$ replaces the participation in the definition (1) of the polarisation score.

It stands to reason that the Swiss system of direct democracy is truly put to the test when polarisation scores are high. By surveying records of all popular initiatives in the 1900-2018 period, we have extracted the most polarising votes in each decade for every canton (state) of Switzerland, as well as for Switzerland generally. The table below displays the ten most polarising votes on the national level across the entire data. The results of older votes were unfortunately not published in English, so we have translated the titles and added an explanatory note where relevant.

Table 1: Most polarising votes in Swiss history ordered by date. Type includes popular initiatives (PI), federal decrees (FD) or federal laws (FL).

Date	Type	Title	Note	Polarisation	Outcome
1926-12-05	FD	Establishing a national emergency grain supply	wartime measure	0.748	Rejected
1931-12-06	FL	Tobacco tax		0.779	Rejected
1947-07-06	FD	Constitutional reform concerning the economy	submitted 1937	0.750	Accepted
1961-03-05	FD	Fuel tax to finance national roads		0.742	Rejected
1970-06-07	PI	“Against foreign influence”	limit foreigner pop. to 18%	0.776	Rejected
1992-12-06	FD	European Economic Area	ratifies EEA treaty	0.931	Rejected
2004-09-26	PI	“Postal services for all”	against privatisation	0.778	Rejected
2004-09-26	FD	Citizenship to third-generation immigrants		0.740	Rejected
2014-02-09	PI	“Against mass immigration”		0.788	Accepted
2016-02-28	PI	“Against penalisation of marriage”		0.841	Rejected

Some of the most controversial popular votes are considered polarising at the national scale, even if voters in most of the cantons are firmly decided on whether or not to approve them. Consider the 1977 popular initiative entitled “für die Fristenlösung

(beim Schwangerschaftsabbruch)”, which aimed to resolve differences between cantons regarding abortion. A Federal committee charged with deciding on the continued criminalisation of abortion having failed to come to an agreement, those in favour of decriminalisation collected signatures and launched an initiative. The result is a sharp divide between conservative and liberal cantons, as seen in Figure 1. The polarisation score of this initiative on the national level is around 0.717, which is consistent with the contrasts visible on the map. The initiative was rejected overall, as did all others until a 2002 federal decree decriminalised abortion until the twelfth week of pregnancy.

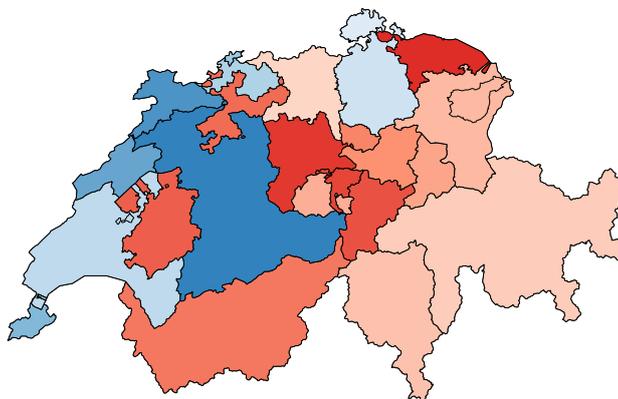


Figure 1: Outcome of the 1977 popular initiative to decriminalise abortion. Blue cantons accepted the initiative while reds rejected. Deeper shades indicate increasing canton-level polarisation in either direction. Cantons which accepted the initiative include most high-population areas, including the cities of Zürich, Bern, Basel and Geneva.

Polarisation at the Swiss level is symptomatic of many divisions, such as the country’s linguistic barrier between French- and German-speaking cantons; the cultural divide between Protestant and Catholic-dominated cantons; and the opposition between rural and urban populations. All of these likely contribute to the outcome of the 1977 initiative displayed above.

As it turns out, for many types of data, a theorem exists that describes the limiting behaviour of the highest values in each time interval. More precisely, if

$$PS_{1900-1910}, \dots, PS_{2010-2020}$$

are the highest polarisation scores recorded in each decade of our data, then statistical literature suggests the so-called generalised extreme value (GEV) distribution models the values well, as long as there are enough votes in each decade. The GEV is also commonly used to model maxima of wind speeds, rainfall, or wave heights, and others for which the highest value in a certain timespan is what matters most; see Coles [2001] for more examples.

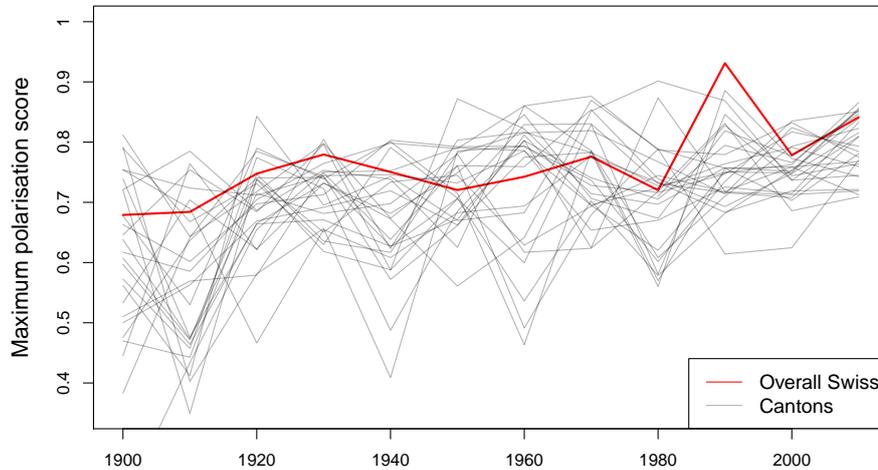


Figure 2: Maximum polarisation for votes 1900-2018, with maxima taken over each decade.

In the context of the Brexit vote mentioned at the beginning of this article, we may wonder: how often does Switzerland face a vote as polarising as the Brexit referendum?

There have been only two other popular votes in the United Kingdom's history: the 2011 Alternative vote referendum, with 42.2% participation, and the 1975 referendum on the European Economic Area with 64.2%. This means we can't compare the 72.16% voter participation of Brexit with other votes of the decade, as we did with Swiss plebiscites. However, we can try to substitute this lack of other data points with the UK general election turnouts of 65.1%, 66.1% and 68.7% for 2010, 2015 and 2017 respectively. Putting all of these voter participation rates together leads to an adjusted Brexit voter participation of 0.793 and a PS of 0.685.

If the GEV model alluded to above is correct, an estimate of the probability of observing a Swiss vote with polarisation higher than this score is around 0.126 (in any given year of this decade). Another way of saying this is that such a vote would happen around once every 8 years on average (if each year is considered separate and independent from every other).

However, this number is quite unreliable because there isn't much data to perform the analysis (12 decade maxima). Instead of using maxima, we could follow a 'peak over threshold' as in a recent *Significance* writing competition article by Anastasia Frantsuzova ('Queen Elizabeth II - an extreme event monarch?', 2017) which would use more data points. That being said, the political events of recent years in Switzerland indicate it is a reasonable forecast – in the last five years alone, several controversial initiatives on subjects as varied as buying military jet planes or raising women's retirement age are evidence of strong polarisation in the Swiss electorate.

A word of caution regarding this analysis is needed, however, as the polarisation score defined above measures only one type of political activity, namely voting. It

doesn't take into account media attention, or the political activity of the numerous foreign citizens residing in Switzerland (one-quarter of the population in 2017) who are not eligible to cast their vote. Moreover, some initiatives polarise the electorate merely by being submitted to the popular vote, even if they are overwhelmingly rejected - such is the case of several initiatives aiming to abolish compulsory military service. Finally, the number of matters put to the popular vote has steadily increased, and the frequency of polarising votes with it, as Figure 2 attests.

Inspecting the individual votes closely would give further evidence that the Swiss system is just as sensitive to 'populism' as any other, but using the mechanism of popular votes more frequently might clarify its role as a tool for citizen expression in parallel to representative democracy.

References

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