

## Beyond Work Ethic: Religion, Individual, and Political Preferences<sup>†</sup>

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*We investigate the effect of Reformed Protestantism, relative to Catholicism, on preferences for leisure, and for redistribution and intervention in the economy. We use a Fuzzy Spatial Regression Discontinuity Design to exploit a historical quasi-experiment in Western Switzerland, where in the sixteenth century a hitherto homogeneous region was split and one part assigned to adopt Protestantism. We find that Reformed Protestantism reduces referenda voting for more leisure by 14, redistribution by 5, and government intervention by 7 percentage points. These preferences translate into higher per capita income as well as greater income inequality. (JEL D12, D31, D72, H23, N33, Z12)*

*St. Paul's 'He who will not work shall not eat' holds unconditionally for everyone. Unwillingness to work is symptomatic of the lack of grace. Here the difference from the mediaeval view-point becomes quite evident.*

— Max Weber, 1930

Can different religions lead to different economic or political preferences? Max Weber famously claimed in his 1904 classic “The Protestant Ethic and the Spirit of Capitalism” that, in contrast to Catholicism, “Ascetic Protestantism” had cultivated a set of preferences conducive to the establishment of capitalism in northern Europe. This includes on the one hand the “work ethic” hypothesis, examined by a lively recent literature in economics, whereby Protestantism is claimed to have nurtured preferences for hard work and thus resulted in greater economic prosperity. It also includes, hitherto less discussed, stronger preferences for self-reliance, and hence less support for redistribution and government intervention in the economy.

Empirical results on the “work ethic” hypothesis by Cantoni (2010), Becker and Woessmann (2009), and Spenkuch (2010) are mixed. Common to all three papers however is their focus on Germany, whose Protestants adhere mostly to the

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Lutheran variant of Protestantism, whereas Weber (1930) makes it clear that his famous hypothesis concerns explicitly not the Lutheran, but the Reformed variant, born with the Swiss rather than the German Reformation. As laid out in chapter II of his classic, he counts as Reformed the variants of Calvinism, Pietism, Methodism, and Baptism.<sup>1,2</sup> This is the first dimension in which we add to the existing literature: we focus specifically on Switzerland with its Reformed variant of Protestantism. In fact, we focus precisely on that region in the South West, which was first converted to Calvinism and from where Calvinism later spread to other countries such as England or the New World.

Our second contribution to the economic literature on the work ethic hypothesis is that we use voting in referenda as direct measures of preferences. Studies on the subject often examine the relationship between outcomes such as economic performance and religious affiliation. But lacking data on attitudes, they cannot provide direct evidence on the work ethic channel posited by Weber.

But this paper goes beyond providing another evaluation of the work ethic hypothesis with a different sample and identification strategy: based on an analysis of Weber (1930) as well as more recent work in the other social sciences, we show that Max Weber's classic includes hypotheses not only about work ethic, but also about political preferences, with far-ranging implications for the choice of political institutions and therewith also on economic outcomes like income inequality. In particular, this literature suggests that, relative to Roman Catholicism, Reformed Protestantism has curbed preferences for redistribution and for government intervention in the economy.

Switzerland is well suited to study how religion affects politics and the economy as it is one of the few countries exhibiting genuine within-country variation in religion. In the early modern period, religious unity was critical for political stability. Hence, most of the emerging European territorial states enforced adherence to a single religion on what eventually became the national level. In Switzerland, however, cantons were the most important political unit, and consequently religious uniformity was enforced at the canton-level. Early in the sixteenth century, some cantons adopted the Reformation whereas others did not, which leaves us with both a treatment and a control group.

Switzerland, however, exhibits not only religious variation, it is also a geographically and institutionally diverse country. As institutions and geography affect long-run economic performance, they potentially confound the results, and the decision to adopt the Reformation was indeed correlated with geography and institutions. Almost the entire rural and mountainous center of the Confederation remained Catholic. Among the urban Confederates, those ruled by patricians were more likely to remain Catholic whereas cities with a guild regime embraced Protestantism. To address this issue, we focus on an institutionally and geographically homogeneous subset of the Confederation: the area in western Switzerland that is comprised of the present day cantons of Vaud and Fribourg.

<sup>1</sup> See especially pages 41, 42, 44, and 46.

<sup>2</sup> A recent paper which deals more explicitly with the difference between Reformed and Lutheran Protestantism is Bai and Kung (2011), which analyzes the impact of Protestantism in China.

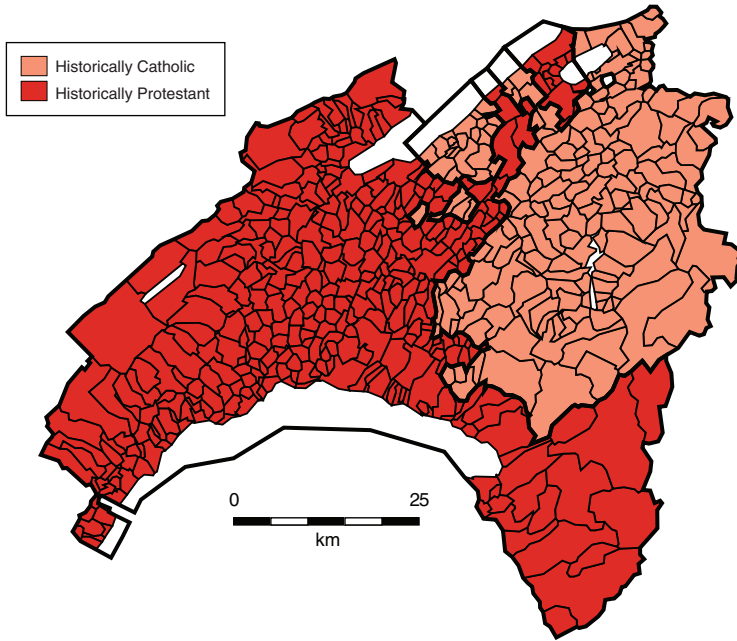
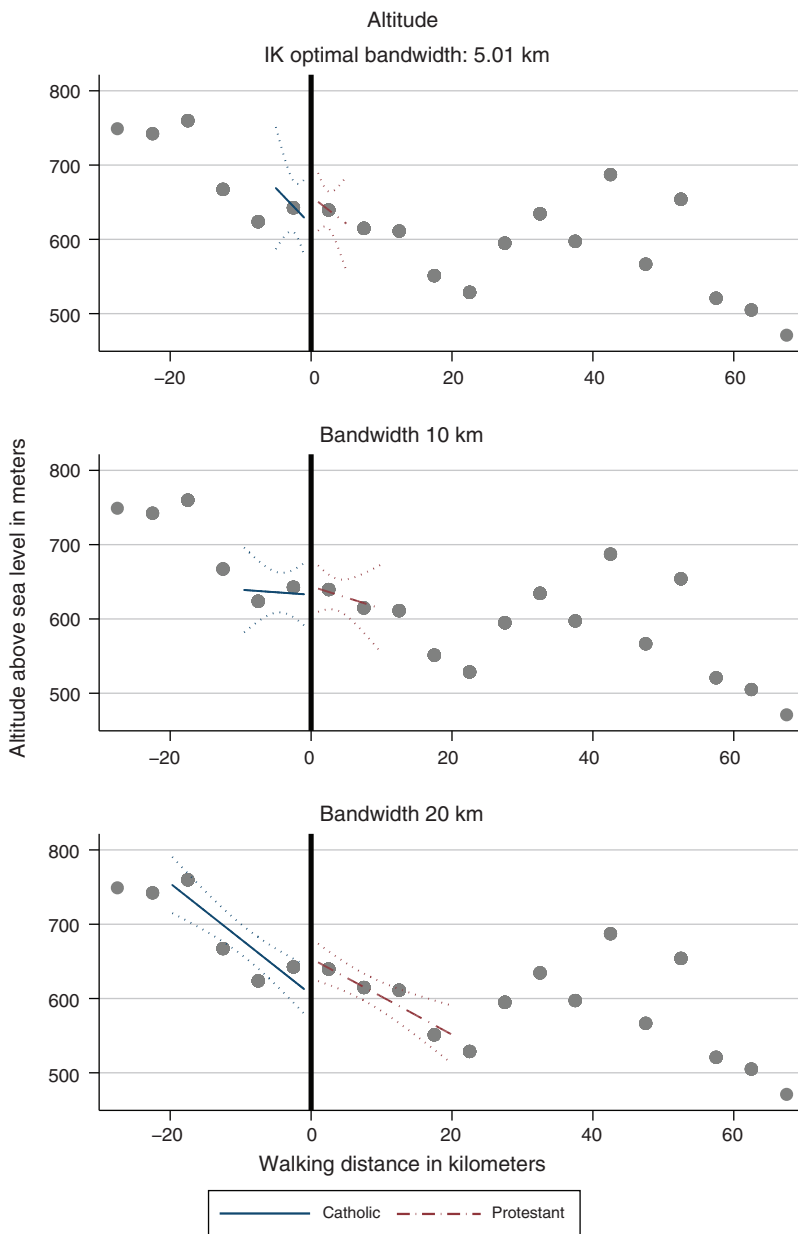


FIGURE 1. CATHOLIC AREA IN THE NORTHEAST, PROTESTANT IN SOUTH AND WEST;  
LAKE GENEVA IS IN THE SOUTH AND LAKE NEUCHATEL IN THE NORTH

In this setting, the Reformation process led to exogenous variation in religion. Until 1476, the region was ruled by the duke of Savoy. Then, however, the Swiss defeated Burgundy and its ally Savoy in the Burgundy Wars. The peace negotiations awarded the eastern half of the region to the city republic of Fribourg, whereas the western part fell to the city republic of Berne. When Protestant ideas spread in the 1520s the Fribourg magistrates decided to stay with the old faith, whereas Berne eventually adopted the new religion. By contrast, when Berne in 1536 finally conquered what is now the canton of Vaud, it imposed Protestantism on its new subjects. Thereby we rule out self-selection into religious form.

Figure 1 shows the area of interest, covering only 4,883 square kilometers ( $\text{km}^2$ ) or about 4.5 percent of Swiss territory. This makes the entire area quite homogeneous. The exceptions are more mountains in the East of Fribourg (see Figure 2) and proximity to Geneva and France in the West of Vaud. To address both of these potential confounding factors, we implement a Spatial Regression Discontinuity Design around the historical religious border.

Our empirical results suggest that *ceteris paribus* in a Reformed Protestant electorate support for increasing leisure time will be about 13.5 percentage points lower than in a Catholic electorate, and support for redistribution and government intervention will be respectively 5.1 and 6.5 percentage points lower. These results are robust to varying our methodology along all relevant dimensions. There is some, albeit less strong evidence that these different preferences manifest themselves also in differences in economic outcomes: in historically Protestant municipalities, average annual income per capita is found to be 4,170 CHF (about four fifths of a



IK estimate: 38.25, standard error: 47.48, N: 133

FIGURE 2. AVERAGE ALTITUDE IN METERS ABOVE SEA LEVEL CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

standard deviation) higher and the Gini coefficient of income inequality is 0.13 units (more than 2 standard deviations) higher.

The paper is organized as follows. Section I introduces theoretical considerations and previous work on religion, politics, and the economy. Section II provides a brief account of the Swiss Reformation and presents the quasi-experiment. In Section III,

we introduce the data. Section IV presents results, and Section V concludes. The online Appendix provides more detailed information on the referenda used and a wide range of robustness checks. Besides the set of robustness checks common for any Regression Discontinuity Design, it looks at the role of education, possible differences between treatment and control group in secularization, and the coincidence of the religious border with present-day political borders.

## I. Religion, Politics, and the Economy

### A. *The Hypothesis of a Protestant “Work Ethic”*

In recent years, Weber’s hypothesis of a “Protestant work ethic” has received particular attention by economists. In *The Protestant Ethic and the Spirit of Capitalism*, Weber (1930) argues that the rise of capitalism was facilitated by “Ascetic Protestantism.” The religion provided a spiritual sanction for work in a calling and thus made hard work and the acquisition of wealth an end in itself: “Labour came to be considered in itself the end of life, ordained as such by God. St. Paul’s ‘He who will not work shall not eat’ holds unconditionally for everyone.” Weber contrasts this new *spirit of capitalism* with the work attitude prevailing at the time and throughout most of human history, designated *traditionalism*, which aimed merely at maintaining the accustomed standard of living.

Weber considers “Ascetic Protestantism” to comprise Calvinism, Pietism, Methodism, and various Baptist sects, but not Lutheranism, which according to him embodies a traditionalist set of work norms. In Calvinism, the religious motives behind worldly asceticism appear in its starkest form. Characteristic of Calvinism is the doctrine of predestination, which holds that by his grace God has elected a small share of humanity for everlasting life and by his justice has condemned the rest to everlasting death. For believers the doctrine of predestination resulted in a crisis of proof: How do I know that I am one of the elect? In response, practical pastoral work declared it a duty to consider oneself chosen, and to resort to intense worldly activity so as to dispense any doubts. “However useless good works might be as a means of attaining salvation [...] nevertheless, they are indispensable as a sign of election.” In sum, Ascetic Protestantism encouraged the accumulation of wealth, which it regarded as a sign of God’s blessing, but restricted consumption. Hard work in a worldly calling is sanctified as the surest means to attain certainty of salvation.

While this hypothesis has found a great deal of attention recently, empirical results remain mixed. While Cantoni (2010) does not find Protestantism to affect economic prosperity in nineteenth century Prussia, Becker and Woessmann (2009) do find a positive effect of Protestantism on economic prosperity there, but argue that most of that can be explained by its positive effect on literacy, thus leaving little scope for Weber’s work ethic channel.

Studying the nineteenth century in Switzerland, Boppert et al. (2008) find that interconfessional differences in education did only exist in rural environments, but disappear in economically more advanced ones. Boppert, Falkinger, and Grossmann (2010) show that where Protestants are educationally more advanced than Catholics, they are so not only in reading but also in other fields, which Boppert,

Falkinger, and Grossmann (2010) interpret as evidence against an education policy aimed primarily at facilitating the ability to read the bible. Instead, they argue that compared to Catholics Protestants may have been more aware of the economic benefits of education.

### *B. Religion and Political Preferences*

But beyond suggesting to focus on a region characterized by predominantly Reformed Protestantism, the reading of Weber (1930) is illustrative also for another reason: when, as in the passages quoted above, Weber points to the emphasis in the Reformed Faith that “He who will not work shall not eat,” this suggests that those educated in this new faith should also be less sympathetic to redistribution.

Such a connection between religion on the one hand and political preferences and systems on the other hand has also been suggested in a more recent literature in political science, starting with Esping-Andersen’s (1990) comparative analysis of welfare states, in which he contrasts the “Liberal” (minimum) type of welfare state, said to be characteristic of the Anglo-Saxon countries, with two larger types, the “Social-Democratic” or “Universal” one typical of the Scandinavian countries and the “Conservative” type found in much of Continental Europe. Manow (2002) links the origins of these three stylized types explicitly to the influence of respectively Reformed Protestant, Lutheran Protestant, and Catholic social teaching. He argues that Reformed Protestantism’s strong anti-statism has, in many countries, retarded the development of the welfare state. Referring to Switzerland in particular, he stresses that Reformed Protestantism saw state help as subsidiary to voluntary collective self help. Manow (2002) follows Weber in emphasizing that the anti-state stance is characteristic of Reformed but not of Lutheran Protestantism.

The possible relationship between culture and political preferences has also found some attention in the recent literature in economics. Most of this literature is surveyed in Alesina and Giuliano (2010) who, in their own analysis with data from the General Social Survey and the World Values Survey, find that Protestantism tends to decrease and Catholicism tends to increase preferences for redistribution. Luttmer and Singhal (2011) established a causal effect of culture on preferences for redistribution by analyzing the attitudes of immigrants within Europe from different countries of origin. Most recently, Eugster et al. (2011) show that French- and Italian-speaking Swiss exhibit on average about 7 percent greater support for redistribution than German-speaking Swiss.

The literature dealing specifically with religion and government-run redistribution has so far mostly emphasized the possible substitutability between insurance through religion and insurance through government, see for instance Dehejia, DeLeire, and Luttmer (2007) or Huber and Stanig (2011). Yet these papers differentiate little between different religions, but are rather about religiousness in general. An exception here is Arrunada (2010), who finds that Protestants and Catholics do not exhibit significant differences in terms of their work ethic, but do exhibit different social attitudes.

Lastly, one may question whether it is reasonable to use contemporary data to study the effects of Protestantism on work ethic and political preferences, given

that most European countries have experienced multiple waves of secularization in recent decades. Swiss sociologist Geser (2004) however argues that “political mentalities and preferences with confessional roots can remain valid and be transmitted (through mechanisms of implicit socialization) even when the explicit religious beliefs, practices and institutions, to which the preferences go back, have largely ceased to exist and to be effective.”<sup>3</sup> Secularization can also lead to biased estimates if, in the treatment group, it is either more or less prevalent than in the control group. In the online Appendix, we investigate this and find no evidence of differential secularization.

## II. Empirical Strategy

### A. *The Swiss Reformation*

The Swiss Reformation was started in Zurich in 1519 by head priest Huldrych Zwingli. Although his theology quickly led to conflict with the Roman Church, he eventually won the support of the city’s magistrates. After converting Zurich, he and his friends also sought to expand the new faith into other parts of present-day Switzerland. Regional differences notwithstanding, historian Gordon (2002) discerns a common pattern of these efforts:

*The Swiss would have remained Catholic, had not a small minority succeeded in persuading them that the old religion was wrong [...] success was dependent on winning over the magistrates, who would then impose the new religion.*

In the late 1520s, tension between Catholics and Protestants increased and in 1531 Protestants and Catholics clashed in the Second War of Kappel, which ended with Protestant defeat and Zwingli’s death. The peace confirmed each canton’s right to abide by its own faith, thus anticipating the “*cuius regio, eius religio*” principle which at the 1555 Peace of Augsburg was established also for the Holy Roman Empire. The resulting spatial distribution of the two religions—with Protestantism in Zurich, Berne, Basel, and Schaffhausen; Catholicism in Lucerne, Uri, Schwyz, Unterwalden, Zug, Fribourg, and Solothurn; and Bi-Confessionalism in Appenzell and Glarus—then remained largely untouched until 1848, when freedom of movement was granted and between-canton migration started to somewhat loosen confessional milieus (von Greyerz and Bischof 2007).

### B. *Determinants of Adopting the Reformation*

But why had the local elites of different cantons chosen different confessions? At first sight, their choices depended largely on geopolitical considerations, as some cantons feared that Zurich would exploit the Reformation to pursue her hegemonic interests. Yet beyond geopolitical considerations, analysis reveals that the

<sup>3</sup> Our translation from German. For more on this, see also Geser (2008).

more mountainous regions were more likely to remain Catholic. A major reason was Zwingli's condemnation of mercenary service, on which however the more rural regions depended for their income. This poses a challenge for identification of a causal effect of religion on attitudes and outcomes today: the rural and mountainous landscape as well as the strong direct democratic traditions in the center of Switzerland may have an impact on mentalities today that we cannot perfectly control for.

A second potential source of bias are institutions: amongst the city republics in the Swiss Confederation, it turns out that all those with a guild regime became Protestant, whereas all patrician ones, except for Berne, remained Catholic. But guild regimes did also exhibit a higher degree of social mobility and so cities with a guild regime are likely to have differed already *ex ante*.

A final concern stems from the fact that, since the Reformation was initially and during most of the territorial competition with Catholicism, a German-speaking movement,<sup>4</sup> its spread is largely restricted to the German-speaking parts of Switzerland, whereas the French- and Italian-speaking areas are predominantly Catholic. This might lead one to worry that differences in preferences might, at least partly, be due to different cultural influences from the German- and the French- or Italian-speaking neighboring countries, respectively, which were found to matter for preferences in Brügger, Lalive, and Zweimüller (2009) and Eugster et al. (2011).<sup>5</sup>

### *C. Exogenous Assignment in the South-West*

Fortunately, these concerns can be circumvented by focusing on a region in the South-West of present-day Switzerland that, as we shall show, was homogeneous until the beginning of the sixteenth century, but was then split into two parts assigned different religions. The region was subject territory of the Roman Catholic kingdom of Burgundy until the late fifteenth century. Then, however, the Swiss Confederacy won the Burgundy War and in the 1476 Peace Congress was granted most of what is now the South-Western part of Switzerland.<sup>6</sup> After the conquest, the new territories were initially jointly ruled by all Swiss Confederates, but then the city republics of Berne and Fribourg decided to pay the others off and to divide the region amongst the two of them: the Eastern part thus fell to Fribourg and the Western one to Berne.

As the latter had recently become Protestant, the new rulers—in order to facilitate governance of their new territories—imposed (initially Zwinglian) Protestantism everywhere, so that the new religious authorities would all be based in Berne rather than Rome, and could more easily be persuaded to preach citizens to obey also the worldly authorities of Berne. Of course the question arises whether the region would not have become Protestant anyway, but the historical accounts suggest

<sup>4</sup> The Swiss Reformation was started by Zwingli in German-speaking Zurich, and French-speaking Jean Calvin became involved only after Zwingli's death.

<sup>5</sup> Further accounts of the assignment of religion in Switzerland in general can be found in Moeller (1978), Schaab (1993) and Schindling and Ziegler (1989).

<sup>6</sup> The part furthest in the West was initially given to the duke of Savoy, an ally of Burgundy, but was also conquered by Berne in 1536.



otherwise: as late as in 1534, the deliberative assembly of Vaud decided explicitly that they would like to remain Catholic,<sup>7</sup> and the forced conversion to Protestantism led to riots. According to Bruening (2005), the inhabitants of the Vaud did not even appear to be aware of the Reformation before 1525. A major reason for ignorance of the Reformation was language: most of the Reformation documents had been published in German, and of those few (Lutheran) Protestant pamphlets published in French none had been printed in Switzerland.<sup>8</sup>

#### *D. Equality at Baseline*

For our setup to constitute a valid quasi-experiment, treatment and control region must have been statistically identical at the baseline, i.e., before the event. A first dimension to look at, in view of Weber's hypothesis, is economic prosperity. Data on per capita income in this period are difficult to come by and therefore studies such as Acemoglu, Johnson, and Robinson (2002) use as a proxy data on population density, frequently from Bairoch, Batou, and Chèvre (1988). In our setup, these cover only the largest towns, but fortunately Ammann (1937) has compiled data on the number of fireplaces per parish in the fifteenth century, based on parish visitations in the dioceses of Geneva and Lausanne. These provide a useful proxy for population density and hence economic development at the time. Table 1 shows that there is no significant difference between our two areas in the number of fireplaces per parish.

Looking at cultural factors other than religion, both areas are French-speaking, except for the Lake District and parts of the Sense district in the Catholic part, which are German-speaking. To ensure homogeneity with regard to language, we drop the German-speaking municipalities from the baseline sample.

Institutionally, both areas were subject territory of Burgundy and Savoy before the experiment.<sup>9</sup> Different developments after the experiment can typically be interpreted as one of the outcomes, or can be expected to cancel out in sufficiently large samples. However, an added concern arises in our setup because in 1803 the two areas became separate cantons (states) of Switzerland, Vaud and Fribourg. If any relevant event that occurred between 1803 and today affected one canton but not the other, then it may confound our results. In this case, present-day differences may have reasons other than religion. To probe this, the online Appendix exploits a separate natural experiment in which the former district of Murten, in the North of the otherwise Catholic canton of Fribourg, did remain predominantly Protestant. The effects of Protestantism found there are consistent with those found in the full sample. This strongly suggests that the reason underlying our results is indeed Protestantism.

A final dimension to analyze is geography. Here our area of interest, which has a maximum East-West extension of only about 100 km, is largely situated on the Swiss Plateau, a mostly hilly region bounded by the Jura Mountains in the North-East

<sup>7</sup> For details, see Feller (1953, 379).

<sup>8</sup> See Bruening (2005), as well as Holenstein (2006). For Catholic Fribourg on the other hand, Guggisberg (1987) writes that in 1522 the authorities decided to severely punish those found to be Protestant and that "the numerous repressive measures taken by the authorities reflect the presence of a lively reforming opposition."

<sup>9</sup> For details, see Holenstein (2009).

TABLE 1—SUMMARY STATISTICS FOR THE MAIN ESTIMATION SAMPLE

	Protestant			Catholic			Compared	
	Mean	SD	N	Mean	SD	N	Difference	T
Share Protestants 1980	83.25	11.41	84	9.43	5.69	49	73.82	49.63
Share no religious affiliation 1980	2.95	2.73	84	1.73	1.5	49	1.22	3.33
Altitude in <i>m</i>	639.61	113.56	84	642.59	120.23	49	-2.98	-0.14
Fireplaces per square km in 1416	12.29	22.59	136	11.65	15.81	56	0.64	0.22
Preferences for leisure	39.51	5.72	84	48.24	4.77	49	-8.73	-9.44
Preferences for redistribution	39.19	5.03	84	43.05	2.63	49	-3.86	-5.8
Preferences for intervention	47.09	3.37	84	52.64	2.94	49	-5.56	-9.96
Average income (CHF), 1980–2000	47,253.27	5,342.36	84	43,692.71	3,369.17	49	3,560.56	4.71
Gini coefficient 1996	0.37	0.05	84	0.3	0.03	49	0.07	9.28

*Notes:* The table presents the summary statistics for our main estimation sample. This includes all municipalities situated within 5.03 km of the next “border point” (i.e., intercept between a road and the border). Statistics on the number of fireplaces per km<sup>2</sup> in 1416 refer to the entire region, given the smaller sample size in 1416. The difference is also insignificant when we restrict to the 5.03 km bandwidth per side.

and the Alps in the South. Yet average geography in the two areas as a whole does exhibit some differences because the far East is somewhat more mountainous. At the same time, in the West the Vaud shares a common border with France and is on average closer to the city of Geneva. However, Figure 1 suggests how to address these issues. By implementing a Spatial Regression Discontinuity Design, we can focus on those municipalities near the historical religious border and which are thus statistically identical in terms of the factors mentioned above. Indeed, Figure 2 confirms that while altitude is on average higher in the East, there is no significant difference nearby the border.

### E. A Spatial Fuzzy Regression Discontinuity Design

The Regression Discontinuity Design exploits the fact that the assignment of Protestantism in the sixteenth century and therefore also the “treatment” of present-day Protestantism change discontinuously at the historical religious border, whereas the confounding factors described above can be expected to change only continuously. This allows us to identify the causal effect of Protestantism as the discontinuous change in outcomes at this border, while controlling with sufficient flexibility for the effect correlated with the forcing variable, distance from the border per se.<sup>10</sup> The paper methodologically closest to ours is Brügger, Lalive, and Zweimüller (2009) who analyze the impact of Latin languages (French, Italian, or Romansh), relative to German, on work attitudes in Switzerland using distance to the language frontier as forcing variable.

As the share of Protestants does not jump from zero to one at the border, we have what Trochim (1984) called a “Fuzzy Regression Discontinuity Design,” in which the causal effect of present-day Protestantism is identified by instrumenting the latter with the indicator for whether a municipality had been assigned Protestantism in the sixteenth century. Put differently, the hypothetical effect on our outcomes of interest

<sup>10</sup> For a recent summary of papers implementing such a design with various forcing variables, see for instance Imbens and Lemieux (2008) or Lee and Lemieux (2010).

of moving from a municipality with 0 percent Protestants to one with 100 percent Protestants is given by the jump at the border in those outcomes (the “Reduced-Form” or “Intention-to-Treat” effect), divided by the jump at the border in the share of Protestants (the “First-Stage effect”). To implement the Spatial Fuzzy Regression Discontinuity Design, we have to decide how to measure distance from the border. Dell (2010), analyzing the impact of forced labor in Peru, uses great-circle distance, whereas Brügger, Lalive, and Zweimüller (2009) use driving distance. We think that driving or walking distance better proxies economic distance than great circle distance, as the latter does not take into account the barriers posed by mountain ranges or rivers. Thus we consider walking distance the best possible proxy for historical travel distance and use great circle distance in a robustness check covered in the online Appendix.

### III. Data

To measure both “self-regarding” preferences about the choice between more leisure and more income, and “other-regarding” or “social” preferences about political issues like redistribution and government intervention in the economy, we use the fraction of citizens in each municipality voting for different policy proposals on these issues in different Swiss referenda. The Swiss system of direct democracy, with its many referenda, is one of the rare cases that come close to the system of “Pure Majority Rule” often assumed in political economy models like in Persson and Tabellini (2000): citizens vote directly on specific policies, choosing between pairs of alternatives, and there is an “open agenda,” as any sufficiently large group of citizens can demand a referendum on an issue. Since voting outcomes are directly put into policy, the voting data may be considered a better measure of preferences than mere survey data.

For all referenda held from 1980 onwards, the Swiss Federal Office of Statistics provides voting data by municipality level on its website.<sup>11</sup> Given this list, we have researched the precise questions put to vote to decide which referenda can be classified as being about leisure, redistribution or intervention, and whether the referendum proposed more or less thereof. Information on most referenda is publicly available on the website of the Swiss Federal Chancellery,<sup>12</sup> and additional information can be found in appendix E of Kaufmann and Waters (2004), as well as on the Internet.

In Table 1 of the online Appendix, we provide a complete list of all referenda considered, giving for each referendum its official Federal Statistical Office (FSO) indicator (a counter of all federal referenda held since 1848), the date, the official title in German, and a brief summary of the question in English. We also indicate for which of four different reasons the referendum was held: firstly there is the “Volksinitiative,” a people’s initiative started by a sufficiently large group of citizens. Secondly the “Gegenentwurf,” a counterproposal made by the government in response to a people’s initiative: typically a counterproposal will go in the same

<sup>11</sup> <http://www.bfs.admin.ch>.

<sup>12</sup> <http://www.bk.admin.ch>.

direction as the people's initiative but will be relatively less radical, i.e., deviate less from the status quo. Citizens will then on the same day vote on both proposals and also vote on which proposal they would prefer if both receive a majority of votes, although sometimes the initial initiative is withdrawn once a satisfactory counterproposal has been made. Thirdly, a "Fakultatives Referendum," optional referendum, is held when a sufficiently large group of citizens decides to challenge a law proposed by the government. And finally there is an "Obligatorisches," obligatory, referendum when the government wishes to make changes to the constitution.

We are interested in referenda that can serve as a measure of preferences for leisure, redistribution and intervention. Leisure referenda proposed, for instance, to prolong the length of legally required vacation (e.g., FSO 329), to lower the official retirement age (e.g., FSO 352), or to cut weekly working time (e.g., FSO 354). Referenda on redistribution were about such issues as expanding old age and disability insurance (e.g., FSO 423), cutting unemployment insurance benefits (e.g., FSO 437), or introducing a capital gains tax (e.g., FSO 484). Finally, referenda on intervention dealt with price regulation in general (e.g., FSO 307), in the market for renting (e.g., FSO 342), or in agriculture (e.g., FSO 418). Overall, we have 8 referenda on leisure, 24 on redistribution, and 12 on intervention. Most referenda proposed more leisure, more redistribution or more intervention, but a few proposed less. In these cases, we used the fraction voting against instead of the fraction voting in favor of the proposal. For the results displayed in this paper, we have computed the three summary measures "Preferences for Leisure," "Preferences for Redistribution," and "Preferences for Intervention" as averages of these referenda, and in what follows we focus on these outcome variables, but Table 2 of the online Appendix displays also the results for each of the 44 separate referenda.

We also consider two economic outcomes. The first is each municipality's total pre-tax income, divided by the number of taxpayers.<sup>13</sup> We have information on this for every other year between 1980 and 2000, so we use the average across all 20 years for our main analysis and we show results for various individual years in our online Appendix. Since the tax statistics do not contain direct information on income inequality, we take information on the Gini coefficient of income inequality within each municipality from appendix D of Ecoplan (2004), which refer to tax period 1995–1996. These are based on the "Equivalent Income," the sum of all incomes in a household divided by the number of "equivalent" persons, counting the first member with weight 1, each further adult with weight 0.5 and each child with weight 0.3.

The explanatory variable of interest is given by a municipality's share of Protestants. Religious affiliation is recorded every ten years by the Swiss census, and since our referenda go back to 1981, we use the 1980 census. Today, of course not all inhabitants of Switzerland are affiliated with either the Catholic or the Protestant Church, and since our quasi-experiment provides us with only

<sup>13</sup> In particular, we use "Reineinkommen," which deducts expenditure on insurance premiums and loan interest payments, but not child deductions, as is the case for the other available variable, "Steuerbares Einkommen" or taxable income. For details, see the documentation on the Federal Tax Administration website, <http://www.estv.admin.ch>.

TABLE 2—FIRST STAGE RESULTS

	Share of Protestants	Share of Protestants	Share of Protestants
	(1)	(2)	(3)
<i>T</i>	0.67*** (0.03)	0.73*** (0.02)	0.76*** (0.02)
Distance	0.02*** (0.01)	0.00 (0.00)	0.00 (0.00)
<i>T</i> × distance	−0.01 (0.01)	−0.00 (0.00)	−0.01*** (0.00)
Constant	0.13*** (0.02)	0.10*** (0.01)	0.10*** (0.01)
BW	5.01	10	20
Observations	133	208	305

*Notes:* *T* is an indicator for whether a municipality is on the historically Protestant side of the border; “Distance” is walking distance to the closest border point in kilometers. In column 1, bandwidth in kilometers is chosen optimally following Imbens and Kalyanaraman (2012). Columns 2 and 3 use alternative bandwidths of respectively 10 km and 20 km. Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

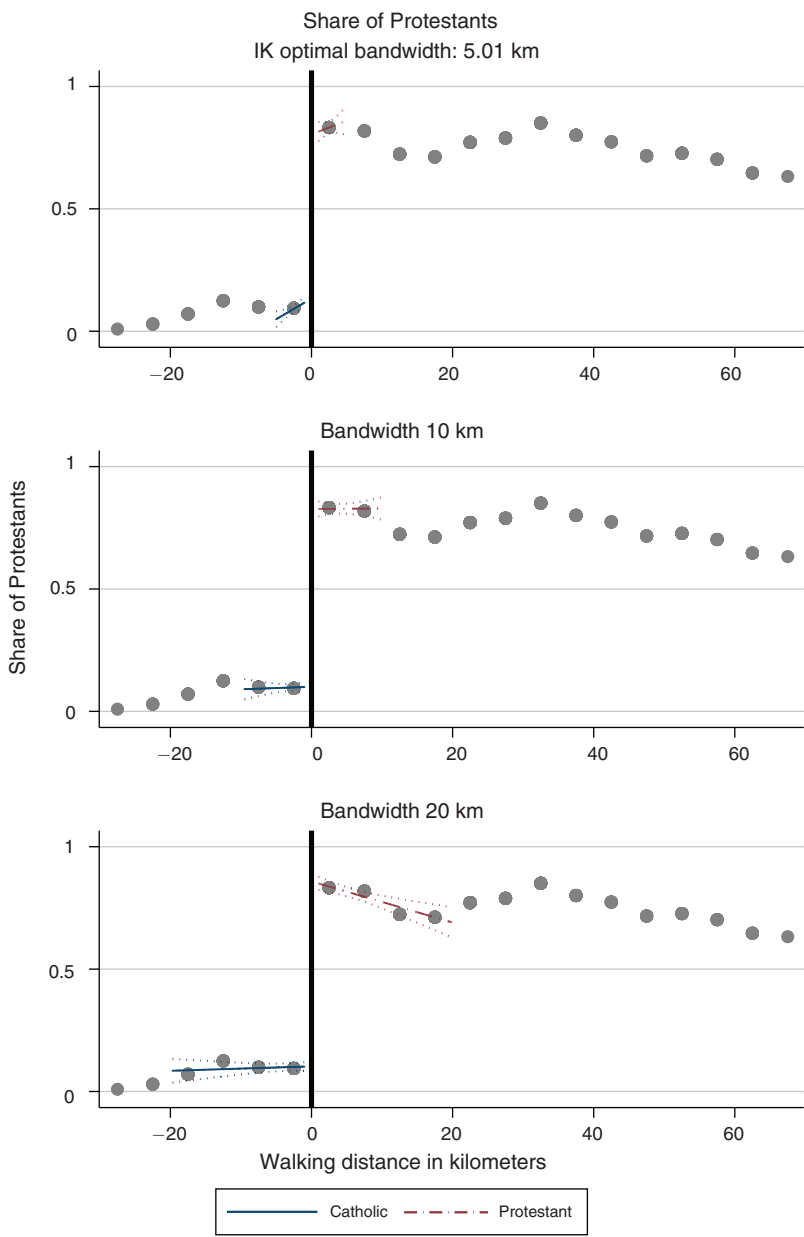
\* Significant at the 10 percent level.

one instrument, for Protestantism, we use as “treatment” variable the share of Protestants out of those either Catholic or Protestant. This amounts to assigning those with neither affiliation to the two confessions in the same proportion as is found amongst those with either affiliation. The census provides us also with a number of further covariates used in the robustness checks in the online Appendix: population density, the shares who are respectively foreign, married and male, the share without religious affiliation, electoral participation, and the shares with different educational achievements.

## IV. Results

### A. First Stage

Table 2 and Figure 3 present first stage results. The econometric specifications differ only in terms of bandwidth. Column 1, and the first panel of Figure 3, show results for the Imbens and Kalyanaraman (2012) (IK) optimal bandwidth. The remaining columns present results for fixed bandwidths of 10 km and 20 km respectively, which the graphs suggest as sensible bandwidth numbers. Figure 3 shows clearly that the share of Protestants changes discontinuously at the border. The IK estimate of the effect equals 67 percentage points, based on a bandwidth of 5.01 km. The larger bandwidths result in slightly larger estimates ranging from 73 percentage points to 76 percentage points. The results testify to the strong persistence of religion. Municipalities where, in 1536, Berne had imposed Protestantism had a 67 to 76 percentage points higher share of Protestants in 1980, almost 450 years after the initial assignment. It is therefore safe to conclude that the IV estimates do not suffer from a weak instruments problem.



IK estimate: 0.67, standard error: 0.03, N: 133

FIGURE 3. SHARE OF PROTESTANTS CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

### B. Main Outcomes

Table 3 presents estimates of the intention-to-treat effect. We first compute the Imbens and Kalyanarman (2012) optimal bandwidth for each of the five outcomes. Then we use for all reported regressions the same average of these five optimal bandwidths, so as to make results directly comparable across five outcomes. Column 1

TABLE 3—REDUCED FORM RESULTS

	Preferences for leisure	Preferences for redistribution	Preferences for intervention	Mean income 1980–2000	Income inequality in 1996
	(1)	(2)	(3)	(4)	(5)
<i>T</i>	−9.03*** (2.22)	−3.40** (1.50)	−4.35*** (1.21)	2.80* (1.52)	0.08*** (0.02)
Distance	0.21 (0.61)	0.36 (0.34)	−0.27 (0.32)	−0.42 (0.31)	0.00 (0.00)
<i>T</i> × distance	−0.29 (0.86)	−0.88 (0.59)	0.05 (0.45)	1.11* (0.60)	−0.01* (0.01)
Constant	48.73*** (1.60)	43.88*** (0.79)	52.00*** (0.90)	42.72*** (1.01)	0.31*** (0.01)
IK OB	5.01	5.01	5.01	5.01	5.01
Observations	133	133	133	133	133

Notes: *T* is an indicator for whether a municipality is on the historically Protestant side of the border; “Distance” is walking distance to the closest border point in kilometers; Bandwidth in kilometers is chosen optimally following Imbens and Kalyanaraman (2012). Preferences in columns 1, 2, and 3 are averages of the respective referenda listed in Table 1 of the online Appendix. Column 4 uses the average across the years 1980–2000 of each municipality’s pre-tax income divided by the number of taxpayers. Column 5 uses the Gini coefficient of income inequality, taken from Ecoplan (2004). Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

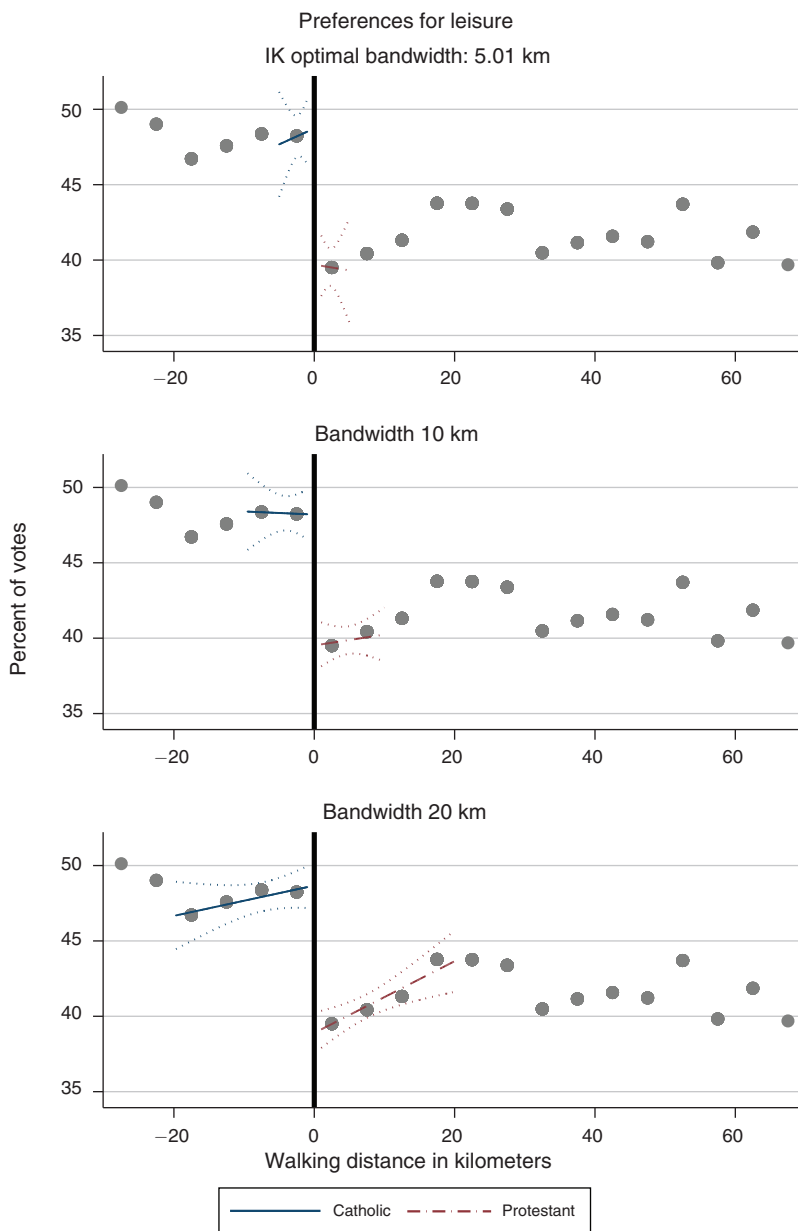
\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

and Figure 4 are concerned with Weber’s work ethic hypothesis. The IK estimate of the effect equals 9 percentage points and is significant at the 1 percent level. Figure 4 provides clear evidence of a discontinuous change in voting behavior at the border. Moreover, comparable changes do not exist within either the Catholic or the Protestant subregion. Column 2 presents results on our measure of preferences for redistribution, which is 3.4 percentage points lower on the Protestant side of the border. Figure 5 provides clear evidence of a discontinuity at the canton border. Concerning preferences for intervention the difference amounts to 4.4 percentage points, as shown in column 3 and Figure 6. Table 2 of the online Appendix presents results also on individual referenda. It shows that while not every single referendum does yield a statistically significant coefficient within our narrow-bandwidth estimation sample, the direction of the coefficients is generally quite robust, so that the results obtained for our summary measures would not deviate much if we used only a subset of these referenda.

It is interesting to compare these results to those obtained by Brügger, Lalive, and Zweimüller (2009) and Eugster et al. (2011), who analyze the effect of Switzerland’s other main cultural divide, language, on respectively work attitudes and preferences for redistribution. While they use only a subset of the referenda considered here and use much wider bandwidths of 25 km and 50 km, their approach is also a Regression Discontinuity Design and hence largely comparable. Since their first-stage is somewhat larger than ours,<sup>14</sup> we compare Reduced-Form (Intention-to-Treat) coefficients. Here the average effect of language on work attitudes, according to Brügger, Lalive, and Zweimüller (2009, table 2), is about 16 percentage points, and thus larger than

<sup>14</sup> See Brügger, Lalive, and Zweimüller (2009, table 12); or Eugster et al. (2011, table A1).



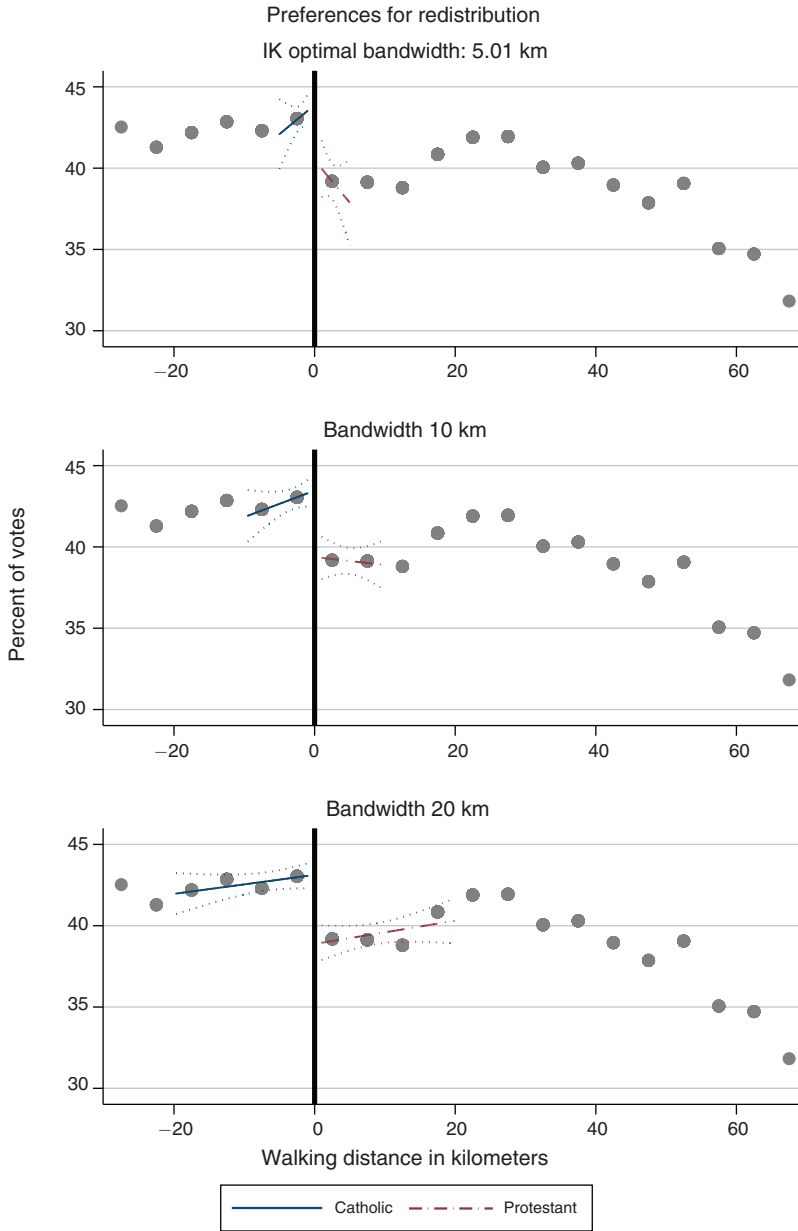
IK estimate: -9.03, standard error: 2.22, N: 133

FIGURE 4. PREFERENCES FOR LEISURE CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

our estimate of 9 percentage points. A similar pattern applies to the effect on preferences for redistribution, which equals about 7–8 percentage points in their paper.<sup>15</sup>

<sup>15</sup> See Eugster et al. (2011, table 3, column 4), which has the specification closest to ours with a bandwidth of 25 km and a linear control function.

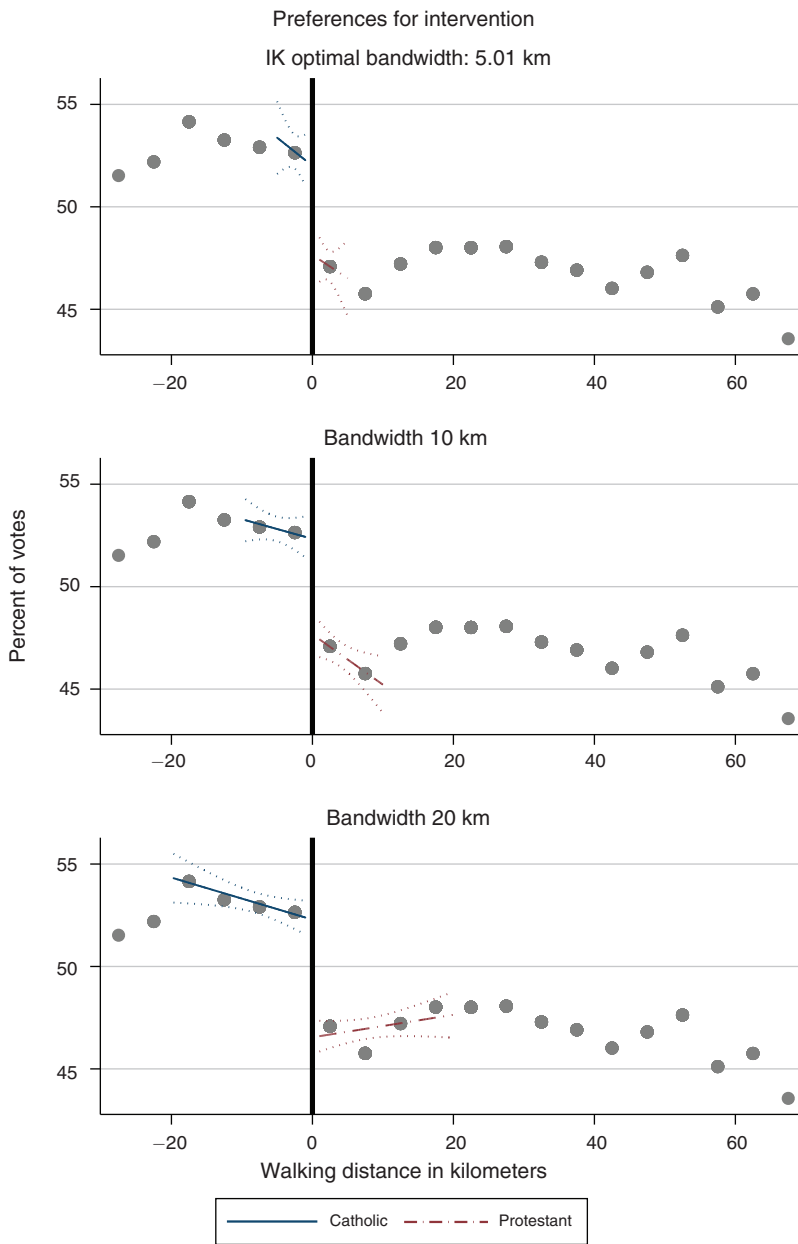




IK estimate: -3.40, standard error: 1.50, N: 133

FIGURE 5. PREFERENCES FOR REDISTRIBUTION CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

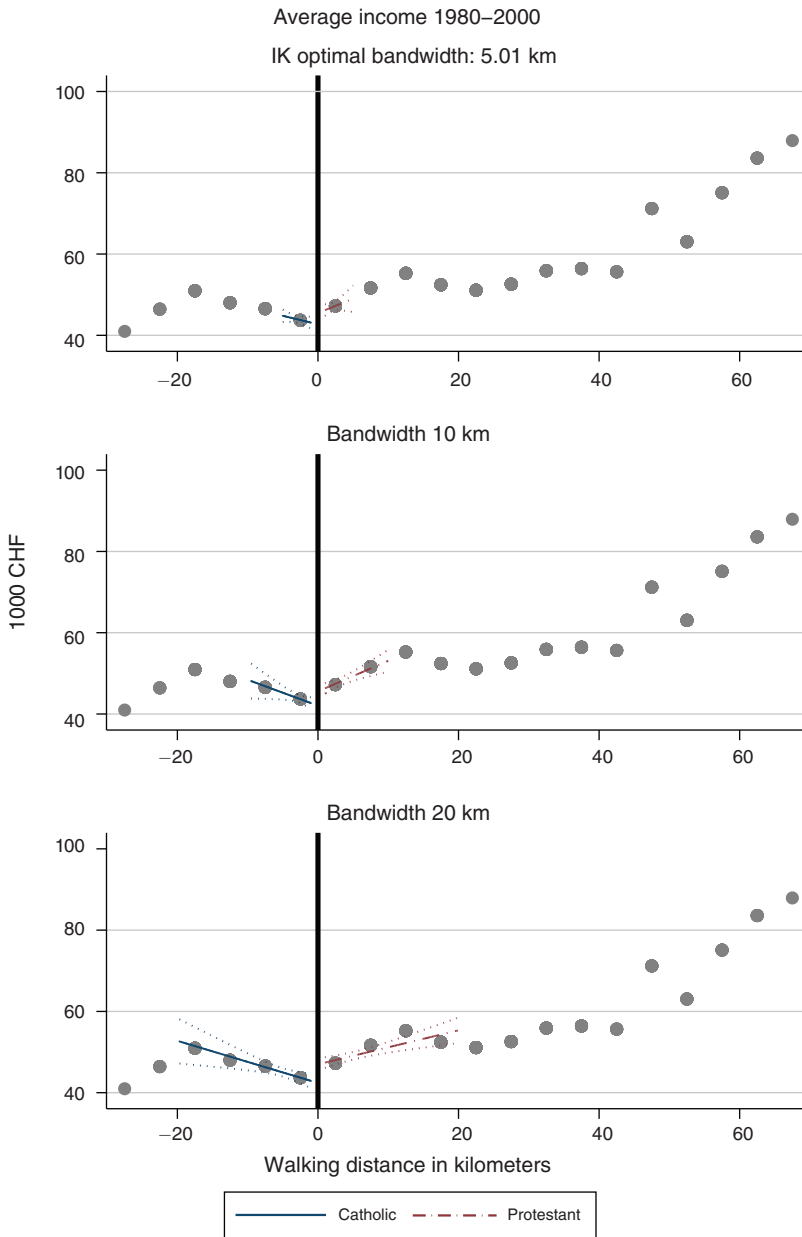
The remaining columns of Table 3 are concerned with economic outcomes. Column 4, and Figure 7 then show the results for income per capita. We find that on the Protestant side income per capita is about CHF 2,800 or about half a standard deviation higher. The difference is statistically significant at the 10 percent level, but as Figure 7 does not exhibit a clear discontinuity at the border, we prefer to view these



IK estimate: -4.35, standard error: 1.21, N: 133

FIGURE 6. PREFERENCES FOR INTERVENTION CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

results as merely suggestive. This result may be indicative of general equilibrium effects. Whereas in front of the ballot box people can express their preferences independent of the preferences of others, an integrated market imposes a certain degree of uniformity on economic behavior. Table 4 of the online Appendix provides additional evidence for the income effect in different years. The Protestant side exhibits



IK estimate: 2.80, standard error: 1.52, N: 133

FIGURE 7. AVERAGE NET INCOME PER HEAD CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

higher incomes in all years and at all bandwidths we consider, though the difference is not always significant especially when bandwidths are small. Column 5 and Figure 8 are concerned with inequality. The Gini coefficient is 0.08 points higher on the Protestant side of the border, which is significant at the 1 percent level. As Figure 8 shows, the change at the border is indeed discontinuous.

TABLE 4—SECOND STAGE RESULTS

	Preferences for leisure	Preferences for redistribution	Preferences for intervention	Mean income 1980–2000	Income inequality in 1996
	(1)	(2)	(3)	(4)	(5)
Share Protestants	−13.46*** (3.11)	−5.06** (2.13)	−6.49*** (1.71)	4.17* (2.29)	0.13*** (0.03)
Distance	0.44 (0.63)	0.44 (0.35)	−0.16 (0.33)	−0.49 (0.32)	−0.00 (0.00)
$T \times$ distance	−0.36 (0.80)	−0.91 (0.55)	0.01 (0.43)	1.14* (0.60)	−0.01 (0.01)
Constant	50.53*** (1.89)	44.56*** (0.94)	52.87*** (1.05)	42.16*** (1.20)	0.29*** (0.01)
IK OB	5.01	5.01	5.01	5.01	5.01
Observations	133	133	133	133	133

Notes: “Share Protestants” is the share of Protestants amongst those either Protestant or Catholic, as of the 1980 census. The coefficients give the estimated difference between a fully Protestant and a fully Catholic municipality. The share of Protestants is instrumented with  $T$ , an indicator for whether a municipality is on the historically Protestant side of the border; “Distance” is walking distance to the closest border point in kilometers; Bandwidth in kilometers is chosen optimally following Imbens and Kalyanaraman (2012). Preferences in columns 1, 2, and 3 are averages of the individual referenda listed in Table 1 of the online Appendix. Column 4 uses the average across the years 1980–2000 of each municipality’s pre-tax income divided by the number of taxpayers. Column 5 uses the Gini coefficient of income inequality, taken from Ecoplan (2004). Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

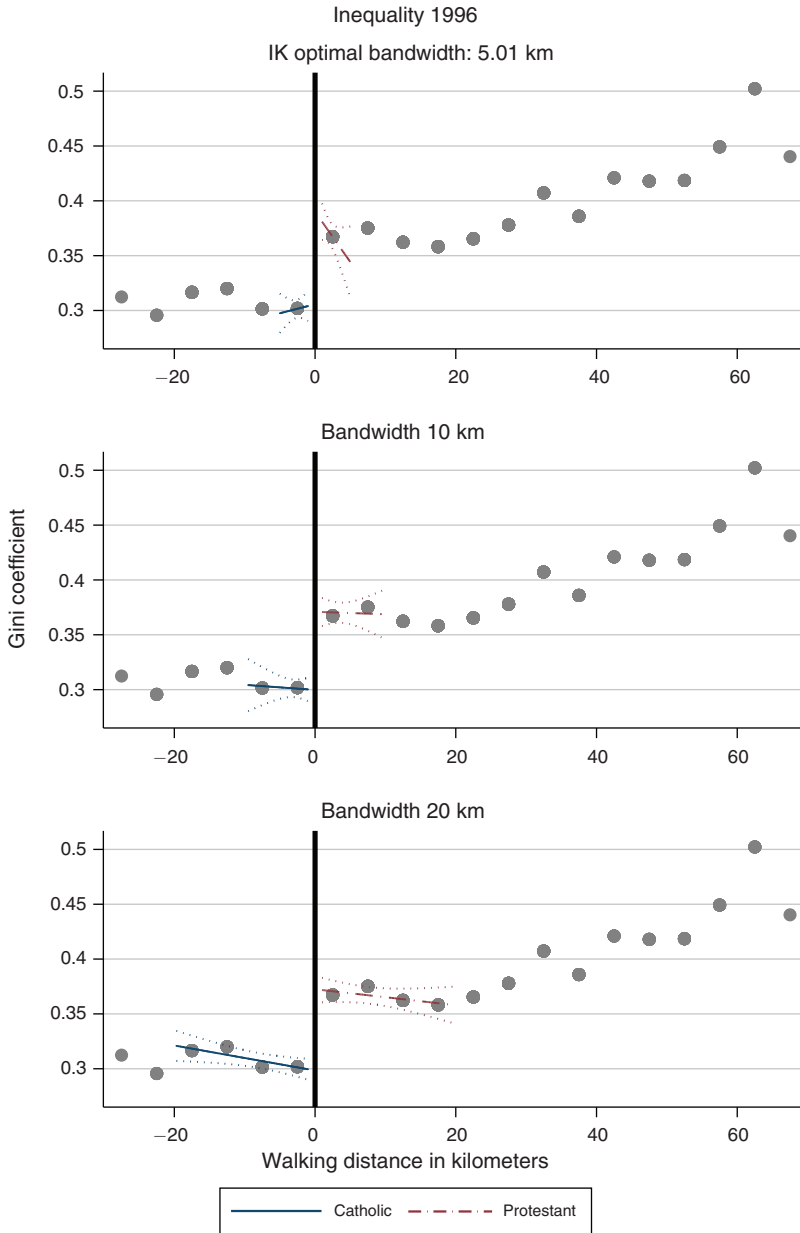
\* Significant at the 10 percent level.

Table 4 presents the corresponding instrumental-variable (IV) or second-stage estimates, given by the reduced-form or intention-to-treat (ITT) estimate scaled by the first stage effect. With a first stage effect of 0.69 at bandwidth 5 km, the IV estimates are about 45 percent larger than the ITT results. Thus preferences for leisure are about 13.5, preferences for redistribution 5.1 and preferences for intervention 6.5 percentage points weaker in the Protestant part. Income per capita is CHF 4,170 and income inequality is 0.13 units higher.

Table 5 presents results for alternative bandwidths of 10 km and 20 km as shown in the lower panels of Figures 4–8. The differences in preferences tend to increase slightly with bandwidth. With an estimate of 4,600 CHF at a bandwidth of 20 km compared to 2,800 CHF in Table 3, the increase in income differences is more pronounced. The difference in the Gini coefficients remains at 0.07 for both the 10 km and the 20 km bandwidth.

### C. Robustness Checks

In the online Appendix, we subject the analysis to additional robustness checks. Some concern the technical implementation of our setup. We show that the results are robust with respect to using a triangular instead of a rectangular kernel, to using great-circle distance instead of walking distance, and to controlling separately for differences in latitude and longitude. If in a Regression Discontinuity Design variables other than those affected by the assignment exhibit discontinuous changes at the threshold, this may question the validity of the setup. The online Appendix investigates whether this applies to our case. We show that population density, the



IK estimate: 0.08, standard error: 0.02, N: 133

FIGURE 8. GINI COEFFICIENT CONDITIONAL ON WALKING DISTANCE TO THE BORDER, BANDWIDTH 5 KM; PREDICTION FROM LINEAR REGRESSION, INCLUDING 95 PERCENT PREDICTION INTERVAL

share of foreigners, the share of married inhabitants, the share of males and the share of individuals without religious affiliation do not exhibit a discontinuous change at the border.

The validity of the identification mechanism may also be questioned because the assignment described above has led not only to differences in present-day religion,

TABLE 5—VARYING THE BANDWIDTH

	Preferences for leisure	Preferences for redistribution	Preferences for intervention	Mean income 1980–2000	Income inequality in 1996
	(1)	(2)	(3)	(4)	(5)
BW 10 km					
ITT	−8.68*** (1.33)	−4.08*** (0.92)	−4.66*** (0.78)	3.51*** (1.26)	0.07*** (0.01)
IV	−11.95*** (1.77)	−5.62*** (1.22)	−6.41*** (1.04)	4.84*** (1.75)	0.10*** (0.01)
Observation	208	208	208	208	208
BW 20 km					
ITT	−9.78*** (1.03)	−4.24*** (0.72)	−5.74*** (0.62)	4.60*** (1.30)	0.07*** (0.01)
IV	−12.94*** (1.31)	−5.62*** (0.92)	−7.60*** (0.78)	6.08*** (1.72)	0.10*** (0.01)
Observations	305	305	305	305	305

*Notes:* The table presents reduced form (ITT) and second stage (IV) estimates for the alternative bandwidths 10 km and 20 km. “Distance” is walking distance to the closest border point in kilometers. Preferences in columns 1, 2, and 3 are averages of the respective referenda listed in Table 1 of the online Appendix. Column 4 uses the average across the years 1980–2000 of each municipality’s pre-tax income divided by the number of taxpayers. Column 5 uses the Gini coefficient of income inequality, taken from Ecoplan (2004). Robust standard errors in parentheses.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

but has in addition implied that the two areas became separate Swiss cantons in 1803. We therefore need to ask whether shocks asymmetrically affecting the cantons would cause voting behavior to differ for reasons other than religion. If so, the exclusion restriction of our instrumental-variable design would be violated. Fortunately, we can investigate this issue empirically. Areas where the Swiss had won important battles of the Burgundy Wars later fell to Berne and Fribourg who administered them jointly. One such territory, German-speaking Murten, located in the North-West of the present day canton of Fribourg, was pressured by Berne into adopting the Reformation. Thus, we have intra-cantonal variation in religion and can compare the German-speaking Protestant municipalities of Fribourg to the German-speaking Catholic municipalities. The online Appendix shows that our main results hold also within the canton of Fribourg, which suggests that they do indeed represent the long-term impact of Protestantism. Finally, the online Appendix investigates the role of education as a mediating factor. The findings in Becker and Woessmann (2009) raise the question whether the identified effect of religion on work and political preferences operates at least partly through education: Has there been a promotion of education also in Reformed Protestantism, which persists until today, and which in turn has changed preferences? Though the results in Boppart et al. (2008) suggest that in Switzerland the literacy channel mattered only before urbanization, it is nonetheless interesting to investigate whether there are any differences in education. While we find some evidence that those on the Protestant side of the border tend to achieve on average higher degrees, there is also evidence that they perform less well in standardized PISA tests. This suggests that in the Swiss setup, education is not as important as Becker and Woessmann (2009) have shown it to be in nineteenth century Prussia.

## V. Conclusion

We have shown that in a 100 percent Reformed Protestant municipality, support for more leisure is predicted to be about 13, support for more redistribution 5 and support for intervention about 6 percentage points lower than in a 100 percent Roman Catholic municipality. When pondering the substantial importance of these differences, one needs to keep in mind that the referenda are not just survey questions, but that the majority preference will be implemented as policy. But aggregation and implementation happen at the federal level. Thus, Protestant and Catholic municipalities often vote differently, yet in all areas for which the decision power is at the federal level they end up with the same policy, the one which finds a majority in Switzerland as a whole. In this sense, the resulting differences in economic outcomes are to be interpreted as lower bounds on the differences we would see if the two areas had completely separate political systems.

The findings on preferences for leisure lend empirical support to Max Weber's famous hypothesis of a "Protestant work ethic." Although the prior work on this issue by Becker and Woessmann (2009) and Cantoni (2010) does not use a direct measure of preferences, their findings did suggest no role for a "work ethic." In view of Max Weber's arguments, a plausible explanation for this difference is that their focus was on Lutheran Protestantism, whereas we—like Weber—focus on Reformed Protestantism.

Going beyond the "work ethic" hypothesis, we show that Weber's classic can be seen to argue that the different religions will also lead to different political preferences, and our empirical results confirm this. They also confirm, in a quasi-experimental setting, the result in Alesina and Giuliano (2010), whereby Protestantism leads to weaker and Catholicism to stronger preferences for redistribution. It is important to stress that these preferences concern specifically *government-organized redistribution*, but they need not mean less solidarity overall, since government-run redistribution may be substituted for by more private or church charity, as shown for instance in Hungerman (2005) or Gruber and Hungerman (2007).

There is some suggestive evidence that the different preferences also manifest themselves in differences in economic outcomes. This is not obvious a priori, because despite differences in voting, municipalities end up with the same federal policies in many areas.<sup>16</sup> Furthermore, differences in labor supply need not fully translate into differences in actual work, if employees in both areas face the same labor demand, and hours and wages are federally regulated or negotiated on a regional or federal level.<sup>17</sup> Thus, Swiss sociologist Geser (2008), in reference to Max Weber, argues that we should expect religious influences to shine through strongest in politics and less so on economic issues, where market forces

<sup>16</sup> There are also policy areas where different cantons (states) can make different choices, for instance in choosing their tax rates. In this paper we have however focused on referenda at the federal level, as we need outcome variables comparable across all municipalities in our sample.

<sup>17</sup> Details on federal regulation can be found on the Swiss government's website for small and medium enterprises, [www.kmu.admin.ch](http://www.kmu.admin.ch), and those on contracts between unions and employer associations are available from the Swiss Ministry of Economics, <http://www.seco.admin.ch>.

will enforce greater equalization.<sup>18</sup> Finally, our referendum results are based only on Swiss citizens and only on those who vote: these may have stronger opinions than those who abstain, yet it is those who vote who shape policies at the federal level. When we look at average income, by contrast, results are based on all inhabitants. Despite these arguments, we do find some suggestive evidence that historically Protestant municipalities have higher income per capita, and have even higher income inequality. In line with that, results in the online Appendix find some micro-level evidence that Protestants tend to retire later than Catholics, but these results as well are rather noisy and hence only suggestive.

On a more general level, our findings show that culture does matter for political and economic outcomes. These preferences cannot be judged as good or bad. By contrast, it is only through such preferences that economic outcomes can be evaluated. The high persistence of differences in preferences suggests that if economic policy is to maximize social welfare, it will typically have to take preferences into account and as given. Finally, our results underline the benefits of a federal system in which regions with different cultural backgrounds are able, in at least some areas, to choose different policies.

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<sup>18</sup> This idea is also consistent with Arrunada (2010), who uses international survey data and finds Protestants and Catholics to have the same "work ethic," but different political attitudes.



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