Weber Revisited: The Protestant Ethic and the Spirit of Nationalism.
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Online Appendix
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A Tables and Figures
Table A.1: Lutherans and Reformed Protestants

|                       | (1)   | (2)   |
|-----------------------|-------|-------|
| **Panel 1: Dep. Var. Savings per Capita, 1875-1905** |       |       |
| Share Protestants     | 0.071 |       |
|                       | (0.081) |       |
| Share Reformist       | -0.029*** | (0.009) |
| Share Lutherans       | -0.074*  | (0.041) |
| Further Controls      | Y     | Y     |
| N                     | 2170  | 2170  |
| \(R^2\)              | 0.359 | 0.356 |

| **Panel 2: Dep. Var. Literacy, 1871** |       |       |
| Share Protestants      | 0.099*** | (0.010) |
| Share Reformist        | 0.173**  | (0.082) |
| Share Lutherans        | 0.129*** | (0.014) |
| Further Controls       | Y     | Y     |
| N                     | 452   | 452   |
| \(R^2\)              | 0.737 | 0.735 |

*Notes:* In Panel 1 Standardized beta coefficients. Standard errors in parentheses. Robust standard errors clustered at the province level. Further controls include in Panel 1: number of savings banks, share working men above 14, share urban population, average household size, share other religions, dummy for counties w/o savings bank. Further controls include in Panel 2: % age below 10, % Jews, % females, % born in municipality, % of Prussian origin, average household size, population size (log), population growth 1867-1871 (in %), % missing education info, % blind, % deaf-mute, % insane. * p<0.1, ** p<0.05, *** p<0.01.

*Sources:* See Table B.1
Table A.2: Polish Savings, Robustness

|                      | (1)  | (2)  | (3)  | (4)  |
|----------------------|------|------|------|------|
|                      | Savings p.c. + Pol. credit coop. |
| Share Protestants    | 0.149| 0.141| 0.149| 0.140|
|                      | (0.117)| (0.118)| (0.118)| (0.119)|
| Share German Speaking| 0.167***| 0.177**| 0.152**| 0.163**|
|                      | (0.049)| (0.057)| (0.051)| (0.058)|
| Income per Capita    | -0.047| -0.048|
|                      | (0.075)| (0.075)|
| Further Controls     | Y    | Y    | Y    | Y    |
| N                    | 338  | 338  | 338  | 338  |
| $R^2$                | 0.290| 0.291| 0.282| 0.284|

Notes: Standardized beta coefficients. Standard errors in parentheses. Robust standard errors clustered at the province level. Further controls: number of savings banks, share working men above 14, share urban population, average household size, share other religions, dummy for counties w/o savings bank. We exclude the provinces of Silesia and East Prussia. * p<0.1, ** p<0.05, *** p<0.01.

Sources: See Table B.4.
Table A.3: Polish Doctors in the Province Poznan, 1907

| County                     | % Polish Doctors | % Mothertongue Polish |
|----------------------------|------------------|-----------------------|
| **District Poznan**        |                  |                       |
| Wreschen                   | 0.44             | 0.78                  |
| Pleschen, Jarotschin        | 0.29             | 0.79                  |
| Schroda                     | 0.13             | 0.84                  |
| Schrimm                     | 0.33             | 0.78                  |
| Kosten, Schniegel           | 0.50             | 0.83                  |
| Graetz                      | 0.29             | 0.65                  |
| Neutomischel                | 0.25             | 0.65                  |
| Posen (Stadt)               | 0.38             | 0.47                  |
| Posen (Land)                | 0.28             | 0.70                  |
| Obornik                     | 0.40             | 0.58                  |
| Samter                      | 0.30             | 0.70                  |
| Birnbaum, Schwerin          | 0.27             | 0.31                  |
| Merseritz                   | 0.20             | 0.20                  |
| Bomst                       | 0.30             | 0.47                  |
| Fraustadt, Lissa            | 0.23             | 0.31                  |
| Gostyn, Rawitsch            | 0.36             | 0.68                  |
| Koschmin, Krotoschin        | 0.43             | 0.70                  |
| Adelnau, Ostrowo            | 0.44             | 0.81                  |
| Kempen, Schildberg          | 0.36             | 0.85                  |
| **District Bromberg**       |                  |                       |
| Czarnikau, Filehne          | 0.06             | 0.27                  |
| Kolmar                      | 0.30             | 0.17                  |
| Wirsitz                     | 0.25             | 0.46                  |
| Bromberg                    | 0.10             | 0.28                  |
| Schubin, Znin               | 0.36             | 0.63                  |
| Hohensalza, Strelno         | 0.35             | 0.68                  |
| Mogilno                     | 0.30             | 0.68                  |
| Gnesen, Witkowo             | 0.39             | 0.68                  |
| Wongrowitz                  | 0.38             | 0.71                  |

*Notes:* We identify Polish doctors via their last name. Every person with “ski” or “cz” or “zki” or “sz” or “tz” or “yz” or “zc” or “ow” or “wy” or “zy” in his lastname is classified as Polish doctor.

*Sources:* See Table B.1
Table A.4: Effect of Protestantism on Literacy, 1871 (Using Distance to Wittenberg as IV)

| Panel 1: OLS | Dep. Var. Literacy |  (1) | (2) | (3) | (4) | (5) |
|-------------|---------------------|-----|-----|-----|-----|-----|
| Share Protestants | 0.099*** (0.010) | 0.062*** (0.008) | 0.057*** (0.009) | 0.033*** (0.007) | 0.040*** (0.007) |
| Share German Speaking | 0.221*** (0.014) | 0.213*** (0.016) |
| $R^2$ | 0.737 | 0.831 | 0.610 | 0.431 | 0.735 |

| Panel 2: Second Stage | Dep. Var. Literacy | (1) | (2) | (3) | (4) | (5) |
|-------------|---------------------|-----|-----|-----|-----|-----|
| Share Protestants | 0.189*** (0.028) | 0.149*** (0.026) | 0.182*** (0.024) | 0.077*** (0.014) | 0.145*** (0.021) |
| Share German Speaking | 0.178*** (0.020) | 0.173*** (0.022) |

| Panel 3: First Stage | Dep. Var. Protestantism | (1) | (2) | (3) | (4) | (5) |
|-------------|--------------------------|-----|-----|-----|-----|-----|
| Distance to Wittenberg in km | -0.095*** (0.011) | -0.086*** (0.011) | -0.114*** (0.012) | -0.140*** (0.015) | -0.109*** (0.012) |
| Share German Speaking | 0.404*** (0.073) | 0.170 (0.106) |
| $R^2$ | 0.419 | 0.457 | 0.448 | 0.620 | 0.452 |

Including Eastern Provinces: Y Y Y N Y
Only Holy Roman Empire: N N Y Y Y
Further Controls: Y Y Y Y Y
F-Stat excluded instrument: 74.19 64.21 96.12 89.27 85.32
N: 452 452 378 280 378

Notes: Standard errors in parentheses. IV: Distance to Wittenberg. We show in Section ?? that distance to Wittenberg is not suitable as an instrumental variable, because it violates the exclusion restriction. Eastern provinces include East and West Prussia, Poznan, and Silesia. Further controls include: % age below 10, % Jews, % females, % born in municipality, % of Prussian origin, average household size, population size (log), population growth 1867-1871 (in %), % missing education info, % blind, % deaf-mute, % insane. * p<0.1, ** p<0.05, *** p<0.01.
Note that the different standard errors between panel 1 column 5 in this table and Table 5 in Kersting et al. (2020) panel 1 column 3 are due to the use of clustered standard errors in Table 5 in Kersting et al. (2020). In this table, we rely on the exact specification by Becker and Woessmann (2009).
Sources: See Table B.1.
Table A.5: Literacy as Mediator, 1871

|                  | (1)       | (2)       | (3)       | (4)       | (5)       |
|------------------|-----------|-----------|-----------|-----------|-----------|
| Dep. Var.        | Income Tax per Capita |
| Total effect     | -0.199    | -0.315    | 0.835***  | -0.246    | 0.842***  |
|                  | (0.201)   | (0.330)   | (0.272)   | (0.189)   | (0.278)   |
| Direct effect    | 0.187*    | 0.184     | 0.083     | 0.272*    | 0.144     |
|                  | (0.103)   | (0.143)   | (0.083)   | (0.152)   | (0.088)   |
| Indirect effect (literacy) | -0.039    | -0.500    | 0.752***  | -0.517*   | 0.698***  |
|                  | (0.104)   | (0.434)   | (0.291)   | (0.303)   | (0.270)   |
| Mediator explains | 19.87%    | 158.42%   | 90.09%    | 210.57%   | 82.93%    |
| Further controls | Y         | Y         | Y         | Y         | Y         |
| Only HRE         | Y         | Y         | N         | N         | Y         |
| Including eastern provinces | Y         | N         | Y         | N         | Y         |
| IV               | Residual Decision | Distance to Wittenberg |
| N                | 356       | 261       | 426       | 284       | 356       |

Notes: Standard errors in parentheses. Eastern provinces include East and West Prussia, Poznan, and Silesia. * p<0.1, ** p<0.05, *** p<0.01. Further controls: % Jews, % females, % age below 10, % of Prussian origin, average household size, population size (log), population growth 1867-1871 (in %), % missing education info. Method: mediation analysis with IV (Dippel et al., 2018). For the computation we rely on the Stata package `mediate` provided by Dippel et al. (2020). Sources: See Table B.1.
### Table A.6: Spill-over Effect of Protestantism on Literacy among Catholics, 1871

|                      | (1)             | (2)             | (3)             |
|----------------------|-----------------|-----------------|-----------------|
| **Panel 1: OLS**     |                 |                 |                 |
| Dep. Var. Literacy among Catholics |                 |                 |                 |
| Share Protestants    | 0.020           | -0.000          | -0.000          |
|                      | (0.030)         | (0.019)         | (0.019)         |
| Share German Speaking | 0.260**        | 0.324**         | 0.324**         |
|                      | (0.093)         | (0.121)         | (0.121)         |
| $R^2$                | 0.667           | 0.525           | 0.525           |
| **Panel 2: Second Stage** |                 |                 |                 |
| Dep. Var. Literacy among Catholics |                 |                 |                 |
| Share Protestants    | 0.273           | 0.199*          | -0.057          |
|                      | (0.179)         | (0.096)         | (0.043)         |
| Share German Speaking | 0.145*         | 0.248*          | 0.346**         |
|                      | (0.077)         | (0.123)         | (0.122)         |
| **Panel 3: First Stage** |                 |                 |                 |
| Dep. Var. Protestantism |                 |                 |                 |
| Distance to Wittenberg in km | -0.086**       | -0.109***       |                 |
|                      | (0.038)         | (0.032)         |                 |
| Residual Decision 1624 |                 |                 | 45.369***       |
|                      |                 |                 | (2.866)         |
| Share German Speaking | 0.404**         | 0.170           | 0.327**         |
|                      | (0.160)         | (0.160)         | (0.144)         |
| $R^2$                | 0.457           | 0.452           | 0.489           |
| Further Controls     | Y               | Y               | Y               |
| Only Holy Roman Empire | N             | Y               | Y               |
| N                    | 452             | 378             | 378             |

**Notes:** Standard errors in parentheses. Further controls include: % age below 10, % Jews, % females, % born in municipality, % of Prussian origin, average household size, population size (log), population growth 1867-1871 (in %), % missing education info, % blind, % deaf-mute, % insane. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

**Sources:** See Table B.1.
B Sources
## Table B.1: Data Sources

| Variable                  | Description                                                                 | Years                        | Source                                      |
|---------------------------|-----------------------------------------------------------------------------|------------------------------|---------------------------------------------|
| **Religion**              |                                                                             |                              |                                             |
| Protestants               | Share Protestants                                                           | 1875, 1880, 1890, 1900, 1905 | Galloway (2007)                            |
| Other religions           | Share other religions, i.e. non-Catholic and non-Protestant                  | 1875, 1880, 1890, 1900, 1905 | Galloway (2007)                            |
| Reformed Protestants      | Share reformed Protestants                                                  | 1871                         | Königlich Statistisches Bureau (1875)       |
| Literacy by Religion      |                                                                             | 1871                         | Galloway (2007)                            |
| **Savings**               |                                                                             |                              |                                             |
| Number of savings-banks   | Number of savings-banks                                                     | 1875, 1882, 1888, 1898, 1904 | Lehmann-Hasemeyer and Wahl (2017)           |
| Deposits in savings-banks | Amount of deposits at savings-banks                                          | 1875, 1882, 1888, 1898, 1904 | Lehmann-Hasemeyer and Wahl (2017)           |
| Deposits in Polish credit co-operatives | Amount of deposits (equity and borrowed capital) at Polish credit cooperatives | 1907                         | Politische Abteilung des königlichen Polizeipräsidiums in Posen (1909) |
| **Instrumental Variable** |                                                                             |                              |                                             |
| Ecclesiastical status     | 1 if data of Canton (2012) indicate that a prince-bishop or another clergyman ruled over the area |                               | Spenkuch (2017) and Spenkuch and Tillmann (2018) |
| Reichsmatrikel            | Contribution to the Imperial War Tax                                         | 1521                         | Zeumer (1913)                              |

See next page
| Variable                  | Description                                                                 | Years     | Source                                      |
|--------------------------|------------------------------------------------------------------------------|-----------|---------------------------------------------|
| Protestant in 1624       | 1 if the prince who reigned over the corresponding area in 1624 decided to choose Protestantism over Catholicism | 1624      | Spenkuch (2017) and Schindling and Ziegler (1989, 1992, 1993b,a, 1995, 1996) |
| Printing Press           | 1 if data of Rubin (2014) indicate that at least one of the cities in a given county had a printing press at the beginning of the sixteenth century |           |                                             |
| Latitude                 | Based on the coordinates of a counties’ centroid                           |           | Own calculations using QGIS                |
| Distance to Wittenberg   | Distance to the city of Wittenberg                                          |           | Own calculations using QGIS                |
| **Ethnic Nationality**   |                                                                              |           |                                             |
| Mother tongue German     | Share mother tongue German                                                   | 1867 (partially), 1890 | Galloway (2007), Belzyt (1998)              |
| **Further Controls**     |                                                                              |           |                                             |
| Labor income per capita  | Estimated by multiplying sector employment and wage data                    | 1882, 1895, 1907 | Kaiserliches Statistisches Amt (1884, 1897, 1910); Hoffmann (1965); Becker et al. (2014) |
| Average household size   | Households divided by population                                             | 1875, 1880, 1890, 1900, 1905 | Galloway (2007)                           |
| Urban population         | Share urban population                                                       | 1875, 1880, 1890, 1900, 1905 | Galloway (2007)                           |
| Potential male working population | Share men above 15                                                            | 1875, 1880, 1890, 1900, 1905 | Galloway (2007)                           |
| Polish doctors           | List of all doctors in the province Poznan                                    | 1905      | Verband der Ärzte Deutschlands (1908)        |

See next page
| Variable |
|------------------|
| % age below 10, % Jews, % females, % born in municipality, % of Prussian origin, average household size, population size (log), population growth 1867-1871 (in %), % missing education info, % blind, % deaf-mute, % insane |

| Years | Source |
|-------|--------|
| 1871  | Becker and Woessmann (2009) |
C Protestantism and literacy rates: Direct comparison with Becker and Woessmann (2009)

The well-known paper by Becker and Woessmann (2009) – further BW – serves as an important reference point for our work. Therefore, we compare our findings with their main results along several dimensions.

First, we compare our main results from the cross-table and the 2SLS regression with the main findings from the IV-regression by BW. Using the cross-table, we find that Protestants are on average only slightly over-proportionally literate (one percentage point for the complete sample and 0.15 percentage points once we exclude the eastern provinces). In our IV specification (Table 5 in Kersting et al. 2020), we find no significant effect of literacy. Moreover, our results from the cross-table show that the difference in literacy by religion is much bigger for regions in the East where the Polish minority lived (Figure 5 in Kersting et al. 2020). These findings stand in contrast to the results from Becker and Woessmann (2009, p.558): “In fact, the point estimate is significantly higher, with a difference in literacy of 18.9 percentage points between an all-Protestant and an all-Catholic county.” We exactly replicate their finding (column 2 in Table III in Becker and Woessmann (2009, p.559)), using distance to Wittenberg as an instrument, in column 1 in Table A.4. Thus, there seems to be a striking difference between, on the one hand, the relationship between Protestantism and literacy what BW measure, and, on the other hand, comparing literacy by religion based on the cross-table and our 2SLS results. Comparing Table A.4 column 5 with Table 5 in Kersting et al. (2020), column 3, we see that the discrepancy in the second stage results stem from the use of different IVs. These different results need an explanation. One possibility is that the instrumental variable used by BW may violate the exclusion restriction because the IV is highly correlated with German share as discussed in section HYPOTHESIS, DATA, AND EMPIRICAL STRATEGY in Kersting et al. (2020). Hence, BW probably overestimate the effect of Protestantism on literacy due to their choice of instrument. Distance to Wittenberg does not isolate the effect of Protestantism because it captures both, the effect of Protestantism and that of ethnicity. Instead, the IV based on the idiosyncratic part of a rulers’ choice to become Protestant in the 17th century is less likely to suffer from such a violation of the exclusion restriction. The main reason is that this instrument controls for distance to Wittenberg and latitude, which should capture among other things also variation in ethnic heterogeneity. We have also tested for this formally following Conley et al. (2012) and Karadja and Prawitz (2019), see section HYPOTHESIS, DATA, AND EMPIRICAL STRATEGY in Kersting et al. (2020). In the context of abating religious tensions and growing ethnic conflict at the end of the nineteenth-century, this is crucial.

Second, we provide a mediation analysis on literacy rates, income and Protestantism. We rely on a new approach for a causal mediation analysis put forward by Dippel et al.

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1Note that Becker and Woessmann (2009, p.549) mention the cross-table but do not provide an analysis based on this cross-table.
and use STATA code by Dippel et al. (2020). This methodology allows us to calculate the share of the total effect of Protestantism on economic outcomes that can be attributed to higher literacy among Protestants. BW show that higher income tax per capita for Protestant regions is due to higher literacy as crucial mediating factor. We replicate this finding by relying on the IV mediation analysis put forward by Dippel et al. (2018). If we use the IV from BW in column 3 in Table A.5 we find that indeed about 90% of the overall effect of Protestantism on income tax per capita is due to literacy. If instead we use our preferred IV as described above the results change: income tax per capita is no longer significantly related to Protestantism and literacy is no longer a crucial mediating factor (columns 1 and 2 in Table A.5). This is an example that the context can be essential for econometrics: because the geography of ethnic differences overlaps with that of religious differences, a simple distance-based instrument is likely to violate the exclusion restriction.
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