

Testing the Protestant Ethic Thesis with Quantitative Historical Data: A Research Note

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We provide a test of the thesis that Protestantism influenced the development of modern capitalism by using quantitative data from 1500 through 1870. Results show that during this period the percentage of a country's population that is Protestant is unrelated to both its level of per capita GDP and the average rate of its annual growth in per capita GDP. We conclude that the thesis that the Protestant ethic has been an important factor in the growth of modern capitalism is not supported.

Max Weber's thesis of the influence of Protestantism on capitalism is one of the great ideas in sociology, *The Protestant Ethic and the Spirit of Capitalism* very likely being one of the two or three most frequently discussed books in sociology's entire history. Most sociologists seem to accept it, albeit in some cases in modified form, but it has also been subjected to harsh criticism. Even in the first years after its publication it was controversial. Early critiques were made by Werner Sombart (1915), R.H. Tawney (1926), and H.M. Robertson (1935). Somewhat later, Kurt Samuelsson (1957) weighed in with a detailed critique that some considered devastating.

The most comprehensive attempt to evaluate the thesis was made by Jere Cohen (2002). Cohen breaks the thesis down into 31 separate propositions and empirically tests them all using a variety of data sources. Some of the propositions are supported, but usually weakly and in a qualified way, and for the most part his results do not support the thesis. However, Cohen brings forth no quantitative data, and thus some might argue that his tests are not sufficiently rigorous.

Delacroix and Nielsen (2001) attempted a rigorous test. They believed the thesis to be a "beloved myth." Eschewing any sort of nuanced exegesis of the thesis, they work from what they term the "Common Interpretation," which is set forth in terms of three propositions: (1. the Protestant Reformation generated new attitudes; (2. these new attitudes had an affect on the behavior of Protestants; (3. these "attitudes and behaviors favored economic development and contributed to the Industrial Revolution." These three propositions, Delacroix and Nielsen argue, have four empirical implications: (1. "the spread of Protestantism is *explicitly linked, in a causal sense*, with economic development and the origins of the Industrial Revolution;" (2. the formulation contains the *explicit* hypothesis that the Industrial Revolution began in "predominantly Protestant nations;" (3. the prediction is related to the Industrial Revolution in Europe and not to the

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later spread of industrial capitalism outside Europe; and (4. the Common Interpretation distinguishes between the effects of the Protestant and Catholic doctrines on people's behavior and attitudes. In sum, the Common Interpretation "views economic behavior as rooted in attitudinal—psychological and moral—processes within individuals." (512)

Using these three propositions and four implications as the foundation for their analysis, Delacroix and Nielsen hypothesize that at an individual level there should be a greater number of Protestants in entrepreneurial types of occupations; that on the societal level industrial capitalism should be seen as developing earlier in predominantly Protestant countries as opposed to Catholic nations; and that Protestant regions within nations should have a greater affinity for industrial capitalism than those regions with large populations of Catholics.

To test these hypotheses, Delacroix and Nielsen employ quantitative data from several sources delineating the distribution of Protestants and Catholics in 14 European nation-states, one data point for the entire United Kingdom, one for Great Britain, one for England and Wales, a data point for Austria-Hungary, one for the Austrian Crown, and one for the Hungarian Crown (yielding a final N of 20) at the earliest dates for which data were available, all of which are in the late 19th century. The dependent variable, industrial capitalism, is operationalized in terms of 17 categories under the sub-headings wealth and savings, institutionalization of stock trading, development of railroads, sectoral distribution of the labor force, and infant mortality (data come from a range of compendia). Using bivariate correlation analyses, they find a statistically significant link between Protestantism and savings bank deposits per capita, and a weaker yet still significant link with total bank deposits per capita. However, they find no other statistically significant relationships, which leads them to reject the Common Interpretation.

Delacroix and Nielsen's study is a laudable effort to test the Protestant ethic thesis rigorously. Because their focus is on the period around 1870, we wanted to see if their findings would hold for earlier centuries. We therefore test the thesis for the period 1500-1870. To carry out our test, we obtained data on GDP per capita for 15 European countries for the entire period of our analysis. These data are drawn from the electronic version of Angus Maddison's *The World Economy: A Millennial Perspective* (2010), which is probably the best source available for such early data. Original data provided by Maddison in 2001 were revised in 2008, and we use the revised data. These data are reported in appendices A and B. The countries are:¹ Austria, Belgium, Denmark, Finland, France, Germany, Italy, The Netherlands, Norway, Sweden, Switzerland, United Kingdom, Ireland, Portugal and Spain.

We first calculated Pearson and Spearman correlations between the percentage of each country that was Protestant and its per capita GDP. Because of excessive skewness in the GDP variable, it was logged, but we report correlations for both the logged and unlogged versions. Because the Netherlands experienced negative growth in the period 1700-1820 (-14 percent), Italy zero growth for 1500-1600 and 1600-1700, and Spain zero growth for 1600-1700, we added 15 to each case for all time periods before logging. Results are shown in Table 1. As can clearly be seen, they provide no support for

Table 1: Pearson and Spearman Correlations for Percent Protestant and GDP Per Capita

| Year | Pearson's r | | Spearman's rho |
|------|----------------|-----------------------|----------------|
| | GDP per Capita | Logged GDP per Capita | GDP per Capita |
| 1600 | -.215 | -.270 | -.342 |
| 1700 | -.022 | -.101 | -.214 |
| 1820 | -.023 | -.104 | -.207 |
| 1870 | .084 | .074 | .091 |

All correlations nonsignificant at .05 level (one-tailed test).

the thesis. All of the correlations are low, none is statistically significant, and in fact 9 of the 12 are negative, thus pointing in the wrong direction.

However, a more accurate test of the Protestant ethic thesis would seem to be the extent of *economic growth* in the centuries after the Protestant Reformation rather than simply static GDP levels. Results for the relationship between growth in GDP per capita and percent Protestant are shown in Table 2. These results also fail to support the thesis. Although all but one of the correlations is pointing in the right direction, all are low (only 6 of 30 are .300 or greater) and none is statistically significant.

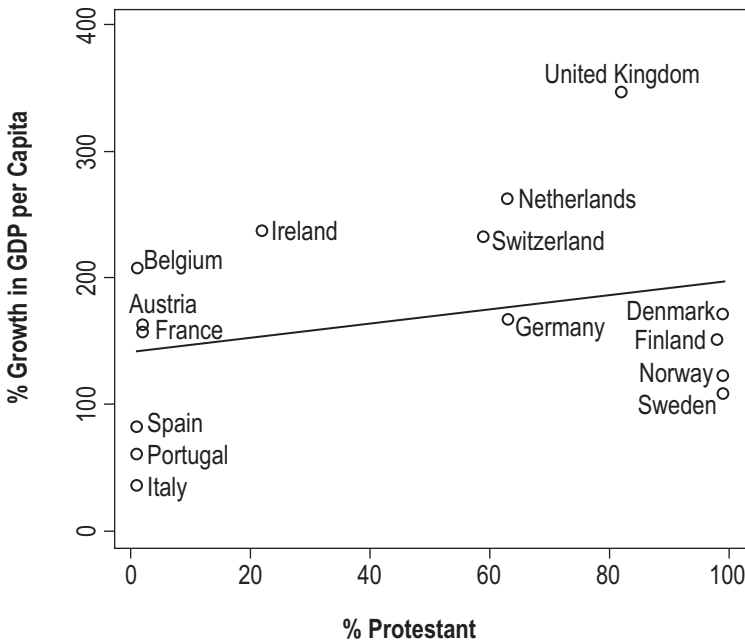
For good measure, we generated a scatterplot for the entire 1500-1870 period (Figure 1). Inasmuch as the regression line is nearly flat, this too shows no support for the thesis. In terms of individual countries, we see that Spain, Portugal and Italy, overwhelmingly Catholic countries, are in the lower left-hand corner where they are expected to be, but three other overwhelmingly Catholic countries, Belgium, Austria and France, are above the regression line. And predominantly Catholic Ireland is even farther above the regression line. Moreover, four overwhelmingly Protestant countries, Denmark, Finland, Norway and Sweden, are below the regression line. The United Kingdom is the only predominantly Protestant country that is located in approximately its expected position

Table 2: Pearson and Spearman Correlations for Percent Protestant and Percent Growth in GDP Per Capita

| Period | Pearson's r | | Spearman's rho |
|-----------|-------------|-----------------|----------------|
| | % Growth | Logged % Growth | % Growth |
| 1500-1600 | .111 | .114 | -.040 |
| 1600-1700 | .303 | .362 | .328 |
| 1700-1820 | .045 | -.051 | .067 |
| 1820-1870 | .226 | .335 | .245 |
| 1500-1700 | .193 | .233 | .243 |
| 1500-1820 | .249 | .233 | .299 |
| 1500-1870 | .295 | .350 | .266 |
| 1600-1820 | .291 | .286 | .252 |
| 1600-1870 | .270 | .367 | .223 |
| 1700-1870 | .188 | .263 | .188 |

All correlations nonsignificant at .05 level (one-tailed test).

Figure 1. Scatterplot of Percent Protestant and Growth in GDP per Capita, 1500-1870



(upper right-hand corner). In examining those countries with low GDP growth, both Catholic and Protestant countries appear to be on the periphery of the more centrally located European countries that experienced above average levels of growth. This may indicate that economic growth was related to shifting trade centers rather than to psychological characteristics attributable to a particular religion.

These shifting trade centers are clearly indicated by GDP levels and levels of growth in GDP and correspond closely to the shifting fortunes of nations in the world economy as outlined by such scholars as Wallerstein (1974, 1980) and Braudel (1979). Italy has the highest GDP per capita in 1500, well above that of all other countries. This is to be expected because Italian cities such as Venice and Genoa were, in the two centuries leading up to that time, the leading merchant capitalists in Europe. After 1500 we see a shift toward the Netherlands, which surpasses Italy by 1600, the latter not showing any growth. By 1700 the Netherlands has experienced large-scale growth and its per capita GDP is almost double that of Italy (which again shows no growth). The period between 1600 and 1700 (in particular 1625-1675) was the famed Dutch “golden age,” a period when that country enjoyed an “embarrassment of riches.” (Schama 1997) But the United Kingdom moves into second place by 1700. By 1820 the United Kingdom has almost caught up with the Netherlands, which has declined slightly from its GDP level in 1700. The Netherlands lost its 17th century hegemony during this period. By 1870, the United Kingdom takes the lead and, according to Wallerstein, becomes the world economy’s second hegemonic power. Belgium, which separated from The Netherlands to become a sovereign state in 1830, has essentially caught up with it. The

first stage of the Industrial Revolution, from 1820 through 1870, is demonstrated by strong growth figures for nearly all countries.

In conclusion, our results, like those of Delacroix and Nielsen, offer no support for the Protestant ethic thesis. Based on our analyses for the time period 1500-1870, Delacroix and Nielsen's contention that the thesis is a "beloved myth" appears well justified.

Note

1. Maddison reports data for Scotland for 2001, but does not provide updated data for 2008. Therefore, we excluded Scotland from the analyses because we cannot be sure of the reliability of the 2001 data.

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Appendix A: Percent Protestant and GDP Per Capita Data

| Country | % Protestant | per Capita GDP | | | | |
|----------------|--------------|----------------|----------|----------|----------|----------|
| | | 1500 | 1600 | 1700 | 1820 | 1870 |
| Austria | 2 | 707.00 | 837.20 | 993.20 | 1,218.17 | 1,862.59 |
| Belgium | 1 | 875.00 | 975.63 | 1,144.00 | 1,318.87 | 2,691.52 |
| Denmark | 99 | 738.33 | 875.38 | 1,038.57 | 1,273.59 | 2,003.18 |
| Finland | 98 | 453.33 | 537.50 | 637.50 | 781.01 | 1,139.68 |
| France | 2 | 727.47 | 841.03 | 910.02 | 1,134.98 | 1,875.65 |
| Germany | 63 | 688.00 | 791.00 | 910.00 | 1,076.85 | 1,839.08 |
| Italy | 1 | 1,100.00 | 1,100.00 | 1,100.00 | 1,116.92 | 1,499.36 |
| Netherlands | 63 | 761.05 | 1,381.33 | 2,130.00 | 1,837.98 | 2,756.79 |
| Norway | 99 | 610.00 | 665.00 | 722.00 | 801.03 | 1,360.14 |
| Sweden | 99 | 650.91 | 700.00 | 750.00 | 818.89 | 1,359.03 |
| Switzerland | 59 | 632.31 | 750.00 | 890.00 | 1,090.13 | 2,102.07 |
| United Kingdom | 82 | 714.10 | 973.58 | 1,250.32 | 1,705.92 | 3,190.43 |
| Ireland | 22 | 526.25 | 615.00 | 715.32 | 877.48 | 1,775.05 |
| Portugal | 1 | 606.00 | 740.00 | 819.00 | 922.96 | 975.04 |
| Spain | 1 | 661.03 | 853.03 | 853.02 | 1,007.87 | 1,207.09 |

Sources: Data on percent Protestant were derived from Delacroix and Nielsen (2001). Per Capita GDP data are from Maddison (2010) and are expressed in 1990 Geary-Khamis dollars.

Appendix B: Percent Growth in Per Capita GDP by Time Period

| Country | Growth Period | | | | | | | | | | | | | |
|----------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1500-1600 | 1600-1700 | 1700-1820 | 1820-1870 | 1500-1700 | 1500-1820 | 1500-1870 | 1600-1820 | 1600-1870 | 1600-1870 | 1700-1870 | 1700-1870 | 1700-1870 | 1700-1870 |
| Austria | 18.42 | 18.63 | 22.65 | 52.90 | 40.48 | 72.30 | 163.45 | 45.50 | 122.48 | 122.48 | 87.53 | 87.53 | 87.53 | 87.53 |
| Belgium | 11.50 | 17.26 | 15.29 | 104.08 | 30.74 | 50.73 | 207.60 | 35.18 | 175.88 | 175.88 | 135.27 | 135.27 | 135.27 | 135.27 |
| Denmark | 18.56 | 18.64 | 22.63 | 57.29 | 40.66 | 72.50 | 171.31 | 45.49 | 128.83 | 128.83 | 92.88 | 92.88 | 92.88 | 92.88 |
| Finland | 18.57 | 18.60 | 22.51 | 45.92 | 40.63 | 72.28 | 151.40 | 45.30 | 112.03 | 112.03 | 78.77 | 78.77 | 78.77 | 78.77 |
| France | 15.61 | 8.20 | 24.72 | 65.26 | 25.09 | 56.02 | 157.83 | 34.95 | 123.02 | 123.02 | 106.11 | 106.11 | 106.11 | 106.11 |
| Germany | 14.97 | 15.04 | 18.34 | 70.78 | 32.27 | 56.52 | 167.31 | 36.14 | 132.50 | 132.50 | 102.10 | 102.10 | 102.10 | 102.10 |
| Italy | .00 | .00 | 1.54 | 34.24 | .00 | 1.54 | 36.30 | 1.54 | 36.30 | 36.30 | 36.30 | 36.30 | 36.30 | 36.30 |
| Netherlands | 81.50 | 54.20 | -13.71 | 49.99 | 179.88 | 141.50 | 262.23 | 33.06 | 99.57 | 99.57 | 29.43 | 29.43 | 29.43 | 29.43 |
| Norway | 9.02 | 8.57 | 10.95 | 69.80 | 18.36 | 31.32 | 122.97 | 20.46 | 104.53 | 104.53 | 88.39 | 88.39 | 88.39 | 88.39 |
| Sweden | 7.54 | 7.14 | 9.19 | 65.96 | 15.22 | 25.81 | 108.79 | 16.98 | 94.15 | 94.15 | 81.20 | 81.20 | 81.20 | 81.20 |
| Switzerland | 18.61 | 18.67 | 22.49 | 92.83 | 40.75 | 72.41 | 232.44 | 45.35 | 180.28 | 180.28 | 136.19 | 136.19 | 136.19 | 136.19 |
| United Kingdom | 36.34 | 28.42 | 36.44 | 87.02 | 75.09 | 138.89 | 346.77 | 75.22 | 227.70 | 227.70 | 155.17 | 155.17 | 155.17 | 155.17 |
| Ireland | 16.86 | 16.31 | 22.67 | 102.29 | 35.93 | 66.74 | 237.30 | 42.68 | 188.63 | 188.63 | 148.15 | 148.15 | 148.15 | 148.15 |
| Portugal | 22.11 | 10.68 | 12.69 | 5.64 | 35.15 | 52.30 | 60.90 | 24.72 | 31.76 | 31.76 | 19.05 | 19.05 | 19.05 | 19.05 |
| Spain | 29.05 | -0.00 | 18.15 | 19.77 | 29.04 | 52.47 | 82.61 | 18.15 | 41.51 | 41.51 | 41.51 | 41.51 | 41.51 | 41.51 |

Note: Percent growth calculated from GDP per capita measures in Maddison (2010).

