

## **The Effect of Religion on Economic Development: A Cross National Study of 63 Former Colonies**

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### I. INTRODUCTION

Latin America's failure to develop and prosper, especially in comparison with her northern neighbors, has frequently led scholars to speculate about the political and socio-economic reasons behind the region's underdevelopment. The consensus in the literature has been that the Spanish-speaking countries inherited characteristics of Spain, characteristics which are not especially conducive to growth and development<sup>1</sup>. Many have argued that these traits emanate from Catholicism, a dominant cultural force in most Spanish-speaking countries. Since Weber (1930) wrote about the relationship between Protestantism and economic development, many social scientists have noted a negative correlation between Catholicism and economic progress<sup>2</sup>. However, little of the literature on religion and growth has been subjected to empirical testing.

This paper seeks to fill that gap by testing whether Protestantism is positively related to economic growth and development and whether religion can help to explain why Spanish ex-colonies perform markedly worse than their British

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1. Examples of such 'Spanish' traits include a proclivity toward hierarchical, authoritarian government and religion, a disdain for punctuality and the work ethic, and the lack of public spirit (see Andreski 1969, for a good discussion of these ideas).
2. Macaulay (1874), Morse (1964), Andreski (1988), and Harrison (1985) all provide a good exposition of this argument. They argue that the characteristics of Catholicism, such as a focus on the 'other' world and penance for sins, makes it less conducive to the work ethic and economic development than Protestantism.

counterparts<sup>3</sup>. In a pooled sample of 63 ex-colonial states, I find that the former Spanish and French colonies (both steeped in the Catholic tradition) perform significantly worse on average than former British colonies. I also find that the growth rate of Protestantism is positively and significantly correlated with real GDP growth, and that the level of Protestantism is significantly related to real per capita income levels.

Contrary to the Weberian hypothesis though, my results show that religion is not the sole determinant of differential development and growth. Controlling for the level and growth rate of Protestantism does not eliminate the gap between the three sets of former colonies. As Weber's critics have pointed out, Protestantism seems to be only one of many factors which determine economic progress.

Section II of the paper examines the literature on Protestantism and growth, and surveys some of the development writings that link Catholicism to Latin American underdevelopment. Section III describes the data and variables used in the statistical analysis. In Section IV, I estimate several regressions to see whether religion is correlated with the growth rate of real GDP, and whether controlling for religion explains the development gap between the sets of ex-colonial states. Section V tests for a correlation between real per capita GDP and the level of Protestantism in a society. Section VI summarizes the results and discusses potential extensions of the model.

## II. RELIGION AND DEVELOPMENT<sup>4</sup>

The literature on Latin American underdevelopment tends to fall into two categories: case studies of particular countries and why they have fared so poorly in the post-independence era, or more philosophical, anecdotal arguments about how Spanish America inherited growth-retarding characteristics of the Spanish culture. One of the most interesting lines of research is the debate on Catholicism and economic growth.

Richard Morse and Lord Macaulay have applied Weber's hypothesis on religion to the Americas, arguing that the Spanish region inherited a Hispano-Catholic tradition that is less conducive to development than Protestantism. The Protestant virtues of hard work and individualism have allowed the United

3. See Grier (1995) for an empirical analysis showing that French and Spanish ex-colonies have significantly lower growth rates than do ex-British colonies.

4. For a good analysis of the effect of church membership on moral and economic development in the United States, see Lipford et al. (1993).

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States and Canada to build up a large savings base, providing capitalists with the funds needed to increase investment and the capital stock<sup>5</sup>.

Stanislav Andreski, in his 1969 work on Latin American underdevelopment, goes further by arguing that Catholic societies are more prone to communism than are Protestant ones. He states that,

'Communism wins adherents much more easily in Catholic than in the Protestant countries. Can this be accidental? One possible explanation is that the Protestant countries are all prosperous whereas all the entirely Catholic countries are poor. The only country in the world which has neither a large number of Protestants nor widespread poverty is France, and there about half of the population is irreligious and the Church is disestablished ... Protestantism, by promoting prosperity, prevents the emergence of a social environment propitious to the spread of ideologies preaching violent subversion'.

While most social scientists would admit of a general correlation between Protestantism and economic development, the details of Weber's argument are still being debated. Most of the critics argue that development and prosperity are not limited to Protestant states and sects. Felix Rachfahl points to a Catholic counterpart of Protestantism, including the Benedictines, Franciscans, and Jesuits, whose ascetics are similar to those of Calvinism. Lujo Brentano argues that Weber's Protestant spirit described only the Puritans, a relatively minor sect of Protestantism and points to the Italian renaissance cities, which were clearly Catholic, as counter-examples to Weber's Protestant enclaves. Lastly, H.M. Robertson argued that capitalism existed before the Reformation, and that Weber's correlation between Protestantism and growth is really a case of reverse causality. The rise of the middle class and capitalism changed the Protestant ethic to accommodate a more thrifty, hard working people.

While much of the work on Protestantism and development is useful and insightful, little of it has been tested on a large cross section of countries. In the following section, I estimate a growth model which includes dummy variables for the major colonial powers and a proxy for Protestantism, in order to determine whether Protestantism is correlated with economic growth and if it can help to explain the underdevelopment in Spanish America. For the purpose of this essay, I do not claim that Protestantism is the only religion conducive to capitalism, nor that Protestantism is the only determinant of growth. In fact, I find that controlling for Protestantism does not help to close the development gap between the former French and Spanish colonies and the British ones.

5. This section relies heavily on Samuelsson's *Religion and Economic Action* (1964), which provides an excellent review of the literature on the subject.

## III. DATA AND VARIABLES

In the following section, I pool data for the years 1961-1990 for all of the major British, French, and Spanish ex-colonies (see Appendix 3 for a listing of the countries included)<sup>6</sup>. As in Grier (1995), I convert the 30 years of annual data into six 5 year averaged observations per country. I use five year averages because averaging over the entire sample could result in a loss of temporal information, where the results would be driven solely by cross-country variations.

Because the sample covers a large number of countries, I test for coefficient stability over time and whether pooling the data into a single sample is appropriate. Dividing the data by the colonizing power, I calculate f-tests for the restricted and unrestricted models, and find that pooling is a feasible and appropriate technique.

In the first empirical application of the paper, the dependent variable is average real GDP growth; in the second part, it is real per capita income. The independent variables are drawn from the new empirical economic growth literature, including such factors as initial wealth, population changes, the standard deviation of inflation, and government consumption (see Barro 1988, Grier and Tullock 1989, Kormendi and Meguire 1985, and Lucas 1987). The following is a brief description of the variables:

#### 1. Variables in the Growth Equation

(a) *Initial real per-capita GDP*: The neoclassical model argues that lower income countries, with lower initial levels of technology and capital, will grow faster than more advanced countries (see Solow 1956, Dowrick and Nguyen 1989, Barro and Sala-i-Martin 1991, 1992). Following Romer (1987), Rebelo (1991), and Grier and Tullock (1989), I estimate a growth model which uses initial real per-capita GDP as a variable to explain subsequent GDP growth.

6. The economic data comes from the Penn World Tables 5.6. I limit my sample to countries that were predominantly held by one colonizing power. Countries which were ruled by different colonizers (either because the country was split between colonizing powers, or because the country changed hands, e.g., as many German colonies were turned over to Britain and France after WW II) are excluded from the sample because of the difficulty in drawing meaningful conclusions from the results.

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(b) *Colonizing Country*: Dummy variables representing the identity of the colonizing country, either Britain, France, or Spain<sup>7</sup>.

(c) *Population Growth*: The neoclassical growth model implies a positive and proportionate relationship between growth in labor force and income growth (see Kormendi and Meguire 1985 and Grier and Tullock 1989). Population growth, while not equivalent to labor force growth, works as a good proxy and should have a similar effect on income.

(d) *Standard deviation of inflation*: It has long been argued that inflation uncertainty lowers real output growth. Hayek (1944) and Friedman (1977) argue that inflation uncertainty increases the variability of prices, which lowers economic efficiency and productivity. Empirically, Levi and Makin (1980) and Mullineaux (1979) shows that the variability of inflation is negatively correlated with economic growth in the U.S. Using post-war U.S. data, Grier and Perry (1995) estimate a GARCH model showing that inflation uncertainty lowers output growth. I use the standard deviation of the inflation rate over each 5 year period as a proxy for stable monetary policy. I expect the variability of inflation to be negatively correlated with average economic growth<sup>8</sup>.

(e) *Government Consumption*: The issue of government spending and its effect on economic growth is still widely debated in economics literature. To avoid the controversy, I use the average growth rate of government consumption spending as a percentage of GDP over each 5 year period, which is more likely to be negatively correlated with economic growth than government spending on investment.

(f) *Religion*: I use a variable called GPROT, which is the growth rate of Protestant adherents during the 1970-1980 period<sup>9</sup>.

7. I exclude most of the island countries in the Caribbean because of the lack of data needed to construct a meaningful time series. I exclude Dutch, Portuguese, and Belgian ex-colonial holdings because of the limited number of countries involved. When I estimate equations with colonial dummies for these countries, I find that their inclusion does not substantively change my results. See Appendix 1 and 2 for a summary of these results.
8. Following Grier and Tullock (1989) and Kormendi and Meguire (1985), I assume that the variability of inflation and government consumption are exogenous variables in the model. Because of the possibility that these variables may be related to the growth rate of Protestantism, I perform a simple correlation test and find them to be uncorrelated.
9. The data on Protestantism are from Barrett's World Christian Encyclopedia, which has the most up-to-date and accurate data on religious affiliation. Although his data only includes data from the years 1900, 1970, and 1980, it is by far the best data that exists and the best proxy of Protestant growth during the sample period.

## 2. Variables in the Income Equation

(a) *Investment*: Following Mankiw et al. (1992), I use lagged value of investment as a percentage of GDP to help explain real per capita income differences across countries. I expect investment to be positively correlated with real per capita income levels.

(b) *Population Growth*: Relying on the Mankiw et al. (1992) equation, I include a variable for lagged population growth to see if it is correlated with real per capita income levels.

(c) *Religion*: I use data on Protestantism for the years 1900, 1970, and 1980 to create a variable called PROT, which is the lagged value of the level of Protestantism (to reduce causality problems). That is, 1970 real per capita income levels are explained by the 1900 level of Protestantism, 1980 income levels by 1970 Protestant levels, and 1989 income by 1980 Protestant levels.

## IV. ECONOMETRIC RESULTS

### 1. Does Religion Matter for Economic Growth?

Before including religion in my growth equation, I first test to see whether the identity of the colonizing power has a significant effect on subsequent growth and development. In equation 1 below, I find that former Spanish and French colonies have average GDP growth rates that are significantly lower than ex-British colonial growth rates.

Average real GDP% =

$$\begin{aligned}
 & 4.01 - 0.0000015\text{Initial Real GDP} - 1.62\text{ France} - 0.83\text{ Spain} \\
 & (8.4) \quad (0.04) \qquad\qquad\qquad (4.43) \qquad\qquad\qquad (3.3) \qquad\qquad\qquad (1) \\
 & + .64\text{ Pop} - 0.054\text{ Std. dev inflation} - 0.05\text{ Govt. consumption\%} \\
 & (4.77) \quad (5.24) \qquad\qquad\qquad (2.2)
 \end{aligned}$$

$N = 378$ ;  $R^2 = 0.4559$

t-statistics are in parentheses

Time period dummies were estimated but are not reported to save space.

Because the British colonial dummy is excluded from the regression specification, its effect is recorded in the intercept coefficient. The results indicate that

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former French colonies perform, on average, 1.62 percentage points worse than former British colonies. Ex-Spanish colonies, while out-performing the French ex-colonial holdings, still do 0.83 percentage points worse than the mean growth rate of British colonial states.

As do Grier and Tullock (1989), I find that population growth has a positive and significant effect on economic growth, and that inflation variability and the growth in government consumption are both negatively related to development. I find no evidence of convergence in my sample, as the t-statistic for initial wealth is completely insignificant. My results show strongly that the identity of the colonizing power has a significant effect on subsequent economic growth, even when other institutional facts are controlled for.

Having established the fact that former French and Spanish colonies do perform significantly worse on average than former British colonies, I add a proxy for Protestant growth to test whether religion can help to explain the development gap between the three sets of ex-colonies and whether religion is significantly correlated with real GDP growth. In the following equation, I add the variable GPROT, which is the growth rate of Protestant adherents from 1970-1980. The results are reported in equation 2 below, with t-statistics in parentheses.

Average real GDP% =

$$3.96 - 0.0000004 \text{ Initial Real GDP} - 1.85 \text{ France} - 0.86 \text{ Spain} \\ (8.3) \quad (0.011) \qquad (5.4) \qquad (3.5) \qquad (2)$$

$$+ 0.68 \text{ Pop} + 0.049 \text{ GPROT} - 0.054 \text{ Std. dev. infl.} - 0.055 \text{ Govt. \%} \\ (5.12) \quad (4.21) \qquad (5.35) \qquad (2.44)$$

N = 378; R<sup>2</sup> = 0.4761

t-statistics are in parentheses

Time period dummies were estimated but are not reported to save space.

The results indicate a strong positive correlation between the growth rate of Protestantism and economic growth. A one standard deviation increase in the growth of Protestantism is associated with a 0.49 percentage point increase in

average growth<sup>10</sup>. Inclusion of GPROT in the regression does not significantly change the Spanish coefficient, but does make the French variable slightly more negative and significant. While former French colonies had significantly lower levels of Protestantism than the British ex-colonies, the growth rate of Protestantism is significantly higher in the formerly French dependencies. Appendix 5 shows that the mean level of GPROT for French colonies is 3.97, while it is only 1.44 for Spanish ex-colonies and 0.04 for British ones, which helps to explain why controlling for the growth rate of Protestantism does not help to close the development gap between ex-French and British colonial holdings.

One potential problem with the regression is that the sample period includes the years 1960-1990, while GPROT is the 1970 to 1980 growth rate of Protestantism. I limit my sample to 1970-1990 to see whether the earlier results are substantiated. The results are reported in equation 3 below.

Average real GDP% =

$$4.9 - 0.00003 \text{ Initial Real GDP} - 1.19 \text{ France} - 0.9 \text{ Spain} + 0.44 \text{ Pop} \\ (9.9) \quad (0.68) \qquad \qquad (3.6) \qquad \qquad (3.3) \qquad \qquad (3.1) \qquad (3)$$

$$- 0.05 \text{ Std. Dev. Inflation} - 0.045 \text{ Govt Consumption\%} \\ (4.5) \qquad \qquad \qquad (2.1)$$

N = 252; R<sup>2</sup> = 0.6534

t-statistics are in parentheses

Time dummies were estimated but removed to save space.

Even when the sample is limited to the 1970-1990 period, former French and Spanish colonies still perform significantly worse than their British colonial counterparts. As found above, the variability of inflation and the growth of government consumption are negatively correlated with real GDP growth. To

10. The results imply only a correlation between the growth rate of Protestantism and real GDP growth, not causation. It is possible that GDP growth causes an increase in the number of Protestant adherents, though the specific link in that scenario is far from obvious. It is also possible that a third factor, uncontrolled for in the equation, could be driving both the growth rate in Protestantism and real GDP. Because there is no continuous time series available on Protestant levels, I am unable to perform causality tests on the data. In the second part of the paper, I use lagged levels of Protestantism to explain subsequent levels of real per capita income. Since it is unlikely that 1970 income levels explain 1900 levels of Protestantism, the correlation between Protestantism and real income is likely to signify causation also, which lends credence to the hypothesis that the growth rate of Protestantism is a causal factor in explaining the growth rate of real GDP.



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determine the effect of Protestantism on this narrower sample, I now include GPROT in the equation.

Average real GDP% =

$$4.8 - 0.00002 \text{ Initial Real GDP} - 1.4 \text{ France} - 0.93 \text{ Spain} + 0.5 \text{ Pop} \\ (9.7) \quad (0.51) \qquad \qquad (4.1) \qquad \qquad (3.4) \qquad \qquad (3.66) \quad (4)$$

$$+ 0.032 \text{ GPROT} - 0.05 \text{ Std. Dev. Inflation} - 0.047 \text{ Govt. \%} \\ (2.15) \qquad \qquad (4.5) \qquad \qquad (2.2)$$

$N = 252; R^2 = 0.6576$

t-statistics are in parentheses

Time dummies were estimated but removed to save space.

The results support my hypothesis that the growth rate of Protestantism is significantly correlated with real GDP growth, and that Protestantism is one of many determinants of development. Controlling for Protestantism does not significantly close the gap between the three sets of former colonies, implying that some effect, independent of religion, is driving the difference in growth rates.

### *2. Does Religion Matter for Real Per Capita Income Levels?*

The previous section analyzed the effects of the increase of Protestantism on real GDP growth. I found a strong positive correlation between Protestant growth and economic development. This section further explores the effect of religion on economic growth by looking at whether Protestantism can help to explain differences in real per capita income levels.

Because of the limited sample size of the religion data, I estimate a regression where the dependent variable includes 1970, 1980, and 1989 real per capita income levels<sup>11</sup>. Mankiw et. al (1992) regress investment and population growth on real per capita income levels. I follow their example, but use lagged values of the independent variables to reduce causality problems. More specifically, I use the average value for investment and population growth from 1965-1969 and the 1900 Protestant level to explain 1970 real per capita income,

11. 1989 income levels are used because of missing data for many developing countries for the year 1990.

the 1975-1979 investment and population mean values and the 1970 Protestant level for the 1980 observation, and the average 1984-1988 investment and population growth values and the 1980 Protestant level for the 1989 observation.

Before controlling for religion, I use OLS to estimate equation 5, which includes only the dummy variables and the two independent variables.

Real per capita income =

$$3950.5 - 1436 \text{ Population growth }_{t-1} \quad (5)$$

(5.5)      (6.41)

$$- 918.9 \text{ France} - 283.7 \text{ Spain} + 190.2 \text{ Investment }_{t-1}$$

(1.99)      (0.63)      (7.5)

N = 186; R<sup>2</sup> = 0.4179

t-statistics are in parentheses

Time dummies were estimated but are not recorded to save space.

The results indicate that investment is strongly and positively correlated with real per-capita income, while population growth is negatively related to income levels. Ex-French colonies have lower real per capita income levels on average than ex-British colonies, an average of 919 dollars less. The average real percapita income of ex-Spanish colonies is insignificantly different from formerly British colonies.

To determine the effect of Protestantism on income, I add a variable called PROT to the equation, where PROT is simply the level of Protestantism in the years 1900, 1970, and 1980. Equation 6 below reports the results when religion is included in the regression.

Real per capita income =

$$3006.9 - 1315.8 \text{ Population growth }_{t-1} - 552.4 \text{ France} \quad (6)$$

(4.3)      (6.16)      (1.24)

$$+ 425.8 \text{ Spain} + 170.7 \text{ Investment }_{t-1} + 100.2 \text{ PROT}$$

(0.95)      (6.99)      (4.74)

N = 186; R<sup>2</sup> = 0.4825

t-statistics are in parentheses

Time dummies were estimated but are not recorded to save space.

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The results indicate that Protestantism is positively and significantly correlated with real per capita income. The inclusion of PROT also reduces the significance of the French coefficient, to the point where the average income level in the ex-French colonies is not significantly different than in British ones. PROT also changes the sign of the Spanish variable, although the t-statistic would not warrant any strong claims about the effect of Protestantism on Spanish income levels. Thus, the results show that accounting for Protestantism slightly closes the gap between French and British income levels, and that Protestant levels are positively related to income.

### VI. CONCLUSION

Since Weber's famous essay on the effect of the Protestant ethic on national development, social scientists have linked Protestantism with economic growth and prosperity. Development writers have long associated the failure of Spanish America to develop with the region's overwhelming Catholicism. In this paper, I set out a formal test of whether Protestantism is correlated with economic growth rates and real per capita incomes. I find overwhelmingly that Protestantism is correlated with growth and development. I also find that controlling for Protestantism does not significantly lessen the gap between British and French and Spanish colonial development.

Further empirical work on the subject of religion and growth could be highly illuminating. Fanfani (1936) argued that religion is conducive to growth insofar as it is separate from a country's political and economic life. He claims that all religion has a negative effect on development, and that the separation of church and state that occurs in many Protestant countries is the real driving force behind economic growth. More empirical work examining the influence of the Catholic Church and subsequent economic development could help to find a true basis for the correlation of Protestantism and growth.

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APPENDIX 1

Pooled Cross-Country Equations, with Colonial Dummies for Portuguese, Dutch, and Belgian ex-Colonial States <sup>a b</sup>

Variable	sample w/ ex- Port. colonies	sample w/ ex- Dutch colonies	sample w/ ex- Belgian colonies
Initial Wealth	-0.000032 (0.96)	-0.000004 (0.11)	-0.000004 (0.11)
French colonial dummy	-1.69 (4.67)	-1.6 (4.4)	-1.65 (4.5)
Spanish colonial dummy	-0.79 (3.15)	-0.81 (3.23)	-0.9 (3.67)
Portuguese colonial dummy	-0.60 (0.73)	na	na
Dutch colonial dummy	na	1.3 (0.78)	na
Belgian colonial dummy	na	na	-0.67 (0.71)
% govt. consumption	-0.05 (2.3)	-0.04 (1.7)	-0.076 (3.2)
Population growth	0.45 (3.47)	0.623 (4.6)	0.697 (5.4)
Std. dev. inflation	-0.05 (5.08)	-0.05 (5.17)	-0.05 (4.99)
Intercept	4.48 (9.8)	3.98 (8.2)	3.8 (8.0)
N; R <sup>2</sup>	408; 0.4141	384; 0.4435	396; 0.4451

<sup>a</sup> t-statistics are in parentheses.

<sup>b</sup> Time-period dummies were estimated but are not reported to save space.

APPENDIX 2

Pooled Cross-Country Equations, with Colonial Dummies for Portuguese, Dutch, and Belgian ex-Colonial States, and the Growth Rate of Protestantism <sup>a b</sup>

Variable	sample w/ ex- Port. colonies	sample w/ ex- Dutch colonies	sample w/ ex- Belgian colonies
Initial Wealth	-0.00003 (0.96)	-0.000003 (0.08)	-0.000005 (0.14)
French colonial dummy	-1.9 (5.7)	-1.8 (5.3)	-1.88 (5.4)
Spanish colonial dummy	-0.83 (3.3)	-0.84 (3.37)	-0.9 (3.79)
Portuguese colonial dummy	-0.61 (0.75)	na	na
Dutch colonial dummy	na	1.3 (0.78)	na
Belgian colonial dummy	na	na	-0.67 (0.72)
GPROT	0.05 (4.0)	0.05 (4.07)	0.05 (4.3)
% govt. consumption	-0.06 (2.5)	-0.05 (1.98)	-0.08 (3.4)
Population growth	0.48 (3.7)	0.66 (4.9)	0.73 (5.8)
Std. dev. inflation	-0.05 (5.2)	-0.05 (5.3)	-0.05 (5.1)
Intercept	4.5 (9.8)	3.93 (8.2)	3.8 (7.97)
N; R <sup>2</sup>	408; 0.4312	384; 0.4630	396; 0.4643

<sup>a</sup> t-statistics are in parentheses.

<sup>b</sup> Time-period dummies were estimated but are not reported to save space.

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## APPENDIX 3

### *Division of Countries in the Sample, by Colonizing Power*

#### *A.1 Former British Colonies (29)*

Botswana	Nigeria	Barbados	Singapore
Egypt	Seychelles	Canada	Sri Lanka
Gambia	Sierra Leone	United States	Australia
Ghana	Swaziland	Guyana	New Zealand
Kenya	Tanzania	Malaysia	Jamaica
Lesotho	Uganda	Pakistan	
Malawi	Zambia	Hong Kong	
Mauritius	Zimbabwe	India	

#### *A.2 Former Spanish Colonies (17)*

Costa Rica	Colombia	Argentina
El Salvador	Ecuador	Bolivia
Guatemala	Paraguay	Chile
Honduras	Peru	
Mexico	Uruguay	
Nicaragua	Venezuela	
Panama	Philippines	

#### *A.3 Former French Colonies (17)*

Algeria	Madagascar	Haiti
Benin	Mali	
C.A. R.	Mauritania	
Chad	Niger	
Congo	Réunion	
Gabon	Senegal	
Guinea	Togo	
Ivory Coast	Tunisia	

## APPENDIX 4

Macro Data Summary and Sources <sup>a</sup>  
 Mean/Std. Deviation (% of the Population Adhering to Protestantism)

Variable	Total Sample	Ex-British Colonies	Ex-French Colonies	Ex-Spanish Colonies
Output Growth	3.8 / 3.33	4.3 / 3.42	3.11 / 3.26	3.6 / 3.1
Initial Wealth	2552 / 2847	3086 / 3780	1285.3 / 937	2909 / 1631
Pop. growth	2.36 / 0.898	2.22 / 0.989	2.48 / 0.858	2.47 / 0.732
Std. Dev. Inf.	9.36 / 12.28	9.29 / 10.2	8.5 / 4.76	10.35 / 19
Govt. Consump	0.79 / 4.12	1.18 / 4.24	0.37 / 3.75	0.55 / 4.22
N	378	174	102	102

<sup>a</sup> Source for economic variables is the Penn World Tables, 1960-1990.

## APPENDIX 5

Summary of Religious Statistics for Former British, French, and Spanish Colonial States  
 Avg. Percent of the Population that is Protestant /Std. Deviation

	Total Sample	Ex-British Colonies	Ex-French Colonies	Ex-Spanish Colonies
P1900	4.57 / 10.56	8.54 / 14.1	1.45 / 4.4	0.91 / 2.1
P1970	7.7 / 8.8	11.38 / 10.2	6.09 / 7.98	3.0 / 1.44
P1980	7.9 / 8.6	11.1 / 9.6	6.76 / 8.9	3.48 / 1.9
GPROT	1.13 / 8.6	0.039 / 0.14	3.97 / 16.3	0.144 / 0.105

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### SUMMARY

In this paper I present a statistical test of the hypothesis that Protestantism is positively associated with economic growth. I also investigate whether religion can help to explain why ex-Spanish and French colonies have significantly lower economic growth than ex-British colonies. I find that the growth rate of Protestantism is significantly and positively correlated with real GDP growth, and that the level of Protestantism is significantly related to real per-capita GDP levels. While the results imply that Protestantism plays an important level in development, its inclusion in the cross-country regressions do not close the gap between the ex-colonial states.

### ZUSAMMENFASSUNG

In dieser Arbeit präsentiere ich eine statistische Überprüfung der Hypothese, daß der Protestantismus positiv mit wirtschaftlichem Wachstum assoziiert wird. Ich untersuche auch, ob Religion zur Klärung der Frage beitragen kann, warum frühere spanische und französische Kolonien ein weitaus niedrigeres Wirtschaftswachstum verzeichnen als frühere britische Kolonien. Ich stelle fest, dass

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die Wachstumsrate des Protestantismus und das reale Inlands-Bruttosozialprodukt in bedeutender, positiver Wechselbeziehung zueinander stehen, und daß ein wesentlicher, positiver Zusammenhang zwischen dem Bevölkerungsanteil der Protestanten und dem realen, pro Kopf erwirtschafteten Inlands-Bruttosozialprodukt besteht. Während meine Ergebnisse andeuten, daß Religion eine wichtige Rolle in der Entwicklung spielt, so eliminiert deren Einbeziehung in landesweite Wachstumsmodelle dennoch nicht die Kluft zwischen den früheren britischen Kolonien und den anderen früheren Kolonialstaaten.

### RÉSUMÉ

Dans cette communication, je présente une analyse statistique de l'hypothèse selon laquelle le protestantisme est indéniablement associé à la croissance économique. J'ai également fait une étude pour savoir si la religion peut aider à expliquer pourquoi les ex-colonies espagnoles et françaises ont une croissance considérablement plus faible que les ex-colonies britanniques. J'ai trouvé que le taux de croissance du protestantisme était considérablement et indéniablement en corrélation avec la croissance réelle du PNB et que le niveau de protestantisme est considérablement et indéniablement apparenté aux niveaux réels de PNB par habitant. Alors que mes résultats laissent supposer que la religion joue un rôle important dans le développement, son inclusion dans les modèles de croissance à travers le pays, n'élimine pas l'écart entre les Anglais et les autres états ex-coloniaux.



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