ResearchLEAP

Journal of International Business Research and Marketing
Volume 1, Issue 5, July, 2016
journal homepage: www.researchleap.com

Freedom of Religion, Religiosity, and GDP per Capital

Gregory Chase
University in West Liberty, West Virginia

DOI: *10.18775/jibrm.1849-8558.2015.15.3001*
URL: *http://dx.doi.org/10.18775/jibrm.1849-8558.2015.15.3001*

Keywords:
Religiosity
Religious Freedom
GDP per Capita
Natural Resources as Percent of GDP

ABSTRACT

Past studies have found a link between the level of religious freedom or religiosity in a nation and GDP per capita. These s0074udies have found GDP per capita is higher in nations with higher levels of religious freedom or that countries with increasing levels of GDP per capita have increasing levels of religious freedom. Studies of religiosity are consistent in that countries with higher levels of religiosity have lower levels of GDP per capita. This study expands on these previous studies by combining these two factors using multiple measures of religious freedom and religiosity. Countries that have more religious freedom suggests they also have freedom in other areas with many of these freedoms important to produce higher levels of income, while nations that have the higher level of religiosity are willing to sacrifice higher levels of GDP per capita to be able to practice their religion. Along with the multiple measures of religiosity and religious freedom considered, additional variables were included to isolate their relationship with GDP per capita. Additional control variables not related to the religion variables included economic freedom, civil liberties, political rights, and percent of GDP from natural resources. Many of the measures of religious freedom and religiosity were similar to the results from previous studies or were insignificant. Consistent with the previous study the results showed that increased levels of religiosity in a nation were related to lower levels of GDP per capita. However, contrary to previous studies this study found that having a state religion had a strong positive relationship with GDP per capita. The often heard argument is that many of the nations with a state religion are also resource rich nations which could override other factors that limit income per capita was not found to be the case. In the various models considered, the most significant model included both state religion and natural resources as a percent of GDP with the two having a very low level of correlation.

1. Introduction

Barro and Mc Cleary (2006) state that the presence of a state religion increases religiosity in a nation and government restrictions on religion reduced religiosity, while the levels of GDP per capita and economic growth are not related to State Religion.(Barro and McCleary 2003 & 2006). Alon and Chase (2005) found that increased levels of religious freedom increased the level of economic growth within a nation. However, Binet (2011) reported that as GDP per capita increases in a nation, the level of religious freedom increases.

Nevertheless, if a nation is Islamic, it reduces religious freedom. While religiosity increases economic growth, participation in religious activities reduces economic since involvement in religious activities reduces the time available for economic pursuits. (Barro and McCleary 2005& 2006). Barro (2004) asserts that regular attendance at religious services has a negative influence on economic performance due to the time it takes away from economically productive activity. At the same time as economic growth occurs in the nation, it reduces religiosity due to the increase in possible alternative pursuits (Barro and McCleary 2003, Dana 2009, and Chase 2015). Herzer and Strulik (2016) using a set of panel data from developed countries demonstrated that from 1950 to 1990 total factor productivity increased as religiosity declined in a nation. Bénabou, Ticchi and Vindigni (2013), found a significant negative relationship between religiosity and innovation. (Bénabou, Ticchi and Vindigni (2015) went on to show that greater religiosity resulted in a significant reduction of innovation within a nation as demonstrated by a significant negative relationship between religiosity and patents per capita in a nation.

Secularization is an indirect cause of economic growth due to the changes in attitudes in creates (Kuznets 1973). As income increases, belief in religion and religious attendance declined based on the secularization model (Barro and Mitchell, 2004). Strulik (2016) states that as a person becomes less religious, they derive more satisfaction from consumption which leads them to

pursue activities in such a way as to increase their available income for greater consumption. This higher rate of consumption increases the desire for future generations to become less religious. Barro and McCleary (2003) and McCleary (2007) show that greater religiosity has tenants that help to promote economic growth due to the behavioral influence that religion promotes enhance productivity. Guisoa, Sapienzad, & Zingalese (2003) state that religious beliefs promote a positive economic attitude that in turn promotes higher per capita income and growth. Galbraith and Galbraith (2007) found the "intrinsic" religiosity had a positive effect on economic growth through the positive aspects of behavior it provides.

Noland (2005) recognizes a relationship between economic performance and religious beliefs with no difference due to the type of religion. When looking a particular religion, Islam has been found to promote economic growth (Noland 2003 & 2005). Campante and Yanagizawa-Drott (2015) states that the Ramadan in the Islamic religion was a major contributor to lower levels of productivity from adherents. Van Der Ploeg (2011) evaluated the impact of natural resources on GDP per capita and got mixed results. This may be influenced by the large number of Islamic nations that are rich in natural resources. Other studies have found a relationship between economic growth and the Protestant religion, which are based on Weber's (2005) Protestant work ethic. Chase (2014) found a relationship between the Protestant religion and economic growth, but no relationship between economic growth and the Catholic religion.

2. Model and Data

The model used in the study is based on Chase (2015) in which he considered the impact of religiosity on the level of income for each state in the US. For this study, the dependent variable in all of the models is GDP per capita (World Bank). Combining the data from the various sources resulted in 99 nations that all data was available for all of the variables.

There were seven continuous independent variables in the full model. Religiosity as a percent of the population, the more people that consider themselves to be highly religious, the higher the value of a percent (Gallup). GDP from natural resources as a percent of total GDP which ranged in value from 0% to 60% (World Bank). Government restrictions on religion using an index developed by Pew Research Center with a value from 0 to 10 with a higher value meaning more government restrictions on religious activity.Social hostilities to religion which indicates how non-governmental parts of society limit religion by others in their nation using an index developed by the Pew Research Center from 0 to 10 with a higher value meaning more social hostilities.The civil liberties and political rights indices were both from Freedom House on a scale from 1 to 7 with a higher value meaningless of each. The index of economic freedom from the Heritage Foundation with values from 0 to 100 with a higher value indicating more economics freedom.

There were three dummy variables that also entered the model as independent variables. The major religion in a nation classified as either Islam, Christian, or others and none from the Pew Research Center with other and none being the base case.There were 57 Christian nations, 26 Islamic nations and 16 others and none. A restriction on the type of religion for the head of states of a nation with no restrictions the base case from the Pew Research Center in an article by Thordorou (2014).There were 14 nations that had restrictions on the religion of the head of state. Finally, there is a state religion in a nation with no state religion as the base case from the US Department of State. There were 44 nations with a state religion and 55 with no state religion.

3. Results

The initial regressions considered each of the independent variables individually regressed against per capita GDP. Five of the individual independent variables were significant at the 5% level; they were: religiosity, political rights, civil liberties, economic freedom, and private restrictions on religion. The coefficients for all of the variables that were significant had the expected coefficient signs based on previous studies.An increase in religiosity and private restrictions on religion in a nation resulting in a lower level of GDP per capita, whereas a decrease in civil liberties and political rights decreased the level of GDP per capita.When looking at the type of religion, it was found that compared to the group of "other religions" both Islam and Christianity were not significant which was not what was expected based on results from previous studies. Of the independent variables, economic freedom had the largest impact on per capita GDP based on the F-Stat. See Table 1 below for the results:

Table 1: Individually Independent Variables against Dependent Variables

Variable	Coeff	T-state	P-Value
% Religiosity	-426.315	-5.29724	7.34E-07*
GDP Nat Res %	24.91745	0.139557	0.889299
Political Rights	-3467.88	-3.44848	0.000836*
Civil Liberties	-4914.4	-4.33004	3.63E-05*
Econ Free	1373.757	7.252937	1E-10*
Gov Restrict Rel-	1206.74	-1.10673	0.27115
Private Restrict Rel	-2045.23	-1.98604	0.049851*
State Religion	3489.202	0.805597	0.422446
Leader Religion	-1548.23	-0.24991	0.803184
Islam	2376.632	0.34899	0.727861
Christ	6553.036	1.080705	0.282536

Economic Freedom the most Significance F: 1.0004E-10
***Significant 5%**

The next regression considered all of the independent variables regressed against the dependent variable in one model. Four of the ten independent variables were significant at the 5% level in the full model, but they were not the same variables that were individually significant (see Table 2). Multi-collinearity seemed to be a possible reason for the variables that were individually significant becoming insignificant in the full model. A correlation matrix showed that this was most likely the cause.

Table 2: All Variables

Variable	Coeff	T-state	P-Value
% Religiosity	-217.06	-2.309	0.0232*
GDP Natl Res %	526.54	3.044	0.0030*
Political Rights	1232.76	0.458	0.6478
Civil Liberties	-4860.53	-1.308	0.1940
Econ Free	1041.62	4.757	7.7369E-06*
Gov Restrict Rel	744.30	0.501	0.6178
Private Restrict Rel	-304.53	-0.263	0.7931
State Religion	6970.44	2.007	0.0479*
Leader Religion	427.49	0.086	0.9314
Islam	4936.37	0.843	0.4017
Christ	3421.54	0.707	0.4815

Significance F: 4.20822E-10
* Significant 5%

For the significant variables, most of the coefficient signs were as expected, but not all of the signs were as expected. Religiosity and economic freedom had the expected signs for their coefficients. Natural resources as a percent of GDP had a positive sign, but passed studies had mixed results, so the result was not a surprise. State religion had a positive coefficient, which was in contrast to previous studies, which indicated that it should be a negative coefficient and impact on GDP per capita.

The overall level of significance of the model was less than when the economic freedom variable was regressed individually, indicating that the addition of variables did not offer an improvement in the model with just economic freedom included as the independent variable.

The next regression considered only the variables that were significant in the full model: religiosity, GDP from natural resources, economic freedom and the existence of a state religion. The result was that three of the four variables remained significant. The existence of a state religion became insignificant, but only marginally insignificant at the 5% level. The overall significance of the model improved compared to the full model, and the level of significance of the model was greater than the economic freedom variable individually regressed against GDP per capita (see Table 3).

Table 3: Reduced Model
(Significant Variables in Full Model)

Variable	Coeff	T-state	P-Value
% Religiosity	-287.17	-3.928	0.0002*
GDP Natl Res %	396.34	2.911	0.0045*
Econ Free	1252.17	6.542	3.1446E-09*
State Religion	6234.48	1.960	0.0529

Significance F: 5.81534E-13
* Significant 5%

The reduction in the model continued with only the three significant variables in a regression from the model with the four variables: religiosity, GDP from natural resources, and economic freedom were included without the insignificant variable the existence of a state religion. In the revised model all of the variables were significant at the 5% level, and the coefficients all had the expected sign. While the overall level of significance of the model was greater than the model with just economic freedom individually, the overall level of significance of the model dropped from the model that had four independent variables, indicating that the state religion variable had an impact on the overall model even though it was not significant at the 5% level (see Table 4).

Table 4: Significant Variables in Reduced Model

Variable	Coeff	T-state	P-Value
% Religiosity	-278.18	-3.7569	0.0003*
GDP Natl Res %	399.92	2.894	0.0047*
Econ Free	1234.97	6.3648	6.8758E-09*

Significance F: 6.33E-13
* Significant 5%

As a check for robustness, a stepwise regression was run, and the results produced the same model as the model with just the three significant variables: religiosity, GDP from natural resources and economic freedom (see Table 5). This suggested that the model with just the three variables model produced the best results, but since the overall significance of the model was lower it also suggested another model could produce a better result.

Table 5: Stepwise Regression

Variable	Coeff	T-state	P-Value
% Religiosity	-278.18	-3.756	0.0003*
GDP Natl Res %	399.93	2.894	0.0047*
Econ Free	1234.9	6.365	6.8758E-09*

Significance F: 6.33E-13
Significant 5%

As a check for a better alternative model, each of the variables that were individually significant against the dependent variable was combined into a new model: religiosity, political rights, civil liberties, economic freedom, and private restrictions on religion. Only two of the variables were significant: religiosity and economic freedom. The overall level of significance of the model was less than the model with just economic freedom (see Table 6).

Table 6: Individually Significant Variables

Variable	Coeff	T-state	P-Value
% Religiosity	-244.09	-2.876	0.0050*
Political Rights	662.45	0.234	0.8153
Civil Liberties	-605.35	-0.169	0.8661
Econ Free	1111.58	4.885	4.3E-06*
Priv Rest Rel	-532.05	-0.589	0.5574

Significance F: 5.92661E-10
* Significant 5%

To consider the fact that the variables might be confounders, additional models were considered. Various permutations were done on the variables to look for a better model, and one was found with five variables being significant and had the greatest explanatory power as measured by the F-Stat of all of the models considered. The significant variables were: religiosity, GDP from natural resources, economic freedom, state religion, and civil liberties. Four of the five variables had the expected coefficient, but state religion did not have the expected sign being positive instead of negative (see Table 7).

Table 7: Best Model

Variable	Coeff	T-state	P-Value
% Religiosity	-239.61	-3.201	0.0019*
GDP Natl Res %	577.95	3.684	0.0004*
Economic Free	1046.66	4.995	2.74044E-06*
State Religion	7719.69	2.421	0.01744*
Civil Liberties	-2997.03	-2.202	0.0301*

Significance F: 2.99775E-13
* Significant 5%

4. Discussion

The initial regressions involved regressing each of the individual variables against GDP per capita. The results were that five of eleven individual variables were significant at the 5% level. When the five individually significant variables were combined into a new model only two remained significant. The model produced a better result than any of the variables individually as measured by the F-Stat.

When a model with all of the variables at once were considered four of the variables were significant at the 5% level. When the four significant variables were combined, only three of them remained significant at the 5% level.The model once again produced a result superior to the variables individually as measured by the F-Stat. When the model was regressed without the fourth insignificant variable, state religion, all of the remaining variables were significant at the 5% level. The model with just the three variables had less explanatory power as measured by the F-Stat than the model with just economic freedom alone as the independent variable. A step-wise regression produced the same model as the three variable model created by removing insignificant variables from when all of the independent variables were considered. However, the model with the four variables produced the best model based on the F-Stat.

Possible reasons for the varying results suggested possible multi-co linearity or confounding variables. A correlation matrix showed that multi-co linearity was an issue with many of the variables highly correlated. To address the issue of confounders, various permutations of the variables were considered and resulted in a model superior to any of the previous models. The model had the highest level of significance as measured by the F-Stat and included five independent variables.

5. Conclusions

Most of the significant variables considered in the various models in this study produced the expected results. Increased levels of religiosity and private restrictions on religion resulted in lower levels of GDP per capita. Higher levels of civil liberties, political rights produced, and religious freedom higher levels of GDP per capita.

In regards to percent of GDP from natural resources, the results showed a strong relationship between them and the level of GDP per capita in a nation. Previous studies have shown mixed results in the relationship between the two, so the result was not surprising. These results could be due in part to the rising price of oil and its influence on GDP per capita in many oil-producing nations. Besides, the significant increase in fracking for oil in some high-income developed nations could also be the cause for GDP per capita to rise.

Contrary to previous studies, this study found that state religion had a positive influence on the level of GDP per capita in a nation. The initial thought behind this would be that many nations, which are rich in natural resources, also have a state religion, but the correlation between the two is less than 5%, so this suggests it is not the cause. One possible explanation could be the unifying effect on the nation of having a state religion. This unifying effect reducing sectarian violence is found in other nations allowing them to spend more time on their economic pursuits, thus increasing the level of GDP per capita in the nation. This higher level of level of religiosity in a nation as a whole seems to be a benefit.

References

- Alon, I., and Chase, G. (2005). "Religious Freedom and Economic Prosperity", Cato Journal, Vol. 25, pp. 399-405.
- Barro, R. J. and McCleary, R. M. (2005). "Which Countries Have State Religions?", Quarterly Journal of Economics, Vol. 120, pp. 1331-1370, CrossRef
- Barro, R. J. and McCleary, R.M. (2003). "Religion and Economic Growth Across Countries", American Sociological Review, Vol. 68, No. 5, pp. 760–781, CrossRef
- Barro, R.J. and McCleary. R.M. (2006). "Religion and Economy", Journal of Economic Perspectives, Vol. 20, pp. 49-72, CrossRef
- Barro, R.J. and Mitchell, J. (2004). "Religious Faith and Economic Growth: What Matters Most—Belief or Belonging?", Heritage Lectures, Heritage Foundation, No. 481, pp. 1-12.
- Barro,R.J. (2004). "Spirit of Capitalism: Religion and Economic Development", Harvard International Review, Vol. 25, No. 4.
- Bénabou, R., Ticchi, D., and Vindigni, A. (2013) "Forbidden Fruits: The Political Economy of Science, Religion and Growth," Princeton University, Research Paper No. 0652014, Dietrich Economic Theory Center.

- Bénabou, R., Ticchi, D., and Vindigni, A. (2015)"Religion and Innovation", The American Economic Review, Vol. 105, No.5, pp. 346-351, CrossRef
- Binet, F. (2011). "Religious Freedom in the World: A Quantitative Approach", Association for the Study of Religion, Economics & Culture, ASREC Annual Meeting, Crystal City (Washington DC).
- Campante, F. and Yanagizawa-Drott, D. (2015). "Does Religion Affect Economic Growth and Happiness? Evidence from Ramadan", The Quarterly Journal of Economics, Vol. 130, No. 2, pp. 615-658, CrossRef
- Chase, G. (2014). "Religiosity, Corruption, and Economic Growth", Quarterly Review of Business Disciplines, Vol. 1, No. 3, pp. 263-272.
- Chase, G. (2015). "Religiosity, Attendance of Religious Activities, and Economic Growth in the US", Journal of Business and Economics, Vol. 6, No. 12, pp. 2072-2079, CrossRef
- Dana, L. P. (2009). "Religion as an Explanatory Variable for Entrepreneurship", The International Journal of Entrepreneurship and Innovation, Vol. 10, No. 2, pp. 87-99, CrossRef
- Freedom House (2016). "About Freedom in the World 2016 An Annual Study of Political Rights and Civil Liberties", https://freedomhouse.org/report-types/freedom-world
- Galbraith,C.S. and Galbraith, D. M. (2007) "An Empirical Note on Entrepreneurial Activity, Intrinsic Religiosity and Economic Growth", Journal of Enterprising Communities: People and Places in the Global Economy, Vol. 1, Issue 2, pp. 188 – 201, CrossRef
- Gallup International (2012). "Global Index of Religiosity and Atheism", http://www.wingia.com/web/files/news/14/file/14.pdf
- Guisoa, L. Sapienzad, P. & Zingalese, L. (2003) "People's Opium? Religion and Economic Attitudes",Journal of Monetary Economics, Vol. 50, Issue 1, pp. 225–282, CrossRef
- Heritage House (2016) "2016 Index of Economic Freedom", http://www.heritage.org/index/ranking
- Herzer, D.and Strulik, H. (2016) "Religiosity and Long-Run Productivity Growth",http://ssrn.com/abstract=2800094
- Kuznets, S. (1973). "Modern Economic Growth: Findings and Reflections", The American Economic Review, Vol. 63, No. 3, pp. 247-258.
- McCleary, R.M. (2007). "Salvation, Damnation, and Economic Incentives",Journal of Contemporary Religion, Vol., No. 1, pp. 49-74.
- Noland, M. (2003). "Culture, and Economic Performance", Institute for International Economics Working Paper No. 03-8, CrossRef
- Noland, M. (2005). "Religion and economic performance", World Development, Vol. 33, No. 8, pp. 1215–1232, CrossRef
- Pew Research Center (2012). "Global religious landscape", http://www.pewforum.org/files/2012/12/globalReligion-tables.pdf .
- Pew Research Center (2016). "Global Restrictions on Religion 2007-2014".
- Strulik, H. (2016). "Secularization and Long-Run Economic Growth", Economic Inquiry, Vol. 54, pp. 177–200, CrossRef
- Thordorou, A. E. (2014). "In 30 countries, Heads of State Must Belong to a Certain Religion", http://www.pewresearch.org/fact-tank/2014/07/22/in-30-countries-heads-of-state-must-belong- -a-certain-religion/.
- US Department of State (2014). "Current International Religious Freedom Report",http://www.state.gov/j/drl/irf/rpt/.
- Van Der Ploeg, F. (2011). "Natural Resources: Curse or Blessing?", Journal of Economic Literature, Vol. 49, No. 2, pp. 366-420, CrossRef
- Weber, M. (1958). The Protestant ethic and the spirit of capitalism. New York: Scribner.World Bank (2016).GDP per Capita (Current US$) http://data.worldbank.org/indicator/NY.GDP.PCAP.CD