

International Conference on Emerging Economic Issues in a Globalizing World, İzmir, 2008

Economic Development and Religiosity: An Investigation of Turkish Cities

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Abstract

The relationship between the degree of religiosity and economic development is empirically investigated for a cross-section of all Turkish cities with municipal authorities. It is found that economic development and the degree of religiosity have a non-linear relationship. Religiosity increases with industrialization first, however, as the industrialization increases more, the degree of religiosity decreases. Coastal towns are less religious. Mosques and schools are complements rather than substitutes as they affect each other positively. This can be interpreted as the ideological competition between religious communities and secularists.

Introduction

This paper investigates population and development elasticity of religiosity of a cross-section of all Turkish cities with municipal authorities. Villages are excluded from the sample since data are not available for them. Investigating the determinants of religiosity at the aggregate city level is not a worthless endeavor since scholars from different disciplines try to understand the sources of degree of religiosity, especially after the September 11 attacks. Religiosity of a particular city in this paper is measured by the number of mosques in total number of all buildings in that city. Only mosques are included in the analysis here since there is very small number of religious buildings related to other religions in only small number of cities in Turkey. Therefore, this is an aggregate economic analysis of mosques in the city level. It can be argued that the number of mosques themselves might not necessarily be a good measure of how religious a community is if mosques are almost always empty. Even if it is so, since mosques are built by donations of either individuals or non-governmental organizations and land is a relatively expensive factor in Turkey, mosque financiers still have a perception that society/community values the mosques more or they have the intention of making people more religious (religious propaganda or ideological competition with secularists in Turkey) if mosques are chosen among alternatives like schools, sport centers, cultural centers, etc. Therefore, it would not be wrong to have the number of mosques as a measure of religiosity. In fact, popular discussions among different political circles in Turkey often cite the number of mosques as a measure of religiosity.

This paper investigates the two elasticities mentioned in the first sentence of introduction section since there is a popular understanding in Turkey, and in many other circles in different countries in this matter, that economic development reduces the need for religious services or religiosity. The assumed link from economic development to reduced religious services, as theory suggests, is the modernization. Modern societies/communities, as opposed to traditional societies/communities, are assumed to be less religious or have more secularization (Giddens,1993; Martin,1978) even though the USA does not confirm this explanation, Verweij et al. (1997). Modernization theory states that increasing modernization leads to the process by which religion loses its social significance in human behavior (Wilson, 1982). The modernization process is characterized as development which marks the transition from agrarian or traditional economy into large scale industrial or commercial economy, Verweij et al. (1997). It is claimed that industrialization and commercialization make people more worldly (secular). Some scientist, however, discussed that modernization theory should be abandoned completely since it is simple wrong. They claim that modernization of USA does not reduce the degree of religiosity of people in that country as the church attendance rate is all time high in the 1990s as the issue is discussed in great detail in Stark and Iannaccone (1994).

This paper therefore explicitly tests this popular perception that modernization reduces the degree of religiosity of a society as the issue is not exhaustively empirically investigated, under the condition that economic development is assumed to transform the societies from traditional ones into modern ones. This paper is organized as follows. The next section reviews the related literature. Section III defines the data and gives some descriptive statistic and section IV gives the estimation results. Section V concludes the paper.

Literature Review

Studies of religion and economics are analyzed and summarized in Iannaccone (1998). It is mainly mentioned three lines of inquiry: microeconomic determinants of religious behavior, economic consequences of religion, and religious economics, which is primarily about economic policies from a religious perspective like Islamic banking and taxation as specific examples of the research. Recently, the literature about economics of religion focuses more on the first two lines. Papers about the microeconomic determinants of religious behavior use the degree of religiosity as the dependent variables and different economic variables as the independent variables (Verweij et al., 1997; Smith et al. 1998; Smith and Sawkins, 2003; McCleary and Barro, 2006; Arano and Blair, 2007; Lopez and Santos, 2008). Papers about economic consequences of religion investigate different religions and their effects on economic growth and development. This branch of the literature uses the Weber (Protestant Ethic and the Spirit of Capitalism) work as an inspiring paper (Grier, 1997; Blum and Dudley, 2001, 208; Guiso et al. 2002; Barro and McCleary, 2003; Montalvo and Reynol-Querol, 2003, 202; Noland, 2005; Cavalcanti et al. 2007,106). In addition to these '*direction of causation*' studies, recently some papers are investigating the political results of religious behaviors as MacCulloch and Pezzini (2007) states that revolutionary rise in a country can be offset by belonging to a religion which lowers the probability of revolution by between 1.8 and 2.7 percentage points. Another paper by Lehrer (2004) investigates the role of religion in union formation.

The already existing studies have the following features.

-They are mostly using different kinds of survey data sets for religiosity and other social attitudes like World Values Survey (WVS), General Social Surveys (GSS), International Social Survey Programme (ISSP), and other surveys.

-Most of them are cross-country studies.

-Most of the studies are about developed countries since data are usually unavailable for developing countries.

This paper, however, is contributing to existing literature from several dimensions: First of all, this study uses a novel data set of all existing buildings in use for all the cities (both small and large) with municipal authorities. The data set is prepared by the Turkish Statistical Institution (TSI). Secondly, this paper is about a cross-section of cities in a relatively homogeneous country, Turkey. Turkey is 99.8 % Muslim (Sunni), 0.2 % Christians, Jews, and other religions¹. Cross-country studies about the relationships between economic growth/development and religiosity might have some problems in especially determining the effects of religion on growth since growth of different countries might be affected by other several cultural variables than religion. In addition to that, data about religiosity of different countries are including a vast array of subjectivity of surveys. Thirdly, this study is about a developing country. In addition, this study is the first study of its kind in Turkey. In fact, this data set, to the best of our knowledge, has not been used in another paper.

¹ CIA Factbooks.

Investigating the relationship between religious and other economic and social variables by the tools of economics is a relatively new topic in economics. The relationship between cultural and religious factors and economic well being or economic development is recently being paid more attention, especially after the September 11 2001 attack to Twin Towers in New York City as mentioned before in the introduction section. The main motivation of this paper is to contribute to this literature. This paper investigates the population and development elasticity of religiosity. Therefore, the size of religious services (the degree of religiosity) is assumed to be in a relation with the size of population and the level of economic development.

Population can serve two purposes to test: first, in the cities with higher population, the cost per capita of the services would be smaller if there is increasing returns to scale with respect to religious services, which mostly show public good features. As is known, public goods highly likely show the feature of increasing returns to scale as Alesina and Wacziarg (1998) showed it in a different context of public expenditures. As an example, a mosque except for Fridays, where some congestion effect reveals, is a public good since it is nonexcludable and nonrival. If this is the case, the more populated the city, the smaller the cost of religious services per capita, mainly cost of building the mosque since imams are getting paid by government but mosques are being built by nongovernmental organizations or individuals in Turkey. Second, cities with higher population are relatively culturally more heterogeneous cities than the cities with smaller population. In more heterogeneous cities, there would be two types of social behavior in terms of financing religious services or participation to religious services.

The first, different groups of people try to free ride, in which case, supply of services of public good per capita would be smaller if the income or wealth is distributed relatively evenly. If the income distribution is relatively bad, then this outcome would not necessarily have to be observed since some religious wealthy people alone can take the financial burden of the religious services, mainly building the mosques. As a related observation, it should be mentioned here that small towns have relatively better income distribution than big cities have in Turkey even though big cities have a higher income per capita. As a second observation, most mosques are built on land which is donated by wealthy people in Turkey. Donations by the attendees of the mosques are mostly used for maintenance of the mosques.

The second, cultural heterogeneity would make the citizens of the city more or less open minded or less or more conservative respectively. If cultural heterogeneity makes the citizens more open minded or less conservative, religious public services per capita would be smaller in more populated cities. If, on the contrary, cultural heterogeneity makes the citizens of the city less open minded or more conservative, religious public services per capita would be higher in more populated cities.

What would be the final effect of population on religious services depends on the dominating factors. Which effects would be eventually prevailing is an empirical question since theoretically all possible three types of behavior are likely to be observable.

The level of development can also affect the religiosity of societies or individuals. As the literature is reviewed briefly above, the relationship between economic and socio political developments and degree of religiosity is investigated in the literature in some

detail (Mangeloja 2005, 2350; McCleary and Barro, 2006, 150; Arano and Blair, 2007). The direction of causality is usually one of the main concerns in most of the research in this field. One way of directions is from the development to religiosity and the other way is the reverse. Development, it is claimed in the literature reviewed above, increases industrialization and therefore secularization or decreased level of religiosity. However, this may not be the only outcome of development. Development can cause a religious market competition since different sects or denominations might have the resources to compete. This market structure and government regulation of it can affect the degree of religiosity. In short, development can also increase the degree of religiosity. This issue is entirely an empirical one. The degree of religiosity can affect the development and growth as well, the reverse causation. More religious communities, as is discussed in the literature, can develop a social trust among themselves to do better business. In other words, higher level of religiosity can increase the social capital and therefore economic growth and development. This issue is also entirely empirical one since different countries or societies can respond this relationship differently. Therefore, there is a huge need for more empirical studies for different societies or countries.

Data and Descriptive Statistics

The domain of the empirical study is the cross section of the Turkish cities. Provinces (il), towns (ilce), and small towns (belde) are used in the study. There are 81 provinces, 850 towns, and 2267 small towns in Turkey. Villages are excluded from the study due to non availability of the data.

In terms of the variables in the empirical models here, first type of public good is the number of mosques in total building. That is, mosques and mescits, smaller and easy-built (sometimes an apartment can be used as a mescit) versions of mosques. There is some small number of churches in some of the major cities. However, their statistical effects are ignorable since almost all of the religious buildings are mosques or mescits. The second type of public goods is the number of buildings for educational and cultural use in total number of all buildings. These different buildings and their use are defined below. Aggregate wealth per capita of the city is proxied by total number of all buildings per person. The building classification in Table 1 below is using international classification of buildings.

Table 1: Descriptive Statistics

| | | Pop. | Res. | Com. | Ind. | Educul. | Health | Gov. | Rel. | Agri. | total |
|-------------|------|------------|-----------|----------|---------|---------|--------|---------|--------|---------|-----------|
| Provinces | mean | 255954.26 | 25308.98 | 2133.18 | 868.16 | 112.03 | 70.58 | 140.66 | 83.64 | 92.01 | 32223.94 |
| | std | 453238.40 | 41058.45 | 3051.18 | 1809.52 | 177.56 | 122.20 | 277.45 | 96.50 | 147.93 | 52144.71 |
| | max | 3168054.00 | 246231.00 | 15924.00 | 9484.00 | 1325.00 | 914.00 | 2221.00 | 562.00 | 930.00 | 301642.00 |
| | min | 17274.00 | 1487.00 | 94.00 | 2.00 | 16.00 | 6.00 | 10.00 | 3.00 | 1.00 | 2665.00 |
| Towns | mean | 28336.76 | 2902.85 | 273.64 | 61.88 | 15.93 | 9.03 | 17.14 | 13.86 | 73.66 | 3930.31 |
| | std | 67691.67 | 4627.83 | 523.71 | 141.43 | 20.81 | 14.88 | 25.62 | 17.72 | 156.51 | 6143.76 |
| | max | 663299.00 | 43799.00 | 9583.00 | 1547.00 | 270.00 | 183.00 | 496.00 | 209.00 | 1960.00 | 56484.00 |
| | min | 683.00 | 72.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 115.00 |
| Small Towns | mean | 4191.17 | 639.53 | 33.66 | 13.05 | 3.78 | 2.78 | 3.87 | 4.10 | 64.22 | 888.35 |
| | std | 5526.08 | 808.50 | 74.97 | 54.68 | 2.83 | 6.49 | 12.90 | 3.24 | 103.14 | 918.02 |
| | max | 148981.00 | 15509.00 | 1380.00 | 1475.00 | 38.00 | 217.00 | 536.00 | 33.00 | 1298.00 | 18954.00 |
| | min | 858.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 156.00 |

Pop.: Population, Res.: Residential Buildings, Com.: Building for commercial use, Ind.: Building for industrial use, Educul.: Building for educational and cultural use like schools, private tutoring institutions, all the schools related buildings like sports centers, school cafeteria, dormitories, etc. Health: building for health, social and sportive use, Gov.: Government buildings, Rel.: Buildings for religious use (mosques, smaller mescits), Agri.: Building for agricultural use, total: total buildings in a particular city.

The Model and Results of Regressions

The first model to estimate

$$Y_i = Z_i \gamma + \varepsilon_i \quad (1)$$

Where the dependent variable is the number of mosques in total number of all buildings in a given city, independent variables are population, industrialization, level of wealth, and educational and cultural use buildings in the total number of all buildings along with several dummy variables. Level of wealth is measured by total number of buildings per capita. Eq. 1 is estimated by OLS and 2SLS to account for endogeneity with all variables in the system as instrumental variables. The results of these regressions are reported in Table 2.

Table 2: Religiosity and Development

| | Dependent Variable: Number of religious buildings in total number of buildings | | Dependent Variable: Number of religious buildings in total number of buildings | |
|--|--|--------|--|--------|
| | Regression 1: OLS | | Regression 2: 2SLS | |
| | Coefficient | t-stat | Coefficient | t-stat |
| constant | -2.88*** | -19.48 | -2.99*** | -19.83 |
| Population | -0.16*** | -11.73 | -0.18*** | -12.19 |
| Industrialization | 0.02*** | 2.70 | 0.02** | 2.37 |
| Industrialization ² | -0.004** | -2.10 | -0.004* | -1.89 |
| Wealth | -0.23*** | -6.48 | -0.35*** | -7.28 |
| Building for educational and cultural use in total buildings | 0.23*** | 10.12 | 0.20*** | 8.85 |
| Coastal towns | -0.24*** | -5.98 | -0.22*** | -5.52 |
| Aegean | -0.39*** | -9.28 | -0.37*** | -8.65 |
| Mediterranean | -0.26*** | -5.81 | -0.26*** | -5.82 |
| Marmara | -0.63*** | -14.03 | -0.62*** | -13.59 |
| East Anatolia | -0.38*** | -7.40 | -0.40*** | -7.64 |
| Central Anatolia | -0.27*** | -7.19 | -0.27*** | -7.20 |
| South East Anatolia | -0.38*** | -6.47 | -0.40*** | -6.88 |
| Adj-R ² | 0.31 | | 0.31 | |
| Observations | 2297 | | 2297 | |

*** p<0.01, ** p <0.05, *p<0.10,

Industrialization=((Buildings for industrial use+ buildings for commercial use)/ buildings for agricultural use)

Wealth: Total buildings/population. Regional dummies: Aegean, Mediterranean, Marmara, East Anatolia, Central Anatolia, South East Anatolia, Black Sea.

All the variables except for dummy variables are in their natural logarithms. According to Table 2 there is a non linear relationship between industrialization and the degree of religiosity in Turkish cities. At the beginning level of industrialization, the degree of religiosity is increasing; however, as the industrialization increases eventually the degree of religiosity is decreasing. There is also a negative relationship between wealth and the degree of religiosity: as wealth increases, the degree of religiosity decreases.

These results here are confirming the secularization hypothesis of modernization theory. As industrialization and wealth increase, the religiosity decreases. We can not test for religious competition in this paper as it is tested for many other countries (Smith and Sawkins, 2003; Lopez and Santos, 2008) since majority of the population is Muslim and Sunni. Therefore, there is no competition between different religions and/or different denominations or sects. There is however a highly likely ideological competition between religious communities and secularists. The results of the regressions of eq.1 indicate that educational and cultural buildings in total buildings are positively significantly affecting the religiosity. That is, if a city relatively to other cities has a higher ratio of cultural and educational buildings in total buildings, that city has also higher ratio of mosques to total buildings. This can be interpreted as the existence of ideological competition between secularists and religious communities in a city if mosques and educational and cultural buildings are not being funded by the same people. As is known very well that mosques are being built by individuals or non-governmental institutions, schools (educational buildings) or cultural buildings are being built by government. The regression is controlled for population and wealth. Coefficient of population is negative and significant, showing that crowded cities are less religious. Different links of population variable as defined above can not be

disaggregated into different variables since data are not available. It is very interesting to observe that coastal towns which are tourism towns are less religious or the degree of religiosity for those towns is smaller compared to other towns. Tourism promotes non-religious business opportunities and makes people more open minded and secular.

In order to address the endogeneity problem, eq.1 is run by 2SLS. The results of 2SLS are also reported in Table 2. The results of regression 2 are very similar to those of regression 1.

In order to be able to investigate the ideological competition between schools and mosques, eq. 2 below is run by a system of equations. The system estimation is done by 3SLS and the results are reported in Table 3.

$$Y_1^i = Z_i\gamma + \alpha_1 Y_2^i + v_i \tag{2}$$

$$Y_2^i = X_i\beta + \alpha_2 Y_1^i + \varepsilon_i$$

Where y_1^i is the natural logarithm of percentage of mosques in total number of all buildings and y_2^i is the natural logarithm of percentage of educational and cultural buildings in total number of all buildings Z_i and X_i re vectors of independent variables, γ and β are vectors of unknown parameters and v_i and ε_i are error terms.

Table 3: System Estimation

| | Dependent Variable: Number of religious buildings in total number of buildings | | Dependent Variable: Number of cultural and educational buildings in total number of buildings | |
|--|--|--------|---|--------|
| Estimation method: 3SLS | | | | |
| | First equation in the system | | Second equation in the system | |
| | Coefficient | t-stat | Coefficient | t-stat |
| Constant | -2.91*** | -19.62 | -3.64*** | -28.21 |
| Population | -0.18*** | -11.15 | -0.13*** | -9.84 |
| Industrialization | 0.02*** | 2.66 | 0.006 | 0.94 |
| Industrialization ² | -0.004** | -2.21 | | |
| Wealth | -0.32*** | -6.80 | -0.42*** | -13.56 |
| Expenditures on education and culture (% in total) | 0.22*** | 10.22 | | |
| Coastal towns | -0.22*** | -5.76 | -0.14*** | -3.71 |
| Number of religious buildings in total number of buildings | | | 0.22*** | 10.95 |
| Aegean | -0.37*** | -8.57 | -0.16*** | -3.89 |
| Mediterranean | -0.26*** | -5.75 | -0.12*** | -2.75 |
| Marmara | -0.61*** | -13.86 | -0.17*** | -3.94 |
| East Anatolia | -0.40*** | -8.15 | 0.14*** | 2.98 |
| Central Anatolia | -0.26*** | -6.99 | -0.13*** | -3.57 |
| South East Anatolia | -0.39*** | -5.75 | -0.07 | -1.08 |
| Adj-R ² | 0.31 | | 0.27 | |
| Observations | 2297 | | 2297 | |
| System Observations | 4594 (Balanced System) | | | |

***p<0.01, **p<0.05, *p<0.10

Table 3 shows that the non-linear relationship between the degree of religiosity and industrialization is kept in system estimation as well. All the variables are significant except for the industrialization variable in the second equation in the system. Since schools are built by the government and it is exogenous to industrialization, it is not surprising that industrialization is not statistically significant. Schools are built if there is enough population. Industrialization is not required to build schools since children of the non-industrial cities also need to go to school and the government should provide schooling for them. Table 3 indicates that schools and mosques are complement rather than being substitutes since they affect each other positively and significantly. If schools and mosques are not funded by the same resources, this complementarity can be interpreted as ideological competition. This is an interesting result since popular press discusses the ideological competition between secularist government structure and religious communities in Turkey. This point, however, needs to be investigated with different type of disaggregated data, which is a subject of another paper.

Conclusion

This paper investigates empirically the relationship between the degree of religiosity and economic development for a cross section of Turkish cities. Degree of religiosity is measured by the total number of mosques in total number of all buildings, whereas industrialization is measured by the ratio of industrial and commercial buildings to agricultural buildings. It is observed that there is a nonlinear relationship between the degree of religiosity and industrialization. As industrialization is increased a little, the degree of religiosity is also increased. Therefore, villagers are less religious than people who live medium size commercial cities, *ceteris paribus*. As industrialization increases more, the degree of religiosity is decreasing, conforming the hypothesis of modernization and secularization.

Coastal towns are found to be less religious. This is not surprising the coastal towns in Turkey are known culturally very liberal. Coastal towns are tourism towns and cultural very diverse. Cultural diversity might reduce the *neighborhood pressure* to practice religion.

Another interesting finding is that mosques and schools are complement and there might be a ideological competition between secularists and religious communities.

As a further research, a different type of data set is needed to investigate whether there is really ideological competition between secularists and religious communities.

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