Religious diversity and regional development in China

Zheng Ying[a,b], Shibao Liu[c], Shuming Bao[d,e,*], Jianbo Zhou[a]

[a] School of Economics, Peking University, Beijing 100871, China
[b] Harvard Law School, Harvard University, Cambridge, MA 02138, USA
[c] LeBow College of Business, Drexel University, Philadelphia, PA 19104, USA
[d] China Data Center, University of Michigan, Ann Arbor, MI 48106, USA
[e] Lab for Urban and Regional Analysis, East China University of Science and Technology, Shanghai 200237, China

ARTICLE INFO

ABSTRACT

This paper investigates possible impacts of religious diversity on regional development in China. We developed the religious fragmentation and polarization indices as measurements for the religious diversity by using the religious site data from the 2004 economic Census data in China. The results from the panel data regressions within national coverage suggest that the religious diversity has positive and significant impacts on regional development in general. The results from the panel data regressions within regional coverage also suggest that religious fragmentation has a positive and significant association with the economic development in the eastern region of China while religious polarization has a positive and significant association with the economic development in the central and western regions of China.

1. Introduction

In recent years, there has been increasing interest in the economic consequences of religious diversity. Theory suggests that religious diversity has positive and negative economic effects. The former arise from complementarities in production, diversity of skills, ideas and experiences (think of a Dixit-Stiglitz production function). The latter is due to disagreements about public policies, animosity between different groups and conflict (Alesina, Harnoss, & Rapoport, 2016). The current empirical evidence linking economic performance to religious diversity is growing rapidly but is still limited when it comes to intra-country evidence. Existing studies have focused mainly on effects on economic development of religious diversity in cross-country comparisons. Montalvo and Reynal-Querol (2003) calculated religious fragmentation and polarization using the classification of the World Christian Encyclopedia. They found that ethnic (religious) polarization has significant and negative effect on economic development through the reduction of investment and the increase of government consumption and the probability of a civil conflict. Considering a sample of 138 countries and data from 1960 to 1989 organized in 5-year intervals, Montalvo and Reynal-Querol (2005b) came to the same conclusion. Eum (2011) tests the theories of Montalvo and Reynal-Querol with updated datasets to see if their conclusions still hold true. They find neither religious fragmentation nor religious polarization is statistically significant with updated dataset. By using data in 83 countries from 1960 to 1992, Mankiw, Weil, and Romer (1992) found that religious polarization had a negative significant effect on economic development while religious fragmentation does not have any effect. But due to the quite different political and economic regimes, cultural traditions and geographical locations between countries, the use of cross-country data cannot eliminate the impact of these factors on economic development. So the results of these papers are not good enough to recognize the effects of religious diversity on economic development.

This paper will test possible impacts of religious diversity on regional growth by applying the religious fragmentation and polarization index of Montalvo and Reynal-Querol (2003) based on the data of religious institutions aggregated at provincial level from the 2004 economic census in China. Two important contributions to the literature are to be derived from this study.

First, given that very few studies used the data below the country level, our research provides new evidences of the relationship between religious diversity and economic development at province level under the same political regime. Unbalanced economy development in regions makes China an excellent place to test the relationship between religious diversity and economic development within the country. Different than Montalvo and Reynal-Querol (2003), we find that religious fragmentation demonstrated positive and significant associations with economic development in the Whole and East of China while religious polarization demonstrated positive and significant associations with economic development in the Central and West of China. The results from our study suggested positive impact of religious diversity on regional development.

Second, we make progress towards addressing endogeneity issues arising from omitting variables and reverse causality. It is a challenge to infer the causality from religious diversity to economic development. One important reason is the endogeneity of religious diversity. Different than Alesina et al. (2016) and many other studies, we take the diversity of religious administration institution as an instrumental variable to re-examine the impact of religious diversity on economic development by using two-stage least squares. We find that the result in the East is robust.

The rest of this paper is organized as follows. Section 2 is the literatures review on religious diversity and economic development. Section 3 presents econometric methodology. Section 4 describes the datasets and discusses the empirical results. Section 4 shows how to tackle the endogeneity problem in the models. Finally, Section 5 gives the summary and discussion.

2. Literature review

Religion can play an important role in human civilization and social development (North, 1990; Smith, 1776; Weber, 1930). Empirical studies confirmed the association between religion and economic growth (Barro & McCleary, 2003; Grier, 1997; Noland, 2005; Wang & Lin, 2014). Our literature study on religious diversity and economic development are focusing on two aspects: the empirical literature and the influence mechanism of diversity. The empirical literature about religious diversity and economic development has been focused on the measurements of religious diversity, including index and data. Another important research area for religious diversity and economic development is the influence mechanism of diversity (religious, ethnic, genetic, linguistic, and etc.) on economic development.

2.1. The measurement of religious diversity

The measurement of religious diversity can adopt several forms. The traditional one in the literature (Helble, 2007; Knack & Barro, 1998; Kodila-Tedika, 2012; Porta, 1999; Sala-i-Martin, Doppelhofer, & Miller, 2004; Tavares & Wacziarg, 2001) is to use the fractions of the population affiliated with different religious groups as approximates to measure religious diversity.

Collier and Hoeffler (1998) construct a measure of religious fragmentation in the study of the causes of civil wars, based on the ethnolinguistic fragmentation (Easterly & Levine, 1997; Mauro, 1995). Subsequently, Alesina and Ferrara (2005) use the religious fractionalization index as the measurement of religious diversity and find that that variable has a statistically significant effect on the quality of government but not necessarily on long-term growth, the latter is built on the specification of Easterly and Levine (1997).

Another measurement of religious diversity is the index of religious polarization proposed by Montalvo and Reynal-Querol (2000), who argue that religious polarization might well capture the extent of religious conflict better than religious fragmentation: "The index POL ranges from 0 to 1. Opposite to what happens with the fragmentation index, polarization reaches a maximum when there are two religious groups of equal size. In this type of index, what matters is not only how many groups there are but also if they view other groups as a potential threat for their interests. For a given number of groups, the threats is higher the larger the size of another group relative to the size of the reference group. Therefore the polarization index can reflect potential religious conflict in a society better than the fragmentation index." (Montalvo & Reynal-Querol, 2003: 202–203). Montalvo and Reynal-Querol (2003, 2005a, 2005b) suggest that their index of polarization has more power in measuring the impact of religious diversity on economic development.

Based on the international survey data on religiosity from a broad panel of countries, Barro and McCleary (2003) apply the instrumental variables of state religion, regulation of the religion market as measures of religious pluralism,[1] based on Herfindahl indexes, for the religion shares in their investigation of the effects of church attendance and religious beliefs on economic development. They find that economic development responds positively to the extent of religious beliefs, notably those in hell and heaven, but negatively to church attendance. Later, McCleary and Barro (2006) used state religion, regulation of religion market and religious pluralism to study the effect of religious diversity and found that religious pluralism has a positive effect on monthly attendance at formal religious services but no significant effects on personal prayer, religious beliefs, or religiousness.

There are several sources for the measurement of religious diversity (Montalvo & Reynal-Querol, 2005b).

Barret's (1982) World Christian Encyclopedia (WCE), one of the most cited sources of data across countries, provides estimates of the size of religious groups for a large cross-section of countries in 1970, 1975, and 1980. The WCE has several well-known

---

[1] The Herfindahl index equals the sum of the squares of the population fractions belonging to each religion, Barro and McCleary's pluralism index equals 1 - the Herfindahl index.