

Economic Growth and Social Cohesion: Evidence from the Organization of Islamic Conference Countries

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Accepted: 8 April 2016 / Published online: 13 April 2016
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Abstract This study contributes in the literature by investigating the impact of social cohesion on economic growth using a panel data of 44 OIC countries over the period 1986–2010. The study has employed a comprehensive measure of social cohesion that covers a large number of social indicators such as inequality, trust, terrorism, and social conflicts. Our study finds out that the growth effect of social cohesion is positive and significant in the Muslim world. Finding of the study are shown to be robust to different control variables, different specifications, econometric techniques and outliers.

Keywords Economic growth · Social cohesion · Islamic countries · Panel data

JEL Classification C23 · O40

1 Introduction

Why do some economies exhibit high levels of economic growth while others do not and what causes economic growth? These questions have received widespread attention at least since the time of Adam Smith. One important line of research, which has gained momentum in the last decade and so, highlights the role of social capital as an important cause of economic growth. Most of the studies find a positive relationship between social capital and economic growth (see, for example, Whiteley 2000).

Recently, the relationship between economic performance and social cohesion¹ has been emerged an important area of research. The high level of social cohesion in societies

¹ Social cohesion is a broader concept than social capital. Social capital is one dimension of social cohesion and it is considered at individual level and it gives monetary returns such as physical capital while social cohesion is taken at global level and it is characteristics of the society as a whole (Klein, 2013).

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is connected with positive outcomes such as low crime rates, high economic growth, low unemployment and satisfied citizens (Fenger 2012). The World Bank (1999) states that ‘increasing evidence indicates that social cohesion is critical for sustainable development and for societies to prosper economically’.

Social cohesion increases economic growth by minimizing social conflicts and riots. It makes the cooperation more predictable, reduces the risk and minimizes the transaction cost thus increases the investment, innovation and creativity and enhances the economic growth (Stanley 2003). The high level of social cohesion also improves the quality of institutions in turn enhances the speed of economic growth (Easterly 2006).

Social cohesion is the ability of a society to guarantee the welfare of all its individuals while reducing disparities and preventing marginalization. Jenson (1998) has identified five dimensions of social cohesion ‘belonging, participation, legitimacy, inclusion and recognition’. Berger-Schmitt and Noll (2000) concept of social cohesion is based on two dimensional goal of society development which are reduction of disparities and accumulation of social capital.

However, despite increasing popularity and importance of social cohesion among policy makers and academic researchers, there is no clear definition of this concept. Some take this concept equivalent to solidarity and trust and some have defined this concept in the context of social inclusion, poverty and social capital. Maxwell (1996) has defined the social cohesion as building shared values, reducing inequalities in wealth and income and to make people to engage in similar enterprise. Bernard (1999) has criticized that social cohesion is nothing more than a “quasi concept” because it contains vagueness and is able to change according to circumstances.

Though the concept of social cohesion is defined broadly in existing literature but a comprehensive measure of social cohesion has not been used in the empirical literature on growth. We have used the “index of intergroup social cohesion” from the World Bank “Social Development Indicator Project” which is maintained by the Institute of Social Studies (ISS). This data set covers 156 societies.

Though the need of social cohesion is also wide spreading in developing countries however, the empirical literature on social cohesion has mainly focused on developed countries while there are insufficient empirical studies on developing countries. For instance, Ritzen et al. (2000) highlight the importance of social cohesion and economic performance for OECD countries. They cite the example of Ireland which emerged as a relatively poor OECD country and it over took the UK in GDP per capita in the late 1990s. They assert the role of social cohesiveness towards the better performance of Ireland. In addition, they argue that a country’s social cohesion has an important role in managing the policy response to the shocks caused by global economy. Similarly, using micro level indicators of social cohesion for Luxembourg, Klein (2013) found out that social cohesion has positive impact on both income and social wellbeing. In another study, Bellani and D’Ambrosio (2011) provide empirical findings for European countries which show that life satisfaction decreases with an increase in deprivation and social exclusion.

This study is an effort to fill this gap. For this purpose we have taken the large sample of 44 Muslim countries from the years 1986 to 2010. We have used *System Generalized Method of Moments (SGMM)* to estimate our model. This approach treats the possible endogeneity of social cohesion variable and also controls the heteroscedasticity of the panel data. This work sets out to gauge the importance of social cohesion in Muslim economies and how it impacts upon economic growth. The objectives of the study are: To develop relationships between different dimensions of social cohesion and economic growth; to test the growth effect of social cohesion in Islamic countries.

Our study contributes in the existing literature in following ways. First, we believe that this is the first empirical study that tests the relationship between social cohesion and economic growth using a comprehensive index of social cohesion. Second, this study uses a large number of OIC countries over a long period of time to have a better empirical examination. Third, this study takes care of the endogeneity problem.

The paper is organized as follows. Section 2 describes the literature review. Section 3 discusses the methodology. Section 4 documents the data sources and explains construction of the variables. Section 5 presents and discusses the empirical results. Finally, Sect. 6 concludes.

2 Literature Review

Social cohesion is a characteristic of a society which deals with the associations and relations between individuals and groups. The sociologist Emile Durkheim (1893) was the first who used the concept of social cohesion in the nineteenth century. He views solidarity and shared loyalties as two kinds of social cohesion.

Social cohesion has gained importance² in the European Union since the Maastrich Treaty 1992. The objective of treaty was to attain sustained economic growth through social development (Bellani and D'Ambrosio 2011). Social cohesion has also gained much importance in Canada due to ethnic and linguistic heterogeneity as a result of increasing immigrants to Canada (Maxwell 1996).

Social cohesion is defined in the context of divisions within the society. These divisions can be in the form of income, caste, political party, ethnicity, demographic values and language (Easterly 2006). An alternative way to define social cohesion is in terms of building shared values while reducing differences in income and wealth.

Social cohesion elevates economic growth through decreasing income inequality because in societies where wealth is equally distributed people are more able to trust each other and on government, they are more strongly connected and they are willing to cooperate, there is high group membership rate, there are less social conflicts (Easterly 2006; Hulse and Stone 2007; Reeskens et al. 2008). Social cohesion also boosts up economic growth by lowering ethnic and linguistic fractionalizations (Easterly and Levine 1997).

A major literature on social cohesion is based on normative conflicts such as ethnic conflicts. Easterly and Levine (1997) have explained the impact of ethnic divisions on growth tragedies of Africa. Using thirty years data, they find the significant adverse impact of ethnic divisions on public policies which are associated with economic growth, however, the study discovered that direct effect of ethnic divisions on economic growth are ambiguous.

Following Easterly and Levine (1997), Posner (2004) has constructed a new index of ethnic division (Politically Relevant Ethnic Groups) PREG for 42 African countries and tested the same hypothesis of Easterly and Levine (1997). He found out a negative and significant impact of ethnic divisions on economic growth. Similarly, Alesina and Ferrara

² High unemployment, income inequality, deprivation of rural areas and regional cleavages are the major causes which increased the importance of social cohesion in the Europe.

(2003) have investigated the impact of ethnic diversity on economic policies and development outcomes using the survey data of cities in developed countries and villages in developing countries. Their findings also indicate the overall negative effect of ethnic diversification on economic growth.

Rodrik (1999) points out that during 1960s and 1970s growth rates of all East Asian, Latin America and Middle East countries were remarkable but after 1970s these countries experienced huge growth collapses. He argues that social conflicts were the major reason of growth failure after mid-1970s. Using the cross country data and middle class share of income and linguistic homogeneity as measures of social cohesion, Easterly (2006) supports the hypothesis that social cohesion laid the foundation of better institutions and these institutions lead to better economic growth.

Ferroni et al. (2008) has constructed an index for social cohesion using indicators related to social capital and distribution of opportunities for Latin America and analyze its impact on economic growth and institutional development. For social capital they use three indices: compliance with the law, interpersonal trust and trust in public institutions whereas for distribution of opportunities they focus on five indicators: poverty incidence, income Gini coefficient, size of the middle class, education Gini coefficient and intergenerational mobility. They conclude that social cohesion has a positive linkage with different development indicators such as economic growth, new technologies, and effective development policies. Similarly, using ethnic fractionalization, income inequality and adult literacy ratio as measures of social cohesion, Heller (2009) concludes favorable effects of social cohesion on institutions and economic growth.

Neira et al. (2009) have analyzed the impact of social capital on economic growth using the panel data of 14 OECD countries over the period 1980–2000. The results show that social capital has positive impact on economic growth of OECD countries. Klein (2013) has analyzed the impact of social capital and social cohesion on social well-being. Major empirical indicators of social cohesion in his study are marital status, the fact of having children, social contacts, group membership and trust. He concludes that both social capital investment and social cohesion have positive impact on both income and social well-being.

Trust is an important indicator of social cohesion and in many empirical studies level of trust is used to measure social cohesion (Horvath 2011). Trust increases economic growth in two ways. First, interpersonal trust decreases the transaction cost and thus increases the investment and economic growth. Second, trust on public institutions improves the performance of public institutions through good policies and thus increases economic growth. Using the data set contains of developed and developing countries, Horvath (2011) shows that trust is an important determinant of long term economic growth.

The above review shows that social cohesion is defined in different dimensions and various studies have used diverse indicators to measure the level of social cohesion. Some researchers have explained the concept of social cohesion using direct measures of social cohesion such as the level of trust, member's group participation and volunteer activities. While, some researchers have explained it using indirect measures such as ethnic and linguistic fractionalization, gender inequality, elite dominance, incidence of poverty, income inequality and social inequality. We analyze the impact of social cohesion on economic growth of OIC countries through a more comprehensive measure which contains all the indicators described in different definitions of social cohesion.

3 Methodology

The economic growth model used in this study is based on Solow (1956)' growth model which has CRS (constant returns to scale) and two inputs capital (K) and labor (L). The terms α and $1 - \alpha$ are shares of capital and labor in total production. The term A is referred as total factor productivity (TFP). It is also called the Solow residual, which accounts for effects in total output not caused by inputs.

$$Y = AK^\alpha L^{1-\alpha} \quad (1)$$

Taking the natural log of both sides of the Eq. 1, we can write Eq. 1 as

$$\log Y = \log A + \beta_1 \log K + \beta_2 \log L \quad (2)$$

The factors other than L and K affect TFP. Following the growth literature, these factors can be represented with a row vector X, a constant term and error term. The resulting equation can be substituted into Eq. 2.

$$\log Y = \beta_0 + \beta_1 \log K + \beta_2 \log L + \beta_3 X + \varepsilon_{it} \quad (3)$$

Mankiw et al. (1992) has employed the theoretical models of Solow (1956) by relaxing the convergence condition. According to absolute convergence theory the poor countries will catch up the per-capita of rich countries due to high marginal productivity of capital and output growth. Following Mankiw et al. (1992) and Barro (1996), to check convergence hypothesis, we have added initial level of per-capita income as a determinant of growth into Eq. 3.

$$\log Y_{it} = \beta_0 + \beta_1 Y_{t-1} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \beta_4 X_{it} + \varepsilon_{it} \quad (4)$$

In an open economy trade is an important source of economic growth. It promotes growth by encouraging economies to specialize and produce in areas where they have a relative cost advantage over other economies. Trade expands the markets that local producers can access, allowing them to produce at most efficient scale to keep down the costs and it also disperses new technologies and ideas, increasing the productivity of local workers and managers. We include trade openness as a measure of trade.

$$\log Y_{it} = \beta_0 + \beta_1 Y_{t-1} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \beta_4 Trade_{it} + \beta_5 X_{it} + \varepsilon_{it} \quad (5)$$

Why good politicians often enact bad policies. The basic reason is that they face significant social constraints on their efforts to bring about better reforms. It is the degree of social cohesion which shapes such constraints on reforms (Ritzen et al. 2000). Social cohesion increases economic growth by controlling social disorder, conflicts and riots. It minimizes the risk and the transaction costs and makes the cooperation more predictable which, in turn, enhances economic growth (Stanley 2003). Furthermore, social cohesion also increases growth by improving the quality of institutions. Easterly (2006) asserts that more cohesive societies grow faster than less cohesive societies.

Ritzen et al. (2000) provide analytical arguments of the relationship of social cohesion with economic growth for OECD economies. They argue that a number of social maladies such as rising teenage parenthood, unemployment, income inequality, the displacement of people and falling civic participation among others represent characteristic of the breakdown of social order. They argue that socially cohesive societies governed by responsive public institutions are likely to grow more. In addition, they argue that a country's social

cohesion has an important role in managing its policy response to the shocks caused by global economy.

Rodrik (1999) differentiates those economies which performed better during the global recession in the 1974–1994 and provides strong evidence that ‘united societies’ performed significantly better than did those with weak quality institutions and ‘divided societies’. Ritzen et al. (2000) argue that social cohesion creates ‘room-for-maneuver’ which help to control civil conflicts/wars and help to implement better policies through political reforms and implementation of the rule of law. Thus socially cohesive societies tend to perform better than that of socially divided societies.

There are many measures of social cohesion which are used in the literature. These are equality of social outcomes, cooperation, diversity and affinity (Stanley 2003), level of trust, willingness to cooperate, identity/belonging, inequality, ethnic heterogeneity, social inclusion, social capital and quality of life (Berger-Schmitt 2002, Knack 2003, Chen et al. 2006; Easterly 2006 Manole 2012), voluntary network and organizations reduction of differences & cleavages, inequalities, network and organizations, membership rate of organization & civic participation (Easterly 2006; Hulse and Stone 2007), common values, civic culture, social order, social solidarity and sense of membership (Reeskens et al. 2008), marital status, social contracts, group membership, and trust (Klein 2013).

Commonly used proxies ethnic fractionalization and religious tradition are weak measures of social institutions while the data on direct measures of social institutions such as trust and civic norms is available for a limited sample of countries. Therefore, in this study we have used the index of inter group social cohesion, which is a rich resource of data for the purpose of cross-country analysis on social cohesion. Finally, our main variable of concern social cohesion (SC_{it}) enters into the Eq. 6. The expected sign of β_5 is greater than 0.

$$\log Y_{it} = \beta_0 + \beta_1 y_{t-1} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \beta_4 Trade_{it} + \beta_5 SC_{it} + \beta_6 X_{it} + \varepsilon_{it} \quad (6)$$

4 Data Sources

This study uses an unbalanced data which includes 44 OIC countries for the period of 1986–2010. Initially we have selected all OIC countries but 44 countries are screened due to unavailability of education data set. The data is averaged over five years: 1986–1990, 1991–1995, 1996–2000, 2001–2005 and 2006–2010.

The data of economic growth is logarithmic value of GDP per capita adjusted for purchasing power parity 2005 constant prices is drawn from Penn World Tables for 1986–2010. The data on investment share of GDP per capita is also drawn from Penn World Tables which is investment share of purchasing power converted GDP per capita at 2005 constant prices. Data on government consumption is taken from Penn World Tables which is government consumption share of purchasing power converted GDP per capita at 2005 constant prices.

Data on labor force is taken from the World Development Indicators (WDI), which is the proportion of population ages 15 or older that is economically active. Data on education is taken from Barro and Lee (2011) dataset. We have taken the education attainment for population aged 15 and over who have attained the secondary education level. Data on trade openness is taken from Penn World Table (7.01) which is openness at 2005 constant

prices of GDP per capita and expenditures shares. Data on inflation rate is taken from IFS which is CPI over corresponding period of previous year.

Our main variable intergroup cohesion is taken from the Indices of Social Development (ISD) which is World Bank “Social Development Indicator Project” and maintained by the Institute of Social Studies (ISS). It brings 200 indicators together. The indices is composed from 25 different sources (global, regional) including 200 indicators thus it is reliable and rich data set covering wider countries to compare social institutions role in economic development and growth.

ISD has measured intergroup cohesion by employing data on inter-group disparities, perceptions of being discriminated against, feeling of distrust against members of other groups, terrorist acts, terrorism and social instability, assassinations, strikes, kidnapping, agency ratings on the likelihood of civil disorder, number of reported incidents of riots, reported levels of engagement in violent riots, and confrontations.

5 Results and Discussion

We estimate Eq. 6 with the *Ordinary Least Squares* using robust estimation technique to address the possible problem of cross sectional heteroskedasticity. The first column of Table 1 shows that the coefficient on social cohesion, 0.9, turns out to be positive and

Table 1 Economic growth and social cohesion (OLS)

| Variables | (1) | (2) | (3) | (4) | (5) |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Y_{t-1} | -0.224*** (0.0201) | -0.258*** (0.0262) | -0.195*** (0.0353) | -0.196*** (0.0301) | -0.207*** (0.00924) |
| Capital | 0.451*** (0.0883) | 0.374*** (0.105) | 0.503*** (0.0960) | 0.441*** (0.103) | 0.113 (0.138) |
| Labor | -1.463*** (0.171) | -1.578*** (0.256) | -1.655*** (0.148) | -1.561*** (0.212) | -0.538** (0.209) |
| Trade openness | 1.323*** (0.377) | 1.312*** (0.320) | 1.017*** (0.185) | 1.378*** (0.345) | 0.732*** (0.139) |
| Social cohesion | 0.966*** (0.348) | 0.706* (0.380) | 0.796*** (0.299) | 0.862* (0.493) | 0.676*** (0.156) |
| Gov. spending | | -0.577*** (0.105) | | | |
| Population | | | -0.112 (0.0834) | | |
| Inflation | | | | -0.0264 (0.0694) | |
| Human capital | | | | | 0.579*** (0.0465) |
| Constant | 12.67*** (1.179) | 14.79*** (1.781) | 14.60*** (0.843) | 12.80*** (1.337) | 9.280*** (1.139) |
| Observations | 158 | 158 | 158 | 147 | 158 |

Standard error are given in parenthesis

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

significant at 1 % level of significance. It implies that 1 % increase in social cohesion causes 0.9 % increase in economic growth. This finding is consistent with the theoretical arguments given by Rodrik 1999; Ritzen et al. 2000; Stanley 2003; Easterly 2006.

The effect of initial GDP is robustly negative and significant in all regressions. This means that keeping other factors constant, consistent with the convergence theory, a country with less initial income per capita tends to grow faster than a rich country. This finding is consistent with standard growth regressions (for details, see Barro 1996).

Our results show that the growth effect of trade openness is positive and significant at 5 % level of significance. In column 2 we have comprised government expenditure and in column 4 we have included inflation rate. The government expenditures have a negative and significant impact on economic growth which implies that an increase in government expenditures crowds out the private investment which in turn decreases economic growth. The growth impact of inflation rate is negative and insignificant, exhibiting the fact that uncertainty in price level has harmful impact on economic growth. Barro (1996) concludes in his study on determinants of economic growth that the growth rate of real per capita GDP is enhanced by better maintenance of the rule of law, smaller government

Table 2 Economic growth and social cohesion (fixed effects)

| Variables | (1) | (2) | (3) | (4) | (5) |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Y_{t-1} | -0.254*** (0.0778) | -0.300*** (0.0756) | -0.225*** (0.0788) | -0.228*** (0.0823) | -0.231*** (0.0676) |
| Capital | 0.395** (0.170) | 0.304* (0.165) | 0.448*** (0.171) | 0.388** (0.185) | 0.0927 (0.154) |
| Labor | -1.687*** (0.445) | -1.780*** (0.427) | -1.894*** (0.456) | -1.685*** (0.482) | -0.703* (0.411) |
| Trade openness | 1.020** (0.392) | 1.022*** (0.376) | 0.686 (0.431) | 1.112** (0.447) | 0.588* (0.346) |
| Social cohesion | 1.093** (0.549) | 0.668 (0.539) | 0.899 (0.556) | 0.971 (0.587) | 0.695 (0.480) |
| Gov. spending | | -0.617*** (0.165) | | | |
| Population | | | -0.120* (0.0663) | | |
| Inflation | | | | -0.00852 (0.0725) | |
| Human capital | | | | | 0.550*** (0.0781) |
| Constant | 14.63*** (2.288) | 16.77*** (2.266) | 16.72*** (2.549) | 14.23*** (2.465) | 10.56*** (2.067) |
| Observations | 158 | 158 | 158 | 147 | 158 |
| R-squared | 0.370 | 0.425 | 0.384 | 0.356 | 0.529 |

Standard error are given in parenthesis

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

consumption, and lower inflation. Thus our empirical findings on our control variables government expenditures and inflation are consistent with Barro (1996).

The role of labor force growth is negative which is not consistent with the theory. The likely reason could be the diminishing marginal productivity of labor force. However, the role of human capital is positive and significant implying that investment in human capital is critical to enhance per capita growth rate of GDP in OIC countries. The results show that 1 % increase in human capital causes 0.5 % increase in economic growth. The results on human capital are consistent with many studies such as Mankiw et al. 1992; Barro 1996. The growth impact of social cohesion remains positive and significant.

We estimate our model with the Fixed Effects to determine the relationship between social cohesion and economic growth. The advantage of using Fixed Effects over OLS is that it takes into account the unobserved heterogeneity of the cross sectional units. We have found that social cohesion coefficient remains positive and significant. The parameter estimate on social cohesion, in first column of Table 2, exhibits that 1 % increase in social cohesion causes 0.5 % increase in economic growth. Other findings also remain intact. We also estimate Random Effects model to check the robustness of our result. The results of Random Effects model are given in Table 3. The coefficient of social cohesion is positive

Table 3 Economic growth and social cohesion (random effects)

| Variables | (1) | (2) | (3) | (4) | (5) |
|-----------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|
| Y_{t-1} | -0.224*** (0.0771) | -0.258*** (0.0751) | -0.195** (0.0786) | -0.196** (0.0814) | -0.207*** (0.0660) |
| Capital | 0.451*** (0.172) | 0.374** (0.167) | 0.503*** (0.173) | 0.441** (0.185) | 0.113 (0.153) |
| Labor | -1.463*** (0.442) | -1.578*** (0.428) | -1.655*** (0.454) | -1.561*** (0.479) | -0.538 (0.398) |
| Trade openness | 1.323*** (0.382) | 1.312*** (0.369) | 1.017** (0.422) | 1.378*** (0.435) | 0.732** (0.336) |
| Social cohesion | 0.966* (0.507) | 0.706 (0.495) | 0.796 (0.514) | 0.862* (0.530) | 0.676 (0.435) |
| Gov. spending | | -0.577*** (0.165) | | | |
| Population | | | -0.112* (0.0672) | | |
| Inflation | | | | -0.0264 (0.0688) | |
| Human capital | | | | | 0.579*** (0.0768) |
| Constant | 12.67*** (2.206) | 14.79*** (2.214) | 14.60*** (2.477) | 12.80*** (2.393) | 9.280*** (1.940) |
| Observations | 158 | 158 | 158 | 147 | 158 |

Standard error are given in parenthesis

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

and highly significant and all control variables have anticipated signs according to the theory.

Finally, we have used the Arellano-Bond system GMM estimation to improve our results as system GMM is broadly practices in dynamic panel data model to tackle potential endogeneity arising due to the presence of lag dependent variable at right hand side of the equation. The results are given in Table 4. In the first column of Table 4 the coefficient of social cohesion is positive and significant at 1 % level of significance revealing that 1 % increase in social cohesion causes economic growth to increase by 1.1 %.

The advantage of Arellano-Bond system GMM is that it also reports test-statistics on autocorrelation and on instruments validity. The AR (1) and AR (2) both test statistics are not rejecting the null hypothesis of no autocorrelation showing that there is no serial correlation. The P-statistics of Henson test of over identification restrictions (OIR) is also not rejecting the null hypothesis that “instruments as a group are exogenous”. The

Table 4 Economic growth and social cohesion (system – GMM)

| Variables | (1) | (2) | (3) | (4) | (5) |
|-----------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|
| Y_{t-1} | -0.205** (0.0798) | -0.240*** (0.0810) | -0.201*** (0.0769) | -0.182** (0.0852) | -0.226*** (0.0780) |
| Capital | 0.620*** (0.178) | 0.563*** (0.179) | 0.728*** (0.180) | 0.530** (0.208) | 0.479*** (0.176) |
| Labor | -1.530*** (0.500) | -1.708*** (0.505) | -1.581*** (0.482) | -1.910*** (0.575) | -0.807 (0.510) |
| Social cohesion | 1.158** (0.470) | 1.111** (0.471) | 0.898* (0.473) | 1.134** (0.498) | 0.819* (0.463) |
| Trade openness | 0.886** (0.397) | 0.676* (0.405) | 0.468 (0.442) | 0.946** (0.451) | 0.154 (0.415) |
| Gov. spending | | -0.459*** (0.171) | | | |
| Population | | | -0.116* (0.0616) | | |
| Inflation | | | | -0.112 (0.0803) | |
| Human capital | | | | | 0.398*** (0.0811) |
| AR (1) | 0.004 | 0.001 | 0.12 | 0.02 | 0.01 |
| AR (2) | 0.55 | 0.43 | 0.54 | 0.16 | 0.34 |
| Sargan-test | 0.54 | 0.62 | 0.64 | 0.53 | 0.82 |
| Constant | 13.24*** (2.474) | 15.82*** (2.657) | 14.83*** (2.526) | 15.02*** (2.780) | 11.02*** (2.455) |
| Observations | 118 | 118 | 118 | 110 | 118 |

Standard error are given in parenthesis

* Significant at 10 %; ** significant at 5 %; *** significant at 1 %

high F-value is indicating that model as a whole is significant. We have applied Sargan test to check the validity of instruments and the test statistics indicate that our instruments are valid thus we cannot reject the null hypothesis that instruments are exogenous.

Finally we re-estimate our model after removing the outliers in the data. We have treated the outliers values by removing five largest and five smallest values of social cohesion and economic growth gradually to ensure that positive relationship between economic growth and social cohesion is not sensitive to outliers. The coefficient of social cohesion remains positive and significant exhibiting the fact that positive impact of social cohesion is not due to outliers.

6 Conclusion

Recently literature is emerging on the role and importance of social indicators in explaining cross-country differences in economic performance. This study establishes empirical relationship between social cohesion and economic performance using a panel data set of 46 Islamic countries from 1986 to 2010. For this purpose we have used dynamic panel data estimator system GMM which controls the potential problem of endogeneity. The results show that the growth impact of social cohesion is positive and significant and 1 % increase in social cohesion causes 0.9 % increase in economic performance of the OIC countries. We have added three additional control variables trade openness, government expenditures and inflation rate to check sensitivity of the results. The coefficients of all control variables have expected signs and the coefficient of social cohesion remains positive and significant. So under the shadow of these findings it's conducive to invest in social cohesion if Muslim economies want to achieve high economic growth and development.

Though the findings are statistically significant and aligned with theoretical assumptions but still more research is needed in this area to give the answers of policy relevant questions, that how to create cohesiveness in the society and what are the costs and benefits linked with the social modification of the society as cohesiveness of the societies is equally need of all countries. There are some aspects of the research which can be improved. A comparative analysis between Islamic and non-Islamic countries can be helpful to understand the relative significance of social cohesion in explaining economic growth differences. To have an in-depth understanding some country case studies can be conducted. The sensitivity analysis in this study is based on few selected important variables that can be extended to take account of other important causes of economic growth.

Acknowledgments It is to acknowledge that this study has substantially benefited from the constrictive comments and valuable suggestions of an anonymous reviewer.

Appendix

See Tables 5, 6 and 7.

Table 5 Variables description and data sources

| Variables | Notations | Description | Data sources |
|---------------------|------------|---|----------------------|
| Real GDP per capita | log(RGDP) | It is GDP per capita adjusted for purchasing power parity 2005 constant prices | PWT 7.1 (2012) |
| Investment | log(K) | It is investment share of purchasing power converted GDP per capita at 2005 constant prices (Inv/GDP %) | PWT 7.1 (2012) |
| labor force | log(L) | The proportion of population ages 15 or older that is economically active | WDI (2013) |
| Education | log(Edu) | Education attainment for population aged 15 and over who have attained the secondary education level | Barro and Lee (2011) |
| Social cohesion | Cohesion | It is based on trust and cohesion between a particular ethnic, linguistic and religious identity groups | ISS (2011) |
| Trade openness | log(trade) | It is the sum of exports and imports as share of GDP | PWT 7.1 (2012) |
| Government exp. | log(G) | It is the final government consumption | PWT 7.1 (2012) |
| Inflation | Inflation | CPI over corresponding period of previous year (%) | IFS (2013) |

Table 6 Descriptive statistics

| Variable | Obs | Mean | SD | Min | Max |
|-----------------|-----|-----------|----------|--------|---------|
| RGDP per Capita | 220 | 8837.516 | 15532 | 323.43 | 109,301 |
| Investment | 220 | 22.06356 | 9.580865 | 1.588 | 51.626 |
| Trade Openness | 220 | 78.22937 | 42.32269 | 9.598 | 248.75 |
| Social Cohesion | 163 | 0.5774302 | 0.106189 | 0.0318 | 0.7584 |
| Human Capital | 220 | 16.24009 | 11.56839 | 0.56 | 44.81 |
| Government | 222 | 10.52222 | 5.555608 | 2.984 | 40.49 |
| Population | 220 | 9.016462 | 1.57082 | 5.300 | 12.3777 |
| Inflation | 211 | 22.39412 | 110.939 | -3.37 | 1187.85 |

Table 7 List of muslim countries

| No. | Country | No. | Country | No. | Country | No. | Country |
|-----|--------------|-----|------------|-----|--------------|-----|----------------------|
| 1 | Afghanistan | 12 | Guinea | 23 | Maldives | 34 | Senegal |
| 2 | Albania | 13 | Guyana | 24 | Mali | 35 | Sierra Leone |
| 3 | Algeria | 14 | Indonesia | 25 | Mauritania | 36 | Sudan |
| 4 | Bahrain | 15 | Iran | 26 | Mauritius | 37 | Syria |
| 5 | Bangladesh | 16 | Iraq | 27 | Morocco | 38 | Tajikistan |
| 6 | Benin | 17 | Kazakhstan | 28 | Mozambique | 39 | Togo |
| 7 | Brunei | 18 | Kenya | 29 | Niger | 40 | Tunisia |
| 8 | Burkina Faso | 19 | Kuwait | 30 | Oman | 41 | Turkey |
| 9 | Cameroon | 20 | Kyrgyzstan | 31 | Pakistan | 42 | Uganda |
| 10 | Egypt | 21 | Libya | 32 | Qatar | 43 | United Arab Emirates |
| 11 | Gabon | 22 | Malaysia | 33 | Saudi Arabia | 44 | Yemen |

References

- Alesina, A., & Ferrara, E. L. (2003). Ethnic diversity and economic performance. *Journal of Economic Literature*, 43(3), 762–800.
- Barro, R. J. (1996). *Determinants of economic growth: A cross-country empirical study (No. w5698)*. National Bureau of Economic Research.
- Barro, R., & Lee, J.-W. (2011). A new data set of educational attainment in the world, 1950–2010. *Journal of Development Economics*, 104, 184–198.
- Bellani, L., & D'Ambrosio, C. (2011). Deprivation, social exclusion and subjective well-being. *Social Indicators Research*, 104, 67–86.
- Berger-Schmitt, R., & Noll, H. H. (2000). *Conceptual framework and structure of a european system of social indicators. EuReporting Working Paper No. 9*. Mannheim: Centre for Survey Research and Methodology.
- Berger-Schmitt, R. (2002). Considering social cohesion in quality of life assessments: Concept and measurement. *Social Indicators Research*, 58(1), 403–428.
- Bernard, P. (1999). *Social cohesion: A critique*. Canadian Policy Research Network Discussion paper, Department of Sociology, CPRN RCRPP.
- Chen, J., To, H.-P., & Chan, E. (2006). Reconsidering social cohesion: Developing a definition and analytical framework for empirical research. *Social Indicators Research*, 75(2), 273–302.
- Durkheim, E. (1893)1984. *The division of labor in society*. New York: Free Press.
- Durkheim, E. (1986). *An introduction to four major works (pp. 24–59)*. Beverly Hills: Sage.
- Easterly, B. W. (2006). *Social cohesion, institutions, and growth*. Washington, DC: Center for Global Development.
- Easterly, W., & Levine, R. (1997). Africa's growth tragedy: Policies and ethnic divisions. *The Quarterly Journal of Economics*, 112(4), 1203–1250.
- Fenger, M. (2012). Deconstructing social cohesion: Towards an analytical framework for assessing social cohesion policies. *Corvinus Journal of Sociology and Social Policy*, 3(2), 39–54.
- Ferroni, M., Mateo, M., & Payne, M. (2008). *Development under conditions of inequality and distrust social cohesion in Latin America*. IFPRI discussion paper 00777.
- Heller, L. (2009). Social cohesion and its relationship to endogenous institutional formation and economic growth. *The Journal of Private Enterprise*, 25(1), 81–104.
- Heston, A., Summers, R., & Aten, B. (2012). *Penn World Table Version 7.1*. Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania. Retrieved from <http://www.indsocdev.org/intergroup-cohesion.html>.
- Horvath, R. (2011). *Does trust promote growth?*. IES: Charles University, Prague.
- Hulse, D. K., & Stone, W. (2007). Social cohesion, social capital and social exclusion (pp. 109–128). *Indices of Social Development*. (2011). Retrieved from <http://www.indsocdev.org/home.html>.
- International Financial Statistics. (IFS) (2013). Washington, D.C. International Monetary Fund. Retrieved from <http://elibrary-data.imf.org/FindDataReports.aspx?d=33061&e=169393>.
- Jenson, J. (1998) Mapping social cohesion: The State of Canadian Research, CPRN Study F03, Ottawa.
- Klein, C. (2013). Social capital or social cohesion: What matters for subjective well-being? *Social Indicators Research*, 110(3), 891–911.
- Knack, S. (2001). Trust, associational life and economic performance. In J.F. Helliwell (ed.), *The contribution of human and social capital to sustained economic growth and well-being: international symposium report*. Human Resources Development, Canada and OECD.
- Knack, S. (2003). groups, growth and trust: Cross-country evidence on the Olson And Putnam hypotheses. *Public Choice*, 117, 341–355.
- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, 107(2), 407–437.
- Manole, A. M. (2012). Social cohesion—A post-crisis analysis. *Theoretical and Applied Economics*, 11(576), 127–134.
- Maxwell, J. (1996). *Social dimensions of economic growth. Eric John Hanson Memorial Lecture Series (vol. 8)*. Department of Economics, University of Alberta.
- Neira, I., Vázquez, E., & Portela, M. (2009). An empirical analysis of social capital and economic growth in Europe (1980–2000). *Social Indicators Research*, 92(1), 111–129.
- Posner, D. N. (2004). Measuring ethnic fractionalization in Africa. *American Journal of Political Science*, 48(4), 849–863.
- Reeskens, T., Botterman, S., & Hooghe, M. (2008). Is social cohesion one latent concept? Investigating the dimensionality of social cohesion on the basis of the Kearns and Forrest (2000) typology. *Social Cohesion Indicators Flanders*.

- Ritzen, J. M. M., Easterly, W., & Woolcock, M. J. (2000). On “good” politicians and” bad” policies: Social cohesion, institutions, and growth (Vol. 2448). World Bank Publications.
- Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict, and growth collapses. *Journal of Economic Growth*, 4(4), 385–412.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*, 70(1), 65–94.
- Stanley, D. (2003). What do we know about social cohesion: The research perspective of the federal government’s social cohesion research network. *The Canadian Journal of Sociology*, 28(1), 5–17.
- Whiteley, P. F. (2000). Economic growth and social capital. *Political Studies*, 48, 443–466.
- World Bank. (1999). *World Development Report 1999/2000*. New York: Oxford University Press.
- World Development Indicators. (2013). Washington, DC: World Bank. Retrieved from <http://data.worldbank.org/data-catalog/world-development-indicators>.