

REAL WELLBEING OF THE *UMMAH* AND ECONOMIC PERFORMANCE: Islamic Perspectives and Empirical Evidence

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Abstract

This study provides insights into real wellbeing of the *Ummah* (Muslim community) using Islamic perspectives and empirical evidence. Islam places justice at center in economic interactions. In Islamic teachings, justice is a prerequisite for human wellbeing and economic development. *Ibn Khaldun* has devoted a whole section on justice entitled: injustice triggers the destruction of civilization. Nevertheless, justice cannot be fully realized without *asabiyah*, which is also referred to as social solidarity, group feeling or social cohesion. This study focuses on social solidarity to determine its causal links with the economic performance of the *Ummah*. The study employs a comprehensive measure of social solidarity of a society that is based on three indices namely social cohesion, interpersonal safety, trust and civic activism. The results show that social solidarity plays a positive and significant role in determining the economic performance of the *Ummah*. This finding is shown to be robust to different control variables, different specifications, econometric techniques and the outliers.

Keywords: Social Cohesion, Justice, Muslim Community, Economic Growth, Religion.

JEL Classification: C23, O40, P4.

I. Introduction

Religions are essentially ubiquitous across human societies and have a key role in determining economic outcomes. Religion constrains its followers by certain rules of behavior. Religious practices are a kind of informal institutions [North (1991)], which implement different constraints that shape socio-political and economic interactions among their followers. [Campante and Yanagizawa-Drott (2015)] point out following economic outcomes of religious practices: First, religion puts a trade-off between religious activities and material activities. ‘Going to temples or pilgrimages, taking time to pray or to meditate or to study sacred books, spending money on reli-

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gious rituals, not working on religious days of rest: these will all take away from what is devoted to (materially) productive activities [Yanagizawa-Drott (2015)]'. Thus, the time devoted to worship constrains the time available for economic activities. Second, religion also affects productivity. For instance, religion limits interactions with non-believers and puts constraints on dietary requirements. Third, religion also affects economic decisions, such as labor supply and savings behavior.

The literature on religion and economic performance has been relatively neglected by economists. The literature shows both negative and positive effects of religious practice on economic performance. Using a sample of 59 economies (mostly developed), [Barro and McCleary (2003)] found out the negative growth effects of different religions such as Muslim, Christian, Hindu, and Jewish. Guiso (2003) characterizes Islam as being inversely related to attitudes that are conducive to growth. If religions prescribe rules and practices which constrain economic outcomes then these practices also have private and non-pecuniary benefits. An empirical strand of the literature suggests that religiosity is positively associated with subjective wellbeing, e.g., [Dolan, et al. (2008), Deaton and Stone (2013)]. In a sample of 88 economies, Sala-i-Martin, et al. (2004) found that Islam is positively associated with per capita income growth.

[Noland (2005)] argued that 'some commentators have claimed that Islam is inimical to growth. In general, this is not borne-out by econometric analysis at the cross country or within-country level'. He found that 'the coefficient on the Muslim share variable—relative to all non-Muslims—is positive and significant at the 5 per cent level—a one percentage point increase in the share of the population professing Islam is associated with a 0.02 to 0.03 percentage point increase in the TFP growth'.

[Guiso (2003) and Noland (2005)] reach opposite conclusions because both authors used different methodologies and variables to explain the links of religion with economic performance. Guiso (2003) analyzed the relation between religion and six groups of variables: people's attitudes toward cooperation, women, government, legal rules, the market economy and its fairness, and thriftiness. Noland (2005) focused on the actual GDP per capita using the two time periods 1973-84 and 1970-90. In a recent study [Kuran (2018)] concludes that 'on the whole, then, cross-country research on whether Islam harms growth is inconclusive'. Thus, religion and growth nexus is not conclusive and empirical analysis is useful.

The religion promotes social cohesiveness in the society; Muslim scholars place social solidarity at centre in their analysis. *Ibn Khaldun* argues that *asabiyah* or social solidarity is of central importance in the fall or rise of civilization. A simple focus on economic indicators cannot help to attain a sustained equilibrium of economic performance. This study, therefore, focuses on a diverse number of social indicators to explain religion growth nexus.

Social solidarity or *asabiyah* can be broadly defined as the state of mind that makes individuals to identify with a group and subordinate their own personal in-

terests to the group interests [*Ibn-Khaldun* (1995)]. In Islam, the term *asabiyah* is used to connote two different meanings. The first meaning identifies *asabiyah* as social solidarity which is in harmony with the concept of brotherhood in Islam. This type of *asabiyah* is praiseworthy since it encourages people to cooperate with each other for common objectives, restraints their self-interest, and fulfills their obligations towards each other. The following Quranic verse attests to this: 'And cooperate in righteousness and piety, but do not cooperate in sin and aggression: (Al-Quran 5:2)'. The second meaning of *asabiyah* is '*asabiyah jahiliyah*' referring to the blind and prejudiced loyalty to one's own group. This leads to the favouring of one's own group, irrespective of whether it is right or wrong. This type of *asabiyah* is blameworthy. Undoubtedly, *Ibn Khaldun* positively uses the word *asabiyah*. He asserts that *asabiyah* or social solidarity becomes an irresistible power if it is grounded in the religious paradigm.

Social solidarity enhances the performance of an economy by reducing social riots and conflicts. There is the number of ways through which social solidarity helps to increase economic growth. For instance, in societies where social solidarity is high, cooperation increases, risk decreases, transaction costs of business reduce and these all lead to more investment, innovations and creativity which boost economic growth [Stanley (2003)]. According to Easterly (2006) social strength of an economy is the base of high-quality institutions which are essential for high economic growth. This study uses three indices to measure social solidarity that is 'index of intergroup social cohesion', 'interpersonal safety and trust' and 'civic activism' from the World Bank 'Social Development Indicator Project' which is maintained by the Institute of Social Studies (ISS).

This study contributes in the existing literature on religion and economic growth through number of ways. First, to the best of our knowledge, it is the first study of its kind that empirically determines the growth impact of social solidarity (real wellbeing) using a multidimensional and comprehensive index of social indicators. Second, this study analyzes theoretical links based on Islamic perspectives. Third, this study exclusively focuses on Islamic countries. Fourth, the potential problem of endogeneity is addressed using own lag variables as instruments. The study endeavors to test the following two hypotheses: (i) Social solidarity is positively associated with the economic performance of the OIC countries. (ii) The impact of social solidarity on economic performance is not sensitive to additional control variables and alternative econometric techniques.

The remaining sections of the paper are structured as follows. Section II provides a review of the literature using both mainstream economics literature and islamic literature. Section III discusses the methodology of the study. Section IV describes the sources of the data and explains the construction of the variables. Section V documents the presentation and discussion of empirical results. Section VI concludes the study.

II. Literature Review

1. *Real Wellbeing and Economic Performance: Islamic Perspectives*

The share of the Muslim population in the world is 19 per cent but their share in the world income is only 6 per cent [Trimmer and McClland (2007)]. Today Muslim economies are comparatively poor [Kuran (2004)] and this state of affairs is ascribed to Islam itself. The literature highlights the importance of religion for economic performance because religion affects beliefs and attitudes that matter for economic outcomes.

Many Western scholars such as [Toynbee (1935), Hitti (1958), Hodgson (1977), Baeck (1994) and Lewis (1995)] have pointed out that Islam played a favorable role in the development of Muslim societies in the past. Islam constituted a framework which is now known as ‘good governance’ to ensure justice and respectful inclusion of poor in the development process. [Schatzmiller (1994)] acknowledges the positive role of Islam by arguing that ‘all the factors which enabled Europe to succeed were available to Islam much earlier’. The existence of uniquely Islamic economics practices such as the prohibition of *riba* or the injunction to observe *zakat* could serve as the causal links between theological belief and economic performance [Chapra 2008].

[Noland (2005)] concludes that ‘in general this is not borne out by econometric analysis either at the cross-country or within-country level’ and that ‘Islam does not appear to be a drag on growth or an anchor on development as alleged. If anything, the opposite appears to be true’. Chapra (2008) concludes, ‘it is not Islam which has led to the relative poverty and underdevelopment of Muslim societies. It is rather the violation of property rights and the decline in official support for education, research and development of technology, that were prevalent in the earlier centuries of Islam and that democratic governments have ensured in the West’.

An Islamic system supports the market system, but Islamic society cannot depend on the market alone. An Islamic system integrates into the market system Islamic values, which are the rules (institutions) prescribed by Allah and implemented by His Prophet (PBUH). These Islamic rules and objectives are positively correlated with growth. Askari, et al. (2014) provide an excellent elaboration of Islamic rules and objectives in relation to economic outcomes. They note that Islamic rules are different from the conventional rules in many ways. Islamic rules emphasize a greater degree of justice in all dimensions of economic management. They assert high moral standard, honesty and trust in all economic transactions. They promote even distribution of income and wealth; discourage wealth hoarding and more opulence in consumption. They discourage exploitive speculation, emphasis risk sharing, better social infrastructure and provision of social service, better treatment of workers. The authors conclude that these differences would be reflected in higher quantitative and qualitative economic performance if the Islamic rules and objectives were adopted. In sum, high moral standards of Islamic rules promote real wellbeing in the society which, in turn, exerts favorable influence on economic performance.

The rules prescribed by the Law Giver and explicated and implemented by the Prophet (PBUH) were intended precisely to reduce transaction costs. The Prophet (PBUH) says ‘Three (behavioral traits) if found in a person, then he is a hypocrite even if he fasts, prays, performs bigger and small pilgrimages, and says “I am a Muslim”: when he speaks, he lies; when he promises, he breeches; and when trusted, he betrays’. Thus trust is one of the important basic values of Islam and behavioral traits such as lies and betrays discouraged in Islamic teachings.

Some scholars have argued that even though Islam may have promoted development in the past, the Muslim world is poor and underdeveloped today as a result of certain Islamic institutions that were ‘designed to serve laudable economic objectives’, but had the unintended effect of serving as ‘obstacles to economic development’ [Kuran (2004)]. In a recent study, based on the observance of Ramadan fasting, Campante and Yanagizawa-Drott (2015) pointed out that religious practices can affect labor supply choices in ways that have negative implications for economic performance. Nevertheless, religious practices increase subjective wellbeing.

The question is: where to start? Although all socio-economic and political factors need attention, however, the maximum focus is required to reform human wellbeing which had been the main locomotive behind the rise or fall of any civilization and which *Ibn Khaldun* made the center of his analysis. Reforming human wellbeing largely depends on the social cohesiveness of society. In this study, the concept of social solidarity in the context of real wellbeing is discussed and its relationship with economic performance evaluated. The concept of real wellbeing is multidimensional and dynamic; however, this study for empirical analysis focuses only on social solidarity which is an important dimension of real wellbeing. This study focuses on real wellbeing of *Ummah* as a prerequisite for the betterment of all and as an important vehicle to attain rapid and sustained economic performance in the Muslim world. Here the question arises, what reflects real wellbeing? Do higher income levels lead to higher well-being? Researchers have questioned the reflection of wellbeing with income [Hausman and McPherson (1993)]. Empirical evidence has shown a negative answer to this question [see, for example, Easterlin (2001)]. Real income of several economies has substantially increased since World War II, however, reported subjective wellbeing in these economies failed to increase and even it has fallen slightly.

The basic reason is that a positive association between happiness and income is significant up to the level where our biological needs get fulfilled and after that, it remains unchanged until some other indispensable non-material human needs are fulfilled. One of the most important of these non-material needs is justice which requires welfare for all irrespective of their race, color, sex, or nationality. Some others are mental peace and social solidarity, freedom, the security of life and property, and control of crime and anomie. The present study focuses on social solidarity, which is an important aspect of real wellbeing. Moreover, social solidarity is one of the important prerequisites to observe justice in a society which is fundamental to increase the wellbeing of all.

In the past, a sharp distinction has been maintained between markets and social interactions which have ended now [Manski (2000)]. Now researchers are putting greater emphasis on equity rather than relying on trickle-down effects. The researchers have concluded that greater equity is an important condition for self-sustained and long-term economic growth [Todaro (1997), Uslaner (2008)] pinpoints that economic equality is the base of generalized trust and trust in government and an increase in generalized trust promotes investment and economic growth.

These developments have led to the realization of importance of social capital. An eclectic approach towards social capital is that it is a component of three constituents: trust, behavioral norms and social networks. Together they provide the 'glue that holds societies together' [Serageldin (1996)]. Trust facilitates the division of labour and specialization and speeds up development. The trust comes from the observance of society's norms.

The trust has an important role in determining the economic performance of an economy [Keefer and Knack (1997)]. It facilitates contract negotiation, monitoring and enforcement. It reduces transaction costs. When and where transaction costs are low, there is more trade, larger market participation, more long-term investment, high productivity, and higher economic growth [Askari, et al. (2014), Keefer and Knack (1997)] argue that social norms prescribing trustworthy behavior have significant impact on economic performance and development. Whereas trust is fundamental for the fair functioning of the market, it is also essential for social solidarity.

In the absence of social capital and its elements government has to put more and more of its resources towards regulations and controls which are not desirable by the society [Chapra (2003)]. *Ibn Khaldun* had put all these together in what he called '*asabiyah*' or 'social solidarity'. In a recent study, Easterly and Levine (2001) conclude that institutions matter more for development as compared to endowments and policies.

The focus on social capital is a welcome development. It has brought into focus the need for removing poverty and inequality which are prerequisites for ensuring the well-being for all. This has led to the discussions of trust, behavioral norms and social capital which were ignored by the economists in the past and which are now considered essential for minimizing moral hazard problems and promoting equity and sustained development. The present study goes beyond social capital and searches for factors that play a key role in determining social cohesiveness in the societies. The study has employed a comprehensive measure of social solidarity that covers three comprehensive indexes: 'index of intergroup social cohesion', 'interpersonal safety and trust' and 'civic activism'.

It is not yet realized that mutual trust cannot be promoted just with the existence of values and social networks [Chapra (2003)]. These values need to be accepted by all members of a society and also abide by the majority. Institutional economics is primarily concerned with values which are embedded in the society. What if these value do not ensure a rise in real wellbeing and who is capable of their replacement. Can humans motivated by self-interest provide values which are acceptable by all and promote family

and social harmony and the real wellbeing of all? The answer perhaps by conventional economics is yes but the answer by worldwide religious views is no [Chapra (2003)].

Humans are not capable of doing it for following reasons: First humans who will formulate such values can incorporate their self-interests. Second, if wealth is unequally distributed then rich can tilt the rules of the game in their own favor. Third, humans are short sighted as they cannot foresee longer term benefits. Fourth, humans do not have the complete information.

The religion worldview considers the Divine being to be the only one Who is capable of commanding the confidence of all and capable of serving as their Sole Guide. Humans do not need to temper with Divine values. When humans themselves formulate values then some unnatural outcomes are likely. For instance, in some secular societies legal support has been given to sexual gratification outside of marriage, cohabitation of unmarried couples, homosexuality and lesbianism. There short-term benefits receive greater weights while assigning values and their long term negative effects are not foreseen. This along with other values has caused rapid disintegration in family life and ineffective upbringing of the children and human capital.

A focus on real wellbeing will not only ensure increase in wellbeing of all but it will help to achieve sustained and high economic growth. Relying on economic variables and serving individual self-interest cannot ensure wellbeing for all. The incentives and deterrents of this world need to be reinforced by the incentives and deterrents of hereafter life.

In this regard, Chapra (2008) provides *Ibn Khaldun's* analysis which is very helpful in understanding real wellbeing and to understand fall or rise of civilization. *Ibn Khaldun's* analysis is based on multidisciplinary and dynamic framework of a society. It links all important socio-economic and political variables, including sovereign (political authority), beliefs and values of behavior (Sharia), people, wealth, development and justice, in a circular and independent manners. The operation of this type of cycle works in a long run of three generations and a dimension of dynamism is central in the whole model. In this model nothing is *ceteris paribus* because every variable can change in the long-run. If one variable acts as trigger mechanism and others also act in the same negative direction the decay will get moment and it would get difficult to separate cause from the effect. Thus decay or fall of civilizations could be better understood using multidisciplinary approach and dynamism framework.

2. Justice: A Hallmark of the Islamic 'Asabiyah' (Social Solidarity)

Justice is a core value in the Islamic system and worldview. According to *Ibn Khaldun*, justice is the defining characteristic of Islamic life and society and it is a vital part of the legal, social and economic progress. Furthermore, Islamic teachings emphasize that it is not just the system of society should be built on justice but justice should prevail through all levels of social life, in all relationships and dealings, from the family to the state.

Justice is central in *Ibn Khaldun*'s analysis and he has devoted a whole section on justice entitled: 'injustice triggers the destruction of civilization' [Rosenthal (1967)]. Nevertheless justice cannot be fully realized without *asabiyah* which is also referred as 'social solidarity', 'group feeling' or 'social cohesion'. Justice essentially requires certain rules of behavior which are defined as institutions in Institutional Economics and moral values in religious worldviews. In Muslim societies these values are based on sharia 'Divine Laws command the doing of good and prohibit the doing of what is evil and destructive' [Rosenthal (1967)]. They are, therefore, according to *Ibn Khaldun*, 'for the good of human beings and serve their interests' [Rosenthal (1967)].

The concept of justice is indispensable to understand the notion of *asabiya* (social solidarity). It creates equilibrium through accomplishing rights and obligations and by eliminating excess and disparity in all spheres of life. For example, the gains and costs of any scheme of social cooperation must be shared in proportion to the contribution of each participant. Moreover, to ensure justice, each individual must be provided equal rights and opportunities for their basic needs such as food, shelter, education, health, and employment [Parvez (2000)]. The individuals with physical disability cannot reciprocate proportionally to benefits accruing to them through social cooperation nor do they bear the cost. In this situation, society must ensure provisions for such individuals [Naqvi (2003)]. The strong commitment of Islam to justice and brotherhood demands the Muslim society to take care of the basic needs of those who are poor and less privileged in the society [Rice (1999)]. For instance, the Islamic institution of *zakat* is designed in a way that it takes care of all members of the society. The Islamic jurists have unanimously held the view that it is the collective duty (*fard kifayah*) of the Muslim society to take care of the basic needs of the poor [Chapra (1992)].

Thus the concept of social solidarity or *asabiyah* expounded by *Ibn Khaldun* has a great implication on how individuals deal their affairs. They can choose either to be self-interested or socially integrated individuals. The latter causes a favorable impact on the real wellbeing and prosperity of a society. The essence of social solidarity implies that human interactions must be based on justice, equity and justice. Moreover, it requires that humans should cooperate and support each other rather than attempting to dominate or wrong other. Thus, the right attitude towards human being is not to maximize self-interest or survival of the fittest but the mutual sacrifice and cooperation to fulfill the basic needs of all, to develop the entire human potential and to enrich human life.

3. Real Wellbeing and Economic Performance: Mainstream Economics Perspectives

In the nineteenth century, it was the sociologist [Emile Durkheim (1893)] who described the concept of social cohesion for the first time. He views solidarity and shared loyalties as two kinds of social cohesion. In recent years, the European countries have realized the importance of social solidarity as a result of problems caused by immigrants and economic slowdown. [Bellani and Ambrosio (2011)] point out that Maas-

trich Treaty (1992) has increased the importance of social solidarity in European countries. The basic purpose of this treaty was to achieve sustained economic growth through the development of social indicators.

Social solidarity causes building shared values while narrowing differences in income and wealth. It enhances economic growth of an economy through reducing income disparities. In societies where income inequalities are lower, people trust each other and trust on government [Easterly and Levine (1997)]. Furthermore, people cooperate with each other and there are less social conflicts. Therefore, social solidarity favorably impacts economic growth. Lack of social solidarity/cohesion adversely affects the economy. An ample body of the literature on social solidarity focuses on normative conflicts such as conflicts based on ethnicity. For instance the study of Easterly and Levine (1997) and Posner (2004) show adverse impact of ethnicity on growth in case of Africa. Similarly, Alesina and Ferrara (2003) also found an adverse impact of ethnicity on economic growth using a survey data based study for villages of developing economies and cities of developed economies.

The growth rates of all economies were remarkable during 1960s and early 1970s. However, after mid-1970s, many economies of the world experienced growth collapses. The major reason behind these growth collapses was conflict within a society. In other words, the socially united economies were in a better position to manage their growth rates [Roderik (1998)]. The high level of social cohesion also improves the quality of institutions and these institutions in turn enhance the speed of economic growth [Easterly (2006)].

Ferroni, et al. (2008) focus on two dimensions of social cohesiveness that is social capital and distribution of opportunities. They measure social capital using the indicators of interpersonal trust, trust in government, and compliance with law. Whereas, they measure distribution of opportunities using the indicators of poverty, income inequality, education inequality, size of the middle class and intergenerational mobility. They develop an overall index using these social indicators and examine its effect on economic growth of Latin American countries. They conclude that social cohesiveness exerts favorable influences on economic growth and economic development. Ethnic fractionalization is also an important dimension of social solidarity. Heller (2009) uses ethnic fractionalization; income inequality and literacy rate as indicators of social cohesiveness and finds a positive association between social cohesiveness and quality of institutions.

Trust is one of important indicators of social capital. The empirical studies have used it to measure social harmony [Neira, et al. (2009), Horvath (2011), Majeed and Ajaz (2018)]. Trust increases economic growth by lowering the transaction costs. Trust on government and public institutes increases the quality of institutions and that, in turn, increase economic growth. Neira, et al. (2009) find out the positive effect of trust on economic growth in a sample of 14 OECD economies from 1980 to 2000. Similarly, Horvath (2011) finds out the positive growth effect of trust in a combined sample of developing and developed economies.

It can be concluded from the literature on Islamic perspectives of real wellbeing that although all socio-economic and political factors need attention, however, the maximum focus is required to reform human wellbeing which had been the main locomotive behind the rise or fall of any civilization and which *Ibn Khaldun* made the center of his analysis. Following the review of mainstream economic literature, it can be concluded that, some studies have measured social solidarity with the direct measures such as social capital, volunteer activities and group participation while others have measured it with indirect measures such as poverty, income inequality, gender inequality, ethnic and linguistic fractionalization. However, these studies do not measure social solidarity using a comprehensive measure of social solidarity which incorporates diverse dimensions of social solidarity. This study uses a multidimensional and comprehensive measure of social solidarity to test its casual links with the economic performance of the Islamic countries.

III. Methodology

The theoretical and empirical literature on social indicators has provided a number of measures to proxy social solidarity. For instance, Stanely (2003) suggests that cooperation, equality of social outcomes, diversity and affinity are important indicators of social development. Some other studies such as [Knack (2003), Chen, et al. (2006), Easterly (2006), Manole (2012), Majeed (2017)] consider trust, willingness to cooperate, identity, social inclusion, lower inequality, ethnic heterogeneity and quality of life as measures of social strength.

Similarly, some studies [Easterly (2006), Hulse and Stone (2007) emphasize the importance of organizational related social cooperation such as the number of networks and organizations, membership rate of organization and civic participation, voluntary networks and organizations. In addition, these studies emphasize the reduction of differences/cleavages and inequalities in society. Likewise, Reeskaen, et al. (2008) emphasizes the importance of social order, social cooperation, common values, civic culture and sense of membership. Klein (2011) considers social contracts, group membership, marital status and trust as important features of social cohesiveness in the society.

Though these measures represent wellbeing and social strength of a society, their effect is not comprehensive enough to reflect the broader picture of wellbeing and social solidarity. This study focuses on three comprehensive social indices that are social cohesion, interpersonal safety and trust and civic activism. These three indices are combined into a single index to reflect the social solidarity and real well being of the society.

The empirical model is based on neoclassical growth model which has CRS (constant returns to scale) and two inputs labor (L) and capital (K). The terms θ and $1-\theta$ are shares of labor and capital in total production. The term A represents total factor productivity (TFP), which accounts for effects in total output not caused by inputs.

$$Y = AL^\theta K^{1-\theta} \quad (1)$$

After taking the natural log of both sides, Equation (1) can be rewritten as follows:

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

Following the growth literature, factors other than L and K affecting growth can be represented with a row vector X , a constant term and error term. The resulting equation can be substituted into Equation (2).

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

Following Barro (1996), to check convergence hypothesis, initial level of per-capita income has been added as a determinant of growth into Equation (3).

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

Knack and Keefer (1997) have extended the growth model by including social capital as an important determinant of growth model.

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

where, Y_{it} is real GDP per capita; L is labor force, K is capital stock, SS is an index of social solidarity (real wellbeing) and X is a set of control variables. The additional control variables are incorporated one by one to assess the robustness of benchmark empirical findings.

1. *Econometric Methodology*

The estimation strategy for this study is as follows: First, we apply Ordinary Least Squares (OLS). Second, we use 2SLS using lag variables as instruments. Third, in panel data estimation, we use OLS, Fixed Effects, Random Effects, and General Method of Moments (GMM) econometrics techniques.

Pooled model estimated by OLS regression is too restrictive because it specifies constant intercept and coefficients assumption. It is specified as follows:

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

Fixed Effect model allows differences in the intercepts to take into account country specific effects. This could be shown by putting subscript i on the intercept term in Equation (6).

$$\log Y_{it} = \beta_i + \beta_1 y_{t-1} + \beta_2 \log L_{it} + \beta_3 \log K_{it} + \beta_4 SS_{it} + \beta_5 X_{it} + \varepsilon_{it} \quad (7)$$

where i suggests that intercept of all cross-section may be different due to different characteristics of every country. This fixed effect allows intercept to vary across countries but it is time invariant. If we write the intercept as β_{it} it will suggest a time-variant intercept of each country. The dummy variable can be used to allow intercept vary across countries or across time. Therefore we write Equation (6) as:

$$\log Y_{it} = \beta_0 + \beta_1 D_{1i} + \beta_2 D_{2i} + \beta_n D_{ni} + \beta_1 y_{t-1} + \beta_2 \log L_{it} + \beta_3 \log K_{it} + \beta_4 SS_{it} + \beta_5 X_{it} + \varepsilon_{it} \quad (8)$$

If we have N cross sections, we introduce $N-1$ dummies to avoid dummy-variables trap. The Fixed Effects model is also known as Least Square Dummy Variable (LSDV) model. The advantage of using Fixed Effects is that it takes into account things such as geographical and natural factors and other factors which vary across countries but do not vary over time. The problem with Fixed Effects is the loss of degree of freedom due to using too many dummies.

Then the alternative approach suggested by proponents of Random Effects (RE) model is to express ignorance through error term. Error Component Model (ECM) assumes that intercept of a single cross-sectional unit is randomly drawn from a larger population with a constant mean value of intercept. The individual country intercept is then taken as the deviation from the mean value. The term β_{0i} is written as:

$$\beta_{0i} = \beta_0 + \varepsilon_i \quad i = 1, 2, \dots, n \quad (9)$$

where ε_i is a random error term with zero mean and constant variance σ_ε^2 . This error term reflects individual differences in the intercept of each country. Substituting Equation (9) into Equation (8) we obtain:

$$\log Y_{it} = \beta_0 + \beta_1 y_{t-1} + \beta_2 \log L_{it} + \beta_3 \log K_{it} + \beta_4 SS_{it} + \beta_5 X_{it} + \varepsilon_{it} + \mu_{it} + \varepsilon_i \quad (10)$$

or

$$\log Y_{it} = \beta_0 + \beta_1 y_{t-1} + \beta_2 \log L_{it} + \beta_3 \log K_{it} + \beta_4 SS_{it} + \beta_5 X_{it} + \omega_{it} \quad (11)$$

where $\omega_{it} = \varepsilon_i + \mu_{it}$ is composite term having ε_i cross sectional error component and μ_{it} is cross-sectional and time series error component. The assumptions of ECM are that individual error components are uncorrelated with each other and are uncorrelated across both time and cross sectional units. That is:

$$\varepsilon_i \sim NI(0, \sigma_\varepsilon^2) \mu_{it} \sim NI(0, \sigma_\mu^2)$$

$$E(\varepsilon_i, \mu_{it}) = 0 \quad E(\varepsilon_i, \varepsilon_j) = 0 \quad (i \neq j)$$

$$E(\mu_{it}, \mu_{is}) = E(\mu_{it}, \mu_{jt}) = E(\mu_{it}, \mu_{js}) = 0 \quad (i \neq j, t \neq s)$$

Hausman test is applied to choose between Fixed Effects and Random Effects models. We tested the hypothesis that Random Effects are efficient and consistent against the alternative hypothesis that the Fixed Effect will always be consistent.

2. *Endogeneity*

In order to use OLS, zero conditional mean assumption should meet. This assumption is violated in three instances: endogeneity, which is defined as the simultaneous determination of explanatory variables and explained variable, omitted variable bias and the measurement error in the explanatory variables. These all problems arise due to different reasons, but they all have a common solution, the use of instrumental variable technique.

In our model, the problem of endogeneity is likely to arise due to simultaneous linkages between economic performance, and social solidarity. An improvement in social solidarity increases economic performance and it is also likely that higher economic performance provides grounds for the development of social solidarity. If endogeneity is found then we resort to instrumental variable techniques such as Two Stage Least Square (2SLS) and System Generalize Method of Moments (SGMM).

IV. Data Sources

For empirical analysis, a panel data is assembled using the available statistics of selected variables for all Islamic countries. However, data series are not available for all Islamic countries and in some cases only a few observations were available. Following the screening process, the final sample size contains 44 Islamic countries for the years 1990, 1995, 2000, 2005, and 2010. The series are averaged over non-overlapping five years. The index of social solidarity is based on three indices: social cohesion, interpersonal safety and trust and civic activism which are extracted from the Indices of Social Development (ISD) which is the World Bank ‘Social Development Indicator Project’. This data set is maintained and hosted by the Institute of Social Studies (ISS). Whereas an index of social indicators provides a comprehensive picture of social development, it also comprises the identities of individual indicators. Some social indicators are perception based and may not reflect actual observations.

The index of intergroup social cohesion refers to relations of cooperation and respect between identity groups in a society. It is constructed using the data on ‘inter-

group disparities, perceptions of being discriminated against, and feelings of distrust against members of other groups.' Moreover, it includes 'the number of reported incidents of riots, terrorist acts, assassinations, and kidnappings; agency ratings on the likelihood of civil disorder, terrorism and social instability; and reported levels of engagement in violent riots, strikes, and confrontations.'

Interpersonal norms of trust and security exist to the extent that individuals in society feel they can rely on those whom they have not met before. The index of interpersonal safety and trust is constructed using the data on 'general social trust, indicators of trustworthiness such as reported levels of crime victimization, survey responses on feelings of safety and security in one's neighborhood, data on the incidence of homicide, and risk reports on the likelihood of physical attack, extortion, or robbery'.

Civic activism refers to the social norms, organizations, and practices which facilitate greater citizen involvement in public policies and decisions. The index of civic activism is constructed using the data on 'access to civic associations, participation in the media, and the means to participate in civic activities such as nonviolent demonstration or petition.' Finally, social solidarity is measured using a simple average of these three indices.

Economic performance is measured taking the log of GDP per capita. The data for GDP per capita is adjusted for purchasing power parity 2005 constant prices and obtained from Penn World Tables. The data series for investment and government consumption are also obtained from Penn World Tables. The investment and government consumption variables are measured as a ratio of GDP per capita at the constant prices of 2005.

The variable labor force represents proportion of the population which is 15 years or older and economically active. The data on labor force is drawn from the World Development Indicators (WDI). The variable of education is taken for the population aged 15 and over who have attained the secondary education level. The data on educational attainment is extracted from Barro-Lee dataset. The data on inflation is calculated from International Financial Statistics (IFS) which is consumer price index (CPI) over the corresponding period of the previous year. The variable trade openness is sum of exports and imports as a share of GDP per capita at the constant prices of 2005. The data on trade is taken from Penn World Table (7.01).

1. Descriptive and Statistical Analysis

Table 1 presents descriptive statistics of the cross-sectional data for Islamic countries. The minimum value of the log of real GDP per capita is 6.16, which belongs to Mozambique. The maximum value of the average real GDP per capita is 11.05, which belongs to Qatar. The minimum average social solidarity index 0.30 indicating the lowest social solidarity belongs to Iraq.

TABLE 1
Descriptive Statistics-Cross Sectional Data

Variables	Obs.	Mean	Std. Dev.	Min	Max
Real GDP per capita	45	8.114895	1.327943	6.158221	11.05604
Labor	45	4.134457	0.1878548	3.72994	4.46046
Capital	45	3.01828	0.3882344	2.091123	3.731594
Social Solidarity	42	0.5898659	0.089733	0.3351144	0.7011921
Government Exp.	45	10.52497	4.936999	3.6272	26.476
Education	45	16.24009	11.11462	0.6	37.052
Trade Openness	45	78.66714	39.50482	20.3828	181.33
Inflation	44	24.91104	63.57522	0.9056	334.368
Population	45	24327.45	41163.61	285.4652	206948.2

Source: Author's estimation.

2. *Correlation Analysis*

Table 2 shows the correlation analysis. Social solidarity is positively correlated with real GDP per capita. Human capital and trade are also positively correlated with RGDP per capita. It is noteworthy that human capital and trade are showing the highest correlation. It indicates that human capital and trade are the powerful drivers of economic growth in the Muslim world.

TABLE 2
Correlation Matrix

		1	2	3	4	5	6	7	8	9
RGDP	1	1.00								
Labor	2	-0.02	1.00							
Capital	3	0.43	0.11	1.00						
Solidarity	4	0.45	0.21	0.23	1.00					
Population	5	-0.45	-0.24	-0.15	-0.54	1.00				
Trade	6	0.47	-0.19	0.39	0.27	-0.48	1.00			
Govt. Exp.	7	-0.14	-0.10	-0.29	-0.23	-0.23	-0.05	1.00		
Education	8	0.63	-0.15	0.44	0.40	-0.31	0.59	-0.12	1.00	
Inflation	9	-0.08	-0.34	-0.38	0.03	0.04	0.19	0.04	0.32	1.00

Source: Author's estimation.

3. Graphical Analysis

This part describes the relationship between economic performance and social solidarity with the help of graphs. Figure 1 and Figure 2 illustrate the relationship be-

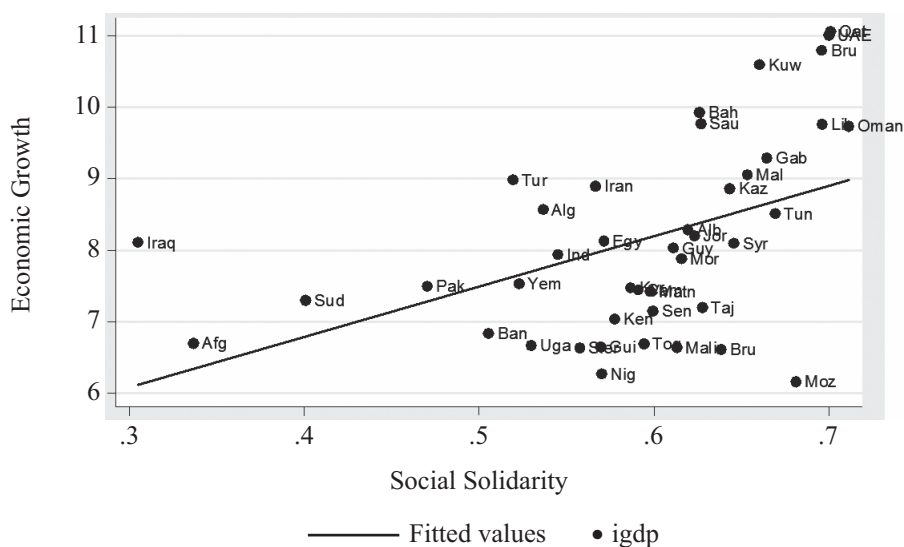


FIGURE 1

Relationship between Economic Growth and Social Solidarity

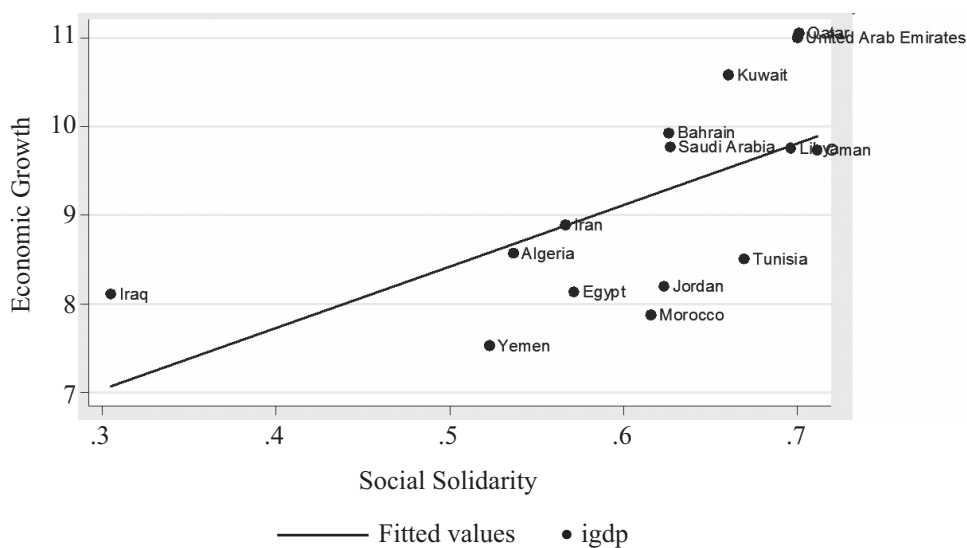


FIGURE 2

Relationship between Economic Growth and Social Solidarity

tween RGDP and social solidarity. It can be seen that there is a positive relationship between RGDP and social solidarity that is increased social solidarity increases RGDP. Figure 2 shows a positive relationship between RGDP and social solidarity in the case of Arab countries. Figure 3 demonstrates a regional classification of social solidarity. It is evident from the figure that the lowest level of social solidarity belongs to South Asia (SA) while the highest levels of social solidarity belong to Arab countries and East Asia and Pacific (EAP) economies. Finally, Figure 4 shows averaged levels of wellbeing (social solidarity) for each country used in the sample.

V. Results and Discussion

Table 3 reports the results of a cross-sectional analysis using 2SLS method of estimation. It is evident from all columns of the table that the impact of social solidarity on economic growth is positive and significant in all models.

Table 3 presents the results of panel data estimation using the Ordinary Least Squares (OLS) estimator. To address the likely problem of heteroskedasticity across the panel units, robust estimation technique is used. It is evident from the first column of Table 4 that the parameter estimate on social solidarity is showing a positive and significant impact on the economic growth of Islamic countries. The size of the marginal impact is 0.98 and the significance level is 1 per cent. It means that a one per cent increase in real wellbeing leads to a 0.98 per cent increase in economic prosperity. To assess the sensitivity of this finding, some additional controls of economic growth are incorporated in columns (2-5). Column 2 of Table 4 shows that baseline finding on social solidarity re-

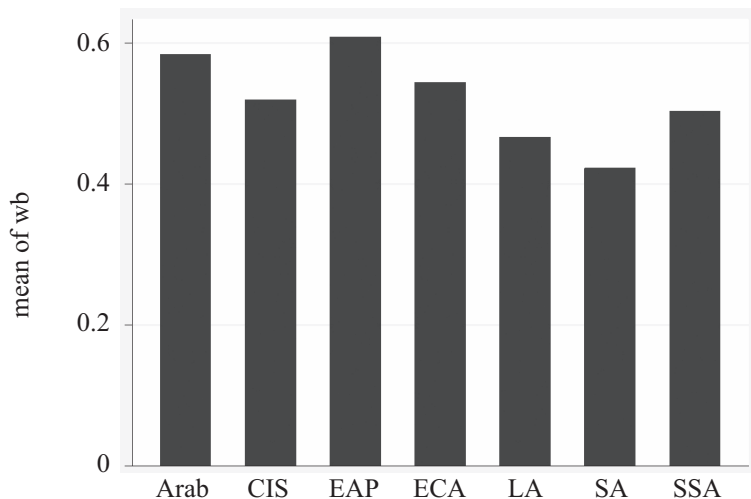
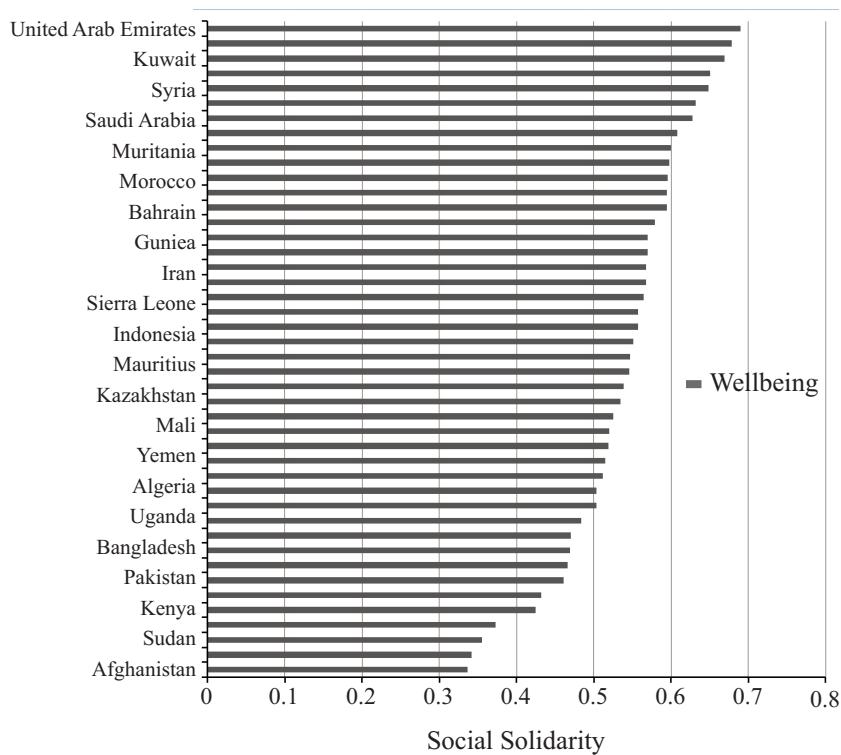


FIGURE 3

A Regional Classification of Social Solidarity



Source: Author's estimation.

FIGURE 4
Averaged Social Solidarity Indices for each Country

mains same after inclusion of trade openness in the baseline growth model. The growth impact of trade is positive and significant, implying that trade is an important determinant of economic growth and quality of life in the Islamic countries (Majeed, 2018).

In the next column (3), the role of government is incorporated in the model. The standard growth theories predict the negative impact of government spending on economic performance. The larger size of the government crowds out the private sector and also negatively affects economic freedom. The sign of coefficient on government spending is negative and significant, implying that the rising size of government impedes economic growth in the Muslim world. In the next column (4), the role of inflation is incorporated in the model. The increasing rate of inflation indicates macroeconomic instability because the uncertainty of prices exerts negative repercussions for different macroeconomic indicators. The results show that inflation is negatively associated with economic growth; however, this effect is not statistically significant. Barro (1996) concludes that the growth rate of real per capita GDP is en-

TABLE 3

Cross Section Regression of Economic Performance on Real Wellbeing (2SLS)					
Variables	(1)	(2)	(3)	(4)	(5)
Social Solidarity	1.141*** (0.4080)	1.277*** (0.4380)	1.195*** (0.4050)	1.131*** (0.4130)	1.121*** (0.4060)
GDP (Initial)	1.018*** (0.0235)	1.020*** (0.0233)	1.019*** (0.0240)	1.019*** (0.0237)	1.011*** (0.0272)
Population	0.0715*** (0.0217)	0.0803*** (0.0242)	0.0708*** (0.0232)	0.0719*** (0.0221)	0.0703*** (0.0217)
Capital	0.0610 (0.0701)	0.0792 (0.0730)	0.0648 (0.0724)	0.0677 (0.0783)	0.0521 (0.0718)
Government Expenditures		0.0521 (0.0657)			
Trade			(0.0156) (0.0668)		
Inflation				5.44e-06 (0.0004)	
Human Capital					0.0168 (0.0311)
Constant	-1.528*** (0.430)	-1.870*** (0.606)	-1.504*** (0.496)	-1.550*** (0.445)	-1.459*** (0.448)
Observations	42	42	42	41	42
R-squared	0.986	0.986	0.986	0.986	0.986

Source: Author's estimation.

Note: Standard error in parenthesis *p<0.01, **p<0.05, ***p<0.001.

hanced by better maintenance of the rule of law, smaller government consumption and lower inflation. Thus empirical findings on government expenditures and inflation are consistent with Barro (1996), Majeed and Malik (2016), and Majeed and Ayub (2018).

In the last column (5), the role of human capital is incorporated in the model following the literature on endogenous growth models. The impact of human capital on economic growth is positive and highly significant at 1 per cent level of significance. In particular, it implies that 1 per cent investment in human capital will generate 0.04 per cent of economic growth in the Muslim world. Thus human capital is a crucial variable to boost the growth performance of Muslim economies. The baseline finding on social solidarity remains robust after including some of important causes of growth. Though the marginal impact and level of significance of social solidarity slightly fluctuate during sensitivity analysis but the direction of causality and overall significance remain robust in all regressions.

TABLE 4
Economic Performance and Real Wellbeing (Pooled OLS)

Variables	(1)	(2)	(3)	(4)	(5)
Y_{t-1}	-0.188*** (0.0230)	-0.212*** (0.0237)	-0.195*** (0.0353)	-0.165*** (0.0331)	-0.181*** (0.0089)
Labor	-1.851*** (0.1730)	-2.108*** (0.1060)	-1.655*** (0.1480)	-1.871*** (0.1790)	-0.761*** (0.1410)
Capital	0.686*** (0.1030)	0.578*** (0.0744)	0.503*** (0.0960)	0.709*** (0.1190)	0.233* (0.1200)
Population	-0.182** (0.0828)	-0.254*** (0.0876)	(0.1120) (0.0834)	-0.192*** (0.0729)	-0.122* (0.0670)
Social Solidarity	0.987*** (0.2900)	0.456* (0.2920)	0.796*** (0.2990)	0.880** (0.4380)	0.623*** (0.0978)
Gov. Spending		-0.770*** (0.0490)			
Trade Openness			1.017*** (0.1850)		
Inflation				(0.0321) (0.0652)	
Human Capital					0.592*** (0.0396)
Constant	17.41*** (1.315)	21.05*** (0.689)	14.60*** (0.843)	17.36*** (1.242)	12.05*** (0.686)
Observations	158	158	158	147	158

Source: Author's estimation.

Note: Standard error in parenthesis *p<0.01, **p<0.05, ***p<0.001.

The correct specification of an econometric model is important to obtain unbiased and efficient results. To assess model specification and data issues following post estimation tests are applied:

1. Model Specification Test

The LINK test is applied to assess the correct specification of empirical model. In addition, Ramsey Regression Equation Specification Error Test (RESET) test is applied to assess the specification of estimated equations. These both tests confirm that our specified models are correct as the P-values are greater than 0.05 for the terms of LINK test and Ramsey RESET test.

2. *Multicollinearity Test*

The Variance Inflation Factor (VIF) test is used to check the multicollinearity of independent regressors in the model. The VIF test is equivalent to the inverse of $1-R^2$ ($VIF = 1/(1-R^2)$). We apply this test to assess the likely problem of multicollinearity. The test statistics reported in Table 2 indicate that the mean value of VIF is fairly small. Similarly, values of VIF for independent variables are fairly small. Thus, we do not find the evidence of multicollinearity in the data set.

3. *Normality Test*

The test of normality is used to determine whether the data set used for empirical analysis has normal distribution or whether the random variables used in the model are distributed normally. It can be determined by examining the distribution of residuals. In this regard, we apply Shapiro-Wilk's test of normality of residuals on Equation 5. The null hypothesis of this test is that residuals are normally distributed. It is evident from the probability values of the Shapiro-Wilk test that null hypothesis of normality of the residuals is not rejected. Thus, residuals of the model are normally distributed.

Since country specific effects can influence the relationship of social solidarity and economic growth, we use fixed effects model to account for country specific time invariant effects. This method of estimation is better than OLS because it addresses the unobserved heterogeneity which is likely to arise in cross sectional units. The empirical findings reported in Table 5 show that the relationship of social solidarity with economic performance is consistently stable and significant. The coefficient on real social solidarity implies that one per cent increase in social solidarity leads to 0.5 per cent increase in economic growth. Other variables in the model also show consistent results in line to the baseline findings.

Table 6 reports the results using Random Effects method of estimation. This method is helpful to address the country-specific time shocks (Baltagi, 2008). The effect of social solidarity on economic performance is positive and significant. The remaining variables show similar results to the baseline findings.

The Hausman test is used to choose a better model between Fixed Effects and Random Effects models. The probability values of 0.0151 and 0.00531 indicate that our null hypothesis of Random Effects is appropriate was rejected at 1 and 5 per cent level of significance, respectively. It implies that Fixed Effects model is more suitable as compared to the Random Effects model.

To address the possible problem of endogeneity, Arellano-Bond system GMM estimator is applied which is broadly used in dynamic panel data models. This estimator addresses the likely problem of endogeneity because of lag dependent variable on the right side of the equation. In addition, this estimator uses both equations at

TABLE 5

Economic Performance and Real Wellbeing (Fixed Effects)

Variables	(1)	(2)	(3)	(4)	(5)
Y_{t-1}	-0.224*** (0.0792)	-0.263*** (0.0741)	-0.225*** (0.0788)	-0.201** (0.0832)	-0.208*** (0.0684)
Labor	-2.056*** (0.4470)	-2.285*** (0.4180)	-1.894*** (0.4560)	-1.989*** (0.4870)	-0.942** (0.4160)
Capital	0.556*** (0.1580)	0.436*** (0.1490)	0.448*** (0.1710)	0.588*** (0.1690)	0.1840 (0.1460)
Population	-0.165*** (0.0602)	-0.246*** (0.0584)	-0.120* (0.0663)	-0.177*** (0.0624)	-0.118** (0.0524)
Social Solidarity	1.062* (0.5490)	0.2750 (0.5350)	0.8990 (0.5560)	0.9430 (0.5790)	0.6130 (0.4780)
Gov. Spending		-0.815*** (0.1660)			
Trade Openness			0.6860 (0.4310)		
Inflation				(0.0058) (0.0721)	
Human Capital					0.552*** (0.0770)
Constant	18.81*** (2.198)	22.54*** (2.181)	16.72*** (2.549)	18.33*** (2.398)	13.20*** (2.053)
Observations	158	158	158	147	158
R-squared	0.373	0.461	0.384	0.364	0.535

Source: Author's estimation.

Note: Standard error in parenthesis *p<0.01, **p<0.05, ***p<0.001.

the level and at the difference. The empirical findings are reported in Table 7. The first column depicts that one per cent investment in social solidarity of the *Ummah* causes a 0.5 per cent increase in economic performance. This effect remains consistently stable and significant in the remaining regressions reported in Table 7.

The Arellano-Bond system GMM estimator also has the advantage of reporting of statistics related to serial autocorrelation and the validity of instruments. The statistics and associated P-values with the AR (1) and AR (2) tests indicated that the null hypothesis of no serial autocorrelation is not rejected. It implies that the empirical findings are not suffering with the problem of first and second order of serial autocorrelation. The null hypothesis of 'instruments as a group are exogenous' is

TABLE 6
Economic Performance and Real Wellbeing (Random Effects)

Variables	(1)	(2)	(3)	(4)	(5)
Y_{t-1}	-0.188** (0.0797)	-0.212*** (0.0752)	-0.195** (0.0786)	-0.165** (0.0831)	-0.181*** (0.0674)
Labor	-1.851*** (0.4540)	-2.108*** (0.4310)	-1.655*** (0.4540)	-1.871*** (0.4910)	-0.761* (0.4080)
Capital	0.686*** (0.1580)	0.578*** (0.1510)	0.503*** (0.1730)	0.709*** (0.1660)	0.2330 (0.1460)
Population	-0.182*** (0.0615)	-0.254*** (0.0599)	-0.112* (0.0672)	-0.192*** (0.0630)	-0.122** (0.0525)
Social Solidarity	0.987* (0.5160)	0.4560 (0.4990)	0.7960 (0.5140)	0.880* (0.5320)	0.6230 (0.4380)
Gov. Spending		-0.770*** (0.1690)			
Trade Openness			1.017** (0.4220)		
Inflation				(0.0321) (0.0688)	
Human Capital					0.592*** (0.0754)
Constant	17.41*** (2.220)	21.05*** (2.235)	14.60*** (2.477)	17.36*** (2.408)	12.05*** (1.996)
Observations	158	158	158	147	158

Source: Author's estimation.

Note: Standard error in parenthesis * $p < 0.01$, ** $p < 0.05$, *** $p < 0.001$.

not rejected as it is evident from the p-values of Henson test of over-identification restrictions (OIR). The test statistics and associated p-values for Sargan Test show that we cannot reject the null hypothesis of instruments exogeneity. Thus instruments are exogenous and empirical findings are not plagued with the problem of endogeneity.

To assess the sensitivity of empirical findings to outliers in the data, the base model is re-estimated by excluding the first five largest and then five smallest values of social solidarity. The relationship between social solidarity and economic performance remains positive and significant after removing the extreme values. We repeat the same process with the extreme values of economic performance and find the same results. Thus empirical findings are not sensitive to the effects of outliers.

TABLE 7

Economic Performance and Real Wellbeing (System-GMM)

Variables	(1)	(2)	(3)	(4)	(5)
Y_{t-1}	-0.218*** (0.0745)	-0.242*** (0.0726)	-0.201*** (0.0769)	-0.200** (0.0787)	-0.222*** (0.0743)
Labor	-1.637*** (0.4750)	-1.843*** (0.4640)	-1.581*** (0.4820)	-1.889*** (0.5460)	-0.859* (0.5000)
Capital	0.808*** (0.1620)	0.707*** (0.1600)	0.728*** (0.1800)	0.772*** (0.1820)	0.535*** (0.1710)
Social Solidarity	0.953** (0.4660)	0.6520 (0.4590)	0.898* (0.4730)	0.931* (0.4920)	0.6960 (0.4670)
Population	-0.149*** (0.0529)	-0.187*** (0.0522)	-0.116* (0.0616)	-0.145*** (0.0548)	(0.0575) (0.0559)
Gov. Spending		-0.619*** (0.1580)			
Trade Openness			0.4680 (0.4420)		
Inflation				(0.1010) (0.0767)	
Human Capital					0.382*** (0.0784)
AR(1)	0.0200	0.0200	0.1200	0.0500	0.0700
AR(2)	0.8300	0.3400	0.5400	0.2800	0.5400
Sargan-Test	0.7200	0.7400	0.6400	0.8000	0.8000
Constant	16.16*** (2.173)	19.10*** (2.239)	14.83*** (2.526)	17.34*** (2.549)	11.84*** (2.340)
Observations	118	118	118	110	118

Source: Author's estimation.*Note:* Standard error in parenthesis * $p < 0.01$, ** $p < 0.05$, *** $p < 0.001$.

VI. Conclusion

Why do some countries show high economic prosperity while others do not and what are the important factors which explain cross-country differences of economic growth? These questions have attracted many researchers since the time of Adam Smith. In early research, economists have mainly focused on economic variables to explain the cross-country differences of economic growth. Now economists are increasingly paying attention to social indicators to explain growth.

The literature on Islamic economics has pointed out the role of real wellbeing at the center in reforming the societies and achieving all round development. In Islamic teachings, justice and fairness in economic interaction is the key to achieve real human wellbeing and all round development. Social solidarity is one of the important prerequisites to observe justice in a society which is fundamental to increase the wellbeing of all. This study measures real wellbeing using an index of social solidarity that is based on three indices: social cohesion, interpersonal safety and trust and civic activism.

This study establishes an empirical relationship between economic performance and real wellbeing (social solidarity) using cross-sectional and panel data sets of 44 Muslim countries over the period 1990-2010. The theoretical links between economic performance and real wellbeing are derived from mainstream economic as well as Islamic teachings. The empirical analysis is based on various econometric techniques such as fixed effects, random effects and system GMM.

The empirical findings show that the impact of social solidarity on economic performance is positive and significant at 1 per cent level of significance. The parameter estimate on social solidarity implies that a 1 per cent increase in social solidarity leads to a 0.50 per cent increase in the economic performance of the Muslim world. This finding remains robust to the inclusion of some additional control variables. This finding validates the *Asabiyah* theory of *Ibn Khaldun*. The impact of additional control variables turns out to be significant and consistent with the theory. Thus the Muslim world needs to invest in social solidarity if the objective is to ensure growth and development.

There are certain limitations of this study: The sample size for this study is small because there were some Islamic countries which do not have a series of social indices. Future work needs further robustness checks as the present study focuses on a few important variables for sensitivity analysis. The panel data hides country-specific information as it aggregates all countries in the sample. This study uses three indices of social solidarity while some other social indicators are also available, but data is limited for other indicators.

Future research may consider the following aspects of research for a better analysis of social solidarity and economic performance. Does the growth effect of social solidarity vary between OIC and Non-OIC countries? A comparative analysis of economic performance can help to have a better understanding of growth differences. A country specific analysis can help to provide a deeper understanding of real wellbeing and economic performance.

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APPENDIX

Post Estimation Tests

TABLE A-1
(a): Link Test for Equation 5

Dependent Variable-Growth	Coefficients	Std. Error	T-stats	Prob. value>t
_hat	0.8678591	0.2377677	3.65	0.001
_hatsq	0.0077535	0.0139001	0.56	0.580
_cons	0.5482249	0.9968352	0.55	0.585

Ramsey RESET test using powers of the fitted values of the dependent variable

Ho: model has no omitted variables

$F(3, 34) = 1.22$ Prob> F = 0.08

Ramsey RESET test using powers of the independent variables

Ho: model has no omitted variables

$F(9, 31) = 1.01$ Prob> F = 0.38

Source: Author's estimation.

TABLE A-1
(b): Link Test for Equation 5a

Dependent Variable-Growth	Coefficients	Std. Error	T-stats	Prob. value>t
_hat	_hat	0.8746697	0.2379193	3.68
_hatsq	_hatsq	0.0073530	0.0139074	0.53
_cons	_cons	0.5200279	0.9975576	0.52

Ramsey RESET test using powers of the fitted values of the dependent variable

Ho: model has no omitted variables

$F(3, 33) = 1.43$ Prob> F = 0.25

Ramsey RESET test using powers of the independent variables

Ho: model has no omitted variables

$F(9, 31) = 1.79$ Prob> F = 0.11

Source: Author's estimation.

Note: Equation 5a represents equation 5 with additional control variables.

TABLE A-2
Multicollinearity Tests for Equation 5 and 5a

Independent Variables	1/VIF	VIF	1/VIF	VIF
	Equation 5		Equation 5a	
GDP (Initial)	1.67	0.599636	1.77	0.563521
Wellbeing	1.48	0.677293	1.49	0.672049
Labor	1.04	0.958509	1.15	0.95
Capital	1.23	0.814535	1.41	0.710721
Population	1.06	0.942970	1.24	0.805557
Trade			1.79	0.557801
Mean VIF	1.3			1.48

Source: Author's estimation.

TABLE A-3
Shapiro-Wilk Test of Normal Data for Equation 5 and 5a

Variable	Observations	W	V	Z	Prob>z
Residual (Equation 5)	43	0.944	2.31	1.769	0.05
Residual (Equation 5a)	43	0.94	2.325	1.783	0.05

Source: Author's estimation.

TABLE A-4
Shapiro-Wilk Test of Normal Data for main Explanatory Variables

Variables	Observations	W	V	Z	Prob>z
GDP (initial)	45	0.94428	2.413	1.867	0.05096
Labor	45	0.97315	1.163	0.320	0.37456
Capital	45	0.97135	1.241	0.457	0.32392
Social Solidarity	44	0.96004	1.701	1.124	0.13055
Population	45	0.98123	0.813	-0.439	0.66967
Trade	45	0.98824	0.509	-1.430	0.92360

Source: Author's estimation.

TABLE A-5
Hausman Test: Fixed Effects Model vs. Random Effects Model

	Chi-2	Probability value > Chi-2
Hausman test on Equation 5	12.12	0.0151
Hausman test on Equation 5a	9.34	0.00531

Source: Author's estimation.