War and peace: why is political stability pivotal for economic growth of OIC countries?

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Abstract

Since the end of World War II, Muslim countries have been plagued by sixteen major wars, many coups, political, religious and ethnic insurgency, and revolutions. While many developing countries in south-east Asia have emerged as developed economy in this time period, in spite of having sufficient natural resources, most of the Muslim countries are still fighting with higher inflation, unemployment, poverty, inequality, poor healthcare, illiteracy, and rampant corruption. This paper studies how political stability affects growth in OIC countries by using relatively advanced dynamic GMM and simultaneous quantile regression. It is found that political stability has significant positive effect on growth. The impact of political stability on economic growth is more important for lower income countries than higher income countries. Most of the low to mid income oil dependent OIC countries suffer from chronic misery, higher inflation and persistent unemployment, which has significant negative effect on growth. Oil revenue plays a major role in economic growth for both OIC and Non-OIC oil dependent developing countries. The importance of political stability, economic diversification and macroeconomic stability has been restated with policy recommendations for oil dependent developing countries in general and OIC countries in particular.

Keywords: political stability, economic growth, misery index, oil rent, OIC countries, dynamic GMM, Quantile regression

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Introduction

Muslim countries have been plagued by sixteen major wars, many coups, political, religious and ethnic insurgency, and revolutions since World War II.[3] Intense political instability, economic and political repression, chronic unemployment could trigger many Arab springs like revolutions in many OIC countries. Is political instability a new phenomenon for Muslim world? The answer is obviously no. The importance of political stability for greater human welfare has been repeatedly mentioned in the Holy Quran and tradition of the Prophet (PBUH). Therefore, theoretical underpinnings of political stability and growth lie in the Holy Quran and the Sunnah.

One of the brightest mind in early Islamic period, Ibn Khaldun (Khaldūn, Rosenthal, & Dawood, 1969) states that political instability adversely affects economic growth. He argues that political stability creates a favorable environment for business to flourish, create employment opportunities and migration into the cities which increase demand and stimulate economic growth. This could certainly be considered as one of the first foundational theories of Islamic political economy.

Political instability is defined as the propensity of a government collapse (Alesina, Özler, Roubini, & Swagel, 1996). This could be either because of conflicts or rampant competition between various political parties. Also, the occurrence of a government change increases the likelihood of subsequent changes. Political instability tends to be persistent.

According to the political theories of Max Weber, political stability depends on the government's legitimate use of physical force. Political instability is associated with the concept of a failed state (Mommsen, 1992). Mancur Olson's influential The Rise and Decline of Nations stressed the importance of institutional and political factors in explaining differences in rates of economic growth.

Barro (1991) in his classic work argue that political instability and growth are negatively correlated. Fosu (1992) studied political instability, instability of governments, regimes, and communities within a nation, and growth in sub-Saharan African countries and found adverse impact of political instability on economic growth. Alesina et al., (1996) found that countries with higher political

[3] Author's calculation from the Encyclopedia of Britannica and web resources

instability, the propensity to change government is high, suffer lower growth. In other words, political stability and economic growth are deeply interconnected. In their more recent work, Aisen and Veiga found positive association between higher political instability and higher inflation (Aisen & Veiga, 2013).

On the other hand, there are studies which did not find any significant relationship between political stability and growth. Although Goldsmith did not find statistically significant relationship between political instability and growth but he acknowledged the limitations of his methodology used in the study and shortage of reliable data on growth in the period of study(Goldsmith, 1987). In another study, Londregan and Poole (1989) did not find evidence of lower growth as a consequence of increased political instability; instead, they argue that low economic growth increases the probability of political instability. Devereux & Wen (1998) investigated the impact of political instability on economic growth in 52 countries by using the averages of 1960–1985 and found that political stability had negative impact on economic growth.

The importance of political stability for sustainable economic development is questionable in current conventional literature, however, Islamic paradigm of economic thought urge to maintain political stability in order to avoid detrimental socio-economic consequences. Not surprisingly, six Muslim countries were ranked at the top 6 of the Economist Political Instability Index in 2009. There are very few research on theoretical understanding of this issue in OIC countries.

Gurr, Woodward, Marshall, & Force (2005) study political instability in Muslim countries and found that 54 cases of political instability in Muslim countries between 1955 and 2003. Armah (2009) investigate political stability and economic growth found that political stability is significantly related to growth for thirty one Sub-Saharan African countries from 1984-2007. Ahmed & Pulok (2013) study the direct impact of political stability on economic performance of Bangladesh for the period of 1984 -2009 and found that political stability has negative effect in the long run while the short run effect is positive. Tang & Abosedra (2014) study impact of political instability on economic growth in MENA countries for the period of 2001 to 2009 found that political instability hinders growth and development in MENA region. Mohamed Masry (2015) study political stability and growth in Egypt after January 2011 revolution by developing two political instability index and applying model used by Aisen & Veiga (2013). He finds that political instability negatively affect growth and economic development in Egypt in the study period.

According to the literature, a good number of studies have been carried out in the last three decades to understand the relationship between political stability and growth. Although theoretical foundation has been strengthened, but the lack of appropriate variable to measure political stability gives conflicting empirical findings. The use of econometric methods also varied across the study, from ordinary least squares, times series co-integration to advanced panel techniques.

Analysis of empirical literature indicates that different studies applied different indicators to measure political stability, with the availability of data from Heritage Foundation, index of economic freedom, encourage several studies to reinvestigate the relationship between political stability and growth. Most of the previous studies did not consider political stability as a focus variable so did not do extensive literature review and analytical framework. In our study we use two indicators of political stability: political stability index[4] by Heritage Foundation and political risk index by Oxford economics. Moreover, economic growth is measured by the natural log of the per capita real GDP constant 2005 $. To test our hypothesis of whether political stability affect growth, we apply advanced dynamic system GMM. This estimator handles important modeling concerns, namely the fixed effects and endogeneity of regressors, whilst avoiding dynamic panel bias. We apply this estimator on a unbalanced panel data set comprising 16 oil dependent OIC countries[5] by taking 4-year average data over the period 1996-2014. When there are evidences of outliers and heavy tailed distributions, quantile regression results are characteristically robust for such cases but standard OLS regression estimators are not robust even to the modest departure from normality. Consequently, simultaneous quantile regression has been applied to see the impact of political stability on growth for countries with different levels of economic development.

The results show that political stability has significant positive effect on economic growth even controlling for other key macroeconomic variables. The impact of political stability on economic growth is more important for lower income countries than higher income countries. Most of the low to mid income oil dependent OIC countries suffer from chronic higher inflation and unemployment and consequently it has significant negative effect on growth. Oil revenue plays a major role in economic growth of oil dependent developing countries both OIC and Non-OIC. The importance of political

[4] GMM estimation with this variable are presented in Appendix D
[5] List of countries are shown in Appendix B

stability, economic diversification and macroeconomic stability has been restated with policy recommendations for oil dependent developing countries in general and OIC countries in particular.

The rest of the paper is organized as follows. Section 2 reviews the relevant theoretical and empirical literature. The theoretical model specification, data and the econometric methodology are explained in section 3. The empirical results and discussions are presented in section 4. The last section ends with the concluding remarks and policy implications.

Political stability in Islam

Allah (SWT) mentions in the Glorious Quran:

> O you who have believed, obey Allah and obey the Messenger and those in authority among you. And if you disagree over anything, refer it to Allah and the Messenger, if you should believe in Allah and the Last Day. That is the best [way] and best in result.[6] [The Quran, 4:59]

This verse is one of the fundamental principles of religious, social, cultural and political life in Islam. One of the significant lessons from this verse is obeying the leader in power right after Allah and His Messenger Prophet Mohammad (PBUH). There are also numerous Hadiths on this regard. Even though as Muslim we must accept the Quranic injunction without any doubt in our mind, however, our inquisitive mind wants to investigate the rationality behind this revelation. While discussing different Quranic interpretations, Muhammad Rafique (2015) argues that following the leader would ensure stable law and order, political stability, protect countries from foreign aggression, and ensure peace and prosperity. The consequence of recent Arab uprising is evident to us and post revolutionary situation clearly restates that this has not only destabilized the political stability but also economic development in those countries. But however, silence against brutal dictator who does not uphold Islamic values is also not acceptable. Even in this situation uprising is not recommended in Islam rather concerted counseling is recommended as insurgency may create not only disorder but also unnecessary blood-shed. In another verse Allah(SWT) says:

> …*fitnah* is worse than killing….[7][The Quran, 2:191]

[6] Sahih International translation of the Holy Quran
[7] Sahih International translation of the Holy Quran

Here, the word *fitnah* means confusing state or corruption. In this way, Islam clearly prohibits social disorder, arm revolution, political instability and corruption.

One of the brightest mind in early Islamic period, Ibn Khaldun (Khaldūn et al., 1969) states that political instability adversely affects economic growth. He argues that political stability creates a favorable environment for business to flourish, create employment opportunities and migration into the cities which increase demand and stimulate economic growth. This could certainly be considered as one of the first foundational theories of political stability and economic growth from Islamic economics perspeective.

M. Umer Chapra argues that ongoing revival of Islam may make it possible to have material advance accompanied by moral uplift, justice and social harmony, which are important for providing the needed social and ethical capital for sustained development (Chapra, 2008).

Based on the above revelations and arguments we can state that Islam is a religion of peace and prosperity, moreover, which encourage political stability for greater welfare of human being. In the following section, a review of literature on political stability and growth is going to be discussed.

Political stability and growth

According to the political theories of Max Weber, political stability depends on the government's legitimate use of physical force. If the government cannot ensure the basic services it provides for people, such as security and the possibility of procuring food and shelter, it loses the power to enforce laws and political instability ensues. Political instability is associated with the concept of a failed state (Mommsen, 1992).

Mancur Olson's influential *The Rise and Decline of Nations* stressed the importance of institutional and political factors in explaining differences in rates of economic growth. Goldsmith summarizes Olson's theory as follows:

> Olson's theory implies that political stability and instability are dichotomous: instability must reach a threshold to disrupt distributional coalitions. Lesser degrees of instability may not trigger this effect at all. The discontinuous character of stability suggests a fourfold typology of political systems. Each type is expected to have a characteristic growth pattern: (1) The Chronically Unstable states should exhibit persistently slow growth. (2) The Consistently Stable ones should

grow relatively quickly but show a declining trend over time. (3) The Stabilizing political systems that are settling into a new pattern of political order should under go a spurt in growth rate. (4) Finally, there are regimes that are becoming less stable. Olson does not make an explicit prediction about these Destabilizing systems, but the inference is that their growth rates would drop sharply.

Political instability is defined as the propensity of a government collapse (Alesina et al., 1996). This could be either because of conflicts or rampant competition between various political parties. Also, the occurrence of a government change increases the likelihood of subsequent changes. Political instability tends to be persistent.

The Economist (2009) defines political instability as those events or developments that pose a serious extra-parliamentary or extra-institutional threat to governments or the existing political order. The events will almost invariably be accompanied by some violence as well as public disorder. These need not necessarily succeed in toppling a government or regime. Even unsuccessful episodes result in turmoil and serious disruption.

Barro (1991) in his classic work argue that political instability and growth are negatively correlated, in his study he measured political instability two ways: first, number of revolutions and coups per year and second, number per million population of political assassinations per year and he found both of these variables were significantly negative for growth. He argued that these variables adversely affect property rights and thereby as negative influences on investment and growth. However, he stated that this relationship may reflect a positive influence of growth on political stability than vice-versa.

Fosu (1992) studied political instability, instability of governments, regimes, and communities within a nation, and growth in sub-Saharan African countries. By using OLS regression the author found adverse impact of political instability on economic growth. The direct effect of high political instability in sub-Saharan Africa is estimated as approximately a 1.1 percent point reduction in annual growth controlling for capital, labor and exports. 15 OIC member states were included in this study and 7 of them were classified as high political instability category, namely, Benin, Burkina Faso, Mauritania, Niger, Nigeria, Sudan and Uganda.

Alesina et al., (1996) in their seminal work studied political instability and growth in a sample of 113 countries for the period of 1950-1982 and found that countries with higher political instability, the propensity to change government is high, suffer lower growth. In other words, political stability and economic growth are deeply interconnected. Unstable political environment may reduce investment activities and the growth, conversely, poor economic performance may lead to government collapse and political unrest. However, they also found that low economic growth does not affect political instability.

By applying three-stage least-squares estimation data covering ninety-six countries for the period of 1960 to 1980, Feng found that political instability and growth are negatively correlated. Moreover, the study showed that democracy has a significant and positive effect on economic growth by inhibiting regime interruption and enhancing system adjustability (Feng, 1997).

Economic growth is found to be positively impacted by political stability in OECD countries for the period of 2003-2007 with the help of panel least squares estimations and panel two-stage least squares estimations (Cebula, 2011).

In their more recent work, Aisen and Veiga found positive association between higher political instability and higher inflation by using advanced panel data econometric technique, system GMM, on 100 countries for the period of 1960- 1999; it was also found that the impact of political instability on inflation is much stronger for high inflation than for moderate and low inflation countries, and also for developing than for industrial countries. Moreover, higher degree of economic freedom and democracy are associated with lower inflation (Aisen & Veiga, 2013).

Bashir & Xu (2014) study political stability on economic growth in 117 countries during the period 1980–2012 by using the Heritage Foundation economic freedom index for economic freedom and established a political stability index by using 12 different political risk measures of International Country Risk Guide. It is found in the study that political stability and economic freedom have positive impact on economic growth.

Radu (2015) found that political stability plays an important role in Romania's economic growth and argued that stable political environment promotes sustainable economic development. Caporale & Leirer (2010) test the Olson superstructure by employing a panel of U.S. state economic growth rates for the period 1975–2005 to investigate the relationship between political stability and growth. They find a significant, negative relationship between political instability and U.S. state economic growth rates.

They argue that higher political turnover (and hence lower expected durability) should be associated with more rent-seeking behavior and lower marginal growth rate

On the other hand, there are studies which did not find any significant relationship between political stability and growth. Goldsmith(1987), one of the earlier empirical works to test Mancur Olson's theory, where political instability is treated as exogenous variables in 77 Least Developed Countries (LDCs) (Goldsmith, 1987).

Although Goldsmith did not find statistically significant relationship between political instability and growth among these four groups but he acknowledged the limitations of his methodology used in the study and shortage of reliable data on growth in the period of study.

In another study, Londregan and Poole (1989) did not find evidence of lower growth as a consequence of increased political instability; instead, they argue that low economic growth increases the probability of political instability.

Devereux & Wen (1998) investigate the impact of political instability on economic growth in 52 countries by using the averages of 1960–1985 and found that political stability had negative impact on economic growth.

From the literature, it is clear that political stability has been treated as an endogenous or exogenous variable. Economic growth and political stability are profoundly interconnected. It can be argued, on the one hand, that uncertainty associated with an unstable political environment may reduce investment and the pace of economic development. On the other hand, poor economic performance may lead to government collapse and political unrest.

According to the literature, a good number of studies have been carried out in the last three decades to understand the relationship between political stability and growth. Although theoretical foundation has been strengthened, but the lack of appropriate variable to measure political stability gives conflicting empirical findings. The use of econometric methods also varied across the study, from simply least squares, times series co-integration to advanced panel techniques.

Political stability and growth in Muslim countries

The importance of political stability for sustainable economic development is questionable but Islamic paradigm of economic thought always urge to maintain political stability in order to avoid detrimental socio-economic consequences. Very few researches have been conducted on this issue in Islamic countries. Many Muslim countries have become independent from colonial power since World War II. Since then most of the Muslim countries have been facing political instability in the form of regional war, frequent coup d'état, uprising, ethic violence, political insurgency, and revolution. Significant wars in Muslim countries since World War II: the First Kashmir War between India and Pakistan (1947-1948), first Arab-Israeli War (1948-49), Malayan War(1948-1960), Algerian War of Independence (1954-1962), Suez War of 1956, Yemen Civil war(1962-1970), Second Kashmir War (1965), Six-Day War (1967), Bengali War of Independence(1971), Lebanese Civil War (1975), Afghan Civil war (1978-Present), Iran-Iraq War (1980-1988), Israeli Invasion and Occupation of Southern Lebanon (1982-2000), Gulf war (1991), American Invasion of Afghanistan and Iraq in the beginning of this century. Moreover, the so called Arab springs have erupted in Tunisia, Libya, Egypt, and Syria since 2011. In this background, isn't it logical to hypothesize that these political uncertainties significantly hinder the economic development of Muslim majority countries?

If we study the empirical literature of political stability and growth in Muslim countries, the results are not also convincing. There could be many reasons for not finding conclusive evidence. First of all, economic development in OIC countries are not equal for all countries, there are countries with higher per capita GDP there are countries with very low per capita GDP, there are countries which rely heavily on natural resources, oil and gas, like countries in the Gulf, there are emerging economies like Malaysia, Indonesia, and Turkey where manufacturing and service sectors have growing faster than other countries, there are countries like Bangladesh, Pakistan, Egypt, Sudan, Nigeria where political instability is comparatively higher than other OIC countries, different types of institutions, government structure: democratic, autocratic, monarchy. Financial sectors development is also at different stage of development, most of OIC countries do not have well-developed capital market and the economy is based on banking system, financial regulation and rule of institutions are also weak, most importantly property rights are not ensured due to lack of rule of law. Corruption is rampant across the OIC countries except few countries which make these countries very different from other developing or

emerging countries. There are seven high income countries in OIC, all of them are GCC countries except Brunei Darussalam (("Country and Lending Groups," 2016).

However, political stability can be achieved through oppression or through having a political party in place that does not have to compete to be re-elected. In these cases, political stability is a double edged sword. While the peaceful environment that political stability may offer is a desideratum, it could easily become a breeding ground for cronyism with impunity. Such is the dilemma that many countries with a fragile political order have to face.

Gurr, Woodward, Marshall, & Force (2005) study political instability in Muslim countries and found that 54 cases of political instability in Muslim countries between 1955 and 2003. The rash of new events in the early 1990s pushed the proportion of Muslim countries with ongoing state failures over 40 percent: Political instability was a bigger problem for Muslim countries in the mid 1990s than it ever had been. A total of 14 new episodes of political instability occurred in Muslim countries in the 1990s, nine in sub-Saharan Africa and four in former communist states. In the late 1990s, there was a sharp global decline in both the incidence and prevalence of instability in Muslim countries, as seven episodes of instability ended and only one new episode began (Côte d'Ivoire 2002). At year-end 2003, only 16 percent of Muslim countries were experiencing political instability.

Adverse regime change—a category that encompasses abrupt declines in the degree of democracy, revolutionary changes in political elites, and collapses of central state authority—has been the most common type of political instability in Muslim countries, occurring 46 times since 1955. The prevalence of this type of event indicates that the fragility of central governments has been a leading cause of political crisis in the Muslim world in the past several decades. Revolutionary and ethnic wars have also been significant sources of instability, however, occurring 25 and 35 times, respectively, during that same period. Fifteen of the 36 incidents of genocide or politicide identified by the Task Force also occurred in predominantly Muslim countries.

Muslim countries were in crisis for roughly one of every four years between 1955 and 2003. This prevalence is substantially higher than the approximately one in seven years for the non-Muslim world. They argue that the main qualification is that economically advanced, consolidated democracies-virtually all of them non-Muslim-rarely experience incidents of instability. Moreover, they investigated the effects of a set of specifically "Islamic" variables: (1) the degree of allegiance to *Shari'ah*, or

traditional Islamic law, particularly family law or codes of personal status; (2) the presence of Islamist ideologies and organizations; and (3) the presence of sectarian groups most Muslims consider to be heretical. However, they did not find any relationship between any of these variables and risk of political instability. Finally, they concluded that, even though religion clearly is very salient to politics in most Muslim countries, the key drivers of political instability in the Muslim world are, in most respects, the same as those in the rest of the world.

Armah (2009) investigate political stability and economic growth by using panel data and find that political stability is significantly related to growth for thirty one Sub-Saharan African countries from 1984-2007.

Many empirical studies have documented that political instability has a negative impact on major macroeconomic variables, such as GDP, inflation and private investment (Khan & Saqib, 2011). Ahmed & Pulok (2013) study the direct impact of political stability on economic performance of Bangladesh for the period of 1984 -2009 by using time series econometric approach and they find that political stability has negative effect in the long run while the short run effect is positive. They argue that destabilizing events interrupt economic activities in the short term, but these can set the stage for more rapid growth in the medium term. Moreover, self-seeking interest group or "distributional coalition" is responsible for this kind counter intuitive relationship between political stability and growth. However, they conclude that even though political stability is an important precondition of growth for developing countries like Bangladesh but it cannot be considered as the key determinant of economic performance.

Tang & Abosedra (2014) study the impact of political instability on economic growth in MENA countries for the period of 2001 to 2009 by using GMM and find that political instability hinders growth and development in MENA region. However, the main focus variables of the study are tourism and energy consumption. They argue that poor economic performance of countries in the region for the last two decades could be due to unstable political condition. They further state that the region has been shaken by violence and political instability for many years and there have been many uprisings since the beginning of 2011 seeking more democratic systems which will lead to more political stability in the long run.

Yilmaz & Levent (2015) study the impact of economic freedom, political stability and economic policy uncertainty in the United States on economic growth in emerging Asian countries including

China, India, Indonesia, the Republic of Korea, Malaysia, Philippines, and Thailand during the period 2002–2013 by using Westerlund's Durbin-Hausman cointegration tests and Dumitrescu-Hurlin panel causality test. They find a bidirectional causality between political stability and economic growth.

Mohamed Masry (2015) study political stability and growth in Egypt after January 2011 revolution by developing two political instability index and applying model used by Aisen & Veiga (2013). He finds that political instability negatively affect growth and economic development in Egypt in the study period.

Analysis of empirical literature indicates that different studies applied different indicators to measure political stability, with the availability of data from Heritage Foundation, index of economic freedom, encourage several studies to reinvestigate the relationship between political stability and growth. Most of the previous studies did not consider political stability as a focus variable so did not do extensive literature review and analytical framework. Therefore, it is safe to assume that the issue is not settled yet and need further empirical investigations.

Data and Empirical model

Code	Description	Definition[9]
LPC	Log of Per Capita GDP constant USD	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Source: The World Bank
LPR	Log of Political Risk Index	The indicator is sourced from Worldwide Governance Indicators: Government Effectiveness. It is calculated according to the formula: Government Effectiveness/2.5*3+4. Source: Datastream, Oxford Economics
LOR	Log of Oil Revenue to GDP	Oil rents are the difference between the value of crude oil production at world prices and total costs of production. Source: The World Bank
LMI	Log of Misery Index[8]	The misery index is an economic indicator, created by economist Arthur Okun, and found by adding the unemployment rate to the inflation rate. Source: A The World Bank
LFI	Log of FDI to GDP	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. Source: The World Bank

In this paper, we investigate the dynamic linkages between growth and political risk after controlling for oil rent, foreign direct investment and misery index for 16 oil dependent OIC countries by taking 4-year average data during the period 1990–2011 using system-GMM model with an

[8] Author's calculation by using Inflation and Unemployment data from The World Bank
[9] For detailed definition see Appendix A

unbalanced panel data.[10] Following Aisen, A., & Veiga, F. J. (2013) the empirical model is identified as a reduced form dynamic panel model of economic growth. Economic growth, log of per capita GDP constant USD (LPC) is described as a function of political risk (LPR), oil rent (LOR), misery index (LMI) and foreign direct investment to GDP(LFI). We take the logarithm of all variables in our model to reduce high variability.

$$LPC_{it} = \alpha_i LPC_{it-1} + \beta_{i1} LPR_{it} + \beta_{i2} LOR_{it} + \beta_{i3} LMI_{it} + \beta_{i4} LFI_{it} + v_i + \varepsilon_{it}$$

Where *i* indicates the country ($i = 1, \dots, 16$) and *t* indicates the time period ($t = 1996, \dots 2014$).

Methodology

We have followed sequential steps to develop the econometric model which is appropriate for our study by considering nature of data and time span. For that, we started with Ordinary Least Squares (OLS) at first to see the relationship between dependent and independent variables. However, there are certain econometric problems which arise while using OLS for estimating our equation. Firstly, as we use the lagged dependent variable on the right hand side of the equation, this variable is supposed to be endogenous and can lead to autocorrelation and time invariant country characteristics, fixed effects, may be also correlated with the other explanatory variables, consequently, OLS estimation gives us biased and inconsistent results.

Then we run fixed effect estimator in order to compare result with the OLS estimation. Fixed effect imposes equality of all slope coefficients, both short and long run, and equality of error variances across units or countries in our case, and only the intercepts across countries are allowed to vary, which is considered as limitation of the fixed estimator. Moreover, fixed estimator is most appropriate for long time series panel data. In our case, we use 4-year average from 1996 to 2014, which means our T is 5. That limits us to use not only fixed effect but also such dynamic heterogeneous panel estimators as pooled mean group and mean group where many restrictions of fixed effect are relaxed however large T is required.

By considering the limitation of OLS and fixed effect estimator, also, nature of our model and short time span induce us to use generalized method of moments (GMM) estimators developed for dynamic panel data that were first proposed by Arellano and Bond (1991). They suggest the use of first differences of the variables to eliminate the fixed effects, which is also known as the Standard or

[10] Data on the index of political risk and its components is available from 1996 for our sample . In order to avoid a great number of missing values in our sample, nearest neighbour interpolation was used to generate annual data.

Difference GMM. However, the problem of correlation between the lagged dependent variable and the error term remains, which requires the use of instruments. To solve this problem, Arellano and Bond (1991)use appropriate lags of dependent and independent variables as instruments. The lagged levels of regressors, independent variables, may be weak instruments for the differenced variables which cannot be addressed in difference estimator. More specifically, first difference GMM estimator behave poorly and lead to large sample biases when the independent variables are persistent over time (Blundell & Bond, 1998). Finally, the absence of information about the focus variables in the level form can result in loss of a substantial part of total variance in the data (Arellano & Bover, 1995).

To solve these above discussed problems with Difference GMM, Arellano and Bover (1995) and Blundell and Bond (Blundell & Bond, 1998) proposed System GMM estimator. This estimator combines in a system with the regression in first differences and with the regression in levels. To compute the system estimator, variables in differences are instrumented with the lags of their own levels, while variables in levels are instrumented with the lags of their own differences (Bond et al., (2009). In other words, the first differenced moment conditions in Difference GMM are augmented by level moment conditions in System GMM for more efficiency in estimation (Blundell & Bond, 1998). In the System GMM, even though the levels of the explanatory variables are essentially correlated with the country specific fixed effect, the differences are not correlated. In addition to that time dummies may be included to control for the time-specific effects and to eliminate cross-sectional dependence in the data and country or unit dummies may be used to control for the country specific or unit effects. One more argument in favor of using System GMM is that for unbalanced panel data it is better to use System GMM and avoid Difference GMM estimation, which has weakness of magnifying gaps (Roodman, 2009b).

However, simulations suggest that the System GMM is not necessarily superior to the Difference GMM in cases where the autoregressive parameter is below 0.8 and the time series observations are relatively large (Blundell & Bond, 1998; Moshirian & Wu, 2012). However, System GMM is more efficient if persistence criteria, the coefficient of lagged dependent variable, fall within lagged dependent variable of OLS and Fixed effect (Huang, 2010).

While System GMM solves the above discussed problems, there exist two weaknesses. Though asymptotically more efficient, the two-step GMM carries out estimations of the standard errors that tend to be critically downward biased. However, it is possible to overcome this problem using the finite-

sample correction to the two-step covariance matrix developed by Windmeijer (2005) which make two-step robust GMM estimates more efficient than one-step robust one especially for the System GMM (Roodman, 2009b). After specifying the Windmeijer correct (WC-robust) standard errors (without which simulation studies indicate the standard errors in the two-step estimation to be severely downward biased), Sargan test is not reported but Hansen J-test is applied for validating the instruments particularly in the presence of heteroscedasticity.

Too many instruments problem is the second weakness of GMM estimations. Roodman (2009a,b) develops a detailed analysis on this issue, emphasizing the symptoms of an excessive use of instruments. The idea is that as time dimension increases, the number of instruments can be too large compared to the sample size (number of units or groups), invalidating some asymptotic results and specification tests. Too many instruments can over fit endogenous variables and fail to wipe out their endogenous components, resulting in biased coefficients. Another argument is that the Hansen and difference-in-Hansen tests can be weak in the presence of overidentification. The system GMM estimation can follow two empirical strategies to deal with too many instruments (Roodman, 2009b). The first one is to use the 'collapse' sub option for the xtabond2 command in STATA. The idea is to combine instruments by adding smaller sets, without dropping any lags, meaning that there is the creation of one instrument for each variable and lag distance, rather than one for each time period, variable, and lag distance. The final outcome is to divide the GMM style moment conditions into groups and sum the conditions in each group to form a smaller set of conditions. At the end, we have a set of collapsed instruments where one is made for each lag distance, with zero substituted for any missing values. The second empirical strategy (lag limits) forces the use of only certain lags instead of all available lags as instruments. Both empirical choices have something in common, which is the reduction of the number of instruments and their linearity in T (Vieira, Holland, da Silva, & Bottecchia, 2013). In our study, we follow the second strategy.

After analyzing various estimator and their pros and cons, it can be argued that by considering the nature of our panel data, System GMM is more likely to give better estimate than Difference GMM. We use the *xtabond2* command (Roodman, 2009a) to run System GMM estimation in Stata 13.[11] However, we run OLS, Fixed effect and both the two-step difference and system GMM estimations for our panel data set. We follow up with post estimation specification tests, namely the Hansen J-test test

[11] $xtabond2$ with options $small\ robust\ orthog$

for over-identifying restrictions after applying Weinjmier correction to correct the distortion of standard deviation, by using syntax *robust in STATA* and the Arellano-Bond (1991) test, AR(2), for no autocorrelation in the second-differenced errors.

As our sample consists of countries with different level of economic, financial, social and political development, for example, three major categories in terms of income: high income, mid income and low income; also different type of political structure, and degree of oil dependence, consequently, standard least-squares assumption of normally distributed errors does not hold for our dataset because the values for per capita GDP and other independent variables follow a skewed distribution. This is because when there are evidences of outliers and heavy tailed distributions, quantile regression results are characteristically robust for such cases but standard OLS regression estimators are not robust even to the modest departure from normality.

Furthermore, advantage is that, ‘‘while conventional regression focuses on the mean, quantile regressions are able to describe the entire conditional distribution of the dependent variable’’ (Coad & Rao, 2006). In the context of this study, high political stability or low political risk, high oil dependent and per capita GDP countries are of interest in their own right, we don’t want to remove from analysis just because they are outliers, but on the other side we strongly believe that it would be meaningful to study them in detail. But this can be done by calculating coefficient estimates at various quantiles of the conditional distribution by using quantile regression equation. Finally, as variable (Coad & Rao, 2006) documented ‘‘a quantile regression approach avoids the restrictive assumption that the error terms are identically distributed at all points of the conditional distribution’’. If we relax this assumption we will be able to acknowledge, to some extent, country heterogeneity and consider the opportunity that estimated slope parameters diverge at different quantiles of the conditional distribution of lower and higher per capita GDP. By following the quantile regression framework of Tiwari (2013) we try to investigate whether different stages of economic growth are affected by our focused and control variables.

The quantile regression model in the framework of Koenker and Bassett (1978) can be written as follows:

$$y_{it} = \acute{x}_{it}\beta_0 + \varepsilon\theta_{it}\ with\ Quant_{\theta}((y_{it}|x_{it}) = \acute{x}_{it}\beta_0, \quad (1)$$

Where i denotes country, t denotes time, y_{it} denotes is the dependent variables, $\acute{x}_{it}$ is a vector of regressors, β is the vector of parameters to be estimated, ε is vector of residuals. $Quant_{\theta}((y_{it}|x_{it})$

denotes θ^{th} conditional quantile of y_{it} given x_{it}. θth regression quantile, $0 < \theta < 1$, solves the following problem:

$$\min_{\beta} \frac{1}{n}\left\{ \sum_{i,t:y_{it}>\acute{x}_{it}\beta} \theta \left| y_{it} - \acute{x}_{it}\beta \right| + \sum_{i,t:y_{it}<\acute{x}_{it}\beta} (1-\theta) \left| y_{it} - \acute{x}_{it}\beta \right| \right\} = \min_{\beta} \frac{1}{n} \sum_{i=1}^{n} \rho_{\theta} \varepsilon_{\theta it} \quad (2)$$

Where $\rho_{\theta}(\cdot)$, which is known as the 'check function', is defined as":

$$\rho_{\theta}(\varepsilon_{\theta it}) = \begin{cases} \theta\varepsilon_{\theta it} & if\, \theta\varepsilon_{\theta it} \geq 0 \\ (\theta-1)\varepsilon_{\theta it} & if\, \theta\varepsilon_{\theta it} \leq 0 \end{cases} \quad (3)$$

Finally Eq. (2) is solved by linear programming methods. According to Buchinsky (1998), as one increases θ continuously from 0 to 1, one traces the entire conditional distribution of y_{it}, conditional on x_{it}.

Due to the advantages (as stated above) of quantile regression estimation technique over OLS, fixed and random effect models, in the study we examined at the 5th, 25th, 50th, 75th and 95th quantiles as shown here:

$$Q_{0.05}(LPC) = \alpha_{0.05} + \beta_{0.05,1}LPR + \beta_{0.05,2}LOR + \beta_{0.05,3}LMI + \beta_{0.05,4}LFI + \varepsilon_{0.05it}$$

$$Q_{0.25}(LPC) = \alpha_{0.25} + \beta_{0.25,1}LPR + \beta_{0.25,2}LOR + \beta_{0.25,3}LMI + \beta_{0.25,4}LFI + \varepsilon_{0.25it}$$

$$Q_{0.50}(LPC) = \alpha_{0.50} + \beta_{0.50,1}LPR + \beta_{0.50,2}LOR + \beta_{0.50,3}LMI + \beta_{0.50,4}LFI + \varepsilon_{0.50it}$$

$$Q_{0.75}(LPC) = \alpha_{0.75} + \beta_{0.75,1}LPR + \beta_{0.75,2}LOR + \beta_{0.75,3}LMI + \beta_{0.75,4}L\square I + \varepsilon_{0.75it}$$

$$Q_{0.95}(LPC) = \alpha_{0.95} + \beta_{0.95,1}LPR + \beta_{0.95,2}LOR + \beta_{0.95,3}LMI + \beta_{0.95,4}LFI + \varepsilon_{0.95it}$$

We used s*qreg* module of Stat 13 for simultaneous quantile regression estimation with baseline OLS and fixed and random effect (see appendix).

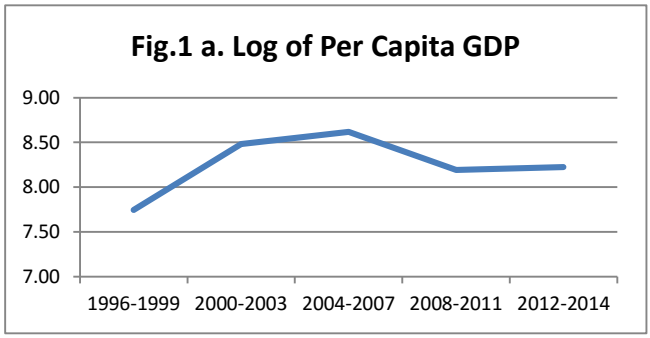
Empirical results and analysis

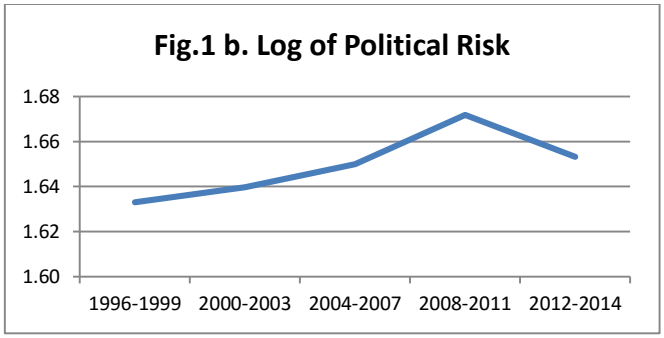
We start our analysis with descriptive statistics (Table 1) for 16 OIC countries (Appendix B). It shows clearly that per capita GDP (LPC) has the highest standard deviation followed by misery index (LMI). This indicates how different these 16 countries are in terms of income, macroeconomic stability and degree of dependence on oil rent. Political risk also differs across countries which are measured in the scale of 1 to 7 where 1 represent very high political risk (political instability) and 7 represent very low political risk (political stability).

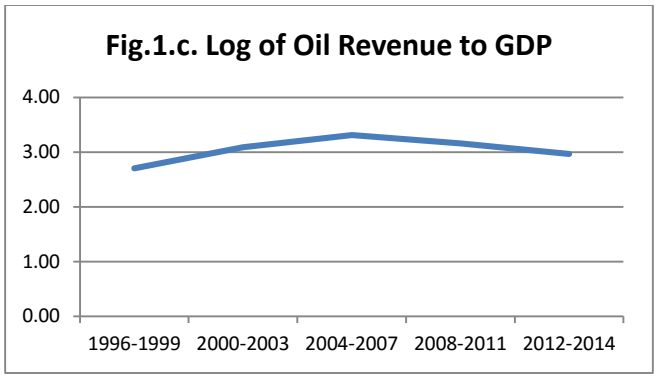
Table 1 Descriptive statistics

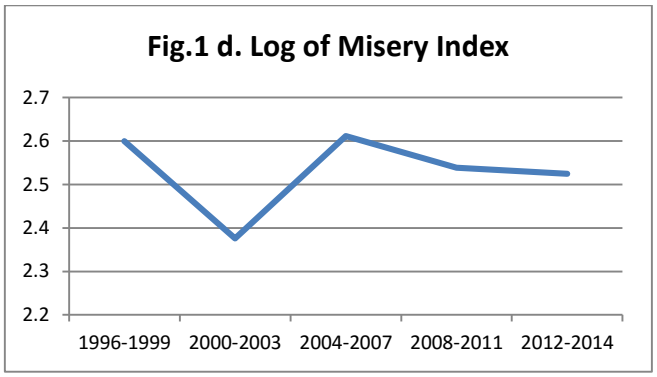
Variables	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis
LPC	8.574	8.477	5.988	11.033	1.437	0.013	1.829
LPR	1.649	1.621	1.180	1.991	0.211	-0.101	1.967
LOR	3.046	3.182	0.032	4.158	0.804	-1.352	4.987
LMI	-2.288	-2.075	-4.936	-0.404	0.999	-0.575	2.818
LFI	2.165	2.146	1.630	2.914	0.252	0.734	3.491

Figure.1. shows that per capita GDP (Fig.1.a) of 16 countries had decreased from 1996 till 2007 before it decreased significantly since then. From 1996 the political risk (Fig.1.b) had increased gradually and reached at peak in 2008-2011, so called "Arab Spring" are the consequences in MENA regions. In the period of 2004-2007 oil revenue to GDP (Fig.1.c) reached at the top when the oil price, West Texas Intermediate (WTI) crude oil increased to all time at$147.27 per barrel. The oil revenue has been declining with the falling oil price since then. Misery Index (Fig.1.d), aggregate of inflation and unemployment, shows that even though it declined greatly from the period 1996-1999 to 200-2003 but increased dramatically afterwards and remained somewhat stable. In a recent report published in Bloomberg Business indicates that Egypt, Turkey, Indonesia and Malaysia suffer from both high inflation and unemployment and falling oil price is one of the key factors behind this (Popina, 2016). FDI to GDP (Fig.1.e) remained somewhat stable only increased slightly in the period of 2004-2007, that is pre-global financial crisis. From the figure 1, we can see that there is a similar trend among the variables.









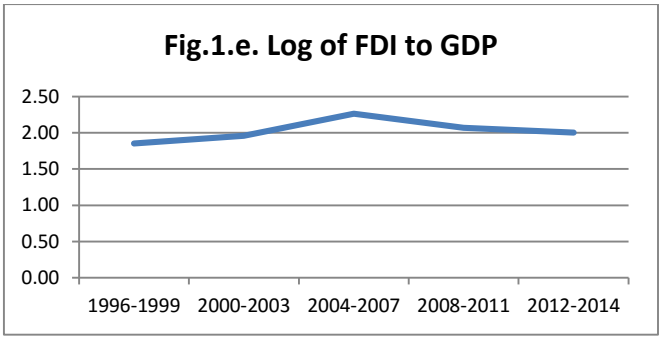


Fig.1. Trend in variables

Table 2

Correlation matrix

	LPC	LPR	LOR	LMI	LFI
LPC	1				
LPR	0.754***	1			
LOR	0.372**	-0.109	1		
LMI	-0.758***	-0.739***	-0.141	1	
LFI	0.0111	0.171	-0.0258	0.00685	1

Notes: * p<0.05, ** p<0.01, *** p<0.001

The correlation matrix (Table 2) shows that correlations among the variables. Most of the correlation coefficients are below 0.80 which confirms that the possibility of having multicollinearity problem is very low. Political risk (LPR) is positively correlated with the economic growth and highly significant. This indicates higher political stability induces economic growth of oil dependent OIC countries. Oil rent (LOR) is also found significantly correlated with the growth. This is evident as we

have selected those OIC countries as oil dependent when oil revenue to GDP is 5% or above. Economic growth (LPC) exhibits the highest correlation with the misery index (LMI) and relationship is negative which supports the theory, increase in inflation and unemployment reduces growth.

Table 3

Base Models and GMM for OIC oil dependent countries

Dependent variable: Log of Per Capita GDP

	OLS[a]	Fixed[a]	DifGMM[a]	SysGMM[a]	SysGMM[b]
				Effect	
L.Per Capita GDP	0.905+	0.791+	0.869+	**0.798+**	0.837+
	[0.02]	[0.10]	[0.22]	**[0.07]**	[0.07]
Political Risk	0.108	0.681	0.368	**0.601***	0.582
	[0.16]	[0.48]	[0.85]	**[0.28]**	[0.45]
Oil Revenue to GDP	0.038	-0.041	-0.026	**0.121-**	0.034
	[0.03]	[0.08]	[0.10]	**[0.06]**	[0.06]
Misery Index	-0.051-	-0.004	-0.004	**-0.073-**	-0.006
	[0.03]	[0.04]	[0.05]	**[0.04]**	[0.05]
FDI to GDP	0.144*	0.092	0.109	**0.111**	-0.003
	[0.06]	[0.10]	[0.10]	**[0.08]**	[0.04]
Constant	0.151	0.644		**-0.004**	0.341
	[0.20]	[1.18]		**[0.28]**	[0.34]
R-Squared		0.995			
Prob>F		0.000	0.000		
Adjusted R-Squared	0.994				
Observations	60	60	44	60	104
Instruments		7	13	13	
Number of Groups		16	16	16	27
Arellano-Bond: AR(1)				0.087	0.154 0.252
Arellano-Bond: AR(2)			0.377	0.826	0.250
Hansen test (p-val)			0.080	0.496	0.086

Notes:

[a] Regression for 16 OIC oil-dependent countries

[b] System GMM for 27 OIC and non-OIC oil dependent countries

- Syntax for xtabond2 twostep small robust
- Model SysGMM indicates coefficient lies in between OLS and Fixed effect model and very close to 0.80
- Standard errors are in parenthesis. Significance level of T-statistics are shown as - $p<0.1$, * $p<0.05$, + $p<0.01$
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2000, correction), so Hansen test is reported rather than Sargan test and Hansen tests never reject the validity of the over-identifying restrictions;
- Second order autocorrelation of residuals is always rejected.

The estimation results of the model described in the previous section using the method system-GMM for linear dynamic panel data models are shown in Table 3. The dependent variable is the log of per capita GDP (LPC) and the explanatory variables are in the log form as well. First of all, we run ordinary least squares (OLS) where R-square is 0.995 and p-value is significant which indicates the model is correct, however, our focus variable political risk is not significant but show expected positive sign and oil revenue to GDP also shows positive sign but not statistically significant. At the same time misery index and FDI to GDP are statistically significant at 10% and 5% level respectively. As expected misery index is found to be negatively correlated with the economic growth which supports the theory. To further elaborate, one percent increase in Misery Index would lead to decrease in economic growth by 0.05% after controlling for other variables.

In the next model, we run fixed effect regression, which is considered as the most restrictive of all and imposes equality of all slope coefficients i.e. both short and long run and equality of error variance across units or countries, and only the intercepts across units or countries are allowed to vary, for the same variables. As the fixed effect column results indicate none of the independent variables is significant except lagged dependent variable.

Even though, the time period is very short (T=5) in our sample study, we run difference or standard GMM to compare our result across different models. The result shows that lagged dependent

variable is significant and coefficient is above 0.80 but none of the variables are statistically significant. Interestingly, the coefficient of oil revenue to GDP became negative as in the fixed effect model, which means increase in oil revenue to GDP would decrease GDP. The result is very counter intuitive as our sample consists of countries where oil revenue to GDP is above 5% and it is well documented in the literature that these countries rely heavily on oil revenue and has positive effect on growth. The coefficient of misery index remains negative. On top of that, the model seems accurate as instruments are less than the number of groups but we loss some observations due to first differencing of the variables. Moreover, we failed to reject the null hypothesis of Hansen test: Over-identifying restrictions are valid. Finally, there is no second order autocorrelation problem. In brief, difference GMM shows some interesting result but due to limitations describe in the methodology we cannot proceed with this model.

The fourth model of table 1, system GMM, exhibits comprehensive result. Starting with persistency parameter, coefficient of lagged dependent variable is statistically significant and very close to 0.80, moreover, which lies in between OLS and Fixed effect model. That's why we can say the first criteria for applying system GMM is fulfilled. Secondly, number of instruments are less than number of groups. AR(2) and Hansen-J test show that there is no autocorrelation problem and over-identifying restrictions problem. Therefore, we can proceed with the explanation of the results found in the model.

The results reported in the Table 3 column four (Sys GMM) confirm the hypothesis that political stability leads to higher economic growth, and show that effects are sizeable: additional one percent increase in political stability would increase the economic growth by 0.6% after controlling for other variables. Oil revenue is statistically significant at 10% level and sign of coefficient is positive as expected. That explains, if oil revenue to GDP increase by one percent increase, the economic growth would increase by 0.12% assuming ceteris paribus. One of the key macroeconomic variables, misery index which combines inflation and employment is also statistically significant at 10% level and sign of coefficient is negative. It means one percent increase in misery index would lead to decrease in economic growth by 0.07% while controlling other independent variables. Interestingly, FDI to GDP is found not statistically significant but the sign and size of coefficient remain consistent across first four models.

By taking all oil dependent developing countries (Appendix A), in order to investigate the relationship between the political risk and economic growth, we run the fifth regression. The results show that when we add 11 non-OIC countries, mostly OPEC member countries, even though the model remains viable but the coefficients have become insignificant and interestingly the effect of FDI to GDP is negative but the magnitude is very insignificant. In other words, increase in FDI to GDP would decrease economic growth. One possible explanation could be that most of these countries face institutional inefficiency, lack of infrastructure, poor property rights, rampant corruption and low political stability which deter foreign direct investment in the first place, even though some foreign investment come they are not properly invested in productive sectors which can boost output.

To sum up findings of Table 3, we can argue that political stability and oil revenue plays a significant role in economic growth of oil dependent OIC countries. It can be argued that heavy dependence on oil revenue can hamper economic growth in the long run if the oil price goes down significantly. As recently the oil price has fallen below $30 per barrel, many of these countries have started to face economic vulnerability. The increase in government budget deficit and decrease in government spending further weaken the growth. Exchange rate and oil price are highly correlated unless they are pegged against USD or EUR for most of the oil dependent economies in OIC and non-OIC. When the oil price goes down exchange rate depreciates. The recent trend in Russia, Nigeria, Malaysia and other OPEC member countries reconfirm this phenomenon. Depreciation in real exchange rate further dampens the output through exchange rate channel. In this scenario, even though oil export revenue remains intact some degree increase in local currency but the import cost goes up and not surprisingly most of the oil dependent countries rely heavily on import. Consequently, inflation goes up, if inflation goes up, interest rate also increases which would discourage investment activities, less economic activity means more unemployment and ultimately fall in consumption and output.

Table 4 introduces interaction variables in order to examine the various channels through which economic growth may be affected by political stability and other control variables. The diagnostic tests show that all 4 models are correctly specified and no problem with instruments proliferation, autocorrelation and over-identifying restrictions.

Table 4

System GMM using interaction variables for OIC oil dependent countries

Dependent variable: Log of Per Capita GDP

	(1)	(2)	(3)	(4)	(5)
L.Per Capita GDP	0.798+	0.818+	0.799+	0.799+	0.818+
	[0.07]	[0.07]	[0.05]	[0.06]	[0.11]
Political Risk	0.601*	1.482-	0.527	0.520*	2.532*
	[0.28]	[0.82]	[0.54]	[0.23]	[1.19]
Oil Revenue to GDP	0.121-	0.106-	0.093	0.088	0.458
	[0.06]	[0.05]	[0.26]	[0.07]	[0.37]
Misery Index	-0.073-	-0.059	-0.077-	-0.033	0.162
	[0.04]	[0.04]	[0.04]	[0.11]	[0.20]
FDI to GDP	0.111	0.852	0.118	0.119	1.134
	[0.08]	[0.63]	[0.09]	[0.08]	[0.86]
PRxFI		-0.430		-0.579	
		[0.36]		[0.48]	
ORxPR			0.015	-0.307	
			[0.14]	[0.25]	
ORxPRxMI				-0.008	-0.040
				[0.01]	[0.03]
Constant	-0.004	-1.605	0.103	0.201	-2.920
	[0.28]	[1.42]	[0.84]	[0.36]	[1.97]
Observations	60	60	60	60	60
Instruments	13	14	14	14	13
Number of Groups	16	16	16	16	16
Arellano-Bond: AR(1)		0.154	0.117	0.116	0.116	0.154

Arellano-Bond: AR(2)	0.826	0.858	0.803	0.760	0.775
Hansen test (p-val)	0.496	0.437	0.470	0.481	0.186

Notes: -Syntax for xtabond2 twostep small robust

- Model SysGMM indicates coefficient lies in between OLS and Fixed effect model and very close to 0.80

[a] Regression for 16 OIC oil-dependent countries

[b] System GMM for 27 OIC and non-OIC oil dependent countries

- Standard errors are in parenthesis. Significance level of T-statistics are shown as - $p<0.1$, * $p<0.05$, + $p<0.01$

- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2000, correction), so Hansen test is reported rather than Sargan test and Hansen tests never reject the validity of the over-identifying restrictions;

- Second order autocorrelation of residuals is always rejected.

In the second model (Table 4), when we add political risk and FDI to GDP dummy (PRxFI) the impact of political risk doubles on economic growth. Even though the dummy itself is not statistically significant but it shows the correct sign which is negative. This explains, increase in political instability decreases foreign direct investment and consequently economic growth declines. This channel is quite interesting in a sense that even though FDI to GDP do not play a very significant role for these countries as we have discussed in the previous paragraph but its magnitude has increased after the addition of dummy. There is no significant difference in impact of oil revenue to GDP but misery index has become insignificant with decrease in coefficient.

To examine, oil revenue and political risk channel, we included this dummy (ORxPR) in the third model. After including dummy, political risk becomes insignificant and coefficient has come back almost to previous level and oil revenue to GDP also has become statistically insignificant. The Dummy explains only 0.01% change due to change political risk through oil revenue assuming ceteris paribus. However, we may observe increase in political instability in many of these countries. In the model 4, when interact oil revenue to GDP, political risk and misery index (ORxPRxMI), we still observe political stability is significant and magnitude remains same, one percent increase in political stability would increase growth by0.52% by controlling for other variables. Moreover, coefficient of oil revenue

to GDP increased but not statistically significant. Interestingly, misery index become insignificant, this may be due to addition of interaction term.

In the fifth and final model, when include all dummy variables in the system of equation, we observe that political stability still remains statistically significant at 5% significance level and magnitude has increase many fold, one percent increase in political risk would increase the economic growth by 2.5% while other variables remain constant. Even though remaining control variables have become insignificant but the magnitude of coefficient increased. One major change noticeable in this model is the change in sign of misery index. This may be due to inclusion of all interactive dummies together as expectedly sign of all interactive dummies are negative but not statistically significant.

Impact of political stability on economic growth through quantile regression

At this point of our study, it is quite interesting to study the effect of political stability on economic growth for countries with different level of economic development. As our sample consists of high income, medium and low income countries, we cannot really expect to see the impact of political stability on economic growth equally. Figure 2 shows the matrix of scatter plots for all variables and it shows that most of the cases we might face heteroskedasticity problem. In order to overcome that, we take the help of simultaneous quantile regression[12] as discussed earlier in the methodology section.

[12] Table of simultaneous quantile regressions are presented in Appendix E

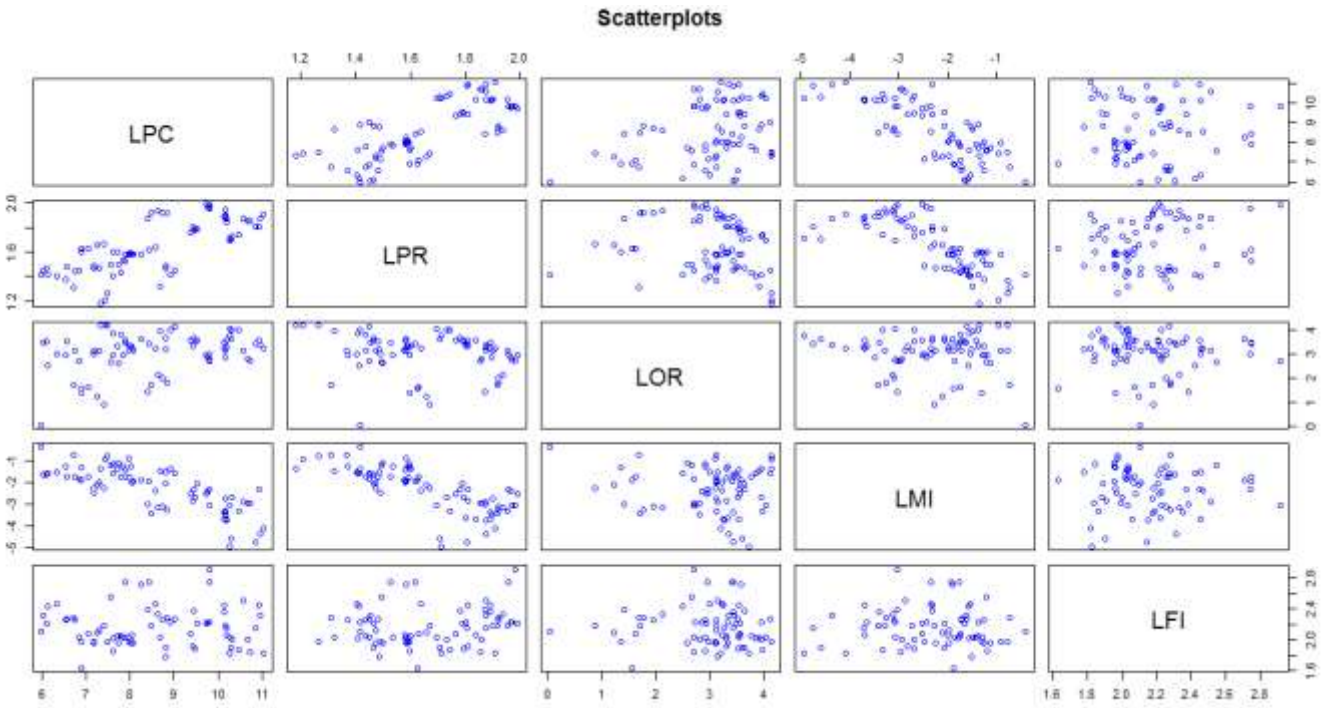


Fig.2.Matrix of scatter plots

Figure 3 shows that the effect of selected variables on economic growth may vary from quantile to quantile. The horizontal line indicates beta of OLS and dotted lines show the confidence interval. If the betas of quantile regression fall outside the confidence interval, they are statistically significantly different from the betas of OLS regression. The shaded area is the confidence interval of the betas in quantile regression.

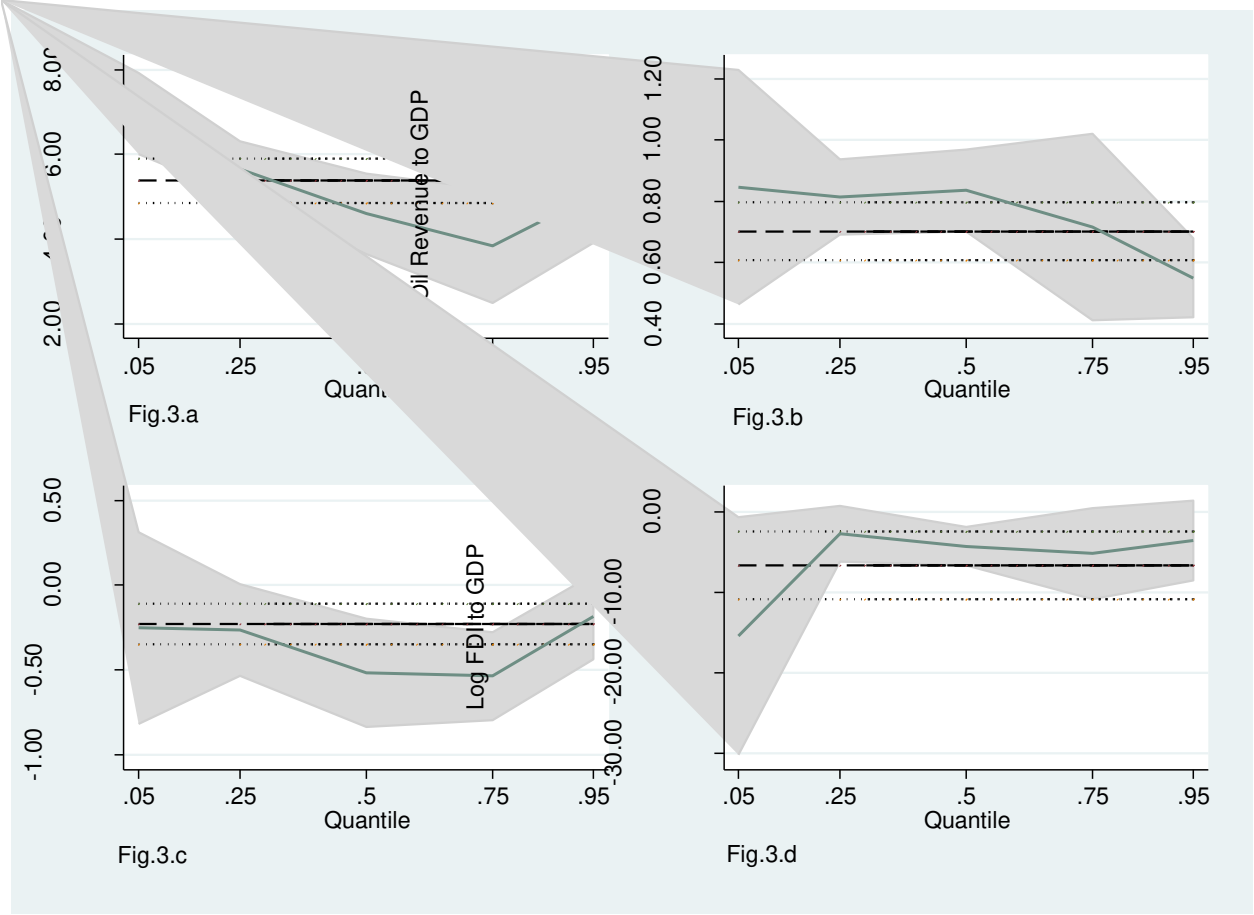


Fig.3. Simultaneous quantile regression on oil dependent OIC countries

For country with lower per capita GDP i.e. below 25% quantiles (Fig.3.a), the impact of political stability on economic growth is higher. On the contrary, for countries with higher per capita GDP e.g. above 50% quantiles (Fig.3.a), the impact of political stability on economic growth is lower. It is shown that the difference is statistically significant as betas for lower and higher quantiles lie outside the area of OLS confidence interval.

The impact of oil revenue to GDP on economic growth does not differ significantly across different quantiles except for lower effect on higher quantiles (Fig.3.b). However, it is visible that for lower quantiles the impact of oil revenue to GDP on economic growth is higher compare to higher quantiles (above 75% quantiles).

When we look at misery index, at lower quantile there is no significant difference but from 25% to 75% quantiles (Fig.3.c), the impact of misery index is lower on economic growth and statistically

significant. Interestingly, for foreign direct investment to GDP there is no significant difference across different quantiles except at 5% quantiles (Fig.3.d), where impact on economic growth is lower.

Conclusion and Policy implications

Although all the findings of the study are robust but we must acknowledge the limited scope of the study by considering the time limitation, as well the number of cross section units is sixteen which might cause bias estimates due to normality assumption. Also inclusion of Islamic variables, development of Islamic banking and capital markets, institutional variables, property rights, corruption, rule of law, good governance, could have been more appropriate but availability of data is the main obstacle. The conclusions drawn from the study are more general and suggestive than specific and prescriptive.

It can be argued that the political stability and growth is one of the fundamental principles mentioned in the Holy Quran and traditions of the Prophet (PBUH). Theoretical and empirical literatures confirm our hypothesis. Our analysis shows that political stability even plays more important role in economic growth of OIC countries under the backdrop of multiple wars, invasion, ethnic violence, military coups, revolutions and recent Arab springs. Our study fill the gap in existing literature by studying political stability and growth in oil dependent OIC countries by including two political risk indicators not usually used in the existing literatures. Moreover, we apply two advanced econometric methodologies: system GMM and simultaneous quantile regression to test our hypothesis.

The results of the system GMM estimators strongly confirm that political stability significantly affect economic growth of oil dependent OIC countries. As expected oil revenue contributes significantly in growth and also statistically significant. Misery index, unemployment plus inflation, is significant and have negative impact on growth. Most of the low to mid income oil dependent OIC countries suffer from chronic higher inflation and unemployment and consequently it has significant negative effect on growth However, foreign direct investment is found not significant determinant of economic growth. The results of quantile regression indicate that political stability is more important for lower income countries than higher income countries. The impact of oil revenue on economic growth remains stable for all countries. However, for low to mid income countries higher unemployment and inflation do affect growth negatively. No significant difference is found for FDI to GDP across different quantiles

From the above discussed findings, we can argue that political stability is one of the most important determinants of economic growth for oil dependent OIC countries. Too much dependence on oil revenue makes most of these economies vulnerable to increase oil price volatility. Recent decrease in oil price has put tremendous pressure on oil exporting countries. Oil dependence and political stability could be interconnected and could affect economic growth. For example, decreasing oil revenue will increase budget deficit, consequently, decrease government spending. Government expenditures play a major role in these economies, so government would like to collect more revenue by imposing tax but for example in GCC countries there are no well-developed taxation system. In addition to that most of these countries suffer from huge budget deficit, for example in 2015 estimates show that budget deficit is 18.8% of GDP for Saudi Arabia, 49.3% for Libya, 11.2% for Algeria, 10.8% for Oman, 15.4% for Iraq, and 3.6% for Malaysia.[13] In this situation, when the government starts to reduce subsidies, tax people, disposable income will decline which will reduce consumption and consequently output. More dangerously, frustration among many young populations would grow up as unemployment is likely to increase with higher inflation, stagflation, and in a recent article by Bloomberg (Popina, 2016) shows unemployment and inflation are very high in many OIC countries. Our study confirms that average political stability is average to very low for oil dependent OIC countries. It has been evident in recent Arab springs in many of our sample countries. While analyzing the root causes of "Arab Spring" it is clear that political instability has aggravated after long period of economic repression, inequality, unemployment, and high inflation and tyrannical autocratic leaders failed to control the situation.

In order to maintain sustainable growth and overcome the so called resource curse, oil dependent countries need to diversify their economy and develop non-oil tradable export sectors. Therefore, governments need to change incentive structure, develop local industry and financial markets in order to encourage entrepreneurial activities and generate more sustainable employment. To control excessive inflation, central banks in OIC countries should maintain stable growth in money supply, as World Bank data shows most of the OIC countries have excessive money supply growth. As evidently, persistent higher inflation and unemployment make people's life more difficult. Most of the population in OIC countries is young, if these young people are unemployed, they would easily involve with popular uprising like Arab spring which ultimate won't bring any good for greater well-being of people and the economy.

[13] CIA, The World FactBook

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