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Effect of interest rate on economic performance: Evidences from Islamic and Non-Islamic Economies

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Abstract:

Saving and investment are most important tools for economic growth and interest rate is the most important determinant of saving and investment according to classical, neo-classical and contemporary economists however in Islam riba or interest is considered forbidden, so the aim of this study is to know the effect of religious factor on financial decision of country's population and its impact on economic growth. As interest rate is forbidden in Islam so country with majority Muslim population should not consider interest rate while saving and investing. We used Panel least square and fixed effect model separately for 57 non-Islamic and 17 Islamic countries from 2005 to 2013. Results suggested that in Islamic countries, people don't care about interest rate while saving however growth in GDP per capita income seems to effect positively to the saving decision. However for non-Islamic economies GDP per capita growth as well as interest rate both has positive impact on saving. However in the case of investment, interest rate affects negatively while growth in GDP per capita affects positively for both Islamic and non-Islamic countries. Hence there seems to be a need of different policies for Muslim countries in order to increase economic growth as religious factor has effects on financial decisions.

Keywords: Interest rate, Economic performance, Islamic, Panel data.

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Introduction:

Interest rate had been considered an important factor for determining the saving and investment by classical, neo-classical and contemporary economists. Interest rate also has a major impact on country's saving and investment interest rate is defined as the cost of borrowing or gain on lending, Interest rate creates asset demand of money leading to saving. However with the increase in interest rate cost of capital will increase hence results reduction in investment within the economy.

Islam prohibits riba or interest. Riba is explained as practices through which one can earn excess in return hence no equivalent counter-value or reward should be paid. Riba is an Arabic word meaning increase or growth, because of interest, there would be a rapid increase in amount payable over and above the actual amount.

In Holy Quran Allah says, "Whereas Allah permitted trading and forbideth usury" and Allah ordered to give up these practices "O ye who believe! Observe your duty to Allah, and give up what remaineth (due to you) from usury, if you are (in truth) believers"

Hence it shows that in islam interest is not liked by Allah however saving is not prohibited Allah says in a Qur'anic verse that a Muslim should "...not spend everything so that you became blameworthy and destitute" (al-Qur'an 17:29).

Although according to many empirical researches, people who patronize Islam and Islamic banks, looks for monetary rewards however we cannot say this finding or statement is true for all cases. We can give here example of Kuwait Finance House, in 1984, they did not give profit to their depositor but there was not any evidence of massive withdrawal from their deposits.

In another example Islamic banks of Sudan never declared any type of reward to their current account holders, but a big part of their funds is generated by these facilities.

According to Shariah principles wealth should be accumulated by struggle and efforts of one's own not by other's efforts. The Prophet (PBUH) advised Muslims to work hard for achieving their own food and disliked income generated through interest or riba without doing any effort.

As in Islamic countries riba or interest is considered forbidden so it is general perception that saving in that countries will have no or minimal effect from change in interest rate

Moreover interest rate should also have a little or no effect on investment.

From policy point of view, if interest rate doesn't effects saving in Islamic countries so there should be different criteria for making policies in Islamic countries.

This study is conducted using Panel data after categorizing countries in to Islamic and non-Islamic. We used Gross domestic saving (% of GDP) in this study as a proxy of saving and gross capital formation (% of GDP) as proxy of investment.

Although in literature many studies covered different aspects of saving and investment on economic growth but this is the first study which not only determined the effects of Muslim's religious factor on economic growth of Muslim countries but also comparing them with non-Muslim countries. Interest rate in this study, we used to assess their impact on saving and investment.

The organization of paper is that this section introduction, section 2 theoretical and empirical review of literature, section 3 empirical analysis and section 4 will conclude the paper.

Theoretical framework of how these determinants affects the saving and investment:

According to classical economists, saving is a function of rate of interest. When it will be high usually people will try to save more money and people will try to decrease present consumption.

But if we focus on utility maximization, current consumption has different for substitution effect leading to decrease in current consumption and income effect leading to increase in current consumption.

BLR (Base Lending Rate) is another determinant of saving. If the interest rate that a lender has to pay to the bank for taking loan is high, borrowing cost will be more however they will try to save to fulfil their future needs so theoretically it is expected it will have positive relationship with saving.

Classical economists were the first who determine the importance of saving. Smith (1776) state that "capital is increased by parsimony and diminished by prodigality and misconduct"

Before 1936, according to the classical economist theory on the saving, saving and interest rates are negatively related with each other.

Keynes (1936) describe saving as, It is remaining part of income after all consumption expenses.

$$S = I - C$$

Where I= Income

S=Saving and C=Consumption

Therefore according to this theory if **per capita income** or income will increase then saving will also increase.

Anyanwu and Oaikhenn(1995) divide saving determinants in to two parts/factors.

- a) Quantitative factors: It includes income level, interest rate, inflation rate, inflation rate expectations and saving ease available to a person.
- b) Non Quantitative factors: They are psychological factors which effects saving. It includes feelings for safety measures, desire for trust, habitual factor and socializing factors.

According to jalaluddin (1992), like Keynes absolute income hypothesis saving is not just remaining part after consumption but there are some ethical and social values that are linked with saving.

If a Muslim saves then there are certain responsibilities that he/she has to fulfil from this saving and these responsibilities can be toward Allah, family, himself.

Moreover he said that the life cycle hypothesis of Modigliani and Brumberg (1954) shows Muslim's behavior of saving to some extend.

Keynes (1936) also believes that in longrun change in interest rate can change social habits including propensity to save.

Friedman (1957) considered interest rate as a main variable to determine average propensity to consume according to his neoclassical theory.

Wright (1967), Taylor (1971), Darloy (1972), Heien (1972), Juster and Watched (1972), Blinder (1975) and Juster and Taylor (1975) found inverse relationship between consumption and rate of interest in their studies and if there will be increase in interest

rate then consumption will be decreases mean there will be increase in saving and investment.

Investment is considered as function of interest rate and income by economist and their relationship is as under:

$$\Delta Investment = \beta_0 - \beta_1 Interest\ rate + \beta_2 Income + \epsilon_i$$

Interest rate increases cost of borrowing money hence reduces investments however with the increase in income, investment increases.

And this function is not only confirmed by economic literature but by many researchers who did study on investment and found this relationship true.

As riba or interest rate is strictly prohibited in Islam, so in Islamic economies interest rate should not have impact on saving and investment.

Saving is also considered to have a significant effect on investment. So the aim of this study is to highlight the difference between the interest rate effect on saving and investment in Islamic and non-Islamic economies. Because riba or interest rate is forbidden in Islam so expectations are there should be different impact on Islamic countries as compare to non-Islamic.

Review of empirical literature:

Although there are many studies available in literature discussing impact of interest rate on saving and investment in non-Islamic countries, but very few studies are available for Islamic countries and the available one are mostly about single country but there is no study available in literature which present the big picture of interest rate impact on saving and investment by comparing Islamic and non-Islamic believes of people of different countries in one study.

Different researcher presented different picture for interest rate impact on Islamic bank deposit or on saving of Islamic country. Some studies which concluded negative impact of interest rate on saving or bank deposits are as under:

Haron and Ahmed (2000) studied that customer of Islamic banks are more influenced by profit. They did study of Islamic bank's deposit in Malaysia and concluded that rate of profit and Islamic bank's deposits are positively correlated. On the other hand they concluded that interest rate has negative relationship with Islamic bank deposit in Malaysia.

In (2005) Sukmana and Yousof concluded the same results for all Islamic banks in Malaysia by taking data from Jan 1994 to Oct 2004.

Mangkuto (2004) performed study in Indonesia. The study was related to Bank Muamalat Indonesia. They concluded that level of the deposit and its yield is positively correlated during Jan 2000-July 2004. While there is negative correlation between conventional interest rate and deposit yield.

Haron and Ahmad (2000), believes that interest rate of conventional bank have negatively correlated with Islamic banks deposits, mean that 1% increase in rate of interest of conventional banks will reduce the level of investment deposit which is interest free, by 65 Million Malaysian Ringgit.

-Sukmana and Kassim(2010), find that if there will be any shock in interest rate then it will negatively impact on Islamic deposits.

Kasri and Kassim(2009), in their study concluded that Mudarabah deposits which are proxy of saving or investment level in Islamic banks was positively correlated with real

rate of return on Islamic deposits and negatively correlated with real interest rate on conventional deposits.

Some studies concluded that interest rate will have impact on Islamic countries and instruments of Islamic banks:

Hakan and Gulumser (2011) did a study on “impact of interest rate on Islamic and conventional Banks” in Turkey and concluded that if there will be any change in interest rate then it will not only affect the loans and deposits of conventional banks but also it will have impact on instruments of Islamic banks.

According to several studies conducted by central bank of Indonesia although religious factor is being considered in Indonesia while keeping deposits in Islamic banks but there is ambiguous condition regarding interest rate perception. Although most respondent during the study accepted that in Islam interest rate application is not allowed or it is prohibited but if there is application of interest rate in banking system, they are not strongly against this (Bank Indonesia,2005).

Khan et.al (1992) concluded that a rise in per capita income will maximize saving, he further stated that higher economic growth will increase saving through Mckinon’s(1973) “Portfolio-Effect” of growth. which stated that if there will be increase in income so it will lead towards increase in saving because people will save more from transitory income this statement also has confirmation with Harberger-Lawrson-Meltzer effect (Qureshi 1981).

While some researcher concluded that there will be no impact of interest rate:

According to Kassim et al,(2009) the basic reason that makes Islamic banks more stable than conventional banks is that they are not affected by change in interest rates and as

result of this, money demand will become more stable within the economy and when there will be stability in money that is held as saving will have positive impact on monetary policy and financial stability of the economy.

Gerrard and Cunningham (1997) Studied that even in non-Muslim country for example Singapore, muslims have still their beliefs that's why they are keeping money in Islamic banks even if the bank where they keep their deposits not pay profit for anyone year.

Metawa and Almosawi (1998) have different conclusion from Gerrard and Cunningham (1997). They did research in Bahrain and concluded that the depositor select bank for keeping their deposits mainly on religious base and then followed by rate of return. They also concluded that in country like Bahrain where most of people embrace islam rate of return is not the only and primary variable to influence deposit volume in islamic banks.

Studies related to investment:

A part from economic theories there is rich literatures of empirical studies are available about investment and interest rate. While in the case of investment mostly studies concluded significant negative impact of interest rate on investment:

Mehrara and Karsalari (2011) concluded that there is negative relationship between private investment and real rate beyond the threshold level of 5 to 6 percent, but within the threshold level there is positive impact of real rates on private investment.

Geng and N'Diaye (2012) concluded in China that 100 bps increase in real rate lowers corporate investment by 0.5 percent of GDP.

Tokuoko (2012) studied negative relationship between real interest rate on corporate investment in the macroeconomic data.

Pattanaik, Behera and Kavediya concluded in their study on real interest rate impact on investment and growth that lower interest rate can stimulate growth and investment but they mentioned that we don't recommend policy to increase inflation tolerance in order to reduce interest rate.

Christy and Clendinson (1976) studied that saving rate and interest rate are two important determinants of investment.

Muhammad et al.(2013) did study on interest rate impact on Investment in Pakistan by taking data from 1964 to 2012 and concluded that interest rate have negative relationship with investment while income has positive impact on investment.

Joshua and Delano (1990) in their study "Determinants of private investment in less developing countries" by considering 23 countries from 1975 to 1985 and concluded that interest rate have negative impact on investment.

Hyder and Ahmed (2003) in "why private investment in Pakistan has collapsed and how it can be restored" concluded that with the increase in interest rate investment will decline.

James E. Larsen (2004), Aysan et al. (2005), Wang and Yu (2007) and Bader and Malawi (2010) all identified negative relationship between interest rate and investment in their studies.

Joshua and Delano (1990), Hyder and Ahmed (2003), Badar and Malawi (2010), James E. Larson (2004) and Aysan et al.(2005) concluded the inverse relationship between interest rate and investment in their studies.

According to Mackinnon cycle saving will have positive impact on investment.

Muhammad et al.(2013) concluded that interest rate have negative impact on investment while income has positive impact on investment.

Some studies considered interest rate insignificant in determining investment:

Salahuddin et.al (2009) investigated the behavior of investment in Muslim developing countries. They took 21 Muslim developing countries data from 1970 to 2002, used fixed effect model and conclude that Debt servicing has negative impact on investment while all other variables that are lagged investment, growth rate of real GDP per capita, domestic saving, institutional development and trade openness has positive impact. Private sector credits and aids from foreign countries although have positive significant impact but results are not robust. They further concluded that lending rate, inflation growth in population and human capital have no impact on investment in Muslim developing countries and these variables have been found insignificant by them.

Impact of interest rate on saving and investment:

Khalid et.al studied saving and investment behavior for Pakistan used time series data of Pakistan from the year 1971 to 2003.They concluded that budget deficit, Govt. investment and interest rate are **insignificant** determinants of saving and return of Govt. investment also don't have any impact on saving. While current Govt. expenditure, high income or growth in GDP and increase in remittances maximizes saving.

They further concluded that public and foreign investment neutralizing interest rate's negative impact on private investment. While return on investment is significant determinant of investment. Expectations are also considered an important determinant of investment, any type of increase in prices of material or energy will reduce investment.

According to them domestic saving is reason to increase in investment while foreign saving has no impact on investment in Pakistan. So they emphasize to increase domestic saving.

J.U.J. Onwumere et.al (2012) did study in Nigeria and concluded that before liberalization interest rate have positive non-significant effect on saving and investment while after liberalization interest rate have negative non-significant effect on saving however negative significant effect on investment.

Athukorala et al.(2007) did study on india and concluded that with the increase of interest rate saving and investment will increase in indian economy.

From all above studies our variables effects on saving and investment are confirmed but no study considered the religious factor effect on economy.

Alternative views on saving and Investment:

According to accelerator model (Chenery 1952 and Koyek 1954) investment is independent from price of capital.

McKinnon (1973) and Shaw (1973) emphasize that real rate of interest and investments are positively correlated in contrast with neoclassical theory. The reason is if interest rate increases, financial saving's value would be increase through financial intermediaries and because of this investible fund would be increase.

Empirical Analysis:

The basic purpose of this study was to investigate the impact of interest rate on saving and investment in Islamic countries and to compare these results with non-Islamic countries to know the fact that either people in Islamic countries have different behavior towards interest. We used two fixed effect models separately for saving and investment.

The subsection includes description of data, regression specification, estimation methodology and estimation results.

Data Description:

We used Panel data from 2005 to 2013 of 57 non-Islamic and 17 Islamic countries.

Selections of Islamic countries were based on Islamic population. Countries with more than 50% Islamic population were taken as Islamic countries.

The data was collected from World Bank development indicators. Data unavailability for many countries and for earlier years was a big limitation for this study and data was not available for few countries with High Muslim population such as Saudi Arabia, UAE etc. hence we excluded them and other many countries from our study.

The dependent variables are saving for model one and investment for our second model.

While independent variables are GDP per capita and interest rate for both saving and investment models. In investment model we also include saving as independent variable as in many studies, saving is a major determinant of investment.

As discussed earlier Khan et al. (2009) and Mackinnon used per capita income growth as determinant of Saving whereas Onwumere et al. (2012) used interest rate. While according to Mackinnon saving is the determinant of investment.

Muhammad et al. (2003) used interest rate and income as determinants of investment.

Regression Specification:

a) Saving Model:

Our saving model is based upon the classical economist views they considered interest rate as function of saving and Keynes (1936) who considered saving as a function of

Income. Many studies confirmed these economics theories by using these variables in their studies afterward.

According to Modigliani (1954), if there will be higher rate of growth then aggregate income will be increase causes labor income to increase as well. This view is in confirmation with life cycle hypothesis. Although saving and income growth are positively correlated but rise in per capita income from a certain level may increase in saving in developing countries.

Our model is specified as under:

$$\Delta \text{ saving} = \beta_0 + \beta_1 \text{Interest rate} + \beta_2 \text{ Per capita Income} + \epsilon_i$$

In this study Gross domestic saving (% of GDP) is used as proxy of saving, β_0 which is constant GDP per capita growth annual percent, is used as proxy of growth in per capita income Base Lending Rate which is the charge on the customer by banks for borrowing money from the bank, is used as a proxy of interest rate while ϵ_i is error term.

According to theories and earlier studies we are expecting positive impact of interest rate and per capita income on saving while in Islamic countries because of religious factor we are expecting interest rate insignificant in determining saving.

b) Investment Model:

In many economic theories investment is described as function of interest rate and income and according to economic theories interest rate will negatively effects the investment.

Our investment model is developed as under:

$$\Delta \text{ Inv} = \beta_0 - \beta_1 \text{Interest rate} + \beta_2 \text{ Per capita Income} + \beta_3 \text{ saving} + \epsilon_i$$

Where inv is investment which is gross capital formation (% of GDP). β_0 is constant. GDP per capita growth annual percent, is used as proxy of growth in per capita income. BLR is used as a proxy of interest rate; gross domestic saving (% of GDP) is used as proxy of saving while ϵ_i is error term.

According to theories and studies we are expecting negative impact of interest rate on investment while positive impact of saving and per capita income on investment.

But our main focus is to see the different between Islamic and non-Islamic countries saving and investment models

Estimation methodology:

The data has variation over time so we used Panel least square with fixed effect model and check its validity through Hausman test, which proves that this model is appropriate to accept.

We ran regression separately for Islamic and non-Islamic countries.

Correlation coefficients have been checked among independent and dependent variables in order to avoid multicollinearity.

Estimation Results:

Before explaining the regression results first we will discuss the correlation among the dependent variables and independent variables correlation matrixes are in appendices showing separate table for Islamic and non-Islamic countries. (Appendix no 1)

Results shows that investment has negative relationship with interest rate while positive relationship with per capita income and saving, as we expected according to earlier studies and theories for both Islamic and non-Islamic countries.

However in the case of saving, income has positive relationship but interest rate has negative impact.

The regression results of panel OLS with fixed effect model are as under:

Variable name	Non-Islamic countries		Islamic countries	
	Model 1	Model 2	Model 3	Model 4
	saving	Investment	Saving	investment
Constant	16.944 (0.0000)	20.5257 (0.0000)	14.2060 (0.0000)	29.4923 (0.0000)
interest rate	0.1295 (0.0454)	-0.1729 (0.0029)	0.2170 (0.2304)	-0.5319 (0.0020)
GDP Per Capita growth	0.2094 (0.0002)	0.1806 (0.0003)	0.1794 (0.0746)	0.2053 (0.0312)
Saving	-----	0.3696 (0.0000)	-----	0.0229 (0.7759)
R-squared	0.895	0.785	0.969	0.713
F-statistic	67.145	28.05	236.7040	17.40
Prob(F-statistic)	0.0000	0.0000	0.0000	0.0000

Note: The figures in parenthesis are p-values.

In the model no 1, of non-Islamic economies interest rate and per capita income both have positive and significant impact on saving while in model no 2, per capita income and saving both have positive impact ,however interest rate have negative and significant impact on investment.

But if we talks about saving behavior in model no 3 of Islamic countries then per capita income has positive significant impact on saving while interest rate have positive but non-significant impact. In model no 4 interest rate have negative significant impact, whereas per capita income has positive significant impact for investment behavior in Islamic countries while saving have positive insignificant impact.

However in regression results in the presence of per capita income interest rate have positive impact on saving.

This reason for change in sign may be that if interest rate will increase in the absence of growth then cost of consumption will increase so people have to spend their money rather than saving but in the presence of growth in income people will have money to save after consumption as increase in interest rate will also maximizes their income.

Above results are consistent with economic theories and in the case of Islamic economies, interest rate is insignificant for determining saving, which shows that religious factor have strong impact on people's decisions in Islamic countries. However in case of investments, saving has no impact in determining investment in the case of Islamic countries. So we can say that people in Islamic countries behave differently towards interest rate as compare to non-Islamic economies.

Comparison of Islamic and non-Islamic countries result:

If we compare the results of saving and investment models for Islamic and non-Islamic countries then it is clear that for both Islamic and non-Islamic countries investment result are same but their magnitude are different, signs are same meaning that for both Islamic and non-Islamic countries investment will be reduced with the increase in interest rate, while it will increase with the increase in per capita income growth. Moreover saving is insignificant variable in determining investment in the case of Islamic countries but not for non-Islamic countries.

While in saving models with the increase in Per Capita income, saving in both Islamic and non-Islamic countries will increase, however in the case of interest rate, saving of non-Islamic countries will increase with the increase of interest rate, while in Islamic countries interest rate remains insignificant.

Conclusions and Recommendations:

The result of this study shows that the religion is an important factor which can have effect on behavior of saving, investment and economic growth.

This study confirmed the Mckinnon effect in non-Islamic countries according to which there will be arbitrary big push in GDP growth which will increase in saving resulting increase in investment that will further maximize GDP and saving hence economic development cycle can be initiated.

While in the case of Islamic countries only half of this cycle is true as saving becomes insignificant in determining investment, however if there will be push in GDP growth then it will increase not only saving but also will have direct impact on investment because religious factor will cancel out the interest rate impact on saving and saving impact on investment in Islamic countries.

Because in Muslim countries religious factor affect their decisions so Muslim countries should try to increase in growth in GDP per capita by making their employment conditions better in their countries and by reducing lending interest rate that will also increase investment, hence Muslim countries can increase their investment and saving and can achieve positive economic growth.

Saving and investment are the tools for economic growth so if efficient economic policies will not be made according to population's religious behavior for Islamic countries then there will be no or less economic growth in Islamic countries.

So the result suggests that there should be separate and different policies for economic growth in Islamic countries because people react differently on the basis of religious impact.

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Annexures:

Correlation Matrixes (Appendix no 1):

Non Islamic saving:

	GDS	PCG	LIR
GDS	1.000000	0.199948	-0.186118
PCG	0.199948	1.000000	0.102495
LIR	-0.186118	0.102495	1.000000

Non-Islamic investment

	GCF	LIR	PCG	GDS
GCF	1	-0.0342332676803015	0.246962961026181	0.2348874390284374
LIR	-0.0342332676803015	1	0.102495451900626	-0.1861182943120908
PCG	0.246962961026181	0.102495451900626	1	0.1999481736372543
GDS	0.2348874390284374	-0.1861182943120908	0.1999481736372543	1

Islamic saving

	GDS	LIR	PCG
GDS	1	-0.454433446695013	0.02244624691651363
LIR	-0.454433446695013	1	0.165670596670113
PCG	0.02244624691651363	0.165670596670113	1

Islamic investment

	GCF	LIR	PCG	GDS
GCF	1	-0.003269566400184899	0.2260923094522152	0.09864694673992409
LIR	-0.003269566400184899	1	0.165670596670113	-0.454433446695013
PCG	0.2260923094522152	0.165670596670113	1	0.02244624691651363
GDS	0.09864694673992409	-0.454433446695013	0.02244624691651363	1

GDS= Gross Domestic Saving (% of GDP), LIR= Lending Interest Rate (%), PCG= GDP Per Capita growth (annual %), GCF=Gross Capital Formation (% of GDP)

List of 57 non -Muslim countries used in this study (Appendix no 2):

Angola, Antigua and Barbuda, Armenia, Australia, Bahamas The, Belarus, Belize, Bolivia, Bosnia and Heregovina, Botswana, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Dominican Republic, Estonia, Georgia, Grenada, Guatemala, Honduras, Hong Kong SAR.China, Hungary, Japan, Korea.Rep, Macedonia.FYR, Mauritius, Mexico, Moldova, Mongolia, Mozambique, Namibia, Nicaragua, Paraguay, Peru, Philippines, Romania, Russian Federation, Sao Tome and Principe, Seychelles, Singapore, South Africa, Sri Lanka, St. Lucia, St. Vincent and The Grenadines, Swaziland, Switzerland, Tanzania, Thailand, Uganda, Ukraine, Uruguay, Vanuatu, Vietnam.

List of 17 Muslim countries used in this study: (Muslim population is more than 50% of total population)

Albania, Algeria, Azerbaijan, Bangladesh, Brunei, Comorous, Egypt, Indonesia, Jordan, Kuwait, Kyrgyzstan, Lebanon, Malaysia, Pakistan, Sierra Leone, Tajikistan, The Gambia.