# Effect of interest rate on bank deposits: evidences from Islamic and non-Islamic economies

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## Abstract:

Banking sector is the backbone of any country's economy and bank deposits are major tool of banking sector's success. Bank deposits are also a major part and determinant of country's saving. According to economic theories and practical considerations, interest rate is considered one of the major elements that can affect savings as well as bank deposits. But as we knows that in Islam interest is considered forbidden, So the basic purpose of this study is to know the fact that either religious factors have any effect on Muslim decision while saving in banks. We used panel least square with fixed effect model by using 55 non-Islamic and 15 Islamic countries data from 2005 to 2013 for this study. Results showed that in Islamic countries interest rate don't have any impact on bank deposits however money supply and inflation do have positive significant impact. But in the case of non-Islamic countries interest rate and money supply both have positive significant impact on bank deposit however inflation seems to be insignificant. Hence there is need of Islamic banks in countries with more Muslim population and there should be different economic policies for Islamic countries as religious factor affects decision of Muslims.

**Keywords:** Interest rate, Bank deposits, Islamic, Panel data.

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## Introduction:

Interest is an inseparable part of today's economic activities and it is also the main reason of fluctuation and hurdles in economic development because of interest rate money is considered as commodity rather than medium of exchange and it creates unequal distribution of wealth within the society as concentration of money remains in few hands hence rich becomes richest and poor becomes poorer (Mohammad Farooq, 2012).

If we define interest rate then it is the amount of money that lender receives or borrower pays in excess of actual money or we can say it cost of capital.

However Islam is against all such practices of usury and riba. Riba is an Arabic word which means increase or addition. Allah Almighty as a creator of human beings wants peace and justice, In Holy Quran Allah clearly says:

"O you who believe! Be mindful of God and give up what remains of al-riba if you are believers. If you do not do so, then receive a declaration of war from God and his Messenger. But if you repent, you shall have your capital sums (ru`us alamwal). You do not deal unjustly and you are not dealt with unjustly (2:278-279)"

"God brings riba to destruction, but gives increase (yurbi) to sadaqah. God loves not anyone ungrateful and wicked. (2:276)"

Prophet Muhammad (PBUH) in his last sermon eliminated this evil and denounced interest from society, Prophet said:

"All interest and usurious dues accruing from the times of ignorance stand wiped out. And the first amount of interest that I remit is that which Abbas ibn Abd-al Muttalib had to receive. Verily, it is remitted entirely."

Interest rate affects all sectors of economy but it has a major impact on banking sector because they directly deal with money. Bank deposits are considered as major part of any country's saving and has major impact on any country's economic performance, bank deposits are defined as the amount of money that a customer of bank keeps in his account either in form of cash, cheque or sent through a wire transfer. In return bank pays some amount of interest according to prevalent rate to the customer. The basic purpose for this study was to investigate the impact of interest rate on banking sector deposits. As deposits are back bone of banking sector, interest rate is an effective tool to attract customers. In this study we tried to investigate the fact that in countries where Muslim population is in majority, what is the response of Muslims towards interest rate while depositing their money in to any bank. Whether they considered interest income while depositing or they deposit for purpose of keeping money in banks just for business or saving purpose not for interest income.

Bank deposit is a type of saving hence all theories related to saving will be true for banks deposits. As interest rate is prohibited in Islam so Muslims should not consider interest rate as a major factor while placing their money in any place for saving purpose thatswhy there should be a big different between Muslims and non-Muslims behavior towards interest rate. Muslims savings in bank should not be affected by interest rate so by doing this study we want to see that either Muslims considers interest rate as important factor to affect their savings in banks or the purpose of keeping their money in banks is just for saving purpose and not for interest income. We are expecting insignificant effect of interest rate on bank deposits in Muslim countries however positive significant effect in non-Muslim countries, moreover expecting positive impact of inflation and money supply on bank deposits.

This study is conducted by using panel data after categorizing countries into Muslims and non-Muslims on the basis of population by religion. We used banks deposits to GDP (%) as proxy of banks deposits.

In literature there are many studies about significance of Islamic banks, their comparison with conventional banks, and their deposit determinants etc., but this is the first study which considered effect of Muslims religious factor on their decision of depositing money. As interest is forbidden in Islam, so Muslims deposits should not effect by interest rate fluctuations.

The organization of paper is section 1 introduction, section 2 theoretical and empirical reviews of literature, section 3 empirical analyses and section 4 conclusion.

## Review of literature:

Interest rate is a function of saving according to classical economist. There are two effects of interest rate on saving, income effect leads to inverse relationship between interest rate and saving and substitution effects leads to direct relationship between interest rate and saving. Usually substitution effect dominates the income effect so we are expecting positive relationship between interest rate and bank deposits.

Keynes (1936) described saving as remaining part of income after consumptions but jalaluddin (1992) considered saving not only remaining part of income but according to him there is some social and ethical values that are attached with saving. A Muslim's saving can be because of certain responsibilities toward Allah, family and for himself.

Although economic literature is rich with saving and interest rate relationship and there are a lot of studies available about different aspects of saving and its determinants in economic literature but there are very few studies that covers bank deposits and its determinants.

Sukmana and Kassim(2010) studies that any shock in interest rate will negatively impact the Islamic bank's deposit.

Hakan and Gulumser (2011) conducted research in Turkey "impact of interest rate on Islamic and conventional Banks" and concluded that changes in interest rate will impact both conventional and Islamic banks.

Some researchers found positive relationship between saving and interest rate some studies are discussed below:

Loayza and Shankar(2000) concluded that there is positive effect of real interest rate, Per capita income and the share of agriculture in GDP on saving and there is negative effect of financial development, inflation and dependency ratio on saving in India.

Athukoral and Tsai (2003) concluded that inflation has negative impact on saving while rate of interest has positive effect on saving.

Eriemo (2014) found that interest rate and previous price level have positive significant impact on bank deposits in Nigeria.

Ojeaga et al. (2013) concluded that interest rate and income has strong positive impact on bank deposits in Nigerian Banking sector.

Ostadi and Sarlak (2014), studied that interest rate and money supply positively and significantly impact bank deposits however inflation have significant negative impact on bank deposits.

Mashamba et al. (2014), found positive relationship between deposit interest rate and bank deposits in Zimbabwe.
However according to some researchers there is inverse relationship between saving and interest rate and they discussed this relationship in their studies.

Haron and Azmi (2006) work on deposit determinants of commercial banks in Malaysia. They used co integration technique. They concluded that rate of profit of Islamic bank, rate of interest on deposits; Base lending rate, Kuala Lumpur Composite Index, Consumer Price Index, Money supply and Gross Domestic Product have significant impact on deposits. They further determined that return on deposit and inflation has negative impact on bank deposits. While composite index and money supply have positive impact on bank deposits.

Orji Anthony (2009) concluded that there is positive impact of GDP per capita, Financial Deepening, Interest rate spread on the size of private domestic saving and negative impact of Real interest rate and inflation rate on the size of private domestic saving. They also concluded that there is positive relationship between the lagged value of total private saving, private sector credit, public sector credit, interest rate spread, exchange rates and economic growth.They suggested that government should take step to reduce unemployment rate in Nigeria and try to increase saving in order to enhance economic growth in the country.

Siaw and Lawer (2015) did study on determinants of bank deposits in Ghana and concluded that in long run deposit interest rate, inflation has negative impact on bank deposits however growth in money supply has positive impact. But in short run both inflation and growth in money supply has significant negative impact in determining bank's deposits.

Muhammad et al. (2011) found negative impact of inflation and base lending rates on bank deposits.

Kasri and Kasim (2009) found that conventional interest rate and real rate of return have significant impact on Islamic bank deposits.

According to Kassim et al. (2009) Islamic banks are more stable as compare to conventional banks because they are not affected by interest rate.

So there is combination of different views about interest rate and deposits or saving relationship in the economic literature.

Ozcan et al. (2003) determine the private saving behavior in Turkey and concluded that if we not consider Government saving then income level, financial depth and measures, inflation has positive effect on private saving.

## Empirical Analysis:

The basic purpose of this study was to know the impact of interest rate on bank's deposits in Muslim countries and compare results with non-Muslim countries as there should be different behavior of Muslims towards interest rate while depositing their money as compare to non-Muslims. We used fixed effect models for Islamic and non-Islamic countries separately.
The subsections of this section include description of data, regression specification, and estimation methodology and estimation results.

**Data Description:**

We used panel data of 55 non-Islamic and 15 Islamic countries from 2005 to 2013. The countries more than 50% Muslim population are considered as Islamic countries with more Muslim population. The lack of data or unavailability of data for either any country or variable was big limitation for this study. Data of all variables was collected from World Bank development indicators different issues.
The dependent variable for this study is bank deposit while independent variable includes real interest rate, Inflation (consumer price index) and Money supply (M2). Sukmana and Kassim(2010) and Kasri and Kasim (2009) used interest rate as determinants of banks deposit.

**Regression Specification:**
We used bank deposits as a proxy of savings. In economic literature Loayza and Shankar(2000),Eriemo(2014) and Ostadi and Sarlak(2014) discussed positive relationship of interest rate with saving however according to Ozcan et al.(2003) and Eriemo(2014) there is positive impact of inflation on saving moreover Haron and Azmi (2006) ,Ostadi and Sarlak (2014) discussed positive impact of money supply on bank deposits.

Our model is specified as under:

$$\Delta bank\ deposit = \beta 0 + \beta 1\ real\ Interest\ rate + \beta 2\ inflation + \beta 2\ money\ supply + \epsilon i$$

In this study Bank deposits (% of GDP) is used as proxy of bank deposits, real interest rate use to adjust for inflation, as inflation is built in the interest rates. Inflation is different in across countries so this variable will provide a standardize format to use interest rate.

CPI is used as a proxy of inflation. The buying power of consumer will reduce because of inflation. And the value of money will also decrease. Consumer Price Index is changes in cost of a basket of goods and services to the consumer. It has a high influence on saving. It create uncertainty so a risk averse person will save more to reduce uncertainty in future income and other factors, so with the increase in inflation there will be increase in precautionary saving(Sandmo,1970). Inflation also have impact on real wealth if consumer maintain its same level of liquid assets or wealth relative to income then saving will increase with inflation.

Money and quasi money (M2) as % of GDP is used as a measure of Money supply. M2 includes M1 which are cash and checking deposits plus near money.

Money supply M2 is managed by government of state by making monetary policy. It have a major effect on economy. If money supply will be more then loan will be available on cheaper interest rates so there will be less cost of borrowing for individuals as well as for corporations. So expectation in this scenario is that people will increase consumption and will reduce saving.

Theoretically if money supply will increase then cost of borrowing will decrease so people will borrow more and consumption will increase.

But the positive relationship between money supply and saving is in accordance with the liquidity preference theory which states that increase in money supply means more money will be held for speculative motive.

We are expecting positive impact of real interest rate, inflation and money supply on bank deposits while in Islamic countries because of religious factor we are expecting interest rate, insignificant in determining bank deposits.

**Estimation Methodology:**

We ran regression separately for Islamic and non-Islamic countries by using fixed effect model.
Hausman and Taylor (1981) presented Hausman test for panel data to control individual-specific unobservable effect, which can be correlated with other explanatory variables. They presented two effects, Fixed effect (with time variant characteristics) and Random effect (can use time invariant explanatory variables). Hausman test helps us to select the appropriate effect, either Fixed or Random for the selected panel data.
For this study validity of fixed effect model had been checked by Hausman test which showed that fixed effect model is appropriate. Correlation coefficient of independent variables has been checked in order to avoid multicollinearity.

**Estimation Results:**
Before the discussion about regression results appendices showing separate correlation matrices for Islamic and non-Islamic countries, result clearly indicates that there is no evidence of serious multicollinearity issue among independent variables.
Although results in correlation matrices shows that there are negative relationships between some variables but in the presence of other variable as showed in the regression results they have positive effect on bank deposits.

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

| Variable name | Non-Islamic countries | Islamic countries |
|---|---|---|
| | Model no 1 | Model no 2 |
| | Bank deposits | Bank deposits |
| Constant | 2.3892<br>(0.1305) | -3.6928<br>(0.1765) |
| Real interest rate | 0.0865<br>(0.0495) | 0.0242<br>(0.5521) |
| Money supply | 0.7385<br>(0.0000) | 0.8233<br>(0.0000) |
| Inflation | 0.0452<br>(0.3401) | 0.2513<br>(0.0086) |
| R-squared | 0.9936 | 0.9913 |
| F-statistics | 1190.643 | 792.2804 |
| Prob(F-statistics) | 0.000000 | 0.000000 |

Note: The figures in parenthesis are p-values.

In model no 1 of non-Islamic countries result shows that real interest rate and money supply both variables have positive significant impact on bank deposits however Inflation have positive insignificant impact on bank deposits of non-Islamic countries.

But in model no 2 of Islamic countries result indicates that money supply and inflation have positive significant impact on bank deposits of Islamic countries while interest rate have positive insignificant impact.

Above results are not only consistent with economic theories but also proves this fact that as interest rate is forbidden in Islam so Muslims don't give importance towards interest rate while keeping their deposits in banks.

**Comparison of Islamic and non-Islamic countries result:**
If we compare the results of both Islamic and non-Islamic countries then it is clear that in Islamic countries, bank deposits will increase with the increase in money supply and inflation while no effect is seen when interest rate are increased however in the case of non-Islamic countries, increase in interest rate and money supply will maximize bank deposits while with the increase in inflation there will be no impact on bank deposits.
Moreover in Islamic countries there should be more focus on globalization of different factors of Islamic countries and data of different aspect that have major impact on Islamic economies

should be highlighted on regional and international level hence policies would be different for Islamic economies in order to gain benefit from their heritage, religion, human and material resources to face the current and future challenges.

## Conclusion and Recommendation:

This study conclude that interest rate which is forbidden in Islam have significant positive impact on banks deposits in non-Muslim countries however in Muslim countries because of religious restriction on interest rate people don't care about increase or decrease in interest rate while depositing in banks. So there is need of Islamic banks in countries where Muslim population is in majority because people although putting their saving in conventional banks but their savings are insensitive of interest rate variations meaning that they keeps their money in banks only for saving or for precautions against any uncertain condition or for future need and not for profit purpose.

This situation is favorable to banks as they reap maximum return on account of higher interest rate spread that is they take deposit at lower rate as it is insensitive of interest rate, and lend at a higher rate, Islamic banks can easily erode this advantage as people will switch to Islamic banks for halal profit.

However money supply for both Muslims and non-Muslim economies has positive significant impact so government can control money supply through effective monetary policy for increase in bank deposit and to strengthen banking industry. Inflation is insignificant in the case of non-Muslim economies however it has positive significant impact on banks deposits in Muslim countries.

Moreover government of Muslim countries should maintain a healthy inflation rate and money supply within the economy rather than considering interest rate as an important consideration and should make policies to develop Islamic banking within the economy by considering the need of Muslims depositing behavior.

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# Annexures:

## Correlation Matrices: (Appendix 1)

## Non-Islamic countries:

| | BD | I | CPI | M2 |
|---|---|---|---|---|
| BD | 1 | -0.09368170436083169 | -0.3329060365569494 | 0.9149337372507464 |
| I | -0.09368170436083169 | 1 | -0.3101313087270832 | -0.1302968148210838 |
| CPI | -0.3329060365569494 | -0.3101313087270832 | 1 | -0.3245726879653878 |
| M2 | 0.9149337372507464 | -0.1302968148210838 | -0.3245726879653878 | 1 |

## Islamic countries:

| | BD | I | CPI | M2 |
|---|---|---|---|---|
| BD | 1 | -0.1950179191149855 | -0.3503424126118367 | 0.980653205842472 |
| I | -0.1950179191149855 | 1 | -0.2208624463566919 | -0.1782009092284499 |
| CPI | -0.3503424126118367 | -0.2208624463566919 | 1 | -0.3482617991419113 |
| M2 | 0.980653205842472 | -0.1782009092284499 | -0.3482617991419113 | 1 |

BD= Bank deposit to GDP(%), I=Real interest rate(%), M2= Money and quasi money (M2) as % of GDP, CPI= Consumer price Index (inflation)

## Countries List: (Appendix 2)

## Lists of 55 non-Muslim countries used in this study:

Angola, Antigua and Barbuda, Armenia, Australia, Bahamas The, Belarus, Belize, Bolivia, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Croatia, Czech Republic, Dominican Republic, Estonia, Georgia, Grenada, Guatemala, Hondurus, 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 15 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, Malysia, Pakistan, Sierra Leone, Tajikistan, The Gambia.