
Assessing the Determinants of Interest Rate Spread of Commercial Banks in Oman: An Empirical Investigation

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Abstract:

This study aims to examine the factors that determine interest rate spread (IRS) of commercial banks listed on Muscat security market over the period 2008 – 2014. They are classified into four groups of financial, economic, market and legal indicators.

The Spearman correlation matrix results show that all economic indicator variables have significant relationship with interest rate spread except GDP variable. No significant relationship exists between financial indicator variables and interest rate spread, but in legal indicator variables there is significant relationship with interest rate spread only in two variables the size of government and regulation. Finally, there is a significant relationship between market indicator based on market concentration measured by Herfindahl-Hirschman Index and interest rate spread.

OLS regression analysis indicates a statistically significant impact on IRS by factors like return to asset ratio, liquidity risk and risk aversion within the financial group and unemployment rate, debt services ratio and principal repayment from the economic group and Herfindahl-Hirschman Index based on market concentration group.

Finally, there is a significant impact of sound money and regulation within the legal group on IRS. The researchers recommend an adaptation in the monetary policy to exploit the high level of liquidity in the banking sector by facilitating easy access to debt to individuals as well as firms thus providing the margin competitive interest rate.

Keywords: Interest Rate Spread, Commercial Banking, Monetary Policy, Oman

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1. Introduction

The concept of the interest rate refers to the interest rate levied by the banks on loans or deposits. The interest rate charged on loan is a form of revenue for the bank and at the same time represent the cost borne by the customer for borrowing the money and is termed as credit interest, on the contrary, while interest rates on deposits is cost, the bank is expected to pay to the customers and at the same time represent a form of revenue earned by the customers in exchange for retaining deposits with banks, also termed as debt interest rate. The difference between the debt and credit interest rate from all banking activities are called interest rate spread (IRS). What determines the rate of interest is the credit risk, thus, if the credit risk is high the interest rate on loans is high in order to compensate for the size of this risk. It is also referred to the cost or price of borrowed funds for a period of time, based on the concept of present values the cash value goes down over time due to many factors, including the rate of inflation.

The banking sector provide a bridging mechanism to transfer the money from individuals or companies that have a financial surplus called Surplus Spending units (SSUs) to those who don't have it and seek them often referred to as deficit spending units (DSUs) which start from customers that keep money in the banks as deposits and take interest as compensation as the bank retains their money over a period of time. The Bank then lends money to customers (DSUs) and charge higher rate of interest in order to compensate for the varied risks surrounding the process of lending rate, which means interest rate spread refer to the difference between the debt interest rate and the credit interest rate, resulting in a margin/profit for the bank that contributes to the continuity of banks in the market competition (Kwakye, 2010).

The fast economic development in the entire world led to the inevitable competition in all sectors of the country's economy, including the banking sector, which is considered as the lifeline of the economy. The effect of the increased globalization and financial development particularly the integration of information technology in banking sector exposed the sector to increasing competition and thus resulted in decrease in their interest rate margins.

The interest rate margins are a practiced role in enhancing the profitability and productivity of the banks as they contribute to the budget and the quantum of money supply in the economy and thus the banks played the role of mediator in the macroeconomic environment. The central bank is the main regulator and supervisor of all the banks within an economy which control the total money supply by maneuvering its monetary policies at the macroeconomic level

(Folawewo and Tennant, 2008; Boldeanu and Tache, 2016; Allegret *et al.*, 2016; Cipovová and Dlaskova, 2016; Theriou 2015).

The nature of competition among banks in the market depends on the interest rate it is offering to customers on all bank deposits products and on the loans, which determine the kind of margin banks could be able to work on within the market. The lower the margin the better could be the supply of money leading to economic growth and increases in efficiency (Chirwa, 2001; Thalassinos *et al.*, 2013; Fetai 2015). It is therefore important to understand the commercial banks' behavior in the determination of interest rate margin for the purposes of economic growth and to evaluate the banking sector efficiency as any increase in interest rate margin will directly affect the non-banking sector and its efficiency as it will lead to higher operating costs and thus will contribute to reduced lending and investment eventually leading to fall in economic growth.

The old understanding of the margin interest rate is to reduce the cost of funding by entering into financial arbitrage operations related to credit risk, while the modern concept envisage focus on changes in the US market due to changes in the interest rate as a result of fast growth in financial derivatives changes as part of a cash flow hedge instruments against any changes in the interest rate (Folawewo and Tennant, 2008).

The aim of this study is to empirically investigate the factors that determine interest rate spreads in commercial banking sector of Oman by understanding the impact of these factors grouped into four categories of financial, economic, market and legal indicator. Banks play an important and prominent role in the development of the countries' economy as they actively contribute to the revitalization of domestic and foreign trade operations, and help accelerate development of the economy by funding economic projects. The quantum of net interest margin of commercial banks plays a key role in influencing investment and savings levels within an economy.

The profitability of banks primarily depends on the interest and commissions charged for various banking services it offers to its customers with the aim of achieving a balance between the operational costs and the revenue it earns on its financial assets. As loan proceeds constitute the main source of income, the primary focus remain on pricing the loan appropriately in order to earn greater profitability. The bank's profitability has always been under criticism by the beneficiaries as it constitutes a heavy burden on them. With the recent phenomenon of floating interest rate which is market based, it has redefined the competitiveness of the banks and their ability in attracting customers and are the new determinants of interest rate spread. This study attempts to examine the banking sector and the impact of monetary policy specifically with respect to

interest rates in the Sultanate of Oman and the extent of its impact on domestic and foreign market and in attracting inward investments to maintain competition in the market. This paper is organized as follows: section 2- Literature review. In section 3, we discuss the methodology followed and define the models and variables used in the study. In section 4, we discuss the research findings. Finally, in section 5 we discuss the conclusion drawn from our study.

2. Literature Review

The banking sector in Oman is considered as one of the important financial sectors to build the economy of the country and contributes to its economic development. The interest rate margin forms the bank's core banking revenue in the work and this margin is essential in the era of economic freedom and increasing globalization. The associated margin of the interest rate in any country is the main obstacles in the process of reducing this margin as a result of the weakness of the changes in institutional structures and organizational behavior of the banking system.

Demirgüç *et al.*, (2004) indicated the relationship between the structure of the market and institutional regulatory framework through a financial intermediary and pointed out the use of net interest margin to address the cost of deposits paid and the preservation of competition. The study found that administrative costs have a significant effect on the cost efficiency of the bank that affect the interest margin and thereby the profitability of bank. Gelos (2006) found that the interest rate margin is high in banks of Latin American countries compared with other neighboring countries as these banks incur high intermediation cost leading to low efficiency and high reserves.

The study by Folawewo and Tennant (2008) identified a number of factors that determine the interest rate margin, including the fiscal deficit of the government, discount rate, rate of inflation and the level of circulation of cash in the market. Horvath (2009) it opined that the efficiency of the banks is directly determined by lower margins with no evidence that banks with lower margins compensate themselves with higher fees. Price stability and higher capital adequacy does contribute to lower margins, thus contributing to the overall stability of the banks. The study of Hossain (2010) noted that the operating cost and NPLs variables have a significant relationship with interest rate spread.

Fungacova and Poghosyan (2011) indicated that the different interest rate determinants belonging to different types of ownership in enterprises which contribute to flexibility in determining the margins which are reflected on the market. The study of Mannasoo (2012) referring to the role of modern financial crisis in determining the interest rate margin through the influence of the

banking market structure factors and limitations with respect to the efficiency of the bank. It also indicated the role of a high credit risk and weak liquidity in determining the interest rate margin. Ahokposi (2013) focused that the credit risk, liquidity and variable equity are most crucial for the bank to have much impact in determining the interest rate margin while the variable of sensitivity to economic growth is weak.

Were and Wambua (2013) pointed that the role of factors determining the interest rate margin, which are - the size of the bank, credit and liquidity risk. The study also reported that there was no significant effect of economic variables such as economic growth and inflation, but there is a significant positive effect of weak and variable money supply. Campisi *et al.*, (2013) it is indicated that technology, quality of infrastructure and the human resources contributes significantly to the increase of investments in the market and play a vital role in adding economic value to the GDP through the interaction of financial and economic sector, this determine the cost of finance based on technological innovation concept.

The study of Sheriff and Amoako (2014) contributed to the assessment of macroeconomic variables that may affect the margin of the interest rate to be determined on the short and long term, noting that the short and long-term relationship is linked to moral and is statistically significant between macroeconomic variables and the interest rate margin.

Churchill *et al.*, (2014) indicated that a number of factors help determine the interest rate margin, which include the GDP, exchange rate, rates of Treasury Bills, liquidity, provision for loan and profit margin, and has statistically significant effect which contribute to the impact on the profitability of banks. Ghasemi and Rostami (2015) explained that the proportion of deposits on demand and benefits of non-interest, capital adequacy and return on the assets of the financial ratios that affect the interest rate margin while the inflation and exchange rate as economic variable also affects the interest rate margin.

The study of Ahmadian and Kyanvnd (2015) indicated that the risk of non-payment, opportunity cost, debt ratios of property rights, ratio of capital to assets variables and efficiency of the administration have a significant and direct correlation on the sidelines of the interest rate, while the liquidity risk associated with an inverse relationship with the interest rate margin.

We classified the literature review for the purposes of determining the factors affecting interest rate spread as follows: Demirgüç *et al.*, (2004), Horvath (2009), and Gelos (2006) the focus was on cost efficiency variable as the main factor determining the interest rate spread. Folawewo and Tennant (2008) and

Sheriff and Amoako (2014) it is indicted that macroeconomics variables such as fiscal deficit of the government, discount rate, rate of inflation are the most factors affecting interest rate spread.

Other studies as in Mannasoo (2012), Ahokpossi (2013) and Were and Wambua (2013) explained that credit risk and liquidity policy is affecting interest rate spread, while the studies of Hossain (2010) and Ahmadian and Kyanvnd (2015) established that factors affecting interest rate spread are internal variables of banks such as various operating cost, NPLs, risk of non-payment, debt ratios and ratio of capital to assets variables. Churchill et al., (2014), and Ghasemi and Rostami (2015) its shows that macroeconomic variables such as GDP, exchange rate, rates of treasury bills, liquidity, provision for loan, inflation, return on the assets and profit margin also affect the determination of interest rate spread. Campisi *et al.*, (2013) and Ahmadian and Kyanvnd (2015) it is opined that human resources and efficiency of the administration are the factors which also determine the interest rate spread. Finally, ownership of enterprises and the banking market structure factors also affect the determination of interest rate spread as established in Fungacova and Poghosyan (2011) and Mannasoo (2012) studies respectively.

In other words, the high cost of capital in banks and high tax of government also expand the margin of interest rate and lead to economic instability in the country and change financial behavior of banks (Khawaja and Din , 2007), An increase in margins of interest rate lead to increased cost of capital and thus has an adverse impact on the standard of living of members of the community who wish to establish such projects and who are inclined to borrow at high cost leading to a decline in crucial investment projects due to high investment risk and resulting in low productivity in the short-term. As per the annual statistical bulletin report (2014) of the central bank of Oman, personal bank loans account for about 40% of the total lending by Omani banks.

In the study of Machek and Hnilica (2013) indicates that the credit rating is essential to know the objective of the investor, if the objective is investment it leads to long-term credit and if the objective is to speculate, this refer to short-term credit, which needs a continuous assessment of the business cycle in the market and thus the degree of financial distress is different depending on the different possibilities and resources of the firm.

In this study endeavor is made to classify the factors affecting the determination of interest rate spreads based on previous studies on this issue and to further strengthen the study two additional indicators are included, which are the legal indicators based on the index of economic freedom and market indicators based on market concentration. Both these factors have not been included in any of the

previous studies in establishing the determinants of interest rate spread in an economy. Furthermore, an attempt has been made to separate economic indicators from financial indicators in order to examine their impact separately on the interest rate spread.

3. Data and Methodology

3.1. The Model of the Study

This study attempts to develop a model based study using four groups of indicators which are as follows: financial, economic, legal and market indicators in trying to explore the determinants of interest rate spreads. These indicators are selected based on many of the previous studies on the same issue. Two additional indicators legal as well as market indicators has been added as Omani market is subject to constant changes due to its emerging economy nature thereby affecting the legal as well as the competitive environments in the country. In our opinion it is a pertinent issue to clearly assess and diagnose the impact of all the four categories of indicators in determining the interest rate spread in any economy. Four equations are developed to test the four groups of indicators as presented below one by one:

Financial Indicator:

$$\text{Interest rate Spread (IRS}_{it}) = \alpha_0 + \beta_1\text{RTAR}_{it} + \beta_2\text{LR}_{it} + \beta_3\text{CER}_{it} + \beta_4\text{RA}_{it} + \beta_5\text{CA}_{it} + \epsilon_{it} \quad (\text{Eq.1})$$

$$\text{Interest rate Spread (IRS}_{it}) = \alpha_0 + \beta_1\text{UR}_{it} + \beta_2\text{DSR}_{it} + \beta_3\text{GDP}_{it} + \beta_4\text{IR}_{it} + \beta_5\text{PR}_{it} + \epsilon_{it} \quad (\text{Eq.2})$$

$$\text{Interest rate Spread (IRS}_{it}) = \alpha_0 + \beta_1\text{SOG}_{it} + \beta_2\text{LSPR}_{it} + \beta_3\text{SM}_{it} + \beta_4\text{FTI}_{it} + \beta_5\text{R}_{it} + \epsilon_{it} \quad (\text{Eq.3})$$

$$\text{Interest rate Spread (IRS}_{it}) = \alpha_0 + \beta_1\text{HHI}_{it} + \epsilon_{it} \quad (\text{Eq.4})$$

Notes:

The following independent indicators selected for the study are grouped under four categories as follows:

- **Financial Indicators** = Return to Asset Ratio (RTAR), Liquidity Risk (LR), Cost efficiency Ratio (CER), Risk Aversion (RA) and Capital Adequacy (CA).
- **Economic Indicators** = Unemployment Rate (UR), Debt Service Ratio (DSR), Gross Domestic Product (GDP), Inflation Rate (IR) and Principle Repayment (PR).
- **Legal Indicators of Areas of Economic Freedom Index** = Size of Government (SOG), Legal System and Property Rights (LSPR), Sound

Money(SM), Freedom to Trade Internationally (FTI) and Regulation (R).

- **Market Indicators based on Market Concentration** = Herfindahl-Hirschman Index (HHI)

Economic and legal variables data was collected by Annul Statistical Bulletin (2014), Annual Report of Economic Freedom of the World (2015), Annual Companies Guide (2013), (2015) from annual statistical reports of central banks, economic freedom of the world report, and companies guide over the period from 2008 to 2014, but financial and market variables are calculated as follows:

Financial indicator represents internal variables of banking sector and includes a measure of return on assets, which represent the extent of banks' ability to best use its assets with maximum efficiency by reducing operation costs and minimizing risks. It represents the bank ability to efficiently deploy its deposits base as loans and investment thereby attaining increased profitability thus contributing to increase in the wealth of owners and achieving capital adequacy ratio based on BASEL committee requirements.

Banks are always subject to monetary regulations by the Central banks which in the interest of the depositors very tightly control the liquidity positions of the banks through general measures like SLR and CRR from time to time. Hence banks are compelled to maintain the deposit held as hedge against liquidity risk which keeps on changing as per the directions of the central bank. Thus (deposit / liabilities) is a good measure to depict the true liquidity position and the ensuing risk of liquidity for the banks.

Financial Measures calculated are as follows:

- Return to Asset Ratio = $\text{Income} / \text{Assets}$
- Liquidity Risk = $\text{Deposits} / \text{Liabilities}$
- Cost Efficiency = $\text{Operating Cost} / \text{Total Income}$
- Risk Aversion = $\text{Equity} / \text{Total Assets}$
- Capital Adequacy based on as a % Total regulatory capital

Economic indicator represents external variables which comprise of important economic variables, whose interaction with each other contribute effectively to a relationship with interest rate spread. An increase in unemployment rate due to lack of employment opportunities negatively affect the GDP, resulting in increased government spending on infrastructural projects to boost employment, which results in additional financial burden even in the times of falling oil prices, severely affecting the size of state revenues leading to increase in the burden of debt service and principle repayment.

The legal indicator represents the quantum of economic freedom measured in terms of an index, which indicates the ability of the business sector to interact, respond and adept with great flexibility to government restrictions, procedures, laws governing global trade and to contribute positively to economic and financial measures and variables.

The market indicator includes HHI variable which is a measure of the extent of bank's ability to acquire a greater percentage of market capitalization compared with the rest of the banks. The increased market value refers to the banks' ability to work efficiently and effectively in the deployment of their deposits and convert them to loans and thus increasing the proportion of profitability by increasing the interest rate margin. Market Measure is calculated using Herfindahl-Hirschman Index (HHI) which is the sum of the squared bank Market Capitalization divided by total Market Capitalization.

Dependent Variable is Interest Rate Spread (IRS) and calculated by: $(\text{Interest gained from Loans} / \text{Total Loans}) - (\text{Interest paid to deposits} / \text{Total Deposits})$.

3.2. Population and Sample Selection

This study examines the factors that determine the interest rate spread (IRS) in commercial banks listed on Muscat security market over the period 2008 – 2014. The sample of this study includes entire population of all six banks in the banking sector as follows: Ahli Bank, Bank Dhofar, Bank Muscat, Bank Sohar, HSBC Bank Oman and National Bank of Oman. The independent variables are distributed and classified into four groups of financial, economic, market and legal indicator as discussed before.

4. Research Findings

4.1 Descriptive Statistic

Table 1 shows the statistical descriptive analysis of dependent and independent variables related to factors of determinants of interest rate spread in banking sector listed on Muscat Security Market over the period 2008 – 2014. The analysis shows the minimum, maximum, mean and standard deviation for four groups of indicators - financial, economic, and legal and market. In financial indicator it is noted that there exists a significant gap between minimum and maximum of cost efficiency ratio, thereby indicating that the banking sector manages the operating cost at optimal utilization levels, but all other variables increased relatively. Jamil et al., (2015) it indicates that the net operating profit ratio contributes significantly to the increase in working capital management efficiency than earnings before interest and tax ratio. Among economic

indicators, the variable having a big gap is principal repayment that means the banking sector have a controlled system and mechanism of collecting the principal amount for disbursed loans and other fees. Among legal indicators all factors increased relatively thereby construing that the government pays attention to improving the environment of economic freedom index in the country. Finally, market indicators as evident by Herfindahl-Hirschman Index improved and showed development through the period understudy, indicating that the market did achieve growth in most of the sectors.

Table 1. *The Statistical Descriptive Analysis of Dependent and Independent Variables*

Dependent and Independent Variables	Minimum	Maximum	Mean	Std. Deviation
Interest Rate Spread (IRS)	-0.93	0.110	0.0303	0.21828
Financial Indicator				
Return to Asset Ratio (RTAR)	0.00	0.03	0.0143	0.00607
Liquidity Risk (LR)	0.72	1.20	0.8633	0.9305
Cost efficiency Ratio (CER)	-11.37	7.38	-1.6414	2.45302
Risk Aversion (RA)	0.08	0.19	0.1281	0.02202
Capital Adequacy(CA)	0.13	0.23	0.1557	0.02056
Economic Indicator				
Unemployment Rate (UR)	0.86	0.88	0.8656	0.00792
Debt Service Ratio (DSR)	0.40	1.10	0.6000	0.24194
Gross Domestic Product (GDP)	-1.31	1.65	0.7148	0.92643
Inflation Rate(IR)	-0.29	0.13	-0.0033	0.12542
Principal Repayment (PR)	47.20	303.50	139.0000	87.85351
Legal Indicator of Areas of Economic Freedom Index				
Size of Government(SOG)	4.56	5.26	4.8829	0.28219
Legal System and Property Rights(LSPR)	7.35	7.62	7.4857	0.10404
Sound Money(SM)	7.29	8.68	7.9143	0.55174
Freedom to Trade Internationally(FTI)	7.92	8.27	8.0186	0.11571
Regulation (R)	8.18	8.72	8.4000	0.22273
Market Indicator based on Market Concentration				
Herfindahl-Hirschman Index (HHI)	5.72	5.91	5.8364	0.06850

4.2 Spearman Correlation Matrix

Table 2 shows the relationship between dependent and independent variables between all five economic variables and interest rate spread analyzed using Spearman correlations (SC) matrix at * Sig at $p < 0.05$ and ** Sig at $p < 0.01$. The results found that there is a significant relationship between interest rate

spread and unemployment rate (UR), debt service ratio (DSR), inflation rate (IR) and principal repayment (PR) at 1% and 5% significant level. Also there is a relationship between these variables as follows (DSR and UR), (IR and UR, GDP) (PR and UR, DSR, IR).

This result is interpreted that many economic variables have strong relationship in determining the interest rate spread, which shows the integration of economic units in the country with each other, where the government is working to maintain low rates of inflation and unemployment, rates of debt despite the drop in oil prices and its impact on government revenues, prompting the government to increase spending to support and boost commercial activities of the firms. In our opinion the government shall be obliged to support diversification of investment portfolios leading to reduction in operational costs, with a complete focus on real economy sector. This might also lead to increase in deposit interest rates to keep the deposits in the country at higher levels.

Table 2. Spearman Correlations Matrix between all Economic Variables and Interest Rate Spread

Variables		IRS	UR	DSR	GDP	IR	PR
IRS	SCC	1					
	Sig(2-tailed)						
UR	SCC	0.529**	1				
	Sig(2-tailed)	0.000					
DSR	SCC	0.329*	0.433**	1			
	Sig(2-tailed)	0.033	0.004				
GDP	SCC	0.134	0.220	0.019	1		
	Sig(2-tailed)	0.399	0.161	0.906			
IR	SCC	0.401**	0.642**	0.243	0.750**	1	
	Sig(2-tailed)	0.009	0.000	0.121	0.000		
PR	SCC	0.385*	0.514**	0.954**	0.143	0.321*	1
	Sig(2-tailed)	0.012	0.000	0.000	0.367	0.038	

Table 3 shows the relationship between dependent and independent variables between all five financial variables and interest rate spread analyzed by the Spearman correlations matrix. The results found that there is a significant relationship between cost efficiency ratio (CER) and return to asset ratio (RTAR), risk aversion (RA) and return to asset ratio (RTAR), capital adequacy (CA) and risk aversion (RA) at 1% and 5% significant level. This result is interpreted as the positive efficiency of banks in deployment of their assets with

efficient operationality resulting in reducing operational costs and increase in profits as banks focused on capital adequacy to meet the BASEL requirements. Lee and Liew (2012) it indicates that the companies need to adopt methods to reduce the risks, especially in light of economic globalization and its perils to avoid higher costs, lower profits and potential future loss. Many firms can adopt the method of Monte Carlo simulation, which helps in transference of the risk to other parties. These strategies had positively contributed in building a good reputation for Omani banks in reducing risks and it has led to stabilization of domestic deposit rates for the depositors which remains attractive in either long-term credit programs or medium-term. Thus the Omani banks had effectively been able to maintain a profitable interest rate.

Table 3. Spearman Correlations Matrix between all Financial Variables and Interest Rate Spread

Variables		IRS	RTAR	LR	CER	RA	CA
IRS	SCC	1					
	Sig(2-tailed)						
RTAR	SCC	-0.112	1				
	Sig(2-tailed)	0.479					
LR	SCC	-0.134	-0.232	1			
	Sig(2-tailed)	0.396	0.139				
CER	SCC	-0.166	0.737**	-0.230	1		
	Sig(2-tailed)	0.294	0.000	0.143			
RA	SCC	-0.030	0.365*	0.060	0.185	1	
	Sig(2-tailed)	0.849	0.017	0.707	0.241		
CA	SCC	-0.069	-0.013	0.099	-0.066	0.667**	1
	Sig(2-tailed)	0.665	0.935	0.532	0.679	0.000	

Table 4 shows the relationship between dependent and independent variables between all five legal variables of economic freedom index and interest rate spread analyzed by the Spearman correlations matrix. The results found there is a significant relationship between size of government(SOG) and interest rate spread, sound money(SM) and size of government(SOG) and legal system and property rights(LSPR), freedom to trade internationally(FTI) and legal system and property rights(LSPR) and sound money(SM) , regulation (R) and interest rate spread and legal system and property rights(LSPR) and sound money(SM) and freedom to trade internationally(FTI) at 1% and 5% significant level. This result is interpreted as index of economic freedom, which reflect the number of political variables in operation within Oman and we note the good reputation of the Omani banks ably supported by the government by increasing spending to support investment and improve economic growth in the market. The government is making positive endeavors to increase foreign trade by relaxing the various government restrictions resulting in a strong correlation in determining interest rate margins. The favorable economic climate thus created

due to government efforts created an environment of trust and optimism among foreign banks which initiated policies to lend freely to the local banks.

Table 4. Spearman Correlations Matrix between all Legal Variables of Economic Freedom Index and Interest Rate Spread

Variables		IRS	SOG	LSPR	SM	FTI	R
IRS	SCC	1					
	Sig(2-tailed)						
SOG	SCC	0.330*	1				
	Sig(2-tailed)	0.033					
LSPR	SCC	0.231	0.208	1			
	Sig(2-tailed)	0.141	0.187				
SM	SCC	0.161	-	-0.585**	1		
			0.321*				
	Sig(2-tailed)	0.310	0.038	0.000			
FTI	SCC	-0.213	-0.094	0.698**	-	1	
					0.887**		
	Sig(2-tailed)	0.176	0.552	0.000	0.000		
R	SCC	0.529*	0.170	0.434**	0.434**	-0.321*	1
		*					
	Sig(2-tailed)	0.000	0.282	0.004	0.004	0.038	

Table 5 shows the relationship between dependent and independent variables between market indicator based on market concentration measured by Herfindahl-Hirschman Index (HHI) and interest rate spread analyzed by the Spearman correlations matrix at sig =0.029, at 5% significant level. This result explains the relationship index mainly focused on market valuation of banks as Omani banks not only maintained their market share but also successfully increased them and this continued growth in deposits despite lower credit interest rates serves as a source of security for depositors during the market turmoil environment.

Table 5. Spearman Correlations Matrix between Market Indicators based on Market Concentration (HH) and Interest Rate Spread

Variables		IRS	HHI
IRS	SCC	1	
	Sig(2-tailed)		
HHI	SCC	-0.337*	1
	Sig(2-tailed)	0.029	

4.3 OLS Regression Analysis

Table 6 indicated the ordinary least square (OLS) regression analysis of financial variables and interest rate spread and found the significant impact of return to asset ratio (RTAR), liquidity risk (LR), risk Aversion (RA) and interest rate

spread (IRS). The t-value -2.659, -9.058 and -2.689 where sig = 0.011, 0.000 and 0.010., at 5%, 1% and 5% significant level, where, R is 0.388, 0.820 and 0.391; R- Square is 0.150, 0.672 and 0.153. This result is interpreted as banks' attention in increasing revenue through the optimum use of assets and constant review of its policies and banking measures to reduce liquidity risk ratio and increasing investment, especially in backdrop of the drop in global oil prices, which is resulting in lower government investment and therefore will find reflection in the determination of the margins of the interest rate in the market. In the study Ting *et al.*, (2009) indicates that the risk management process includes political, economic, social and engineering risk and thus firms are working always to assess these risks constantly.

Table 6. OLS Regression Analysis of each Independent Financial Variables and Interest Rate Spread

Variables	R	R ²	T-Value	Sig	Un standardized Coefficient	
					St-Error	B
RTAR& IRS	0.388	0.150	-2.659	0.011**	5.239	-13.931
LR & IRS	0.820	0.672	-9.058	0.000***	0.212	-1.923
CER & IRS	0.088	0.008	-0.561	0.578	0.014	-7.86E-03
RA & IRS	0.391	0.153	-2.689	0.010**	1.442	-3.378
CA & IRS	0.043	0.002	0.275	0.785	1.677	0.462

Table 7 indicates the OLS regression analysis of economic variables and interest rate spread and found the significant impact of unemployment rate (UR), debt service ratio (DSR), principle repayment (PR) and interest rate spread (IRS). The t-value -1.944, -1.915 and 1.735 where sig = 0.059, 0.063 and 0.090 at 10% significant level, where, R is 0.294, 0.290 and 0.265; R- Square is 0.086, 0.084 and 0.070. This result indicates that the government in trying to reduce the unemployment rate to a minimum thus contributing to increase in employment opportunities and increase in market liquidity which reflects positively on investment. Reduced interest rate margin is reflected positively on the customer's ability to pay installments of loans and bank obligations thus reducing the proportion of non-performing debt rescheduling.

Table 7. OLS Regression Analysis of each Independent Economic Variables and Interest Rate Spread

Variables	R	R ²	T-Value	Sig	Un standardized Coefficient	
					St-Error	B
UR& IRS	0.294	0.086	-1.944	0.059*	4.164	-8.096
DSR &	0.290	0.084	-1.915	0.063*	0.137	-0.261

IRS							
GDP & IRS	0.117	0.014	0.743	0.462	0.037	2.748E-02	
IR & IRS	0.127	0.016	-0.808	0.424	0.273	-0.221	
PR & IRS	0.265	0.070	1.735	0.090*	0.000	-6.57E-04	

Table 8 indicated the OLS regression analysis of legal indicator of economic freedom index and interest rate spread and found the significant impact of sound money (SM), regulation (R), and interest rate spread (IRS). The t-value -1.889, -1.855 where sig = 0.066 and 0.071 at 10% significant level, where, R is 0.286 and 0.281; R- Square is 0.082 and 0.079. This result explains that active market intervention by the central bank by pursuing flexible policy initiatives in accordance to the prevailing economic conditions, particularly with regard to the low price of oil, which is the main source of revenue for the state and its impact on the economy resulted in financial solvency of Omani banks portfolio and insignificant impact on the revenues of these banks. The role of the central bank in maintaining a steady bank rate, relaxing foreign investment norms and tough control on risky operations of the banks not only improved the margins of interest but also contributed positively to the improvement of the level of economic freedom index.

Table 8. *OLS Regression Analysis of each Independent Legal Variables of Economic Freedom Index and Interest Rate Spread*

Variables	R	R ²	T-Value	Sig	Un standardized Coefficient	
					St-Error	B
SOG& IRS	0.019	0.000	-0.119	0.906	0.122	-1.46E-02
LSPR & IRS	0.069	0.005	0.437	0.664	0.331	0.145
SM & IRS	0.286	0.082	-1.889	0.066*	0.060	-0.113
FTI & IRS	0.176	0.031	1.128	0.266	0.294	0.331
R & IRS	0.281	0.079	-1.855	0.071*	0.149	-0.276

Table 9 indicates the OLS regression analysis of market concentration based on HH Index and interest rate spread and found the t-value 1.959, where sig = 0.057 at 10% significant level, where, R is 0.296, R- Square is 0.088. This result indicates that Omani banking sector plays an active role in the market leading to be an impact on the country's economy and is reflected on the determination of interest rate spread based on the requirements of the market, demand and supply of banking services and the government attention in the banking sector.

Table 9. OLS Regression Analysis of Market Concentration Variable Based on HH Index and Interest Rate Spread

Variables	R	R ²	T-Value	Sig	Un standardized Coefficient	St-Error B
HHI & IRS	0.296	0.088	1.959	0.057*	0.481	0.943

5. Conclusion

One of the main functions of the bank is efficient coordination and balance between the investment and financing function in order to achieve better risk management leading to efficiency and resulting in increased market valuation. This coordination process is known as the asset and liability management. The primary goal of any banking organization is achieving better bank efficiency which is the result of optimal utilization of its assets and has a direct bearing of their interest rate spreads. Greater margins on interest results in increased profitability and it is reflected on the market valuation and market share of the banks and reflected positively on the economic growth and stability.

But achieving this goal is not easy, considering the fact that there are limitations in actually achieving a balance between risk and return acceptable by the bank for its loan portfolio, as well as the degree of adequacy for capital requirements for the protection of depositors. The net interest rate spread connotes the bank management efficiency and act as a standard for the bank customer confidence in the banking system. High pricing of the interest on loans, will make borrowing expensive and unsustainable as the investment process costs become high, forcing investors to explore other options including borrowing from abroad which will adversely affect the national economy.

This paper had attempted to investigate the factors that act as determinants of interest rate spread in the Omani banking sector. Four groups of indicators divided into financial, economic, legal and markets are taken as independent variables, and the dependent variable is the interest rate spread. The financial indicator is measured by return to asset ratio, liquidity risk, cost efficiency ratio, risk aversion and capital adequacy. The economic indicator is measured by unemployment rate, debt service ratio, gross domestic product, inflation rate and principal repayment. Legal Indicator is derived from areas of economic freedom index measured by size of government, legal System and property rights, sound money, freedom to trade internationally and regulations. Finally, market indicator based on market concentration as measured by Herfindahl-Hirschman Index. The Spearman correlation matrix results show that the all economic variables have significant relationship with interest rate spread with the

exception of the variable GDP. There exists no significant relationship between all the financial variables and interest rate spread. Among legal indicator variable only two variables- size of government and regulations have significant relationship with interest rate spread. Finally, there is a significant relationship between market indicator based on market concentration measured by Herfindahl-Hirschman index and interest rate spread. The results of OLS regression analysis shows that the factors having statistically significant impact on interest rate spread are return to asset ratio, liquidity risk and risk aversion among the financial indicators group and unemployment rate, debt services ratio and principal repayment among the economic indicators group and Herfindahl-Hirschman Index based on market concentration group and finally, sound money and regulations among the legal group of economic freedom index.

The optimal utilization of invested banks assets led to a positive impact on interest rate spread and increase profitability in the light of a balanced policy with liquidity management and capital adequacy. The liberalization of the financial and banking sector and technology development at the same time too, has a positive role in improving the operations banking systems. The study of inflation expectations, unemployment rates, debt service ratio and principle repayment for banks was widely anticipated in the Omani banking sector and they achieved significant growth in the overall performance making profits even in inflationary conditions through a well-balanced policy taking into account the prevailing market conditions and competition.

Central Bank of Oman flexible and accommodative approach in determining policies on banking operations of banks led to an improvement in economic freedom index, measured by five variables in accordance with international indicators were banking regulations and the soundness of money had a positive impact on the interest rate spread. Finally, the increase in competition between banks in the market due to introduction of Islamic banking led banks slowly but steadily to expand their market shares by opening Islamic windows resulting in enhanced financial inclusion of the populace uncovered which eventually reflected on the increased interest rate spread and profitability of the entire banking sector.

The researchers recommend adopting a monetary policy to exploit the enhanced liquidity in the banking sector and channelize the same as loans grant to individuals and firms at a competitive margin interest rate, which will motivate customers and banks to increase banking operations. Moreover, the government must make efforts to maintain low inflation, government borrowing, encourage savings and investment policies. It is proposed that future researches on

assessing the determinants of interest rate spread in Oman could use a panel data approach for better and realistic results.

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