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CONTENTS OF THE ISSUE

- i. Copyright Notice
 - ii. Editorial Board Members
 - iii. Chief Author and Dean
 - iv. Contents of the Issue
-
1. Impact of Capital Structure on Bank Financial Performance of Al Ahli Bank in Saudi Arabia. *1-6*
 2. Credit Rating Determinants for European Countries. *7-18*
 3. Human Capital, Capital Structure, Employee Pay: Empirical Evidence from Pakistan. *19-41*
 4. Diversification and Portfolio Performance of the Pharmaceutical Sector of Bangladesh. *43-50*
 5. Evaluation of the Financial Performance of Banking Sectors in Ethiopia: The Case of Zemen Bank. *51-64*
 6. Analysis of Sovereign Wealth Funds: From Asset Allocations to Growth. *65-74*
-
- v. Fellows
 - vi. Auxiliary Memberships
 - vii. Process of Submission of Research Paper
 - viii. Preferred Author Guidelines
 - ix. Index



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Impact of Capital Structure on Bank Financial Performance of Al Ahli Bank in Saudi Arabia

By Dr. Mahmoud Izzat Allahham

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Abstract- This paper seeks to examine the relationship between capital structure and bank financial performance. This research had verified the existence of several negative relationships between capital structure (accumulated capital and annual investments) and strategic financial performance, while finding mixed results for the relationship between capital structure (accumulated capital and annual investments) and profitability.

Keywords: *capital structure, bank performance, ROA, ROE, EPS.*

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Abstract- This paper seeks to examine the relationship between capital structure and bank financial performance. This research had verified the existence of several negative relationships between capital structure (accumulated capital and annual investments) and strategic financial performance, while finding mixed results for the relationship between capital structure (accumulated capital and annual investments) and profitability.

Keywords: capital structure, bank performance, ROA, ROE, EPS.

I. INTRODUCTION

The bank performance which constitutes the core of the financial sector, plays a critical role in transmitting monetary policy impulses to the entire economic system. Capital structure plays a significant role in the success of an enterprise. A good capital structure enables a banking company enterprise to go ahead successfully on its path and attain gradual growth.

II. LITERATURE REVIEW

Wael Mostafa. (2011) studied the theory of bank financial performance with the practice of bank ratings. The paper studied the effect of bank capital structure and financial indicators in Middle Eastern commercial banks associated with high and low rate issued by Capital Intelligence (CI). The authors also investigated how bank capital structure and financial indicators can be differentiated between banks with high and low rate, using the multinomial logit technique. A sample of 65 rated Commercial banks from eleven countries was used. The article focused on commercial banks in order to avoid comparison problems between various types of banks. The data was taken from the Bank scope database and covers the period of 1994-2007. The results reveal that the financial indicators of the highly-rated banks are associated with decreases in the ratio of impaired loans to gross loans, the ratio of loan loss reserve to gross loans, the ratio of non-interest expenses to total assets, the ratio of net loans to deposits and short-term funding and the ratio of net loans to total assets. In contrast, these financial indicators were allied to increase in the ratio of non-operating income to net income, the gap ratio, the interbank ratio and thee quity ratio.

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Mubeen Mujahid (2012) examined the impact of capital structure on bank performance. The study spread empirical work on capital structure determinanted of banks within country and foreign country. Multiple reversion models were useful to evaluation the relationship between capital structure and banking performance. Performance was measured by return on assets, return on equity and earnings per share. Determinants of capital structure contains long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio. Results of the study validated a positive relationship between factors of capital structure and performance of banking industry.

III. RESEARCH OBJECTIVES

The main objective of this study is to examine the relationship between capital structure and bank performance by estimating the contribution of capital structure investment to banks performance measured by financial ratios, in the same year of investment, the second year (one-year lag effect), or the third year of the investment (two-year lag effect).

IV. CONVERSION EFFECTIVENESS RESULTS

Conversion effectiveness (CE) emerged, as a bank wide construct comprised of the views of two key managers in the bank.

To produce a common scale, the Z-scores of the seven components were determined. The average of these Z-scores (multiplied by ten) was defined as conversion effectiveness. This technique preserved the bank wide nature of CE by retaining, with an equal weighting, the view of both respondents. The mean and the standard deviation of the seven component variables are presented in Table (4-2).

Table 1 : Conversion effectiveness and component variables

Variable	Mean	Standard Deviation	Cronbach Alpha
Experience	3.9	0.836	NA
Political turbulence (IT)*	4.55	0.941	0.8209
User Satisfaction (IT)	26.28	8.184	0.8848
Top Management commitment (IT)	6.375	0.824	0.9475
Political turbulence (FM)*	4.46	0.752	0.6122
User Satisfaction (FM)	21.6	10.79	0.9314
Top Management commitment (FM)	6.5	0.635	0.6683
Conversion Effectiveness	-0.583	6.86	NA

Conversion effectiveness had a mean of approximately -.58, standard deviation of 6.86, ranging from -18.8 to 8.63. Each component was equally weighted in the construct so that an increase in capital structure experience, user satisfaction, or top management commitment resulted in an increase in the bank's conversion effectiveness. Any decrease in political turbulence also resulted in an improved conversion effectiveness.

The implicit assumption was that the two respondents (the financial manager, and information technology department manager) represented the bank as a whole. The accuracy of this assumption was difficult to check, as it was beyond this study objective, to question each employee in the bank about his opinion in the information technology used.

V. REGRESSION MODELS

In order to provide a mathematical formulation to the model described in Figure (1), and to provide a test for the proposed hypotheses, four regression models have been developed.

The First regression model (model 1): test the relationship between capital structure and banks' financial performance, in which capital structure measures had been related to seven financial performance measures (P) for the same year, while controlling for Economic conditions (E), Financial leverage (L), organization size (S), and Management quality (M).

$$P = \alpha_0 + \alpha_1 IT + \alpha_2 E + \alpha_3 L + \alpha_4 S + \alpha_5 M$$

The Second regression model (model 2): test if there is a one-year lag effect on the relationship between capital structure and banks' financial performance, in which financial performance measures

were related to previous year capital structure measures, while controlling for Economic conditions (E), Financial leverage (L), organization size (S), and Management quality (M).

$$P_t = \alpha_0 + \alpha_1 IT_{t-1} + \alpha_2 E + \alpha_3 L + \alpha_4 S + \alpha_5 M$$

The Third regression model (model 3): test if there is a two-year lag effect on the relationship between capital structure and banks' financial performance, in which performance financial measures were related to

two years earlier capital structure measures, while controlling for Economic conditions (E), Financial leverage (L), organization size (S), and Management quality (M).

$$P_t = \alpha_0 + \alpha_1 IT_{t-2} + \alpha_2 E + \alpha_3 L + \alpha_4 S + \alpha_5 M$$

The Fourth regression model (model 4): test the moderating effect of organization management quality and commitment to capital structure (conversion effectiveness) on the relationship between capital

structure and banks financial performance, in which the previous three models had been replicated with the inclusion of the developed factor conversion effectiveness (CE).

- Moderated capital structure -Performance relationship in the same year

$$P = \alpha_0 + \alpha_1IT + \alpha_2E + \alpha_3S + \alpha_4L + \alpha_5M + \alpha_6CE$$

- Moderated capital structure-Performance relationship (one-year lag)

$$P_t = \alpha_0 + \alpha_1IT_{t-1} + \alpha_2E_t + \alpha_3S_t + \alpha_4L_t + \alpha_5M_t + \alpha_6CE$$

- Moderated capital structure -Performance relationship (two-year lag)

$$P_t = \alpha_0 + \alpha_1IT_{t-2} + \alpha_2E_t + \alpha_3S_t + \alpha_4L_t + \alpha_5M_t + \alpha_6CE$$

a) *Statistical Technique and Packages*

A stepwise multiple regression analysis is used to estimate the coefficients and the direction of the relationships between the dependent and the independent variables in each of the four models specified in the previous section.

Stepwise regression is a technique for choosing the variables to include in a multiple regression model. Stepwise regression starts with no model terms. At each step it adds the most statistically significant term (the one with the highest F statistic or lowest p-value) until there are none left.

An important assumption behind the method is that some input variables in a multiple regression do not

have an important explanatory effect on the response. If this assumption is true, then it is a convenient simplification to keep only the statistically significant terms in the model.

b) *Estimation of Model One*

Model one tests the relationship between capital structure and banks' financial performance in the same year, in which capital structure measures were related to seven financial performance measures (P) for the same year, while controlling for Economic conditions (E), Organization size (S), Financial leverage (L), and Management quality (M).

$$P = \alpha_0 + \alpha_1IT + \alpha_2E + \alpha_3S + \alpha_4L + \alpha_5M$$

c) *Accumulated capital structure*

The relationship between capital structure accumulated capital and bank performance in the same year was estimated. Stepwise multiple regression analysis was used to test the relationship between each of the seven dependent variables and banks' accumulated capital structure in the same year.

The first three dependent variables measure banks' profitability, Return on total assets (ROA), return on share holders equity (ROE), profit margin (PM). According to the results there is no relationship between banks' accumulated capital structure and profitability in the same year.

The following four variables measure the strategic performance of the banks, market share (MSH), growth in revenue (GINR), revenue to total assets ratio (RTA), and market to book value ratio (M/BV). These ratios provide a measurement of the ability of banks to generate future returns. The results indicate significant negative relationships between these variables and accumulated capital structure. Accumulated capital structure negatively affects banks' market share, rate of growth in its revenues, revenues to total assets, and market to book value ratio.

Table 2 : Model 1. Accumulated capital structure and bank performance

Dependent variables	Predictors	R Square	F calculated	t value	Sig.	B
ROA	MQ	0.371	39.76	NA*	NA	NA
ROE	MQ, S	0.311	15	NA	NA	NA
PM	MQ	0.481	62.29	NA	NA	NA
MSH	S, L, E, TIT	0.918	179	-2.195	0.032	-0.02
GINR	S, MQ, TIT	0.248	6.92	-2.146	0.036	-0.112
RTA	TIT, MQ	0.5965	48.78	-8.821	0	-0.041
M/BV	S, TIT, MQ, E	0.6	22	-3.021	0.004	-0.426

*NA is provided whenever the stepwise regression excludes the insignificant variables from the model.

d) *Annual capital structure Investments*

The relationship between annual capital structure investments and bank financial performance in the same year was tested using stepwise multiple

regression analysis. Each of the seven dependent variables was related to banks' annual capital structure investment for the same year. Table (3) presents the statistical outcome of the analysis.

Table 3 : Model 1. Annual capital structure investments and bank performance

Dependent variables	Predictors	R Square	F calculated	t value	Sig.	B
ROA	MQ	0.372	39.76	NA	NA	NA
ROE	MQ, S	0.3129	15	NA	NA	NA
PM	MQ, AIT	0.531	37.41	2.642	0.0103	0.7546
MSH	S, L, E, AIT	0.92	184.76	-2.61	0.0112	-0.1895
GINR	S, MQ	0.193	7.655	NA	NA	NA
RTA	AIT, MQ, E	0.413	15.267	-5.29	0	-0.2395
M/BV	L, MQ, E, AIT	0.582	20.54	-2.51	0.0148	-2.895

The results presented in the previous table indicated that there was a significant positive relationship between annual capital structure investments and one profitability ratio, profit margin (PM); the estimated relationship is strong and significant at $\alpha \leq 5\%$ level of significance. However, the results for the strategic measures (market share, revenue to total assets ratio, and market to book value ratio) show significant negative relationships with annual capital structure investments.

to the third year is tested in this section and the following one.

Model two is developed to see if there was a one-year lag effect on the relationship between capital structure and banks' financial performance, in which seven financial performance measures were related to previous year capital structure measures, while controlling for Economic conditions (E), Organization size (S), Financial leverage (L), and Management quality (M).

e) *Estimation of Model Two*

The question of whether the impact of capital structure is delayed to the second year of investment or

$$P_t = \alpha_0 + \alpha_1 IT_{t-1} + \alpha_2 E_t + \alpha_3 S_t + \alpha_4 L_t + \alpha_5 M_t$$

f) *Accumulated capital structure One-Year Lag Effect*

The relationship between accumulated capital structure and bank financial performance (after one year) was examined using a stepwise multiple regression analysis; Table (4) presents the statistical outcome of the analysis.

year following the investment year) on the relationship between accumulated capital structure and one of the profitability measures, return on assets (ROA). That accumulated IT capital tends to have a negative effect on next year return to total assets ratio, at $\alpha \leq 5\%$ level of significance. Also accumulated capital structure negatively and significantly affects banks' strategic measures revenues to total assets and market to book value ratios.

The results presented in the Table (4) indicate that there is a significant one-year lag effect (i.e. the impact of accumulated capital structure is delayed one

Table 4 : Model 2. Accumulated capital structure and bank performance one-year lag effect

Dependent variables	Predictors	R Square	F calculated	t value	Sig.	B
ROA	MQ, TIT	0.378	15.797	-2.02	0.0482	-0.0062
ROE	S, MQ	0.2459	8.4777	NA	NA	NA
PM	MQ	0.449	43.17	NA	NA	NA
MSH	S, L, E	0.923	204.86	NA	NA	NA
GINR	S	0.157	9.93	NA	NA	NA
RTA	TIT, MQ, E	0.68	36.06	-8.89	0	-0.0435
M/BV	L, MQ, TIT	0.603	24.32	-2.99	0.0044	-0.4582

g) *Moderated capital structure- Performance Relationship*

The inclusion of the “conversion effectiveness” (CE) variable has disclosed a previously hidden relationship between capital structure accumulated and

banks’ profitability measured by return to total assets ratio, as shown in Table (5).

Accumulated capital structure negatively affects banks’ return on total assets at the ($\alpha \leq 5\%$) level.

Table 5 : Model 4. capital structure and financial performance moderated by CE

Dependent variables	Predictors	R Square	F calculated	t value	Sig.	B
ROA	MQ, CE, TIT	0.5	22	-2.11	0.038	-0.005
ROE	MQ, S	0.313	15	NA	NA	NA
PM	MQ, CE	0.614	52.46	NA	NA	NA
MSH	S, L, E, TIT	0.918	179	-2.2	0.032	-0.02
GINR	S, MQ, TIT	0.248	6.92	-2.15	0.036	-0.112
RTA	TIT, MQ, CE	0.622	35.65	-8.87	0	-0.04
M/BV	S, TIT, CE, E	0.59	21.4	-3.54	0.001	-0.498

Also “conversion effectiveness” (CE) affects the relationship between annual capital structure investments and banks’ profitability measured by the profit margin ratio. The inclusion of the conversion

effectiveness factor had reduced both the power and significance of the relationship, as presented in Table (5).

Table 5 : Model 4. Annual capital structure Investment and financial performance moderated by CE

Dependent variables	Predictors	R Square	F calculated	t value	Sig.	B
ROA	MQ, CE	0.47	29.34	NA	NA	NA
ROE	MQ, LNTA	0.313	15.03	NA	NA	NA
PM	MQ, CE, AIT	0.64	38.61	2.198	0.032	0.562
MSH	LNTA, DTOE, LNGDP, AIT	0.92	184.76	-2.61	0.011	-0.189
GINR	LNTA, MQ	0.193	7.655	NA	NA	NA
RTA	AIT, MQ, LNGDP	0.413	15.266	-5.29	0	-0.24
M/BV	DTOE, MQ, LNGDP, AIT	0.58	20.54	-2.51	0.015	-2.895

VI. CONCLUSIONS

The following provide the conclusion arrived at in this study:

- The results of this study indicate that Alahli bank’ accumulated capital structure, on average, had no relationship with banks’ profitability.
- Accumulated capital structure had negatively affected banks’ strategic performance measures, on average, increasing capital structure to revenues ratio, results in a decrease in banks’ market share, productivity, growth, and investors’ valuation of banks’ stocks, in the same year of investment, while only decreasing banks’ productivity and investors’ valuation of banks’ stocks, in the second and third years to investment.
- Alahli bank’ annual capital structure investments, on average, had no relationship with banks’ profitability.
- Annual capital structure investments had negatively affected the strategic performance measures for

three consecutive years, on average, increasing capital structure investments, results in a decrease in banks’ market share, effectiveness, and investors’ valuation of banks’ stocks, but it had no effect on banks’ growth.

- The inclusion of the “conversion effectiveness” variable into the regression model has isolated the impact of the banks’ management quality and commitment to capital structure from the relationship between capital structure investments and banks’ financial performance.

VII. RECOMMENDATIONS

This research had verified the existence of several negative relationships between capital structure (accumulated capital and annual investments) and strategic financial performance, while finding mixed results for the relationship between capital structure (accumulated capital and annual investments) and profitability.

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Credit Rating Determinants for European Countries

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Keywords: *credit ratings, default risk, credit risk.*

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CREDIT RATING DETERMINANTS FOR EUROPEAN COUNTRIES

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Credit Rating Determinants for European Countries

Patrycja Chodnicka - Jaworska

Abstract- The purpose of this article is to analyse factors that can affect the European countries' credit ratings. The analysis performed is based on the level of economic development in line with the division proposed by the World Bank. The data used is derived from the World Bank database and the database of Thomson Reuters for the years 2002-2012. The full sample is divided into subsamples due to the level of economic development. Long- and short-term issuer credit ratings given by Standard & Poor's and Moody's Investor Services are used as dependent variables. Ratings are decomposed linearly on numeric variables. As dependent variables I use macroeconomic data such as GDP per capita, real GDP growth, inflation, fiscal deficit, current account balance, external debt to GDP, foreign reserves. I also analyse how the previous credit rating notes and the communication effect between credit rating agencies influence the current country's standing.

Keywords: credit ratings, default risk, credit risk.

I. INTRODUCTION

Credit rating agencies play an important role in the financial system of the economy. At the moment there are three important agencies: S&P, Fitch and Moody's. They specialize in analysing the creditworthiness of corporate and sovereign issuers of debt securities (Elkhoury 2008, 2-16). The basic goal of them is to address the problem of the information asymmetry between investors and capital borrowers regarding the creditworthiness. According to the previous researches (Jaramillo, Tejada 2011, 7-18; Ferri, Liu, Stiglitz 1999, 335-355) the higher risk presented by received credit ratings, the higher interest rates paid by borrowers of the capital.

A sovereign credit rating is the ability to repay governments debts and financial system development ratio for the assessed countries. The sovereign rating has an influence on the interest rates at which countries can obtain credit on the international financial markets and on credit rating for national banks and companies. A level of sovereign credit rating has an impact on attractiveness to foreign investors, because they cannot invest in debt rated below an agreed level (Tekler, Pala, Kent 2013, 122-132).

This paper aims to analyse the primary determinants driving the short and long term issuer credit ratings and to investigate the strength of the

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impact of the determinants analysed on the economic development divisions. I also study the influence exerted by the credit rating statement (investment and the speculative grade rating) on the cost of the capital. The paper provides an insight into how historical sovereign credit ratings influence the current rating. I strive to find the effect of communication between changes in level rating across different rating agencies. This study is prepared for a sample of 45 European countries over 2002 – 2012. Data includes the sovereign credit rating published by S&P and Moody's from which I chose Moody's long term Issuer Rating, S&P long term Issuer Rating and S&P short term Issuer Rating. The study will be conducted in three subgroups: for the whole population, for political divisions and for economic development divisions. I use dynamic and statistical panel models.

II. DETERMINANTS OF COUNTRY'S RATINGS - LITERATURE REVIEW

In the rating criteria, S&P and Moody's present a list of factors to be taken into consideration during the credit rating valuation process. While assessing the sovereign risk, credit rating agencies take into account several risk parameters such as: political, economic and fiscal drivers as well as monetary flexibility and debt burden.

In practice only a small number of indicators play a key role in the assessment process. According to Cantor and Parker (1996) the most important indicators include: income per capita, GDP growth, inflation, fiscal balance, external balance, external debt, indicator for economic development and indicator for default history. Income per capita is measured by them by using GNP per capita. They applied OLS regressions to a linear representation of the ratings. In their opinion the greater is the potential tax base of borrowing country, the greater is the ability of government to repay debt. They suggest that the higher is the rate of economic growth measured by GDP growth, that a country's existing debt burden will become easier to repay. Inflation is measured by using the consumer price inflation rate. When government is not able to pay off its debt, it has to repair their budget by inflationary money finance. As a result, it may in turn lead to political instability. The fiscal balance is measured by an average annual central government budget surplus relative to GDP. In

their opinion a large federal deficit can prompt the implementation of the restrictive fiscal policy: for example levying higher taxes to cover current expenses. Another determinant embraced by Cantor and Parker is an external balance measured by an average annual current account surplus relative to GDP. A large current account deficit indicates that both public and private sectors rely on funds from abroad. As a result, a growth in foreign indebtedness is observed, which may become unsustainable over time. The external debt is measured by the value of the foreign debt to exports. A higher debt should result in higher risk of default. As a consequence, it increases a country's foreign currency debt relative to foreign currency earnings. The level of economic development is measured by a dummy variable according to the classification presented by the International Monetary Fund. While performing analyses, I structured database by the level of countries' development by using the classification presented by the World Bank. I would like to analyse the economic development in the subsamples. The indicator default history is measured by the dummy variable default on foreign currency debt, where variable "1" means default and "0" no default. A country that has defaulted on debt in the recent past is widely perceived as a high credit risk.

According to other researches (Haque et al 1997, 2004; Reisen and von Maltzan 1999; Jutter and McCarthy 2000; Bathia, 2002) presented by Cantor and Parker, credit rating determinants explain 90 percent of the variation in ratings. GDP per capita explains about 80 percent of the mentioned variation (Borenszste in and Panizza, 2006). Haque et al. (1996, 1997) also incorporate other determinants: increases in the international interest rates and the structure of exports and concentration. While analysing the Asian crisis, Juttner and McCarthy (2000) find that the following variables are significant: CPI, the ratio of external debt to exports, a dummy default history, the interest rate differential, the real exchange rate.

Monfort and Mulder (2000) analyse credit ratings for capital requirements for lending in 20 emerging market economies. They examine internal (e.g. inflation history, crisis indicators) and external determinants (e.g.: foreign reserves, current account balance, exports, terms of trade). The level of rating in these countries can explain variables: debt to export ratio, rescheduling history, rate of export, the inflation history, share of investment in GDP, crisis indicators.

Reinsen and Maltzan (1999) also explore sovereign ratings in emerging markets. They attempt to explain the impact of boom-bust cycles on rating notations. One section of the study has examined links between sovereign credit ratings and dollar bond yields spread over the years 1989 to 1997. Second section probes the response of the market within 30 trading days ahead of and following the change in rating

announcements. Similar study was accomplished by Brooks, Faff, Hillier, and Hillier (2004) where they sought to verify the market responses to announcements of rating, outlook changes, and the stability of ratings.

In 2005 Bissoondoyal-Bheenick analysed 95 countries (including 25 high rated and 70 low rated countries) for a time period of the four years: from December 1995 to December 1999. The authors argue that the sovereign risk analysis is an interdisciplinary activity in which the quantitative analysis must be combined with sensitivity to historical, political, and cultural factors. The main thesis in the study is that economic variables do not carry the same importance for the high rated countries with a long financial stability history as compared to the low rated countries that are still undergoing structural changes.

Bissoondoyal-Bheenick (2005) conclude that weaker economies are not actually rated by the rating agencies. The study includes more macroeconomic and performance variables like the unemployment rate or the investment to GDP ratio. One year later Bissoondoyal-Bheenick, Brooks, and Yip (2006) deployed methods which determine the size of the differences between each category determinants. There viewed variables include: GDP, inflation, foreign direct investment to GDP, current account to GDP, trade to GDP, real interest rates and mobile phones which show the level of technological advancement of the country.

According to Depken, La Fountain and Butters (2007), there are important variables that assess political risk like: corruption (Corruption Perceptions Index (CPI), published by Transparency International) or social indexes. They also studied indicators: fiscal policy, budget balance, government debt, democracy and oil measures (country that production of oil).

Gaillard analyses and compares the list of determinants proposed in 2005 by Moody's and S&P in their statements. He emphasizes the differences in the assessment methodology provided by credit rating agencies and changes during the time period analysed. Next, he sought the principal economic determinants in his opinion. As a result, he finds that three variables: default history, GDP per capita and net direct debt to operating revenues explain 80% of local and regional ratings.

The previous researchers paid attention not only to the determinants of credit ratings notes but also to effects on the financial markets. As a result, Jaramillo and Tejada (2011) find out that changes from investment grade ratings to speculative grade ratings increase the cost of capital more than decreases within the rating class. The same phenomenon is observed by Ferri, Liu and Stiglitz (1999). They analyse the group of factors which can influence the credit rating statement. In the mentioned group of determinants they classified: GDP per capita, real GDP growth, inflation rate, budget deficit, current account balances, development

indicator, external debt and the sum of current account balances and short term debt divided by the foreign exchange reserves. As a dependent variable they use Moody's credit ratings notes for 17 countries over a time period of the ten years: 1989 – 1998. They divide the time period into "before" and "after" the crisis, thereby adopting linear and nonlinear numerical conversion methods of credit ratings. The results received suggest that credit rating agencies attach higher weights to their qualitative judgment than to the economic

fundamentals. They place their emphasis on the procyclical nature of the credit rating assignment.

Afonso, Gomes, Rother in 2007 look into short-run (e.g. level of GDP per capita, real GDP growth, the public debt level, government balance) and long-run (e.g. government effectiveness, the level of external debt, external reserves) impact on sovereign ratings over the period of ten year 1995-2005. The study divides the determinants into four groups:

Table 1 : The list of determinants divided into four groups in Afonso, Gomes and Rother study (2007)

Macroeconomic variables	Government variables	External variables	Other variables
<ul style="list-style-type: none"> • GDP per capita • Real GDP growth • Unemployment • Inflation 	<ul style="list-style-type: none"> • Government debt • Fiscal balance • Government effectiveness 	<ul style="list-style-type: none"> • External debt • Foreign reserves • Current account balance 	<ul style="list-style-type: none"> • Default history • European Union • Regional dummies (uncertain impact: some groups of countries of the same geographical location may have common characteristics that affect their rating)

Source: own calculation based on Afonso, Gomes and Rother (2007).

In 2003 Afonso examines possible determinants of sovereign credit based on Moody's and the S&P data, which includes 81 countries: 29 developed and 52 developing countries using the OLS method. The variables that are statistically significant explanatory to the rating levels are: GDP per capita, external debt as a percentage of exports, the level of economic development, default history, real growth rate and the inflation rate.

According to Afonso, Gomes, Rother (2007), the sovereign ratings are a key determinant of the interest rates that is assumed to be the borrowing cost. Furthermore, they prove that the sovereign rating may have a constraining impact on the ratings assigned to domestic banks or companies and the credit risk perceived by the rating notations (Afonso, Gomes and Rother, 2007).

A study which took into account the recent crisis has been carried out by Teker, Pala and Kent (2013). The period analysed stretched from 1998 up to 2010 while the data covered 23 countries: 13 developed markets and 10 emerging markets with cross sections such as pre crises, post crises, BRIC membership, EU membership, OPEC membership, shipbuilder country and platinum reserved country. On the whole, it was proved that the level of ratings has an impact on the interest rates in the international financial markets whereas sovereign ratings also influence credit ratings of national banks and companies (Tekker, Pala and Kent 2013, 122-132). After the crisis faced in 2008, developed and developing countries changed their monetary and fiscal policies. In effect, rating agencies modified criteria and weights used.

III. METHODOLOGY

a) Data sources, descriptive analyses and estimation technique

The research involves three steps. The first one strives to distinguish the most important determinants likely to affect the credit rating assessment for European countries. The next step relies on the analysis of the mentioned factors on the economic and political divisions. I also sought to verify how the communication effect influences the credit rating assessment across European countries.

Credit rating data published by S&P and Moody's are leveraged for estimation process. Moody's long term Issuer Rating, S&P long term Issuer Rating and S&P short term Issuer Rating from Thomson Reuters database are collected. Moreover, I take into consideration credit ratings for particular countries over 2002 – 2012. My decision is motivated by the limited availability of macroeconomic determinants for all countries and small changes in the credit rating assessment. I also desire to examine whether the principal factors influencing credit rating assessment proposed in previous researches are subject to change. Overall, I incorporate credit ratings evaluation for 45 European countries.

Macroeconomic variables used in research are obtained from the World Bank database.

b) Political and economic development criterion subsamples

At this phase I conduct the analysis in subsamples. The first one encompasses a full sample of European countries. The second group comprises the following: European Union, non-European Union,

Eurozone, non-Eurozone, Central and Eastern Europe. Subsequently, countries divided by their economic development from high – income non OECD members, high – income OECD members, lower - middle income

economies, low – income economies and upper – middle income economies are considered. The final version of the division is presented in Tables 2 and 3.

Table 2 : The European political criterion subsamples

<i>Political divisions</i>	<i>Countries</i>
European Union	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Spain, Netherland, Ireland, Lithuania, Luxemburg, Latvia, Malta, Germany, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, Hungary, Great Britain, Italy
Non-European Union countries	Albania, Armenia, Belarus, Bosnia and Herzegovina, Montenegro, Georgia, Island, Lichtenstein, Macedonia, Moldavia, Norway, Russia, Serbia, Switzerland, Turkey, Ukraine
Eurozone	Austria, Belgium, Cyprus, Estonia, Finland, France, Spain, Greece, Netherland, Ireland, Luxemburg, Latvia, Malta, Germany, Portugal, Slovakia, Slovenia, Italy
Non – Eurozone Countries	Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Czech Republic, Denmark, Georgia, Island, Lichtenstein, Lithuania, Macedonia, Moldavia, Norway, Poland, Romania, Russia, Serbia, Switzerland, Sweden, Turkey, Ukraine, Hungary, Great Britain.
Central and Eastern Europe	Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Czech Republic, Estonia, Lithuania, Latvia, Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Ukraine, Hungary.

Source: own calculation.

Table 3 : The European economic development criterion subsamples.

<i>Economic dev. divisions</i>	<i>Countries</i>
High – income OECD members	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Island, Ireland, Italy, Luxemburg, Netherland, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Great Britain.
High – income non OECD members	Croatia, Cyprus, Lichtenstein, Malta.
Lower - middle income economies	Belarus, Bosnia and Herzegovina, Bulgaria, Latvia, Lithuania, Macedonia, Montenegro, Romania, Russia, Serbia, Turkey,
Low – income economies	Albania, Armenia, Georgia, Moldavia, Ukraine,

Source: own calculation

The final version of the model is given by equation (1) below:

$$y_{i,t} = \sum_{k=1}^n \alpha_k y_{j,t-k} + \sum_{k=0}^n \beta_k x_{j,t-k} + \theta_t T_t + \mu_j + \varepsilon_{j,t}, n = 0,2 \tag{1}$$

where:

$y_{i,t}$ is the credit rating assessment examined (Moody's long term issuer credit rating, S&P long term issuer credit rating, S&P short term issuer credit rating) for: all European countries, EU states, non-EU states, Eurozone states, non-Eurozone states, Central and Eastern Europe states, high – income non OECD members, high – income OECD members, lower - middle income economies, low – income economies and upper – middle income economies;

$x_{j,t}$ is a vector of explanatory variables, i.e.:

$$x_{i,j} = \begin{bmatrix} GDPg_{j,t}, GDPpcc_{j,t}, GDPcur_{i,j}, GDPc_{i,j}, sav_{i,j}, expgdp_{i,j}, \\ expcur_{i,j}, expcon_{i,j}, impgdp_{i,j}, impcon_{j,t}, impcur_{j,t}, \\ cab_{i,j}, cabcur_{i,j}, intpay_{i,j}, extgni_{i,j}, extcur_{i,j}, fdinet_{i,j}, \\ stdebt_{i,j}, tot_{j,t}, res_{j,t}, csdef_{i,j}, unemp_{i,j}, cpi_{i,j}, moncur_{i,j}, \\ monrr_{i,j}, cred_{i,j}, credgdp_{i,j}, fdigdp_{j,t}, oer, reer_{i,j}, \\ claim_{i,j}, debt_{i,j}, longex_{i,j}, pubex_{i,j}, centr_{i,j}, inter_{i,j} \\ rev_{j,t}, expen_{i,j}, bond_{i,j}. \end{bmatrix},$$

where:

$GDPg_{i,j}$ is the GDP growth, $GDPpcc_{i,j}$ is the GDP per capita in constant prices (2005), $GDPcur_{i,j}$ is the GDP per capita in current prices, $GDPc_{j,t}$ is the value of GDP in current prices; $sav_{j,t}$ is the value of gross domestic savings as a percentage of GDP, $expgdp_{i,j}$ is the value of export of goods and services divided by the value of GDP, $expcur_{i,j}$ is the value of export of goods and services in current prices, $expcon_{i,j}$ is the export of goods and services in constant prices, $impgdp_{i,j}$ is the total value of import of goods and services divided by the value of GDP, $impcon_{i,j}$ is the imports of goods and services in constant prices, $impcur_{i,j}$ is the value of imports of goods and services in current prices, $cab_{i,j}$ is the value of current account balance divided by the value of GDP, $cabcur_{i,j}$ is the value of current account balance in current prices, $intpay_{i,j}$ are the interest payments on the external debt, $extgni_{i,j}$ is the present value of external debt divided by GNI, $extcur_{j,t}$ is the present value of external debt in current prices, $fdinet_{j,t}$ is the net flows in current prices of the foreign direct investment, $stdebt_{i,j}$ is the short term debt, $tot_{i,j}$ is the terms of trade adjustment in constant prices, $res_{i,j}$ is the total reserves in current prices, $csdef_{i,j}$ is the value of cash surplus divided by the deficit, $unemp_{i,j}$ is the

unemployment rate, $cpi_{j,t}$ is the consumer price index, $moncur_{j,t}$ is the money and quasi money in current LCU, $monrr_{i,j}$ is the money and quasi money to total reserves ratio, $cred_{i,j}$ is the value of domestic credit provided by financial sector as a percent of GDP, $credgdp_{i,j}$ is the domestic credit to private sector by banks to GDP, $fdigdp_{i,j}$ are net flows of foreign direct investment as a percentage of GDP, $oer_{i,j}$ is the official exchange rate, $reer_{i,j}$ is the real effective exchange rate index, $claim_{i,j}$ are claims on central government as a percentage of GDP, $debt_{i,j}$ is the value of debt service in external debt in current prices, $longex_{i,j}$ is the long term public external debt stocks, $pubex_{j,t}$ is the public and publicly guaranteed external debt stocks, $centr_{j,t}$ is the central government debt as a percentage of GDP, $inter_{i,j}$ are the interest payments as a percentage of revenues, $rev_{i,j}$ is the value of revenue excluding grants as a percentage of GDP, $expen_{i,j}$ is the value of expenses to GDP, $bond_{i,j}$ is public bond market capitalization to GDP.

To analyse the impact of the previous credit rating on the current country's standing we use the Arellano Bond linear dynamic panel data estimation. The final version of the model is given by equation (2) below:

$$y_{i,t} = \sum_{k=2}^2 \alpha_k y_{j,t-k} + \sum_{k=0}^2 \beta_k x_{j,t-k} + \theta_t T_t + \mu_j + \varepsilon_{j,t}, \tag{2}$$

where:

$y_{i,t}$ is the credit rating assessment examined (Moody's long term issuer credit rating, S&P long term issuer credit rating, S&P short term issuer credit rating) for all European countries;

$x_{j,t}$ is a vector of explanatory variables, i.e.:

$$x_{i,j} = \begin{bmatrix} GDPg_{j,t}, GDPpcc_{j,t}, GDPcur_{i,j}, GDPc_{i,j}, sav_{i,j}, expgdp_{i,j}, \\ expcur_{i,j}, expcon_{i,j}, impgdp_{i,j}, impcon_{j,t}, impcur_{j,t}, \\ cab_{i,j}, cabcur_{i,j}, intpay_{i,j}, extgni_{i,j}, extcur_{i,j}, fdinet_{i,j}, \\ stdebt_{i,j}, tot_{j,t}, res_{j,t}, csdef_{i,j}, unemp_{i,j}, cpi_{i,j}, moncur_{i,j}, \\ monrr_{i,j}, cred_{i,j}, credgdp_{i,j}, fdigdp_{j,t}, oer, reer_{i,j}, \\ claim_{i,j}, debt_{i,j}, longex_{i,j}, pubex_{i,j}, centr_{i,j}, inter_{i,j} \\ rev_{j,t}, expen_{i,j}, bond_{i,j}. \end{bmatrix},$$

T_t is a vector of year-dummies;

μ_j is an unobservable time-invariant country effect.

To analyse the communication effect between credit rating agencies and its impact on the current country's standing we use the Arellano Bond linear dynamic panel data estimation. To estimate this phenomenon, monthly data are used. The final version of the model is given by equation (3) below:

$$y_{i,t} = \sum_{k=3}^2 \alpha_k y_{j,t-k} + \sum_{k=3}^2 \beta_k x_{j,t-k} + \theta_t T_t + \mu_j + \varepsilon_{j,t}, \quad (3)$$

where:

$y_{i,t}$ is the credit rating assessment examined (Moody's long term issuer credit rating, S&P long term issuer credit rating, S&P short term issuer credit rating) for all European countries;

$x_{j,t}$ is a vector of explanatory variables (the rest of credit rating agencies notes);

T_t is a vector of year-dummies;

μ_j is an unobservable time-invariant country effect.

c) Estimation technique

To examine the link between the credit rating assessment and factors likely to influence the received assessment as well as the direction of the relationship, panel data models are employed. I use static and dynamic panel data models.

Static panel data models, including models with fixed and random effects estimator are harnessed to analyse the influence of the macroeconomic data variables. The Hausman test is used to distinguish between fixed and random effects, where the null hypothesis is that the preferred model is a random effect model (Greene, 2008). It basically tests whether the unique errors are correlated with the regressors and the null hypothesis is that they are not. Also, the Breusch – Pagan Lagrange Multiplier test is exploited to decide between the random effects regression and a simple OLS regression. The null hypothesis is that variances across entities is zero. It is no significant difference across the units.

To analyse the impact of the historical credit rating data and the communication effect we use dynamic panel data models, especially one – step Arellano – Bond (1991) GMM difference estimator for panel data with lagged dependent variable. If the specification tests render it necessary, we apply the two-step estimation technique based on the Wind meijer test.

Due to the fact that the consistency of GMM estimator depends on the validity of instruments, we consider two specification tests suggested by Arellano and Bond (1991). Only for homoscedastic error term does the Sargan test have an asymptotic chi-squared distribution. In fact, Arellano and Bond (1991) show that the one – step Sargan test over rejects in the presence of heteroscedasticity. Rejection of the null hypothesis suggests that the over identifying restrictions are valid, and implies the need to reconsider our model or our

instruments, unless we attribute the rejection to heteroscedasticity in the data-generating process. The alternative is the two – step estimator.

The Arellano – Bond test measures first and second –order autocorrelation in the first – differenced errors. When the idiosyncratic errors are independently and identically distributed, the first – differenced errors are first – order serially correlated.

Arellano and Bond recommend against using the two – step non-robust results for inference on the coefficients, because the standard errors tend to be biased downward. To overcome this problem we also apply the Windmeijer test.

d) Estimation results

Credit rating determinants have changed over recent years. Numerous researches placed their focus on the same determinants while analysing different credit rating assessment. As a result, the observation of the methodology deployed by particular credit rating agencies provide completely different variables.

One of the most important factor, presented in the over-mentioned statements, is the stage of the economic development. The previous studies analysed the influence of the gross domestic product or the gross national product per capita. The analysis carried out in compliance with the information presented in credit rating agencies methodology, the GDP growth is taken into consideration. In the case of the Moody's assessment process it is an important determinant for European countries, but the strength of its impact is different for particular subsamples. It is observed the higher influence for EU states, especially the Eurozone. The same conclusion is formed for the developed economies according for the World Bank classification. The strength of this factor is weaker for the developing economies. The same conclusion is observed for the S&P's long term issuer ratings, but the differences are not as strong as in the case of Moody's assessment. The most sensitive rating on the over – mentioned factor is the S&P's short – term rating.

The next distinguishing factor is the track record of country's default. In previous researches it is one of the most important determinants. In the case of the Moody's credit rating assessment, countries with solvency problems received notes lower by 6 degrees. In practice, countries that belong to the European Union do not have the high credit risk, and thus the mentioned factor has not been taken into consideration. The analysed phenomenon is characteristic for the less developed economies. It is not an important determinant for the process of the both S&P's long and short term issuer rating.

The uneconomical factors are more important for the European Union countries, especially for Eurozone states. It is the characteristic phenomenon for

the developed economies, especially for the Moody's assessment process.

Moreover, the value of the gross domestic savings as a percent of GDP is also taken into account. We assumed that with the higher value of savings, the countries default risk should decrease. The mentioned correlation is especially high for the Eurozone. In the short-term the high propensity to save has a negative influence on the received credit rating. Meanwhile, it is believed that savings contribute to higher stability in terms of credit risk, and trigger diminished economic growth by reducing the bank credit activity, and hence lower inflation, which confirms the analysis carried out for the European countries according to the level of economic development.

Further determinants considered are indices of exports and imports. It turns out that there is a significant statistical relationship between these indicators and the credit rating of the broadcast by Moody's. The situation proves to be different in subsamples. The higher the value of exports in relation to GDP, the higher the credit rating is assigned to a country. Exports fuel the economic growth, and tend to be particularly important for developing countries, and thus a stronger positive relationship across these groups is noted. The high level of import is observed for developed countries. In this case, it positively affects the credit rating, but it is not the outcome of favorable trade and the same characteristics of the economies. The value in terms of trade is statistically significant, but analysed relationship is very weak. The influence of the factors examined is stronger for the short time period. It can be an effect of the conviction that the situation should be stabilized in long term.

The level of foreign exchange reserves should be revealed as the next indicator of the economic stability in terms of solvency risk. It turns out that this variable significantly affects the credit rating statement, while the strength of its impact is weak. It should be explained by the low value of foreign exchange reserves relative to GDP held by countries, particularly developed ones.

Another variable is the level of the budget deficit. It is statistically insignificant for the entire study sample. Interesting results are provided by the observation of particular subgroups. The value of the budget deficit for the European Union is irrelevant. While for the Eurozone a positive correlation is observed. During the credit rating estimation process, countries that are outside of the Eurozone receive lower credit ratings if they noticed the high value of the analyzed factor. The same situation is observed for countries that do not belong to the European Union and the Central - Eastern European economies. The information about the value of the budget deficit is more important for the developed countries. This is due to the fact that the Eurozone countries maintain the high value of the

budget deficit. The accession of these countries to a group of highly developed economies does not affect the analysed relationship, because this phenomenon is not observed in the group of OECD countries. However, the negative correlation between high budget deficit and credit standing is observed, as in the case of highly developed non-OECD countries. This relationship is stronger for the developing economies.

The next two factors that are referred to in the credit rating statements reports are the unemployment rate and the inflation rate measured by the consumer price index. The analysis of all European countries found that only the consumer price index has a positive effect on the Moody's long term issuer rating. For countries of the European Union, an increase in the unemployment rate causes a strong growth in the default risk, while the small (lower than for all European countries) inflation rate affects incentives for the researched group. For countries outside the European Union the influence exerted by the rate of unemployment is much weaker. The credit standing of the Eurozone countries is not significantly dependent on the level of inflation or unemployment. For countries not belonging to European Union or Eurozone the situation resembles that prevailing in the EU states. It is only the result of the political division and non-compliance with the Maastricht Treaty by Eurozone countries. Such a relationship is not observed for the division in terms of the level of economic development. For the countries belonging to the OCED, credit standing is negatively correlated with the value of the unemployment rate and inflation. For less developed countries economically the CPI is a more important indicator. Its strength decreases with the level of the country's wealth. The unemployment rate is not contained in the S&P's methodology. The most important factor is the inflation rate. While performing research, I found out that this indicator is also important for this credit rating agency. It can be a result of the communication effect or the connection with the inflation rate according to the Philips curve.

The level of money supply measured by M2 to the total value of foreign exchange reserves is statistically significant only for the developing economies. The analysed relationship is negative. That is the result of fear of having an overly excessive surplus of money over the reserves in order to reduce the debt by its recollection group of countries.

The previous researches mentioned the positive impact of the credit lending activity on the financial condition of the economy. The value of domestic credit granted to private sector by banks as a percent of GDP and the value of domestic credit provided by financial institutions as a percent of GDP are taken into account. The second factor mentioned is a negative correlated with the credit rating assessment. It can be an effect of the opinion that shadow banking institutions are characterized by higher credit risk. This phenomenon is

observed for all types of credit rating received by countries. Its strength is higher in the short – term. The value of domestic credit granted to private sector by banks has a positive impact on the country's standing. The analysed relationship is stronger for the developed countries. The lax regulated supervision of the financial sector and more advanced activities of shadow banking reduce the positive influence on the banking credit activity. The researched phenomenon has the weaker impact in short – term period.

The depreciation of the exchange rate contributes to the deterioration of the credit standing of both the countries belonging to the European Union, as well as the Eurozone subsample. This relationship is very weak for the level of economic development.

The analysis embraces the impact of the historical credit ratings on the European country's standing. The positive influence of the previous credit ratings noted by particular agencies is observed. A stronger relationship is presented on the first lags. The analysis of the credit rating determinants by Arellano – Bond method confirms the received results. The strong relationship is apparent between the value of exported goods and services and the received credit ratings. This impact is higher for the short term period of the analysis. The value of imports is important only for the short term. If the variable mentioned is higher, the credit rating received is lower. The next significant variable is the budget deficit. But this factor is also relevant only for the short term credit rating. In statements presented by particular agencies it can be found the information about the significant influence of the inflation ratio measured by CPI and the unemployment ratio. The last factor is negatively correlated with all credit ratings, but especially with S&P's short term issuer rating. The consumer price index is taken into consideration, especially by the S&P's, and thus the stronger ratio for the short term is observed. The depreciation of the currency is the significant determinant for the long term prediction. As in previous researches, the important determinants are those connected with the non-economic factors, especially for the short term analysis. The received results corroborate the previous analysis and place an emphasis on the influence of the historical notes on the received credit rating.

Credit rating agencies are not willing to make changes in the country's notes. At the same time a strong correlation between changes made by particular institutions should be noted, thereby giving rise to the communication effects. This phenomenon can be observed on yearly database.

IV. CONCLUSIONS

The country's credit rating plays an important role in taking investment decisions. The observation of certain factors can predict changes to the country's

credit standing. When analysing the level of economic development or political subdivision, varying strength and direction of change, or even non-reaction from the credit rating agency may be reported. It turns out that the countries that previously had solvency problems, receive a definitely lower rating. The countries not belonging to the Eurozone or the European Union should enjoy GDP growth, because its changes are key for the credit rating assessment. The standing of the Eurozone countries is insensitive to information on the GDP growth. The high level of savings guarantee the greater credit risk stability. On the other hand, it can reduce the economic growth by limiting the bank credit activity. That opinion confirms the analysis carried out for the European countries according to the level of economic development. The level of exports is especially important in the case of developing countries, hence a stronger positive relationship in these groups. The high level of imports observed for economically developed countries has a positive effect on the credit rating, but it is not the outcome of a favorable trade and the same characteristics of the economies. The level of foreign exchange reserves practically does not influence the country's credit standing. It can be explained by the low value of the foreign exchange reserves held by countries, particularly those developed ones. In countries that belong to the Eurozone, budget deficits are not key factors in taking decisions by credit rating agencies. The tested negative correlation is stronger for the developing countries. An increase in the unemployment rate causes a strong insolvency risk for the European Union countries. The lower (less than for the total researched European countries) inflation rate affects incentives for the tested dependent variable. The influence of the unemployment rate is weaker for countries that not belong to the European Union. The credit standing of the Eurozone countries is not significantly dependent on the level of inflation or unemployment. The negative correlation between the unemployment rate and the inflation rate is observed for the subsample of countries belonging to the OCED with their credit rating. For less economically developed countries the CPI is a more important indicator, but its strength falls with the country's wealth. The high level of money supply measured by M2 to the total value of foreign exchange reserves has a negative effect on the credit rating of the developing countries as a result of fears of debasement. The lax shadow banking lending activity contributes the default risk. A large share of domestic credit provided by banking as a percent of GDP has a positive effect on the country's standing. The depreciation of the exchange rate contributes to the deterioration of the credit standing of both the countries belonging to the European Union, as well as the Eurozone subsample.

The study displayed indicates the wide use of non-economic factors, especially in the case of the

Eurozone. Moreover, it reveals the low sensitivity to changes in credit ratings of some determinants given for the research group, which may indicate a reluctance in correcting credit standing of these countries.

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Table 4 : The determinants of Moody's long term issuer credit rating according to political and economic development divisions

Independent variables	Political divisions												Economic development divisions/								
	Europe		UE		non UE		EURO		non EURO		CEE		high OECD		high non		middle		low		
	OLS		FE		OLS		OLS		FE		RE		RE		OLS		OLS		OLS		
	Coef.	t	Coef	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	
defaultm	-31,1281	*			-30,1653	*			-28,2693	*										-26,2	*
gdpg					0,4478	*	-0,3851	*	0,2343	*			0	***							
gdppcc	0,0028	*			0,0012	*	-0,0034	*	0,0007	***	0,0023	*	0	*			0,01	*	0,02	*	
gdpcur					-0,0003	*	0,0015	*			0	***			0	*	0	*			
sav	0,8636	*					1,7516	*	0,3788	*	0,7612	*					1,39	*	-0,29	*	
expgdp			-0,385	*	-0,191	*			-0,1167	***	-0,6324	*	-0,14	*	-0,09	***	-1,01	*	0,24	*	
impgdp			0,3701	*	-0,3243	*	-0,5486	*			0,6542	*					1,13	*			
csdef					-0,6456	*	1,1469	*	-0,5378	*	-0,7618	*			-0,16	***	-0,77	*	-0,52	**	
unemp			-0,504	*	-0,1571	***			-0,3732	*			-1,9	*							
cpi	0,1244	*	0,093	**					0,0405	**			-0,25	*			0,24	*	-0,07	*	
montrr									-0,1858	**										-3,83	*
cred	-0,1574	*	0,1944	*	-0,2756	*	1,25	*			-0,0676	**	-0,15	***			-0,61	*			
credgdp			-0,1825	*	0,4014	*	-1,1818	*	0,0599	**			0,18	**			0,49	*			
fdigdp					0,5915	*	0,4865	**	0,1343	*											
oer	-0,011	*	-0,1356	*	0,007	*	0,1615	*	0,0051	***							-0,01	*	0,04	*	
claim											0,2678	*					0,48	**			
cons	24,6104	*	75,374	*	50,8696	*	90,7763	*	47,7188	*	24,7006	*	128,4	*	67,51	*	-25,9	*			
Hausmann			0						0		0,1032		0,33								
Chi			0						0		0		0								
xttest			0						0		0		0								
Rsq	0,8568				0,9867		0,9157								0,98		0,88		1		
F	0				0		0								0		0		0		

Source: own calculations.

Table 5 : The determinants of S&P's long term issuer credit rating according to political and economic development divisions

Independent variables	Political divisions												Economic development divisions							
	Europe		UE		non UE		EURO		non EURO		CEE		high OECD		high non		middle			
	FE		FE		OLS		OLS		RE		FE		OLS		OLS		OLS			
	Coef.	t	Coef	t	Coef.	t	Coef.	t	Coef.	T	Coef.	t	Coef.	t	Coef.	t	Coef.	t		
Defaultm																				
Gdpg	0,3396	*	0,2619	*	0,4309	*	-0,4068	***			0,3277	*	0,351	***	-0,6134	*				
Gdppcc					0,0015	*			0,0012	*			0,0004	*			0,0065	*		
Gdpcur					-0,0006	*			-0,0002	*							-0,0031	*		
Sav							1,5102	*	0,3401	**			0,5595	*	0,5479	**	0,5671	*		
ExpGdp							-1,4256	*	-0,2721	**			-0,1688	*	0,2141	*	-0,2505	**		
ImpGdp							1,3845	*	0,2497	**							0,5773	*		
Csdef									-0,3632	*					0,3491	*				
Unemp	-0,7852	*	-0,7774	*	0,3678	*	0,799	*	-0,4887	*	-0,7292	*	-1,3023	*			-0,2506	*		
Cpi					0,0412	**									-0,7503	*	0,1617	*		
Montrr			0,2357	***	0,7964	***	4,3099	*			1,6783	*	-0,0113	*						
Cred					-0,7748	*	1,046	*	-0,2259	*							-0,5088	*		
Credgdp					0,8598	*	-0,8898	*	0,2089	*					0,1039	*	0,425	*		
Fdigdp					0,2227	*														
Oer	0,0099	*	-0,2255	*	0,0102	*	0,1691	*			0,0109	*					-0,0113	*		
Claim					0,4871	*					-0,1938	***								
cons	69,9123	*	85,2832	*	20,0665	*			45,6285	*	61,5858	*	78,239	*	119,5326	*				
Hausmann	0,0005		0						0,247		0									
Chi	0		0						0		0									
Xttest	0,00056		0						0		0									
Rsq					0,9816		0,9965								0,6955		0,9854		0,9912	
F					0		0								0		0		0	

Source: own calculations.

Table 6 : The determinants of S&P's short term issuer credit rating according to political and economic development divisions

Independent variables	Political divisions												Economic development divisions					
	Europe		UE		non UE		EURO		non EURO		CEE		High OECD		high non		middle	
	FE		FE		RE		OLS		FE		OLS		OLS		OLS		OLS	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Gdpg	0,6403	*	0,4495	*	0,4256	*	-0,9811	*	0,3025	**			0,5316	**	0,2753	***		
Gdppcc					0,0014	*	-0,0053	*			0,0049	*					0,0076	*
Gdpcur					-0,0005	*	0,0029	*	-0,0002	***	-0,0012	*	0,0004	*			-0,0031	*
Sav					-0,2196	*	2,2223	*					-1,6703	*				
Expdgp	0,7266	*					-1,9132	*					1,087	*	0,1123	**		
Impgdp	-0,6446	*					0,7616	*			0,5064	*	-0,8736	*			0,5158	*
Csdef					0,4975	***	1,3749	*							-0,2063	***	1,1712	*
Unemp	-2,3927	*	-1,4304	*					-0,9361	*	-0,7032	*	-1,8296	*	-2,3445	*	-0,805	*
Cpi							1,1932	*	0,0667	**	0,1511	*	0,1818	***			0,1273	*
Montrr					1,4091	**	9,1622	*					0,4557	*				
Cred							3,6964	*	-0,3386	*	-0,4433	*						
Credgdp					0,1347	*	-4,0464	*	0,3193	*	0,3156	*			0,0433	*		
Fdigdp							0,8086	*										
Oer			-0,2842	**	0,0084	*	0,4701	*	0,0144	*			0,0759	*				
Claim					0,2402	**	-0,8274	*										
cons	89,6656	*	93,5796	*	24,5141	**			65,6098	*			99,4274	*	87,5809	*		
Hausmann	0		0		0,1093				0									
Chi	0		0		0				0									
Xttest	0		0		0,0476				0									
Rsq							0,998				0,9759		0,8394		0,9838		0,9746	
F							0				0		0		0		0	

Source: own calculations.

Table 7 : The determinants of Moody's long term issuer credit rating

Independent variables	Political divisions												Economic development divisions							
	Europe		UE		non UE		EURO		non EURO		CEE		high OECD		high non		middle		low	
	FE		FE		FE		FE		FE		RE		FE		RE		RE		FE	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
defaultm	-21,83	**			-26,46	*			-26,09	*									-25,84	*
gdpg	0,41	*	0,59	*	0,01	*	0,87	*	0,04	*	0,30	*	0,77	*	0,90	*	0,16	*	0,07	*
cons	73,76	*	133,59	*	51,03	*	85,25	*	63,42	*	57,72	*	88,84	*	65,11	*	48,28	*	32,27	*
Hausmann	0		0		0		0		0		0,7318		0		0,9647		0,9448		0	
Chi	0		0		0		0		0		0		0		0		0		0	
xttest	0		0		0		0		0		0		0		0		0		0	

Source: own calculations.

Table 8 : The determinants of S&P's long term issuer credit rating

Independent variables	Political division												Economic development divisions					
	Europe		UE		non UE		EURO		non EURO		CEE		high OECD		high non		middle	
	FE		FE		FE		FE		FE		RE		FE		FE		RE	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Defaultm																		
Gdpg	0,59	*	0,71	*	0,28	*	0,97	*	0,26	*	0,45	*	0,76	*	0,82	*	0,40	*
cons	73,23	*	79,52	*	56,13	*	83,52	*	64,40	*	54,71	*	87,04	*	71,93	*	46,73	*
Hausmann	0		0		0		0		0		0,9734		0		0		0,7848	
Chi	0		0		0		0		0		0		0		0		0	
Xttest	0		0		0		0		0		0		0		0		0	

Source: own calculations.

Table 9 : The determinants of S&P's short term issuer credit rating

Independent variables	Political divisions												Economic development divisions					
	Europe		UE		non UE		EURO		non EURO		CEE		HighOECD		high non		middle	
	FE		FE		FE		FE		FE		RE		FE		FE		RE	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Defaultm																		
Gdpg	0,75	*	0,98	*	0,20	***	1,24	*	0,34	*	0,68	*	0,86	*	1,19	**	0,67	*
cons	72,58	*	80,42	*	51,83	*	86,77	*	60,43	*	51,65	*	89,41	*	72,08	*	39,28	*
Hausmann	0		0		0		0		0		0,8323		0		0		0,9023	
Chi	0		0		0		0		0		0		0		0		0	
Xttest	0		0		0		0		0		0		0		0		0	

Source: own calculations.

Table 10 : The determinants of the issuer credit rating for European countries by using the Arellano Bond linear dynamic panel data estimation

Dependent variable	Moody's		S&P's long		S&P's short	
	Coef	t	Coef	t	Coef	t
L1.	0,40962	*	032968	*	0,22500	**
L2.	0,13488		0,20970	***	0,07909	
Gdpg	0,15099		0,09995		0,30463	
Gdppcc	-0,00052		-0,00057		-0,00159	
Sav	-0,12303		0,01143		-0,54401	
Expdgp	0,28300	***	0,26041	***	1,20377	*
Impdgp	-0,11533		-0,03838		-0,64927	**
Csdef	0,11141		0,24176		1,05978	**
Unemp	-0,50381	*	-0,41273	**	-1,37844	*
Cpi	-0,06836		-0,23705	*	-0,33679	*
Montrr	-0,04434		0,17503		0,04935	
Cred	0,10996		0,12555		0,44515	
Credgdp	-0,05506		-0,10053		-0,30877	
Fdigdp	-0,03828		-0,07465		-0,06932	
Oer	-0,16427	***	-0,19564	**	0,10974	
Claim	-0,04954		-0,11171		-0,37609	***
cons	50,58799	*	78,01331	*	99,63164	*
Sargan	0,07420		0,19170		vce(robust)	
abond (1)					0,01310	
abond (2)					0,36190	

Source: own calculations.

Table 11 : The communication effect between credit rating agencies for European countries notes by using the Arellano Bond linear dynamic panel data estimation

Dependent variable	Moody's		Dependent variable	S&P's long		Dependent variable	S&P's short	
	Coef	t		Coef	t		Coef	t
Moodys			spslong			spsshort		
L1.	0,2299		L1.	-0,0400		L1.	0,0045	
L2.	-0,0729		L2.	-0,1403		L2.	-0,2148	*
Spslong			moodys			moodys		
--.	0,9526	*	--.	0,3794	*	--.	-0,0442	
L1.	0,3181	**	L1.	0,1209		L1.	-0,0646	
L2.	-0,0576		L2.	-0,0284		L2.	-0,1412	
Spsshort			spsshort			spslong		
--.	-0,0290		--.	0,2907	*	--.	1,3400	*
L1.	-0,1743	***	L1.	0,0632		L1.	0,2573	
L2.	0,1516		L2.	-0,0349		L2.	0,2816	
cons	-25,2914	*	cons	30,8487	*	cons	-32,1433	*
abond(1)	0.0000		abond(1)	0.0238		abond(1)	0.0035	
abond(2)	0.8948		abond(2)	0.6233		abond(2)	0.4251	

Source: own calculations.



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Human Capital, Capital Structure, Employee Pay: Empirical Evidence from Pakistan

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Human Capital, Capital Structure, Employee Pay: Empirical Evidence from Pakistan

Talal Tahir^α & Ahmad Fraz^σ

Abstract- This study examines effect of leverage on labor costs there by testing predictions of Titman (1984) and Berk, Stanton and Zechner (2010). The study covers period 2009 to 2013 for which firm level data of 84 non financial companies listed on Karachi Stock Exchange selected on the basis of data availability were examined using ordinary least square regression. Leverage is measured by debt to equity ratio of firm while labor costs considered as labor intensity are the total of salaries expense of the firm divided by total assets of firm. Influence of controlled variable like size of firm, Market to Book ratio, Physical capital intensity and Earning of firm per Asset is also investigated. Results reveal that in overall analysis leverage does not impact labor costs' thereby stating that prediction of Titman (1984) and Berk, Stanton and Zechner (2010) are not applicable in Pakistani context because of the unemployment conditions, ownership structure and level of corporate governance in the country. The results suggest that in Pakistani firms there is no additional labor costs associated with increase in leverage that is large enough to off-set incremental tax benefits of debt. Thus in context of Pakistan level of debt is not an important factor or determinant of Human Capital Costs.

Keywords: labor costs, capital structure, human capital.

I. INTRODUCTION

To raise capital at lowest cost is a major issue for corporate managers, with a view to maximize the value of firm. Corporate Finance literature mostly consists of developing an optimal capital structure for a company, defined as balance of debt and equity in a firm that reduces the weighted average cost of capital. As per trade off theory firms acquire debt to take advantage of tax shield benefits till the time level of debt increases bankruptcy costs of firm off-setting the benefits of tax shield. However empirical evidence shows that firms stop acquiring debt way before the point where bankruptcy costs off-sets the benefit of tax shield through debt. Thus authors have suggested indirect bankruptcy costs as a possible reason depriving firms from using debt to fully utilize tax shield benefit of debt or to acquire debt to the point where bankruptcy costs erode benefit of tax shield through debt.

Historically, managers and academicians have more focus on fundamental area of finance that are focusing on bankruptcy, firm size, leverage profitability etc. Human capital has got low attention to devise the policy about leverage. Employees are one of the biggest

stakeholders and resource (factor of production) that a firm requires to move on and are always kept away from maximum studies of corporate finance. Although capital structure decision impacts almost all stakeholders especially employees as the large amounts of debt can cause bankruptcy for firm. And the bankruptcy costs borne by employees are much more still decision of capital structure is mostly done is keeping all stakeholders interest at par except shareholders and creditors. Titman (1984) argued that customers, workers and suppliers of firms are likely to suffer high costs in event of liquidation. Cost borne by employees due to bankruptcy can significantly affect firms capital structure in a setting where employees have firm specific human capital.

Formalizing Titman (1984) arguments Berk, Stanton, and Zechner (2010) developed a model that human capital costs associated with financial distress can be large enough to be a distinctive reason for firms to issue debt.

According to BSZ (2010) model as firms acquire debt the probability for bankruptcy increases and employees thus demand a premium against the increased risk of bankruptcy of the firm. This demand for premium is to cover the risk employees' face after bankruptcy of firm. Berk, Stanton, and Zechner (2010) state that this premium paid to employees off sets the tax shield benefit created by debt. This eventually leads the firm to stop acquiring debt way before the point where bankruptcy costs off sets benefits of tax shield.

II. THEORETICAL BACKGROUND

Firms finance their assets through equity, debt, other financial arrangement or a mixture of all. This financing combination of assets to maximize overall value of firm is referred to as Capital Structure of firm. Different capital structure theories attempt to explain variation in capital structure of firms over time and across regions. There is no specific methodology realized yet which managers can use to determine optimal debt level and financing mix. Prominent Capital structure theories include MM Irrelevance theory, Trade Off theory and Pecking Order Theory.

a) *MM Irrelevance Theory*

Modigliani and Miller (1958) showed that in perfect markets total value of firm remains same no matter how the capital structure of firm is divided among

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equity, debt and other claims. The support to this theory is based on the idea that both firms and investors can borrow at the same interest rate thus investors are able to substitute personal leverage for corporate financial leverage and have ability to replicate any capital structure firm might undertake. Furthermore, they argue that if value of firm depends on capital structure then in perfect capital markets arbitrage opportunities will be available. This theory is based on unrealistic assumptions which include no taxes, no transaction costs, no bankruptcy costs, same borrowing cost for investor and firm, symmetry of market information.

b) *Trade-Off Theory*

Since Irrelevance Theory is based on based on restrictive assumptions which do not hold in reality and when these assumptions are removed then choice of capital structure becomes important for determining value of firm. Modigliani and Miller (1963) suggested that due to tax deductible interest payments firms should use as much debt as possible. However excessive debt has its cost that is cost of bankruptcy thus based on hypothesis of Kraus and Litzenberger (1973) Trade-Off Theory evolved. Their hypotheses suggest that firms should consider a balance between tax saving benefits of debt and dead-weight costs of bankruptcy. According to Trade-Off Theory optimal leverage of firm is influenced by taxes, bankruptcy costs and agency costs and firms borrow debt up to the point where tax savings through debt equal cost associated with increase in debt and probability of financial distress.

i. *Taxes*

Since interest is a tax-deductible expense a tax paying firm receives interest tax shield in form of lower tax paid. Interest expense thereby decreases tax liability and increases after tax cash flows. Firms in regions with higher tax rates will be highly levered to increase after tax cash flows and market value.

ii. *Bankruptcy Costs*

With increase in amount of debt in capital structure of firm the possibility of the firm to default increases. If the firm is unable to pay the loan and value of assets of firm decline triggering default then to safeguard their interest bondholder's takeover the firm. This legal mechanism allowing creditors to takeover firms is referred to as Bankruptcy and Bankruptcy costs are cost associated with use of this mechanism. Bankruptcy costs are direct as well as indirect. Direct costs of bankruptcy include fees of lawyers, accountants, and other professionals administering bankruptcy. If firm is large in size then these costs are small however if firms is small in size then it has to consider direct bankruptcy cost while determining amount of leverage in its capital structure. Indirect costs include decline in sales, profits, unable to obtain credit line etc. These costs arise when firm foresees bankruptcy. To avoid bankruptcy it cut downs expense

on research, advertisements, training of employees thus quality of product and service is hampered which decreases firm sales and profits and decrease in share price in market further pushing it towards bankruptcy.

iii. *Agency Theory*

Agency costs are costs that arise due to conflict of interest between managers and shareholders because of manager's share of less than 100 percent in the firm. Capital Structure or firms leverage is dependent on role of managers depending on situations.

a. *Free cash flow theory*

Managers, with less than 100 percent stake in business, after funding all projects with positive cash flow may utilize the left over cash flow (referred to as free cash flow) for their own use rather than using it to increase value of firm. This problem can be controlled by using debt in capital structure thus reducing the free cash flow available to the managers as suggested by Jensen (1986). Thus the use of debt in this case is benefiting and decreasing agency costs.

b. *Overinvestment and Underinvestment problem*

According to Myer and Majluf (1984) management is responsible to shareholders and tries to increase the value of equity and is not concerned with overall value of firm. Thus management may invest in projects that are risky just to increase value of equity (overinvestment) and may avoid projects with safe net present value in which value of equity may decrease (underinvestment). This leads to bondholder expropriation hypothesis which states that shareholders gains advantage at cost of bondholder as management is only working for increase in value of equity. Thus bondholders refrain from investment in such firms.

c) *Pecking Order Theory*

Pecking Order Theory (Myers & Majluf 1984) states that firms follow a hierarchy to finance projects. Firms prefer to use internal financing depending on availability and prefer to issue debt instead of equity when external financing is required. This theory is based on the assumption that managers are better informed of firms' future prospect than outside investors and they act in best interest of existing shareholders. Myers and Majluf (1984) state that there is an investor perception regarding managers that managers use private information to issue equity when it is overpriced. This perception leads to under pricing of new equity causing loss to existing shareholders. Thus firms avoid issuing equity for new projects and finance projects through internal funds and issue debt instead of equity if further financing is required. Issuing new equity for financing is the last resort for firms.

Further there is also a signaling effect which arises due to information on capital structure of firm. Since managers have better knowledge about income of firm issuing debt will generate a signal to outside investors that firm has suitably large income and pay off

periodic installments and interest easily increasing confidence of outside investor and value of equity. Thus to increase investor's confidence and value of equity firms use higher level of debt in capital structure.

d) *Human Capital*

In 1960 economist Theodore Schultz invented the term Human Capital representing value of human capacities. According to him human capital is just like any other type of capital and investment in human capital would lead to improvement in production level and quality. Investment in human capital can be done through education, trainings and enhanced benefits. This concept also reflects the fact that all labor is not equal and quality of labor can be improved by investing in them. According to Romer (1989) rate of growth of output and investments of a firm are explained by level of human capital. According to Schultz (1971) and Sakamoto and Powers (1995) human capital theory rests on assumption that formal education is necessary to improve production capacity of employees. Thus to improve output, firms train and educate their employees thereby making investment in human capital.

According to Berk, Staton and Zecher (2010) firms invest in employees and thus during bankruptcy this gives a loss of this investment also which is neglected by finance managers. This loss is counted in indirect bankruptcy costs. The larger the investment in human capital the larger the bankruptcy cost abstaining such firms from decisions leading to bankruptcy.

III. EMPLOYEE PAY AND CAPITAL STRUCTURE

Trade off theory suggests that bankruptcy costs are the main reason which abstain firms from using large amount of debt. However empirical evidence suggests that direct bankruptcy costs are too low to be an important disincentive for firms to use higher high amounts of debt. Thus researchers suggest indirect bankruptcy costs a reason to abstain firms from using large amount of debt. Titman (1984) developed a model showing that bankruptcy status of firm causes firms liquidation decision. He further argued that worker, supplier and customer are to suffer high costs in event of liquidation of firm and workers suffer a much higher cost if they are in a firm-specific worker environment. Formalizing this argument Berk, Staton and Zecher (2010) developed a model showing that to compensate the cost in event of liquidation workers demand an extra premium when they perceive bankruptcy of firm occurring due to incorporation of debt in capital structure. According to BSZ 2010 model this premium cost demanded by workers is large enough to offset the tax benefit of debt. Chemmanur, Cheng and Zhang (2012) tested this model empirically and found that incremental labor expense associated with increase in debt are large enough to offset the tax benefits of debt.

IV. PROBLEM STATEMENT

Indirect bankruptcy costs, such as salary premium, abstain non financial firm to incorporate large amounts of debt in capital structure. However we are unaware of the fact that whether such costs also exist in Pakistan making Pakistani non financial firms to resist large amounts of debt in their capital structure.

V. RESEARCH QUESTION

This study addresses the question that how Leverage affects Human Capital Costs of firm in context of Pakistan?

a) *Research Objective*

- To examine the impact of leverage on human capital.
- To examine the difference in labour intensity across the industries.
- To check the moderating role of leverage across the industries.

b) *Significance of Study*

Debt is used by firms to maximize the value of firm. This level of debt in capital structure is influenced by theories mentioned above. In trade off theory finance researchers are largely concerned with direct costs of leverage neglecting indirect costs of leverage which prevent firms from taking on large amounts of debt. Still the question is un-answered that why firms don't take full advantage of tax benefit shield under trade off theory, what stops them way before the point where bankruptcy cost off sets the tax benefit shield of debt. Many scholars identify such restriction as indirect bankruptcy cost that forces firm to stop use of debt before the point where bankruptcy costs rise and offset tax shield benefit but still these indirect bankruptcy cost are not identified individually.

This study will further support Trade Off Theory and will mention Human Capital Costs as a major restriction to leverage in firm thereby identifying part of indirect bankruptcy cost. Leverage will be treated as a determinant of Human Capital Costs of firm. Further according to Chemmanur, Cheng and Zhang (2012) their empirical study to test BSZ 2010 model was first study in literature thus this study will be second one. This study will be conducted for the first time in Pakistan using data from Pakistani firms.

This study is with the aim to empirically analyze that whether capital structure is important determinant of human capital costs in context of Pakistan. Thus informing whether indirect bankruptcy costs abstain firms from using debt in capital structure. And after evaluating if there would be significant relation among Human Capital variables and Capital Structure it would be justifiable that Human Capital should be incorporated as an important component while developing or deciding optimal capital structure for the firm.

I will further explore that at existing debt level, additional labor costs associated with increase in leverage are large enough to off-set incremental tax benefits of debt thus suggest Human Capital as one of the important factors or determinant of Capital Structure and major resistant to debt incorporation in firms and also that indirect bankruptcy cost causes firms to abstain from incorporating large amount of debt in capital structure.

c) *Plan of Study*

Chapter 2 will provide literature review with hypothesis in end then Data and Methodology in Chapter 3 describing data, defining variables and methodology. Chapter 4 will provide Data Analysis and Results and Chapter 5 will conclude the study.

VI. LITERATURE REVIEW

a) *Capital Structure*

Capital structure defines the financing behavior of firms that is from where does a firm arrange finances for investing, decreasing the cost of capital to minimum and maximizing shareholder value. Research in capital structure is dominated by two theories: trade-off theory and pecking order theory. Modigliani and Miller (1958) proved that capital structure is irrelevant that is the cost of capital and shareholder value is not impacted under the assumption that capital market is perfect and frictionless. As the market is imperfect in reality so trade-off theory evolved based on hypothesis of Kraus and Litzenberger (1973) that considers a balance between tax saving benefits of debt and dead-weight costs of bankruptcy. Trade-off theory of capital structure refers to the idea of maintaining debt and equity by balancing the costs and benefits of debt that is creating a balance between the tax-shield benefit of debt and bankruptcy costs. Later Pecking theory emerged (Myers & Majluf, 1984) stating that firms follow a financing hierarchy.

Many researchers have found firms characteristics which determine the firms' capital structure. These include size of firm, liquidity and interest coverage ratio, median industry leverage, market-to-book assets ratio, profits, credit ratings, expected inflation and uniqueness of firm. (Titman & Wessels, 1988; Frank & Goyal, 2009; Kisgen, 2006; Kila & Mahmood, 2009).

Frank and Goyal (2009), examined the significance of various factors in the capital structure decision of public traded American firms. This study based on the data from 1950 to 2003. The most dependable factors i.e market leverage are; median industry leverage have positive effect of leverage, market to book assets ratio and profits have negative effect, tangibility, log of assets and expected inflation have positive effect on leverage. Furthermore they found

that dividend paying firms tend to have lower leverage and when consider book leverage some time same effects are found. For book leverage; the impact of firm size, effect of inflation and market to book ratio are not reliable. An empirical fact appears logically reliable with some versions of the trade off theory of capital structure.

Kila and Mahmood (2009), in their study tested the determinants of capital structure for the listed firms in BMSB (Bursa Malaysia Securities Berhad) market from 2000 to 2005. Data was taken from financial statements of 17 listed companies, total observation was 102. Debt ratio is their dependent variable; while independent variables are growth, liquidity, interest rate and size. They applied pooled OLS estimations. Their result shows that their independent variables significantly negatively related to their dependent variable. Their study found insignificantly negative between capital structure and growth of the firm, by annual changes of earnings. The result of dummy variable show there are significant different in capital structure between those firms that adopt more debt and those who employ less leverage financing.

Kisgen (2006), in his study of regarding impact of Credit rating on Capital structure empirically finds that credit rating of firms directly impact their capital structure decision. As per his result firms not near a credit rating change (upward/downward) issue debt relative to equity than firms near a change of credit rating.

However these determinants of capital structure vary from country to country because country specific factors also influence determinants of leverage (Jong, Kabir & Nguyen 2008). In China, according to Chen (2004) fundamental institutional assumptions underpinning Western Models are invalid. Financial constraint in banking sector and institutional differences influence leverage decisions thus Chinese firms follow "new pecking-order" – retained profit, equity and long term debt.

Sheikh & Wang (2011) while investigating whether capital structure decisions of Pakistani firms are explained from models derived from Western Settings and the factors affecting Capital Structure decision state that Capital Structure models derived from western setting do provide explanation for financing behavior of Pakistani firm. The financing behavior is consistent with trade-off theory, pecking order theory and agency theory. Further according to them profitability, liquidity, earning volatility, tangibility and firm size impact debt ratios. Whereas non debt tax shield and growth opportunity do not impact debt ratios significantly. Results of Shah & Khan (2007) for determining factors affecting capital structure are in line also. Their results approve prediction of trade-off theory in case of tangibility, agency theory incase of growth and pecking order theory incase of profitability.

In my thesis I am exploring the relation between human capital costs and capital structure on basis of trade-off theory that indirect bankruptcy costs borne by employees associated with bankruptcy or financial distress can off-set firms decision to take over more debt.

b) *Human Capital*

Firms require financial capital as well as human capital to carry out business. In literal terms human capital can be simply stated as employees or workforce of a firm. Different researchers have described and measured human capital in different ways. It is taken in sense of labor intensity that is calculated by salary expense divided by sales, considered as investment made by firm on which firm makes investment in terms of salary. Human capital is also seen in terms of skills of employees and the type of contract through which they are hired that is temporary or permanent. Here we see human capital in terms of salary.

c) *Human Capital, Capital Structure And Employee Pay*

Modigliani and Miller (1958) suggest that capital structure is irrelevant and it does not matter how a firm finances its operations under two main assumptions that there are no taxes and no bankruptcy costs. But over years researchers and academicians have found that capital structure becomes of much importance if these two assumptions are relaxed. Thus it becomes important for firms to make choices of how to finance its operations considering the benefits debt creates due to taxes and the bankruptcy related problems and costs caused by large amount of debt incorporated. As more and more debt is incorporated in capital structure the bankruptcy risks of firms increases and bankruptcy are costly sometimes even forcing liquidation of firm.

The bankruptcy costs mainly discussed in corporate finance are kept in circle of high legal and accounting expenses or liquidation of assets of value less than they worth. According to Branch (2002) while exploring magnitude of bankruptcy costs on firm states that bankruptcy process imposes costs on wide range of parties including shareholders creditor's suppliers, customers and employees. Further Less or and all other having contracts (including employees) with bankrupt firm are likely to absorb costs and losses as a result of bankruptcy. Researchers have also found that bankruptcy costs faced by employees of the firm is much more than the liquidation or direct bankruptcy costs of firms. When a firm becomes bankrupt its employees are left of strayed and such employees who are involuntarily separated from their jobs by mass layoff, plant closure or an employer going out of business are referred as displaced workers (Kletzer, 1998). These employees after job loss have to face large amount of unemployment costs that may include decrease in consumption, long delays before reemployment and significant wage losses after

reemployment. Most displaced employees usually suffer great wage losses and the displaced workers who switch sectors suffer greater wage losses than those who find job in same sector after being displaced. Neal (1995), have conducted the displaced worker surveys, the results of that survey showed that wages cost of switching industries following displacement is strongly correlated with pre-displacement measures of both work tenure and experience. Workers actually receive reward for some skills that are neither completely general nor firm specific. Furthermore, displaced workers who find new jobs in their pre-displacement industry, post-displacement returns to pre-displacement job tenure resemble cross-section estimates of the returns to current seniority. He suggested that firm-specific factors may contribute little to the experiential grade of wages tenure. And further the wage losses for switchers are strongly correlated with displaced workers experience and tenure in sector before displacement.

Thus as more and more debt is increased in capital structure of firm the bankruptcy risks of firm increases. As the bankruptcy risk increases employees risk of being displaced increases, or in others words it can be stated that as debt increases the probability of employees to become unemployed and bear the bankruptcy costs after unemployment increases. Therefore to mitigate the risk of being unemployed and bearing unemployment costs employees demand premium which is to be incorporated in their salary. So as debt is induced in capital structure employees demand compensation and thus we can infer that as debt in capital structure increases the salary of employee increases.

Berkovitch, Israel, and Spiegel (2000) investigated interaction between firms' capital structure and managerial compensation. In their model they show that risky debt affects manager's wage if he is retained by firm. As per their model's prediction managerial pay-performance sensitivity is positively correlated with leverage, expected compensation, and expected cash flows.

Berk, Stanton, and Zechner (2010) while deriving optimal compensation contract in setting including equity and debt state that capital structure decisions trade off employees risk aversion against benefit of debt. In other words the debt can be incorporated in a firm till the time the benefit of tax shield due to debt equals the premium demanded by employees for a potential job loss after incorporation of debt.

Butt-Jaggia and Thakor (1994) developed optimal dynamic wage contracting and capital structure according to them wage contracts are to end at bankruptcy thus employees in firms requiring specific skills look for leverage of firm for deciding their compensation accordingly that is with respect to

potential job loss due to bankruptcy lead by debt thus providing counter balance to tax shield benefit of debt.

Chemmanur, Cheng, and Zhang (2012) while exploring whether human capital costs limit use of debt state that indirect bankruptcy costs arising from human capital can be one disincentive to the use of debt and empirically found that firms with higher debt pay higher wages to compensate for higher financial distress risk thus the incremental compensation associated with leverage is large enough to offset tax benefits of debt.

Agrawal and Matsa (2010) estimates, a total of about 57 basis points of firm value for a BBB rated firm as the average wage compensation for unemployment risks. They state that probability of a firm that it will encounter financial distress and subject workers to costly layoffs is decreased if leverage is reduced and managers are also able to lower the premium demanded by workers as compensation for bearing unemployment risk.

Although Hanka (1998) found that capital structure affects employment terms and lower wages are paid by those Compustat having large amounts of debt. Hovakimian and Li (2011) conclude that capital structure affects employee wage in China. Firms with more debt pay lower wages. The magnitude of this affect is defined by Ownership Structure and firms characteristics. The negative affect is forceful and strong in State-Owned firms and the negative affect in these firms' increases with large size, higher leverage ratios, lower profitability and less growth opportunities. Also debt serves as monitoring device mitigating managerial agency costs resulting in negative relation between leverage and low wage. Debt has negative affect on employees wage for financially constrained firms as such firms borrow from employees by paying low wages today in exchange of future higher wages. Debt protects wealth of shareholders from threat of unionization. Committing debt payments to creditors reduces free cash flow of the firms and limits the compensation managers can demand.

Matsa (2006) state that high levels of corporate liquidity can encourage workers to raise their wage demands thus use of debt financing can improve a firm's bargaining power with workers. To reduce the impact of collective bargaining on profits, the firm has an incentive to undertake costly actions that reduce its owner's liquidity. It is also suggested by authors that firms entering distress zone lower employees wages to cover up interest payments to creditors.

As per scholars firms use debt to lower free cash flows available to managers thereby reducing agency costs and any excess demand of salary thus indicating inverse relation between leverage and employee pay. Khan, Kaleem & Nazir (2012) collected panel data of 54 manufacturing firms from non financial sector of Pakistan for the period 2006 to 2010 and examined impact of financial leverage on agency cost

free cash flow. Their results, consistent with free cash flow theory, reveal that in Pakistani firms leverage plays important role in reducing free cash flow that is under control of managers thus reducing agency cost of free cash flow.

These contrasting works are ex post effect of leverage on employee pay and do not contradict with ex ante relation, on which we focus, between same variables. According to Almazan, Suarez & Titman (2004) terms of trades under which firms transacts with its customers and employees are affected by information and under normal conditions any good news improves these terms and however bad news worsens these terms of trade. Since information regarding leverage acquisitions to lower wages of employees is bad news for employees and if workers anticipate or get informed the move of equity holders to acquire debt to negotiate their wage downward then workers will demand higher expected wages to compensate them for bearing this risk as pointed out by Perotti and Spier (1993). Further they also pointed that firms are unable to use debt as bargaining tool to reduce employee pay if firms are earning large profits from existing assets. Since firm with large profits tend to be less inclined towards non bankruptcy while firms with less profit or negative profits are likely to be bankrupt we can divide are data in two parts bankrupt and non bankrupt firms. Firms falling in bankrupt zone will not pay higher wages and tend to use debt to lower down employee pay whereas firms in non bankrupt zone will not be able to use debt to lower down wages of employees.

Labor intensity is defined as the ratio between labor and pension expense over assets. Greater the salary expenses with respect to total assets more will be the firm labor intensive. Labor intensive firms in other words will be firms having much more labor or employees hired. Since more employees are hired so the unemployment costs of firm increases. Thus with increase in debt the premium to compensate unemployment risks will greater in firm that is more labor intensive than the firm which is less labor intensive. According to Agrawal and Matsa (2010) the impact of unemployment risk on financing decision is strong for firms that are more labor intensive. To reduce the premium of unemployment risks firms convert fix human cost to variable human cost that is they hire more temporary workers. Kuzmina (2011), in his study examined that how firms use of flexible contractual arrangements with a factor of production, labor affects its capital structure. They found that hiring more temporary workers lead firms to have more debt. Temporary workers, unlike permanent ones, it can be fired at a much lower cost, a firm can more easily meet its interest payments and avoid bankruptcy when faced with negative shock. They understand this result, flexible workforce decreasing operating leverage which in turn promotes financial leverage.

Pratt (2011) states that the salary given to employees by firms is like an investment done in human capital and loss of human capital creates a significant cost of financial distress. Labor intensive firms are therefore more exposed to these costs and they counter it by using less debt in capital structure. His results show that when moving from lowest to highest decile of labor intensity leverage drops by 21 percentage points significantly stating that high labor intensity leads to less use of debt. Further Anderson, Banker and Ravindran suggest that employees in non technological firms (labor intensive) earn more wages than in technological firms (capital intensive). Thus impact of debt on employee wages can be greater in labor intensive firms as compared to capital intensive firm which leads to further division of data between labor intensive firms and capital intensive firms.

d) Hypothesis

After this we reach the following hypothesis

- i. Labor Intensity will increase with increase in leverage of firm.

List of companies from sector is given below:

AUTOMOBILE & PARTS	CEMENT
Sazgar Eng.	Al-Abbas Cement
PAK SUZUKI	Attock Cement
Atlas Battery Ltd.	Bestway Cement
Bal.Wheels	Cherat Cement
Exide (PAK) XD	D.G.K.Cement
General Tyre	Dandot Cement
ENGINEERING	EMCO Industries
AL-Ghazi Tractor	Fauji Cement
Bolan Casting	Fecto Cement
Ghandhara Ind.	Flying Cement
Hinopak MotorXD	Gharibwal Cement
Pak Engineering	Kohat Cement
BEVERAGES	Lafarge Cement
Murree Brewery	lucky Cement
Shezan Inter.	Maple Cement
OIL & GAS	Thatta Cement
Attock Petroleum	Frontier Creamics
Attock Refinery Ltd	Pioneer Cement
Burshane LPG	FIXED LINES TELECOMMUNICATIONS
Byco Petroleum	Pak Datacom
Mari Gas Company	Telecard Limited
National Refinery	WorldCall Telecom
Oil & Gas Development Corp.	HOUSEHOLD
Pak Petroleum	Singer Pakistan
Pak Refinery	Tariq Glass Ind.
P.S.O.	MEDIA
Shell Pakistan Ltd.	Hum Network Ltd
CHEMICALS	Media Times Ltd
Bawany Air Products	INDUSTRIAL METAL & MINING

- ii. Labor Intensity will not increase in Bankrupt firms as firms will use debt as a bargaining tool.
- iii. Salary premium cost caused by increase in debt causes firms to abstain from incorporating large amount of debt in capital structure.

VII. DATA DESCRIPTION & METHODOLOGY

a) Data Description

The research is descriptive type on the empirical analysis of secondary data. The sample is selected from listed firms in Karachi Stock Exchange of Pakistan. Data is taken for five years for eighty four companies from annual reports of firms. These companies belong to almost all sectors excluding financial companies namely automobile & parts, beverages, cement, chemicals, electricity, engineering, fixed line telephone, forestry, household, media, multiutilities, oil & gas, Pharmaceutical, tobacco, travel, industrial mining and Industrial transportation. Total number of observations count to four hundred and ten.

Biafo Industries	Crescent Steel Ltd.
Fauji Fert Bin	Dost Steels Ltd.
Fauji Fertilizer	Siddiqsons Tin Plate
Nimir Ind.Chemicals	TOBACCO
Pak.P.V.C.	Pak Tobacco
Sitara Chemical	Philip Morris Pak.
Wah-Noble	PHARMACUETICAL
ELECTRICITY	Ferozsons (Lab) Ltd.
Hub Power Company	Highnoon (Lab) Ltd
Japan Power	Sanofi-Aventis Pak
Kot Addu Power	Wyeth Pak Limited
K.E.S.C.	GSK
Kohinoor Energy Ltd.	TRAVEL & LEISURE
Nishat Chun Power	Dreamworld
Southern Electric	P.I.A.C.(A)
FORESTRY	INDUSTRIAL TRANSPORTATION
Century Paper	P.N.S.C.
Security Paper	MULTIUTILITIES
INDUSTRIAL TRANSPORTATION	Sui North Gas
P.N.S.C.	Sui South Gas

i. Variable Description

a. Dependent variable: Labor Intensity (L.I)

Labor Intensity defined as total wage paid divided by total assets. Pratt (2011) used labor intensity as the factor affecting leverage. According to Pratt (2011) as labor intensity increases leverage of firm decreases. Large value of labor intensity pose a large bankruptcy cost to firms thus firms decrease leverage in order to avoid bankruptcy. We use Labor Intensity as a proxy to measure salary of firms.

b. Independent Variable: Leverage

Explanatory variable is leverage of firm defined as ratio of total debt to equity. Debt to equity ratio is the best ratio used by scholars around the world to measure leverage of a firm. According to Chemmanu, Cheng, and Zhang (2012) as debt to equity ratio increase salary of employees will rise increasing total labor cost of firm as employees demand premium against bankruptcy risk.

c. Control Variable: Size of firm, M / B Ratio, P. C Intensity, EBIT / Total Assets Ratio

• Size of firm

Size of firm is natural log of total assets as firm. Chemmanu, Cheng, and Zhang (2012) state that big firms pay more salary to employees as compared to small firms. Thus to cover effect of size we use size of firm as control variable.

• M / B Ratio

Market to Book Ratio (M/B Ratio) is calculated by dividing market value of equity with book value of equity. Book value of equity is given in annual reports of

firms whereas market value of firm is calculated by multiplying total number of shares with share price as on close of business year. Market to book ratio is a proxy of growth opportunity of firm. According to Chemmanu, Cheng, and Zhang (2012) growing firms or firms with higher M/B Ratio will pay higher salaries.

• P.C Intensity

Physical capital intensity is computed by dividing gross property, plant and equipment to total assets. There is a prediction by researchers that there is positive correlation between capital intensity and employee wage, as physical capital intensified firms have more output.

• EBIT/Total Assets Ratio

Earning of firm per asset that is ratio of earnings before interest and taxes to total assets. Increased EBIT to Total Asset ratio will represent higher profits and lesser firm bankruptcy risk (Rashid & Abbas 2011) thus firms with higher earning per asset will have increased employee pay.

b) Methodology

In order to understand clearly the role of the Human Capital on the corporate capital structure and relation between human capital and Leverage, we will carry out an empirical analysis by using panel data analysis with the following form:

$$\text{Salary of employees} = F (\text{Leverage of firm})$$

The relation between average employee pay and leverage is tested through panel data analysis.

$$LI_{it} = \text{Intercept} + B1 (L_{it}) + B3 (FS_{it}) + B4 (M/B_{it}) + B5 (PCI_{it}) + B6 (EPA_{it})$$

With

LI = Labor Intensity (Salaries/Total assets)

L = Leverage of firm (Total Debt/Total Equity)

M/B = Market to book ratio

PCI = Physical Capital Intensity

Earning per asset = Earning per asset (Earnings before Interest & Taxes / Total Assets)

t = time series

i = cross section

Further we will segregate the data in two parts bankrupt and non bankrupt firms through Z Score method and again apply panel data analysis separately on both data under same equation. According to scholars firms that are in bankrupt zone will use debt to lower down wages where as firms in non bankrupt zone will be earning profits and won't be able to use debt as a bargaining tool.

To check Z Score of our data we use Z Score model developed by Rashid and Abbas (2011). Rashid and Abbas (2011), have conducted a study to identify the Financial Ratios that are much significant in bankruptcy prediction for the non-financial sector of Pakistan. This study based on the sample of companies which became bankrupt from 1996 to 2006. In these study 24 financial ratios covers four most important financial attributes i.e leverage ratios, profitability ratio, turnover ratios and liquidity ratios were examined for five years period prior bankruptcy. Their estimation provide evidence that the firms with below zero Z- value fall into bankrupt instead of these firms their Z- value is above

zero fall into non bankrupt. When this model is applied to forecast of bankruptcies on underlying sample, 76.9% accuracy achieved this model. The Z Score model of Rashid and Abbas (2011) is as follows:

$$Z = 1.147 \times X1 + 0.701 \times X2 - 0.732 \times X3$$

Where:

Z = Z score Value

X1 = sales to total assets ratio

X2 = Earning before Interest & taxes to Current Liability Ratio

X3 = Cash flow ratio

Sales of firm are net sales that is total sales minus discounts. Total asset is the balance sheet figure of firm. Earning before Interest & taxes is net sales minus all expenses except Interest and Taxes. Current Liability includes all short term debt and accounts payable to be paid within one year time period. Cash flow ratio is calculated as follows

$$\text{Cash Flow Ratio: } (\text{Net Profit} + \text{Depreciation}) / (\text{Depreciation} + \text{Change in C.E})$$

Where Net profit is sales minus all expenses, interest and taxes. Depreciation is the total depreciation expense of firm of the year. Change in C.E is change in capital employed from last year. Capital employed is calculated by adding total equity of firm, long term loans (secured/unsecured), debentures and employee benefit obligations. According to Rashid and Abbas (2011) those firms having five year average Z-Score below zero are bankrupt zone and those with above zero are in safe

zone. Through Z-Score calculation 125 observations (25 firms) out of a total observation of 420 are bankrupt. This means 29.76% observations of our data come under distress zone that is having Z-Score below zero whereas as 295 observations (54 firms) out of a total observation of 420 are non bankrupt. This means 70.24% observations of our data come under safe zone that is having Z-Score above zero. Following table shows the results.

The FREQ Procedure

Status	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Bankrupt	125	29.76	125	29.76
Non-Bankrupt	295	70.24	420	100.00

VIII. DATA ANALYSIS

a) Overall Data Analysis (Total Sample)

Descriptive Statistics overall sample

	LI	L	MB	P	PCI	S
Mean	0.07529	-1.8038	1.84122	0.09756	0.49581	6.87101
Median	0.04176	0.4579	0.81523	0.08247	0.47042	6.85132
Maximum	1.88101	132.563	418.38	0.65095	0.99863	8.54086
Minimum	0	-917.22	-479.29	-0.4693	0.01679	3.81585
Std. Dev.	0.13095	46.6628	31.669	0.13265	0.25802	0.79066
Skewness	9.85987	-18.241	-2.8935	0.53736	0.05573	-0.304
Kurtosis	126.425	355.725	199.124	5.45676	1.98678	3.76398
Jarque-Bera	273395	2200555	673717	125.837	18.1831	16.6837
Probability	0	0	0	0	0.00011	0.00024
Sum	31.6204	-757.58	773.311	40.977	208.239	2885.82
Sum Sq. Dev.	7.18458	912337	420227	7.37299	27.894	261.936
Observations	420	420	420	420	420	420

Mean value of Labor Intensity is 0.0753 which means that on average employees earn PKR 0.0753 against every PKR 1 of assets. Maximum value reaches to 1.88 that is against every PKR 1 assets of firm employees earn PKR 1.88. Minimum value rests at zero stating that a firm did not paid salary in a certain year. Firms in our sample vary from total assets of PKR 150 Million to PKR 350 Billion. Mean value of total assets of firms in our sample is PKR 8 Billion. Mean value of Earning per asset is about PKR 0.0976, with firms earning up to maximum of PKR 0.65 per asset and

generating maximum of loss of PKR 0.47 per asset. Market to Book ratio has a mean of 1.84. On average the gross amount of property, plant and equipment is 49.58% of total assets with maximum of 99.86% and minimum of 1.7% of total assets. Mean leverage is at -1.8 that is for every PKR 1 of negative equity on average firms have a loan of PKR 1.8. Maximum leverage value is at 132.56 that is against every PKR 1 of equity firm has a debt of PKR 132.56. Descriptive Statistics table provides summary statistics of variables used in analysis of Labor Intensity.

b) Correlation overall sample

	LI	L	MB	P	PCI	S
LI	1					
L	0.00568	1				
MB	0.03414	0.7264	1			
P	0.10329	0.05913	0.05619	1		
PCI	-0.1505	-0.029	-0.0117	-0.3531	1	
S	-0.2237	-0.0976	-0.1112	0.07006	-0.0797	1

Correlation table above shows the correlation matrix of the variables. The results state that there is positive correlation between Labor Intensity and all independent variables just as expected in literature except physical capital intensity and firm size. Labor Intensity has a higher value of positive correlation with the earnings per asset of the firm showing that with increase in earning per asset average pay will also increase. Same is the case with leverage and market to book ratio however the intensity of correlation is quite less predicting that increase in market value and leverage of firm will increase labor Intensity with a less intensity. Physical Capital Intensity and firm size however have a negative correlation with labor Intensity with a higher intensity than any other variable suggesting that as firms become more mechanized the labor intensity decreases and also increased firm size decreases labor Intensity. The correlation between Labor Intensity and Physical Intensity is opposite as

expected in literature by BSZ (2010). According to BSZ (2010) prediction increase in Physical Capital Intensity average employee pay must increase thereby increasing Labor Intensity. As capital intensive firms tend to be more productive (Cronqvist, Heyman, Nillson, Svaleryd and Vlachos, 2009) the firms earning power increases thereby increasing employee benefits. However in case of Pakistan the relation is opposite. The main reason is unemployment caused by increase in Physical Capital Intensity as machines takeover the jobs of labor. This unemployment leads to increase in supply of labor in market. Unemployment rate increased from 5.2% in 2008 to 6.2% in 2012 with a growth rate of 4.5% per annum (2008-12). Table below shows the unemployment rate in Pakistan from 2008-12 as per Labour Force Survey Pakistan. This increase in supply causes wages of particular job to decrease thereby decreasing employee average salary. It is pertinent to mention that Physical Capital Intensity did not had significant impact

on average employee pay as per empirical results of Chemmanu, Cheng, and Zhang (2012). Further highly negative relation between Physical Capital Intensity and

Earning per Asset can also be the reason for the negative relation between Labor Intensity and Physical Capital Intensity.

c) *Unemployment Rate*

Year	Unemployment Rate
2008	5.20%
2009	5.50%
2010	5.60%
2011	6.00%
2012	6.20%

Thus after analyzing correlation matrix our regression equation comes in the following form

$$LI_{it} = Intercept + B1 (L_{it}) - B2 (FS_{it}) + B3 (M/B_{it}) - B4 (PCI_{it}) + B5 (Pt_{it})$$

With

LI = Labor Intensity (Salaries/Total Assets)

L = Leverage of firm (Total Debt/Total Equity)

M/B = Market to book ratio

PCI = Physical Capital Intensity

P = Earning per asset (Earnings before Interest & Taxes / Total Assets)

t = time series & i = cross section

Regression Table of overall analysis shows panel results of model. The results shows that the constant value of dependent variable (Labor Intensity) is 0.3790 which shows the change in non-financial Pakistani firms Salary to Total Assets ratio when there is

no other independent variable effects. Leverage, firm size and Physical Capital Intensity all are negatively impacting Labor Intensity and Market to Book Ratio and Earning per asset is positively impacting Labor Intensity.

d) *Panel Least Square Regression Overall*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.379073	0.05701	6.649129	0
L	-0.00016	0.00019	-0.848865	0.3964
MB	0.000182	0.00028	0.641156	0.5218
P	0.068579	0.04977	1.377803	0.169
PCI	-0.07426	0.02556	-2.904913	0.0039
S	-0.03992	0.00788	-5.067646	0
R-squared		0.08429		
Adjusted R-squared		0.073231		
F-statistic		7.62164		
Prob(F-statistic)		0.000001		

Only Size of firm and Physical capital Intensity have significant negative impact on Labor Intensity but the value of coefficient is quite small. With increase in 1 unit of Physical Capital Intensity Labor Intensity decreases by 0.074 only and with increase in one unit of Firm Size Labor Intensity decreases by 0.039. These results are opposite to scholars prediction and research as according to them with increase in firm size and physical capital intensity labor wages shall rise thereby increasing Labor Intensity. These results can be due to the fact that large firms are more stable and are more

likely to survive than small firms thus pay of wages at a minimum rate whereas increase in physical capital intensity further increases the unemployed work force in the country. This excess supply of work force ultimately decreases wage rates.

However leverage has no significant impact on Labor Intensity according to the results of our total sample thus our results are not consistent with theory and also the results of Chemmanu, Cheng, and Zhang (2012). Stating that our first hypothesis that with increase in leverage of firm Labor Intensity will increase

keeping other variables constant is rejected. Thus the theory of BSZ (2010) that firms will not use large amounts of debt because of the increase in labour expenses with increase in debt offsetting benefits of debt is not applicable in Pakistani listed firms as shown by our results. These result also reject our third hypothesis that salary premium cost caused by increase in debt causes firms to abstain from incorporating large amount of debt in capital structure.

Reasons for such results include employment conditions of country, discussed earlier, firms ownership structure and level of corporate governance. In Pakistan like most developing markets firms are held by a family or are state controlled firms or are held by corporations and financial institutions while corporate governance practices are in an infancy phase. Javid and Iqbal (2008) while exploring relation of Ownership Concentration, Corporate Governance and Firm Performance in Pakistan state that firms ownership in Pakistan is concentrated in few hands. According to their results from 60 firms of Pakistan for a period of 2003-2008, this ownership concentration is negatively associated with corporate governance practices. Indicating that in Pakistan all stakeholders of a firm (shareholder, employees, customers, suppliers, financiers, and government) are not at a single page. Interests of one stakeholder are achieved at the costs of interests of another stakeholder thus interests of all stakeholders remain unbalanced. Further Hassan & Butt (2009) using multivariate regression analysis on data of 58 randomly selected non financial listed firms of Karachi Stock Exchange Pakistan for period of 2002 to 2005 to explore relationship between corporate governance, ownership structure and capital structure found that board size (representing corporate governance) and managerial holding (representing ownership structure) is negatively correlated with leverage. This indicates that firms in Pakistan have concentrated ownership in few hands have extensive leverage and lower corporate governance. Thus the increase in leverage does not impact average employees pay significantly.

f) Descriptive Statistic Non Bankrupt Sample

	LI	L	MB	P	PCI	S
Mean	0.08227	-3.4726	1.13756	0.0999	0.47283	6.88014
Median	0.04624	0.37106	0.80582	0.08353	0.45194	6.73822
Maximum	1.88101	11.8723	418.38	0.55364	0.93604	8.54086
Minimum	0	-917.22	-479.29	-0.4693	0.01679	5.6878
Std. Dev.	0.14975	55.0484	37.2452	0.12156	0.25107	0.73048
Skewness	9.23261	-15.802	-2.5177	0.40539	0.01072	0.53971
Kurtosis	103.651	259.968	148.241	5.8231	2.0335	2.34968
Jarque-Bera	128713	823925	259604	106.044	11.4877	19.5202
Probability	0	0	0	0	0.0032	5.8E-05
Sum	24.2695	-1024.4	335.58	29.4702	139.485	2029.64

Further the results conclude that model is fit as shown by value of F-Statistic. The value of R-Squared is 0.084 showing that the independent variables (leverage, Physical capital intensity, Earning per asset, Market to book ratio) explain 8.4% of the variation in our dependent variable that is Labor Intensity.

Now to check our second hypothesis that Labor Intensity will not increase with increase in Leverage in Bankrupt firms we divide our sample in two that is bankrupt observations and non bankrupt observations. Bankruptcy of firms is checked by value of Z score developed by Rashid and Abbas (2011) for Pakistani firms as discussed earlier. Panel data for both bankrupt and safe firms is created by average Z score of five years as done by Rashid and Abbas (2011). Negative average Z score states distress firm whereas positive average Z Score indicates safe firm.

g) Data analysis of Non-Bankrupt Sample:

i. Descriptive Statistics

Mean value of Labor Intensity is 0.0822 which means that on average employees earn PKR 0.0822 against every PKR 1 of assets. Maximum value reaches to 1.88 that is against every PKR 1 assets of firm employees earn PKR 1.88. Minimum value rests at zero stating that a firm did not paid salary in a certain year. Firms in our sample vary from total assets of PKR 150 Million to PKR 209 Billion. Mean value of total assets of firms in our sample is PKR 7 Billion. Mean value of Earning per asset is about PKR 0.099, with firms earning up to maximum of PKR 0.55 per asset and generating maximum of loss of PKR 0.46 per asset. Market to Book ratio has a mean of 1.13. On average the gross amount of property, plant and equipment is 47.28% of total assets with maximum of 93.60% and minimum of 1.68% of total assets. Mean leverage is at -3.47 that is for every PKR 1 of negative equity on average firms have a loan of PKR 3.33. Maximum leverage value is at 11.87 that is against every PKR 1 of equity firm has a debt of PKR 11.87. Descriptive Statistics Table of non bankrupt sample provides summary statistics of variables used in analysis of Labor Intensity.

Sum Sq. Dev.	6.59332	890915	407839	4.34465	18.5331	156.88
Observations	295	295	295	295	295	295

g) *Correlation of variables in Non bankrupt sample*

Correlation table of non bankrupt sample shows the correlation matrix of the variables in non bankrupt sample. The results state that there is positive correlation of Labor Intensity with Leverage, Market to Book Ratio Earning per asset. These correlations are justified by theory as increase in leverage will increase salary as employees demand premium against cost of bankruptcy due to leverage. Market to Book ratio represents growth of firm which also should have positive impact on salary when the M/B ratio rises. Earning per asset also increases salary as firms earning more will pay higher to employees. However all these correlations values are insignificant. Physical Capital Intensity and firm size however have a negative correlation with labor Intensity with a higher intensity

than any other variable stating that there as firms become more mechanized the labor intensity decreases and also increased firm size decreases labor Intensity.

Further Physical Capital Intensity is negatively correlated with Earning per assets and firm size. Increase in Physical capital Intensity will decrease Earning per asset. Firm size is also intensely correlated with Market to Book Ratio. Increase in firm size will decrease market to book ratio. Leverage is highly positively correlated with Market to Book ratio of firm. Increase in leverage will increase Market to Book ratio showing that increase in leverage increases value of firm.

As per our results of correlation of bankrupt firms the regression equation to measure impact of independent variables on dependent variables is

$$LI_{it} = Intercept + B1 (L_{it}) - B3 (FS_{it}) + B4 (M/B_{it}) - B5 (PCI_{it}) + B6 (Earning\ per\ asset_{it})$$

With

LI = Labor Intensity (Salaries/Total Assets)

L = Leverage of firm (Total Debt/Total Equity)

M/B = Market to book ratio

PCI = Physical Capital Intensity

Earning per asset = Earning per asset (Earnings before Interest & Taxes / Total Assets)

t = time series

i = cross section

h) *Correlation Non Bankrupt Sample*

	LI	L	MB	P	PCI	S
LI	1					
L	0.01171	1				
MB	0.01788	0.73567	1			
P	0.08982	0.09499	0.08387	1		
PCI	-0.1375	-0.0529	-0.0428	-0.3477	1	
S	-0.2279	-0.1245	-0.1205	-0.087	0.08724	1

Regression Table of non bankrupt sample shows panel results of model. The results shows that the constant value of dependent variable (Labor Intensity) is 0.415 which shows the change in non-financial Pakistani firms Salary to Total Assets ratio when there is no other independent variable effects. Leverage, firm size and Physical Capital Intensity all are negatively impacting Labor Intensity and Market to Book Ratio and Earning per asset is positively impacting Labor Intensity. Only Size of has significant negative impact on Labor

Intensity but the value of coefficient is quite small. With increase in one unit of Firm Size Labor Intensity decreases by 0.044. These results are again opposite to scholars prediction and research as according to them with increase in firm size labor wages shall rise thereby increasing Labor Intensity. These results can be due to the fact that large firms are more stable and are more likely to survive than small firms thus pay of wages at a minimum rate.

i) *Panel Least Square Regression Non Bankrupt Sample*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.415844	0.083643	4.971651	0
L	-7.57E-05	0.000229	-0.33095	0.7409
MB	1.79E-05	0.000338	0.053039	0.9577
P	0.0441	0.074996	0.588033	0.557

PCI	-0.06397	0.036208	-1.76677	0.0783
S	-0.04477	0.011801	-3.79352	0.0002
R-squared	0.067485			
Adjusted R-squared	0.051352			
F-statistic	4.182923			
Prob(F-statistic)	0.001099			

All independent variables except size have no significant impact on Labor Intensity according to the results of our safe firm sample thus no variable is consistent with theory and also the results of Chemmanur, Cheng, and Zhang (2012) confirming that our first hypothesis that with increase in leverage of firm Labor Intensity will increase keeping other variables constant is rejected. Thus the theory of BSZ (2010) that firms will not use large amounts of debt because of the increase in labour expenses with increase in debt offsetting benefits of debt is not applicable in Pakistani listed firms as shown by our results. These result also confirm rejection of our third hypothesis that salary premium cost caused by increase in debt causes firms to abstain from incorporating large amount of debt in capital structure.

Further the results conclude that model is fit as shown by value of F-Statistic. The value of R-Squared is 0.067 showing that the independent variables (leverage,

Physical capital intensity, Earning per asset, Market to book ratio) explain 6.7% of the variation in our dependent variable that is Labor Intensity.

We further see that Auto industry has the highest employee wage per asset among the firms in safe zone as shown in Regression Table Non Bankrupt across Industry (1). Auto industry is followed by Pharmaceutical industry. Beverages industry has lowest employee wage per asset among the firms in safe zone as shown by Regression Table Non Bankrupt across Industry (2).

We further check role of size across the industries in our non bankrupt sample. Regression Table Non Bankrupt across Industry with respect to size shows the impact of size on Labor Intensity Industry wise. Expect Auto, Household and Pharmaceutical Industry in all other industries size has negative impact on labor intensity. However there is no significant impact of size on labor intensity in any industry individually.

j) *Regression Table Non Bankrupt across Industry (1)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.332482	0.105884	3.140058	0.0019
L	8.21E-05	0.000222	0.369705	0.7119
MB	-0.00026	0.000326	-0.78491	0.4332
P	0.043319	0.077619	0.558094	0.5772
PCI	-0.07587	0.047553	-1.59546	0.1118
S	-0.01299	0.016142	-0.80453	0.4218
CEMENT	-0.13848	0.034622	-3.99966	0.0001
CHEMICAL	-0.14744	0.041584	-3.54568	0.0005
OIL	-0.19551	0.038536	-5.07326	0
BEVERAGES	-0.11962	0.050867	-2.35162	0.0194
ELECTRIC	-0.16941	0.044872	-3.77534	0.0002
ENGINEERING	-0.17185	0.03774	-4.55338	0
TELECOM	-0.09283	0.067342	-1.3785	0.1692
FORESTRY	-0.16383	0.066896	-2.449	0.015
HOUSE HOLD	-0.04219	0.068639	-0.61459	0.5393
MEDIA	-0.12796	0.070323	-1.81957	0.0699
INDUSTIRAL MINING	-0.19237	0.05126	-3.75274	0.0002
TOBACOO	-0.08097	0.067765	-1.1949	0.2332
PHARAMA	-0.02856	0.04017	-0.71086	0.4778
TRAVEL	-0.06841	0.075894	-0.90142	0.3682
INDUSTRIAL TRANSPORTATION	-0.15096	0.069649	-2.1675	0.0311

UTILITIES	-0.1527	0.057179	-2.67058	0.008
R-squared	0.211093			
Adjusted R-squared	0.150408			
F-statistic	3.478498			
Prob(F-statistic)	0.000001			

k) Regression Table Non Bankrupt across Industry (2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.136977	0.1233	1.110924	0.2676
L	8.21E-05	0.000222	0.369705	0.7119
MB	-0.00026	0.000326	-0.78491	0.4332
P	0.043319	0.077619	0.558094	0.5772
PCI	-0.07587	0.047553	-1.59546	0.1118
S	-0.01299	0.016142	-0.80453	0.4218
AUTO	0.195506	0.038536	5.073259	0
CEMENT	0.057028	0.037542	1.519043	0.1299
CHEMICAL	0.048063	0.044887	1.07076	0.2852
OIL	0.075886	0.053399	1.421103	0.1564
ELECTRIC	0.026099	0.044318	0.588908	0.5564
ENGINEERING	0.02366	0.039228	0.603131	0.5469
TELECOM	0.102674	0.070881	1.44855	0.1486
FORESTRY	0.031678	0.067808	0.467166	0.6408
HOUSE HOLD	0.153321	0.072541	2.113564	0.0355
MEDIA	0.067547	0.074058	0.912089	0.3625
INDUSTIRAL MINING	0.003141	0.050914	0.061685	0.9509
TOBACOO	0.114533	0.066189	1.730384	0.0847
PHARAMA	0.16695	0.04339	3.847706	0.0001
TRAVEL	0.127093	0.072462	1.753924	0.0806
INDUSTRIAL TRANSPORTATION	0.044541	0.068702	0.648322	0.5173
UTILITIES	0.042804	0.049982	0.856402	0.3925
R-squared	0.211093			
Adjusted R-squared	0.150408			
F-statistic	3.478498			
Prob(F-statistic)	0.000001			

l) Regression Table Non Bankrupt across Industry w.r.t Size

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.18276	0.110698	1.65099	0.0999
L	7.08E-05	0.000223	0.31807	0.7507
MB	-0.00023	0.000325	-0.71787	0.4735
P	0.047258	0.077416	0.610444	0.5421
PCI	-0.07826	0.048807	-1.60339	0.11

AUTO*S	0.01024	0.01763	0.580854	0.5618
CEMENT *S	-0.01136	0.016971	-0.66956	0.5037
CHEMICAL*S	-0.01132	0.017625	-0.64208	0.5214
OIL*S	-0.01916	0.014676	-1.30577	0.1927
BEVERAGES*S	-0.00845	0.018683	-0.45226	0.6514
ELECTRIC*S	-0.01525	0.016452	-0.92676	0.3549
ENGINEERING*S	-0.01632	0.017464	-0.93475	0.3507
TELECOM*S	-0.00345	0.021271	-0.16197	0.8715
FORESTRY*S	-0.01506	0.019376	-0.77698	0.4378
HOUSE HOLD *S	0.004218	0.020831	0.202475	0.8397
MEDIA *S	-0.00925	0.020893	-0.44284	0.6582
INDUSTIRAL MINING *S	-0.01942	0.017846	-1.08841	0.2774
TOBACOO*S	-0.00318	0.018027	-0.17613	0.8603
PHARAMA *S	0.00619	0.01827	0.338776	0.735
TRAVEL *S	-0.00296	0.016179	-0.18283	0.8551
INDUSTRIAL TRANSPORTATION*S	-0.01299	0.017746	-0.73192	0.4648
UTILITIES*S	-0.01326	0.01491	-0.88905	0.3748
R-squared				0.211085
Adjusted R-squared				0.150399
F-statistic				3.478333
Prob(F-statistic)				0.000001

IX. DATA ANALYSIS OF BANKRUPT OBSERVATIONS

a) Descriptive Statistics

Mean value of Labor Intensity is 0.058 which means that on average employees earn PKR 0.058 against every PKR 1 of assets. Maximum value reaches to 0.28 that is against every PKR 1 assets of firm employees earn PKR 0.28. Minimum value rests at zero stating that a firm did not paid salary in a certain year. Firms in our sample vary from total assets of PKR 9 Million to PKR 209 Billion. Mean value of total assets of firms in our sample is PKR 5.5 Billion. Mean value of

Earning per asset is about PKR 0.092, with firms earning up to maximum of PKR 0.65 per asset and generating maximum of loss of PKR 0.27 per asset. Market to Book ratio has a mean of 3.5. On average the gross amount of property, plant and equipment is 55% of total assets with maximum of 99.86% and minimum of 10.99% of total assets. Mean leverage is at 2.13 that is for every PKR 1 of equity on average firms have a loan of PKR 2.13. Maximum leverage value is at 132.56 that is against every PKR 1 of equity firm has a debt of PKR 132.56. Descriptive Statistic Non Bankrupt Sample table provides summary statistics of variables used in analysis of Labor Intensity.

b) Descriptive Statistic Bankrupt Sample

	LI	L	MB	P	PCI	S
Mean	0.05881	2.13461	3.50185	0.09206	0.55004	6.84944
Median	0.03132	0.71357	1.0046	0.08142	0.51751	7.10994
Maximum	0.28133	132.563	61.6848	0.65095	0.99863	8.34585
Minimum	0	-6.1262	-1.4477	-0.2738	0.10993	3.81585
Std. Dev.	0.06617	12.2677	9.79501	0.15614	0.26697	0.92009
Skewness	1.49985	9.8913	4.47924	0.70356	0.07416	-1.2697
Kurtosis	4.24003	104.338	22.885	4.62723	1.70282	4.60193

Jarque-Bera	54.8747	55525	2477.43	24.1035	8.87856	46.9503
Probability	0	0	0	6E-06	0.0118	0
Sum	7.3509	266.826	437.732	11.5068	68.7545	856.18
Sum Sq. Dev.	0.54294	18661.6	11896.9	3.02293	8.83755	104.973
Observations	125	125	125	125	125	125

Correlation Non Bankrupt Sample table shows the correlation matrix of the variables in bankrupt sample. The results state that there is positive correlation of Labor Intensity with Market to Book Ratio and Earning per asset. All other independent variables (leverage, physical capital intensity and firm size) are negatively correlated to Labor Intensity. Labor Intensity has higher value of positive correlation with market to book ratio of the firm showing that with increase in market value of firm average pay will also increase. Physical Capital Intensity and firm size however have a negative correlation with labor Intensity with a higher

intensity than any other variable stating that as firms become more mechanized the labor intensity decreases and also increased firm size decreases labor Intensity. Further as expected in literature leverage of firms in bankrupt zone is negatively correlated with labor intensity as firm use debt as bargaining tool to lower salaries of employees. This relation is however very less.

Further Physical Capital Intensity is negatively correlated with Earning per assets and firm size. Leverage is positively correlated with Market to Book ratio of firm.

c) Correlation Bankrupt Sample

	LI	L	MB	P	PCI	S
LI	1					
L	-0.022652	1				
MB	0.433759	0.346376	1			
P	0.198948	-0.124945	-0.0586	1		
PCI	-0.206161	0.075271	0.190246	-0.365769	1	
S	-0.322994	-0.016132	-0.175592	0.299102	-0.371148	1

As per our results of correlation of bankrupt firms the regression equation to measure impact of independent variables on dependent variables is

$$LI_{it} = Intercept - B1 (L_{it}) - B3 (FS_{it}) + B4 (M/B_{it}) - B5 (PCI_{it}) + B6 (Earning\ per\ asset_{it})$$

With

LI = Labor Intensity (Salaries/Total Assets)

L = Leverage of firm (Total Debt/Total Equity)

M/B = Market to book ratio

PCI = Physical Capital Intensity

Earning per asset = Earning per asset (Earnings before Interest & Taxes / Total Assets)

t = time series & i = cross section

Panel Least Square Regression Bankrupt Sample table shows panel results of model. The results shows that the constant value of dependent variable (Labor Intensity) is 0.309 which shows the change in non-financial Pakistani firms Salary to Total Assets ratio when there is no other independent variable effects. Leverage, firm size and Physical Capital Intensity all are negatively impacting Labor Intensity and Market to Book Ratio and Earning per asset is positively impacting Labor Intensity. All independent variables have significant relationship with labor Intensity. As predicted by literature that firms in distress zone will use debt as

bargaining tool to reduce salary is confirmed as with increase in leverage of firm salary decreases however the intensity of decrease in wages to total assets ratio is quite less with increase in leverage. With increase in one unit of leverage labor intensity decreases by 0.0008 units only at 5% level of significance. This means there is 95% probability that with increase in leverage in distress firms labor intensity will decrease. All control variables (firm size, Market to book ratio, Physical Capital Intensity and Earning per asset) have highly significant relation with labor intensity that is they impact labor intensity at 1% level of significance.

Market to book ratio used as proxy of growth has significant relation with labor intensity however the coefficient is very small. At 1% level of significance one unit increase in market to book ratio increases labor intensity by 0.003 unit. The result is in line with theory stating that as firm maximizes its equity value showing signs of growth salary of employees also increase. Profitability has significant positive relation with labor intensity in line with theory and literature. At 1% level of significance one unit increase in profitability labor intensity increases by 0.086 units.

Physical Capital intensity however opposite of theory shows highly significant effect of firm mechanization on salary of employees. As per theory with increase in physical capital intensity output of firm increases thereby increasing sales and profitability but

in case of Pakistan the results are opposite which is due to the fact of high and increasing level of unemployment. Increase in physical capital intensity by one unit at 1% level of significance labor intensity decreases by 0.093 units. Size of firm also significantly negatively impacts labor intensity. Increase in one unit of size of firm, labor intensity decreases by 0.031 units at 1% level of significance. This relation is also against theory which states bigger firms are to pay more as compared to smaller firms. This may be due to the fact that bigger firms are stable and more preferred by employees as they have more chances of survival.

Further R square value is 0.4765 showing that 47.65% of variance in labor intensity is predicted by independent variables in case where firms are in distress zone.

d) Panel Least Square Regression Bankrupt Sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.309198	0.040387	7.655802	0
L	-0.00079	0.000385	-2.04403	0.0432
MB	0.003316	0.000491	6.758463	0
P	0.086015	0.031033	2.771713	0.0065
PCI	-0.0936	0.018671	-5.01301	0
S	-0.03165	0.005286	-5.9872	0
R-squared		0.476547		
Adjusted R-squared		0.454553		
F-statistic		21.66732		
Prob(F-statistic)		0		

Negative significant impact of leverage on Labor Intensity confirms theory that firms in bankrupt zone take on debt and use it as bargaining tool to reduce salaries of employees this also confirms our second hypothesis that firms labor intensity does not increase with increase in leverage in distress zone.

We further see that Pharmaceutical industry has the highest employee wage per asset among the firms in distress zone as shown in Regression Table Bankrupt

across Industry (1). Pharmaceutical industry is followed by Travel Industry. Telecom industry has lowest employee wage per asset among the firms in distress zone as shown by Regression Table Bankrupt across Industry (2).

We further check moderating role of profitability, market to book ratio, physical capital intensity and size across the industries in our bankrupt sample.

e) Regression Table Bankrupt across Industry (1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.360299	0.029488	12.2183	0
L	-8.12E-05	0.000296	-0.27411	0.7845
MB	0.000894	0.000719	1.244526	0.216
P	0.00386	0.019096	0.202147	0.8402
PCI	-0.06375	0.016275	-3.91677	0.0002
S	-0.01696	0.003479	-4.87685	0
CEMENT	-0.16429	0.013986	-11.7464	0
CHEMICAL	-0.16594	0.01358	-12.2193	0

OIL	-0.17659	0.015353	-11.5023	0
ELECTRIC	-0.19357	0.01467	-13.1944	0
TELECOM	-0.1976	0.016023	-12.3317	0
FORESTRY	-0.15801	0.017819	-8.86777	0
HOUSE HOLD	-0.16788	0.018234	-9.20707	0
MEDIA	-0.05681	0.018599	-3.05434	0.0028
INDUSTIRAL MINING	-0.18859	0.018864	-9.9975	0
TOBACCO	-0.07138	0.017387	-4.10565	0.0001
TRAVEL	-0.05313	0.034048	-1.56041	0.1216
R-squared				0.860142
Adjusted R-squared				0.839422
F-statistic				41.51311
Prob(F-statistic)				0

f) Regression Table Non Bankrupt across Industry (2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.162703	0.028106	5.788792	0
L	-8.12E-05	0.000296	-0.27411	0.7845
MB	0.000894	0.000719	1.244526	0.216
P	0.00386	0.019096	0.202147	0.8402
PCI	-0.06375	0.016275	-3.91677	0.0002
S	-0.01696	0.003479	-4.87685	0
CEMENT	0.033308	0.011887	2.801983	0.006
CHEMICAL	0.031659	0.011706	2.7044	0.008
OIL	0.021005	0.012047	1.743581	0.0841
ELECTRIC	0.00403	0.011447	0.352042	0.7255
FORESTRY	0.039584	0.016092	2.459845	0.0155
HOUSE HOLD	0.029716	0.015211	1.953531	0.0533
MEDIA	0.140789	0.016351	8.610629	0
INDUSTIRAL MINING	0.009005	0.017959	0.501439	0.6171
TOBACCO	0.197596	0.016023	12.33165	0
PHARAMA	0.126212	0.014907	8.466453	0
TRAVEL	0.144468	0.037291	3.874078	0.0002
R-squared				0.860142
Adjusted R-squared				0.839422
F-statistic				41.51311
Prob(F-statistic)				0

g) Regression Table Bankrupt across Industry w.r.t Profitability

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.203031	0.033053	6.142612	0
L	-0.00056	0.000287	-1.95564	0.0531
MB	0.002284	0.000509	4.48442	0
PCI	-0.04554	0.016454	-2.76803	0.0066
S	-0.02055	0.0041	-5.01227	0
CEMENT *P	-0.07396	0.034086	-2.16964	0.0322
CHEMICAL *P	0.071685	0.033672	2.128933	0.0355
OIL *P	0.058557	0.053171	1.101302	0.2732
ELECTRIC *P	-0.11872	0.072322	-1.64159	0.1036
TELECOM *P	-0.08778	0.151225	-0.58043	0.5628
FORESTRY *P	0.126712	0.173723	0.72939	0.4673
HOUSE HOLD *P	0.088646	0.177157	0.500379	0.6178

MEDIA *P	0.424413	0.064227	6.608043	0
INDUSTIRAL MINING *P	2.98408	1.935959	1.541396	0.1261
TOBACCO *P	0.532146	0.058607	9.079904	0
PHARAMA *P	0.529907	0.089303	5.933809	0
TRAVEL *P	3.330852	1.439251	2.314295	0.0225
R-squared				0.779489
Adjusted R-squared				0.746821
F-statistic				23.86077
Prob(F-statistic)				0

h) Regression Table Bankrupt across Industry w.r.t M/B Ratio

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.203088	0.031495	6.448319	0
L	-9.08E-05	0.000639	-0.14215	0.8872
P	-0.01166	0.023698	-0.49207	0.6237
PCI	-0.05572	0.017505	-3.1831	0.0019
S	-0.01933	0.00403	-4.79691	0
CEMENT *MB	0.000875	0.001947	0.449322	0.6541
CHEMICAL*MB	0.007846	0.003234	2.425802	0.0169
OIL*MB	-0.003	0.005986	-0.50061	0.6177
ELECTRIC*MB	-0.01244	0.006822	-1.82364	0.071
TELECOM*MB	-0.0423	0.025723	-1.64432	0.103
FORESTRY*MB	0.01134	0.013626	0.83219	0.4071
HOUSE HOLD *MB	0.002059	0.011341	0.181516	0.8563
MEDIA *MB	0.159175	0.024336	6.540635	0
INDUSTIRAL MINING *MB	-0.0155	0.013333	-1.16285	0.2475
TOBACCO *MB	0.026279	0.002333	11.26333	0
PHARAMA *MB	0.042641	0.007017	6.076647	0
TRAVEL *MB	0.003133	0.00032	9.79572	0
R-squared				0.809104
Adjusted R-squared				0.780823
F-statistic				28.60959
Prob(F-statistic)				0

i) Regression Table Bankrupt across Industry w.r.t Physical Capital Intensity

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.201963	0.028775	7.01873	0
L	-0.00016	0.000311	-0.514	0.6083
MB	0.001159	0.00075	1.544964	0.1253
P	0.007107	0.01988	0.357498	0.7214
S	-0.01951	0.003629	-5.37581	0
CEMENT *PCI	-0.05049	0.014217	-3.55166	0.0006
CHEMICAL*PCI	-0.06057	0.01853	-3.26864	0.0014
OIL*PCI	-0.04448	0.027176	-1.63667	0.1046

ELECTRIC*PCI	-0.08487	0.020755	-4.08891	0.0001
TELECOM*P	-0.12355	0.039724	-3.11005	0.0024
FORESTRY*PCI	-0.03917	0.021121	-1.85448	0.0664
HOUSE HOLD *PCI	-0.02699	0.070234	-0.38424	0.7016
MEDIA *PCI	0.708774	0.110691	6.403171	0
INDUSTIRAL MINING *PCI	-0.07826	0.016483	-4.74773	0
TOBACCO *PCI	0.300155	0.032819	9.145834	0
PHARAMA *PCI	0.298003	0.053047	5.617687	0
TRAVEL *PCI	0.060164	0.041841	1.437924	0.1533
R-squared				0.843669
Adjusted R-squared				0.820509
F-statistic				36.4277
Prob(F-statistic)				0

j) Regression Table Bankrupt across Industry w.r.t Size

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.193037	0.027927	6.912131	0
L	-7.41E-05	0.000294	-0.25172	0.8017
MB	0.00089	0.000714	1.246061	0.2154
P	0.00063	0.019257	0.032704	0.974
PCI	-0.06289	0.016969	-3.70599	0.0003
CEMENT *S	-0.01676	0.003481	-4.8133	0
CHEMICAL*S	-0.01642	0.003648	-4.49968	0
OIL*S	-0.01828	0.00357	-5.1201	0
ELECTRIC*S	-0.02043	0.003292	-6.20635	0
TELECOM*S	-0.02115	0.003636	-5.81769	0
FORESTRY*S	-0.01573	0.00362	-4.34507	0
HOUSE HOLD *S	-0.01705	0.004545	-3.74984	0.0003
MEDIA *S	0.001148	0.004905	0.233962	0.8155
INDUSTIRAL MINING *S	-0.02049	0.003988	-5.13795	0
TOBACCO *S	0.006672	0.003985	1.674244	0.097
PHARAMA *S	-0.00346	0.004023	-0.86125	0.391
TRAVEL *S	0.003069	0.007412	0.414011	0.6797
R-squared				0.861138
Adjusted R-squared				0.840565
F-statistic				41.8593
Prob(F-statistic)				0

Regression Table Bankrupt across Industry with respect to Profitability shows the impact of profitability on Labor Intensity Industry wise. In Cement, Electric and Telecom Industry profitability has negative impact on labor intensity and only in Cement Industry profitability has significant negative impact on labor intensity. In Oil, Forestry, House Hold and Industrial mining the impact of profitability on labor intensity is positive but insignificant. In remaining five industries of Bankrupt Sample profitability significantly positively impacts labor intensity.

Regression Table Bankrupt across Industry with respect to M/B Ratio (market to book ratio) shows the impact of market to book ratio on Labor Intensity Industry wise. In Oil, Electric, Telecom and Industrial

Mining Industry market to book ratio has negative impact on labor intensity. However the impact is insignificant. In Cement, Forestry, and House Hold the impact of market to book ratio on labor intensity is positive but insignificant. In remaining five industries of Bankrupt Sample market to book ratio significantly positively impacts labor intensity.

Regression Table Bankrupt across Industry with respect to Physical Capital Intensity shows the impact of Physical Capital Intensity on Labor Intensity Industry wise. In Media, Tobacco, Pharmaceutical and Travel Industry Physical Capital Intensity has positive impact on labor intensity. However the impact in travel industry is insignificant. In Oil, Forestry and House Hold Industry the impact of Physical Capital Intensity on labor intensity

is negative but insignificant. In remaining five industries of Bankrupt Sample Physical Capital Intensity significantly negatively impacts labor intensity.

Regression Table Bankrupt across Industry with respect to Size shows the impact of Size on Labor Intensity Industry wise. In Media, Tobacco and Travel Industry Size has positive impact on labor intensity. However the impact is insignificant. In Pharmaceutical Industry the impact of Size on labor intensity is negative but insignificant. In remaining eight industries of Bankrupt Sample Size significantly negatively impacts labor intensity.

X. CONCLUSION

Titman (1984) while exploring determinants of capital structure argued that firms don't reach optimal capital structure because of indirect costs associated with increase in leverage. According to Titman (1984) direct costs of debt do not truly and significantly explain why firms restrain from using debt thus the only answer for restraining firms from use of debt was the indirect cost borne by firms by incorporating debt in their capital structure.

Upon this argument Berk, Stanton, and Zechner (2010) developed a model stating that increase in salaries paid to employees with increase in leverage is a major indirect cost which refrains firms from using large amount of debt. As per BSZ (2010) as firms incorporate debt in their capital structure the employees feel high risks of bankruptcy of firms and further increased risk of unemployment. Thus to compensate the risk of unemployment employees demand a salary premium. This salary premium paid to employees offsets the tax benefits of debt thus a firm can only take up debt till the time this premium is below tax benefits of debt thereby enforcing firms to restrain from use of large amount of debt or even not letting firms to reach their optimal capital structure.

To statistically verify this model Chemmanur, Cheng, and Zhang (2012) for the first time explored the impact of increase leverage on salaries. As per results of Chemmanur, Cheng, and Zhang (2012) salaries rise with increase in leverage thus proving BSZ (2010) model and theory of Titman (1984).

I also statistically checked the BSZ (2010) model with context of Pakistan. After analyzing sample data collected from listed companies from Pakistan I conclude that in overall results the theory of Titman and model of BSZ are not applicable in Pakistan. The main reason for this are the economic conditions of country and as well as the ownership structure of firms. There is a large workforce available in the country to work at any provided pay. Further the firms in the country are family held and thus the level of corporate governance is very low. Further these family held firms have small ownership structure thus it is easy for them to acquire

leverage and keep employees at minimum wage. The same conclusion remains for observations of firms in safe zone.

The results of my observations of bankrupt firms or firms in distress zone support the theory that firms in distress zone will use debt as a bargaining tool to lower down the wages however the magnitude is quite small. Growth of firms in distress zone and profitability of these firms increase labor intensity significantly however size and physical capital Intensity of firm significantly decrease labor intensity.

a) *Direction for the Future Research*

This conclusion is drawn from a sample 84 listed companies from different sector of Pakistan covering a period of five years and can be further enhanced by collecting data of more firms for a longer period. Further to get a clear picture the data can be divided in two parts firms with specialized and non specialized employees. As firms with specialized employees will already be providing higher wages than firms with non specialized employees. Similarly technological and non technological firms can be separated to see the similar impact. Existing evidence suggests that employees in non technological firms are entrenched or are already paid higher and scholars expect that there is stronger effect of leverage on labor costs when employees are more entrenched. Further the BSZ (2010) model is of no use in cases where assets of firms are such that they support high leverage and highly paid employees giving a positive relationship between leverage and salary. Thus our conclusion is not final and is restricted to data, time period and the division of data.

b) *Recommendation*

The economic conditions of country, ownership structure of firms and the level of corporate governance in firms does not allow employees to bargain their rights. Thus leverage of firms has no significant impact on salary of employees of firm in Pakistan when they are in safe zone. Therefore the firms in Pakistan are free to take on leverage as the tax benefit of debt is not offset by any premium paid to employees to cover up their risk of unemployment.

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Diversification and Portfolio Performance of the Pharmaceutical Sector of Bangladesh

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Abstract- The pharmaceutical industry is one of the thrust sectors of the economy of Bangladesh. Here, in this report I evaluate how individual players or the companies under review for this report namely Beximco Pharmaceuticals, Ambee Pharmaceuticals, Square Pharmaceuticals and Renata Pharmaceuticals are performing individually and the impact on their portfolio performance when they combine to form a portfolio. While doing this I also evaluate whether the effects of diversification hold for this sector. To evaluate portfolio performance, I used common measures such as Sharpe ratio and M-Squared. To perform all these, I had to calculate the standard deviation and returns of the individual assets over a four year period, along with calculating the covariances between their returns. Based on these calculations, I estimated the standard deviation and returns of the portfolio constructed. To check the effects of diversification and to calculate the ratios these data were used.

Keywords: *diversification, m-squared, portfolio performance, sharpe ratio.*

GJMBR - C Classification : *JELCode : G11*



DIVERSIFICATIONANDPORTFOLIOPERFORMANCEOFTHEPHARMACEUTICALSECTOROFBANGLADESH

Strictly as per the compliance and regulations of:



Diversification and Portfolio Performance of the Pharmaceutical Sector of Bangladesh

Fairuz Chowdhury

Abstract- The pharmaceutical industry is one of the thrust sectors of the economy of Bangladesh. Here, in this report I evaluate how individual players or the companies under review for this report namely Beximco Pharmaceuticals, Ambee Pharmaceuticals, Square Pharmaceuticals and Renata Pharmaceuticals are performing individually and the impact on their portfolio performance when they combine to form a portfolio. While doing this I also evaluate whether the effects of diversification hold for this sector. To evaluate portfolio performance, I used common measures such as Sharpe ratio and M-Squared. To perform all these, I had to calculate the standard deviation and returns of the individual assets over a four year period, along with calculating the covariances between their returns. Based on these calculations, I estimated the standard deviation and returns of the portfolio constructed. To check the effects of diversification and to calculate the ratios these data were used. I used MsExcel program to perform these analysis. The results showed although the effects of diversification hold the portfolio performance of this sector is not satisfactory.

Keywords: *diversification, m-squared, portfolio performance, sharpe ratio.*

I. INTRODUCTION

Pharmaceutical sector is one of the success stories for the economy of Bangladesh. This is one of the thrust sectors of the economy with it being a billion taka industry. But that does not necessarily mean that all the companies present would do well, in terms of the value they provide to their shareholders, at the same time. The value to the shareholders is through capital appreciation and dividend gain. It is highly unlikely that all companies will show the same growth in earnings at the same time. The change in earnings impacts the value of firm; which in turn impacts the wealth of the shareholder.

A look at the earnings growth of the different companies in this sector specifies the claim above. While this year, ACI showed a growth in earnings of 34%, Beacon Pharma showed a decline in growth by 20% (EBL Securities, 2015). So, while investing in a certain company can be beneficial; at the same time it can be sacrificial.

So, comes one of the basic concepts of finance: diversification. Diversification is a procedure of minimizing risk by investing in different stocks, preferably without sacrificing return. The aim of this is to lower the risk of the portfolio held by an investor.

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Diversification looks to nullify the firm-specific or unsystematic risk associated with a certain risk class. For a reasonably well-diversified portfolio, only market risk matters (Brealey, Myers, & Marcus, 2001). Thus, in a well diversified portfolio, one gets compensated for the market risk, not the unsystematic risk. As one adds new securities to the portfolio, he/she is coming up with the new portfolios. At the same time, one needs to look at the performance of the new portfolios. The performance evaluation of the portfolios can be based on Capital Asset Pricing Model (CAPM) or other multi factor models. Some of the common performance evaluation ratios based on CAPM are Sharp ratio, Treynor ratio, M-Squared (M^2) and Jensen's Alpha.

The main objective of this study is to check while adding new securities to the portfolio does the effects of diversification take place for the Pharmaceutical sector, and to check the performance of the new portfolios created along the way using Sharp ratio and Modigliani risk-adjusted performance (M^2).

II. LITERATURE REVIEW

a) *Pharmaceutical Sector of Bangladesh*

The pharmaceutical industry is one of the most technologically advanced sectors currently in existence.....local companies fulfilling 98% of the drug requirements, a picture contrary to that of 20 years ago, when 75% of the drugs were imported (EBL, 2015).

The top three companies in this sector are Square Pharmaceutical, Incepta Pharmaceutical and Beximco Pharmaceutical with companies combined holding around 40 percent of the market share. The domination of the local companies has ensured that none of multinationals is in the top 10 list when it comes to market share (Bangladesh's Corporate World, 2013).

b) *Portfolio Return and Risk*

i. *Portfolio Return*

The return on a portfolio is simply a weighted average of the returns on the individual securities. We can find the return of portfolio consisting of n securities by this:

$$Rp = W1R1 + W2R2 + \dots \dots \dots + WnRn$$

Where:

Rp = return on portfolio

$W1$ = weight of security 1

$R1$ = return on security 1

- W_2 = weight of security 2
- R_2 = return on security 2
- W_n = weight of security n
- R_n = return on security n

The weight, W here means the percentage of investment in a certain security and return, R means the return on that security.

ii. *Types of Risk*

Investment risk depends on the dispersion or spread of possible outcomes and the standard measures are variance and standard deviation (Brealey, Myers, & Marcus, 2001). In finance, we divide total risk into two components: a systematic portion, called systematic risk, and the remainder, related to the firm or industry is called firm-specific or unsystematic risk. The distinction is expressed as: systematic risk, any risk that affects a large number of assets, each to a greater or lesser degree while unsystematic risk, risk that specifically affects a single asset or certain class of securities. While systematic risk is risk that is inherent in the overall market and affects the market as a whole; unsystematic risk is risk that is local or limited to a particular asset or industry and does not impact assets outside that asset class (CFA Institute, 2013). Example of systematic risk is change in interest rates; and example of unsystematic risk is failure of drug trial of a pharmaceutical company.

Total Risk = Systematic Risk + Unsystematic Risk

Standard deviation of an individual stock is the measure of total risk which comprises of both the systematic and unsystematic risk. In short, while unique or unsystematic risk arises because many of the perils that surround an individual company are peculiar to that company and perhaps its direct competitors: market risk or systematic risk stems from economy wide perils that threaten all businesses (Brealey et al., 2001).

iii. *Portfolio Risk*

The variance of the portfolio is dependent on standard deviation of individual stocks and covariance or correlation between stocks present in the portfolio.

While the variances of individual securities measure the variability of individual security's return.

Table 1 : The number of Variance and Covariance Terms as a Function of Number of Stocks

Number of Stocks in Portfolio	Total Number of Terms	Number of Variance Terms	Number of Covariance Terms
1	1	1	0
2	4	2	2
3	9	3	6
10	100	10	90
100	10,000	100	9900
-	-	-	-
N	N	N	N - N

In a large portfolio, the number of terms involving covariance between two securities is much greater than the number of terms involving variance of a single security (Ross et al. , 2003). Thus, variance plays the key role in determining the portfolio variance. To get the standard deviation of the portfolio, we have to square root the portfolio variance.

c) *Essence of Diversification*

While total risk of an individual stock is expressed by standard deviation of their returns, the..... securities present in portfolio. So, when two securities' returns move in the same direction at the same time, i.e. both.....we say they are perfectly positively correlated.

The total risk of a portfolio diminishes as we keep adding securities. The portfolio's variance can never drop to zero as only the unsystematic risk is falling, the systematic risk cannot be diversified away. If we plot a portfolio risk versus number of securities graph, as plotted below, we can see that the unsystematic risk decreases as we increase the number of securities in a portfolio. For a reasonably well-diversified portfolio, only market risk matters (Brealey et al., 2001).

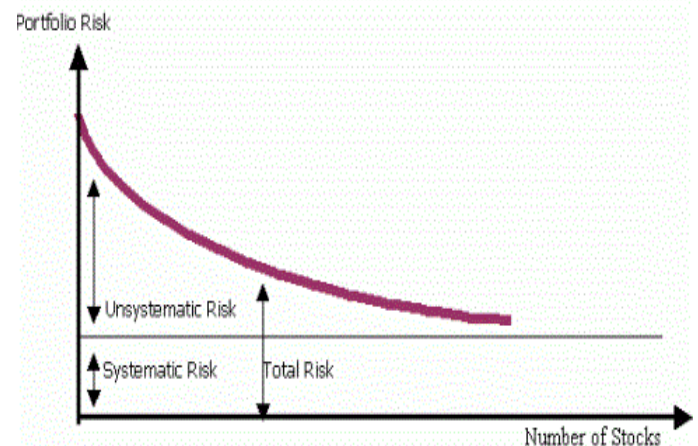


Figure 1 : Relationship between Portfolio Risk and Number of Securities in a Portfolio

Source: <https://thelostprofit.wordpress.com/2011/12/11/diversification-analysis-for-the-diversifically-challenged-unfinished/>

Investors holding diversified portfolios are mostly concerned with macroeconomic risks, not about microeconomic risks peculiar to a particular company or investment project as micro risks are washed out in diversified portfolios (Brealey et al., 2001).

i. *Capital Asset Pricing Model (CAPM)*

As we have already explained that only market or systematic risk exists in a well diversified portfolio so investors won't be compensated for the diversifiable risk in an efficient market. Therefore, investors would be compensated for the market risk involved with investing

in a portfolio of securities. The systematic risk of an asset/portfolio is measured by beta. Beta measures the responsiveness of a security/ portfolio to movements in the market portfolio (Ross et al. , 2003). Investors are compensated for the risk they are taking by this beta measurement.

The Capital Asset Pricing Model (CAPM) is an economic model for valuing stocks, securities and assets by relating risk and expected return. The CAPM is based on the idea that the investors demand additional required return called risk premium for taking additional risk (Sharpe, F.W., 2014). This can be said to be the simplest form of return generating model.

$$Re = Rf + \beta(Rm - Rf)$$

Where,

Re = expected return of a security/portfolio

Rf = risk free rate

β = beta of the security/portfolio

Rm-Rf = Difference between expected return on market and risk-free rate

This formula above, called the capital-asset-pricing model implies that the expected return on a security/portfolio is linearly related to its beta. Blume (1993) stated that the CAPM provides a model, not only explains the equilibrium risk/return relationship, but the linear relationship between the systematic risk and the expected returns.

d) *Performance of Portfolio*

Investors need to know whether it is worth investing in a certain sector or institutional stocks. This can be based on CAPM or multi factor models. Two of the commonly used ratios for portfolio performance evaluation are Sharpe ratio and M-Squared (M^2).

i. *Sharpe Ratio*

The Sharpe ratio is a measure that helps investors figure out how much return they're getting in exchange for the level of risk they're taking on (Marte, 2012). This ratio measures the return on investment for each unit of risk taken i.e. for each unit of total risk taken. Sharpe ratio is defined as risk premium of a portfolio divided by its standard deviation.

$$Sharpe\ ratio = Rp - Rf / \sigma p$$

Where,

Rp = Return of the individual portfolio

Rf = Risk free rate

σp = Standard Deviation of the individual portfolio

It is also known as the reward to variability ratio and assumes that the investor does not own any other assets other than that in his portfolio. The portfolio with the highest Sharpe ratio has the worst performance while that with the highest Sharpe ratio has the best performance (CFAInstitute, 2013).

Sharpe ratios work best when figured over a period of at least three years and through looking at the fund's risk-adjusted performance over several years offers insight on how the fund weathered different market environments (Marte, 2012). It has two limitations: one being the use of total risk as the measure, and second: It can be difficult to interpret and use for comparisons in periods when some funds' returns are below the Treasury-bill return but can be telling when comparing two funds that compete in the same category (Marte, 2012).

ii. *Modigliani–Modigliani Measure (M-Squared)*

Adjusting returns for risk is essential and the methodology employed should be universally representative, M-Squared is an attempt to provide a risk-adjusted measure of performance (Baigent, 2015). It is derived from the widely used and is an extension of the Sharpe ratio in that it is based on total risk, not beta risk (CFAInstitute, 2013). The equation is:

$$M^2 = (Rp - Rf) \frac{\sigma m}{\sigma p} - (Rm - Rf)$$

Where:

Rp = Return of the individual portfolio

Rf = Risk free rate

Rm = Return of market portfolio

σp = Standard Deviation of the individual portfolio

σm = Standard Deviation of the market portfolio

M^2 gives rankings which is similar to that of Sharpe ratio, but in percentage terms. A portfolio that has a positive M^2 value shows the portfolio is performing better than the market while a M^2 value of zero refers to the point that the portfolio matches the performance of the market.

III. RESEARCH METHODOLOGY

For this report, we collected our all information from secondary sources. For the analysis purpose, we collected data from DHAKA STOCK EXCHANGE. To conduct the research, we take the closing share price of the last date of every month from 2010-2013 of the four company from the trade information of DSE.

For the research purposes, we analyzed four pharmaceutical companies, namely, Square Pharmaceuticals, Ambee Pharmaceuticals, Renata Pharmaceuticals and Beximco Pharmaceuticals. Using the closing prices of a company's stocks over two months we calculate the monthly return.

The monthly return is calculated using:

$$Return = (\text{closing price of this month} - \text{closing price of the previous month}) / \text{closing price of the previous month.}$$

Once we calculated the monthly returns over the four year period we estimated the average return

during this period using the AVERAGE function of Excel. At the same time using the STANDARD DEVIATION function we found out the standard deviation of the return for every company.

Using the same return computations we calculate the co-variances between returns of any two companies. Once we get the standard deviation and co-variances we calculate the portfolio variance. Once we have the portfolio variance we can estimate the portfolio standard deviation for the different combinations of portfolios. Using these data, we check for the effects of diversification and performance of the portfolios.

a) *Standard Deviation*

Standard deviation is applied to the annual rate of return of an investment to measure the investment's volatility. Volatility is a measure of risk to determine the risk of a specific security. We use Excel Function to find out the SD.

Excel Function=STDEVP (Return of the four years)

The formula for calculating the portfolio variance:

$$\text{For two stock portfolio: } \sigma_p^2 = w_A^2 \sigma^2(R_A) + w_B^2 \sigma^2(R_B) + 2*(w_A)*(w_B)*\text{Cov}(R_A, R_B) \quad \{3.1\}$$

$$\text{For three stock portfolio } \sigma_p^2 = w_A^2 \sigma^2(R_A) + w_B^2 \sigma^2(R_B) + w_C^2 \sigma^2(R_C) + 2*(w_A)*(w_B)*\text{Cov}(R_A, R_B) + 2*(w_A)*(w_C)*\text{Cov}(R_A, R_C) + 2*(w_B)*(w_C)*\text{Cov}(R_B, R_C) \quad \{3.2\}$$

$$\text{For four stock portfolio } \sigma_p^2 = w_A^2 \sigma^2(R_A) + w_B^2 \sigma^2(R_B) + w_C^2 \sigma^2(R_C) + w_D^2 \sigma^2(R_D) + 2*(w_A)*(w_B)*\text{Cov}(R_A, R_B) + 2*(w_A)*(w_C)*\text{Cov}(R_A, R_C) + 2*(w_B)*(w_C)*\text{Cov}(R_B, R_C) + 2*(w_A)*(w_D)*\text{Cov}(R_A, R_D) + 2*(w_B)*(w_D)*\text{Cov}(R_B, R_D) + 2*(w_C)*(w_D)*\text{Cov}(R_C, R_D) \quad \{3.3\}$$

From these variances we calculate the standard deviation of the portfolio (σ_p) by using excel function SQRT.

d) *Portfolio Return*

Portfolio return is the actual return in monetary terms that the holder of the portfolio would make based on his/her proportional investment on the individual

$$\text{Return on portfolio for A\& B: } w_A(\text{AVG Return}_A) + w_B(\text{AVG Return}_B) \quad \{3.4\}$$

For a three stock portfolio:

$$\text{Return on portfolio for A, B \& C: } w_A(\text{AVG Return}_A) + w_B(\text{AVG Return}_B) + w_C(\text{AVG Return}_C) \quad \{3.5\}$$

For a four stock portfolio:

$$\text{Return on portfolio for A, B, C and D: } w_A(\text{AVG Return}_A) + w_B(\text{AVG Return}_B) + w_C(\text{AVG Return}_C) + w_D(\text{AVG Return}_D) \quad \{3.6\}$$

Average return (AVG Return) comes from the company's return computation i.e. by summing the return over the period in computation divided by the number of observations and weight, w calculation is the same thing that we did for the portfolio variances.

e) *Effects of Diversification*

We want to look into whether the effects of diversification i.e. reduction of risk with investing in

b) *Covariances*

Covariance measures how two variables move together. It measures whether the two move in the same.... it measures between two company's variable. We have got 8 covariances of these four pharmaceuticals.

c) *Portfolio Variances*

The variance of a portfolio's return, σ_p^2 is a function of the variance of the component assets as well as the covariance between individual securities. It is worthwhile to bear in mind that the variance of the portfolio with an increasing number of securities is more dependent on the covariances between individual securities.

For the computation purposes, we assume that equal investments happening in the different stocks of a portfolio. Therefore when we are taking a case of two stock portfolio, we assume the weight, w assigned to be .5 each. In case of a three stock portfolio, we assume the weight assigned to each individual security to be .33 each.

stocks on the portfolio. In actual terms, both dividends and capital appreciation are components of returns but here we use the capital appreciation/ depreciation to be the actual return. The weights assigned while calculating standard deviation of the portfolio is used here too i.e. the amount invested in each stock would be the same.

For a two stock portfolio:

increasing number of different stocks in a portfolio. We look into the fact that when we invest in different stocks whether the unsystematic risk decreases. We plot a graph with total risk in the y-axis and investment in different stocks in the x-axis.

f) *Portfolio Performance*

For the analysis purpose, we take two commonly performance evaluation ratios: Sharpe ratio

and M-Squared (M²). In both these measures, we take into consideration the total risk; not systematic risk. These measures can be extended to multi-factor models but we are using these simple ratios based on only CAPM in this report.

i. *Sharpe Ratio*

Sharp ratio is explained by portfolio's risk premium divided by portfolio risk. Here, we assume that the investor has invested only in the portfolio in question we take that the investor has the investor has invested in and in nothing else.

To calculate the Sharpe ratio, we need to estimate the monthly risk-free rate. This is calculated by

$$\text{Sharpe ratio} = (\text{portfolio return} - \text{Risk-free rate}) / \text{Standard deviation of portfolio}$$

ii. *Modigliani-Modigliani measure*

Modigliani-Modigliani measure, commonly known as M² measures the risk adjusted returns of the portfolio. For calculating this we need to calculate the return and risk profile of the market index. We took the market index and calculated the return the same way we did for individual stocks. For calculating the risk profile of the market we followed the same procedure we did for calculating the standard deviation of individual stock. The formula used: $M^2 = (R_p - R_f) * \sigma_M / \sigma_p - (R_m - R_f)$

The portfolio return and portfolio standard deviation of individual portfolio calculated above are used here to estimate the M². invested in portfolio consisting of Square Pharmaceuticals, Ambee Pharmaceuticals, Renata Pharmaceuticals and Beximco Pharmaceuticals shares; it means these are the only stocks in which the investor has invested in and in nothing else.

IV. FINDINGS AND ANALYSIS

Four pharmaceutical companies are the targeted companies. These companies are: Square Pharmaceuticals, Beximco Pharmaceuticals, Renata Pharmaceuticals and Ambee Pharmaceuticals. The collected DSE indexes are used for the purpose of calculating the standard deviation, covariance and portfolio variance.

a) *Standard Deviation*

The standard deviation is the measure of total risk. Thus, the standard deviation is estimated to understand the riskiness of the companies. From our analysis the standard deviation for the four companies are calculated to be:

Table 2 : Total Risk of Individual Companies

	Variance	Standard Deviation
Portfolio of Square	0.026	16.00%

Table 4 : Portfolio Variance and Standard Deviation

taking the annual return from 10 year Treasury bond and converting to monthly return. This is done using the formula:

$$R_{\text{annual}} = (1 + R_{\text{monthly}})^{12} - 1$$

Where,

R_{annual} = Annual return of 10 year Treasury bond)
 R_{monthly} = monthly risk – free rate

Once we get the risk-free rate from this equation we can calculate the Sharpe ratio for each portfolio.

The formula for calculating the Sharpe ratio is presented below:

Standard Deviation (Square Pharma.)	16.00%
Standard Deviation (Beximco Pharma.)	13.24%
Standard Deviation (Renata Pharma.)	16.03%
Standard Deviation (Ambee Pharma.)	23.77%

b) *Covariance*

As we know, covariance is a measure of the relation between the movements of the stocks' returns. Portfolio variance is more dependent on the stock covariance than on standard deviation of individual stocks. The covariances calculated are as follows:

Table 3 : Covariance between the Stocks Involved

Covariance (Square &Beximco)	0.004555
Covariance (Square &Renata)	0.018337
Covariance (Square &Ambee)	0.004407

Covariance (Beximco & Square)	0.004555
Covariance (Beximco &Renata)	0.008734
Covariance (Beximco & Ambee)	0.010446

Covariance (Renata & Square)	0.01834
Covariance (Renata & Beximco)	0.00873
Covariance (Renata & Ambee)	0.00459
Covariance (Ambee & Square)	0.00441
Covariance (A mbee& Beximco)	0.01045
Covariance (Ambee & Renata)	0.00459

c) *Portfolio Standard Deviation*

We know that portfolio standard deviation is.....Finally, we assumed equal investment to take place in all four stocks.

Portfolio of Square & Ambee	0.023	15.08%
Portfolio of Sqaure, Ambee & Renata	0.018	13.44%
Portfolio of Square, Beximco, Renata & Ambee	0.014	11.93%

d) *Diversification*

Diversification is a risk management skill which involves investing in different types of stocks. This is done to reduce the risk profile of the portfolio. This will mean that the negative performance of some stocks will be negated by the positive performance of other stocks. Thus, this in turn will lead to reduction of unsystematic risk.

Here, we can see that investment in portfolio of only square stocks is riskier than that of Square

Pharmaceutical and Ambee Pharmaceutical. This holds true, in spite of the fact that total risk of Ambee Pharmaceutical stocks is greater. The diversification effects due to the covariance between the two sets of stocks. Here, we see that as investment in increasing number of firms take place, the total risks involved decreases. This in turn means we are diversifying away the firm specific or unsystematic risks. Thus, the effects of diversification hold for the pharmaceutical sector.

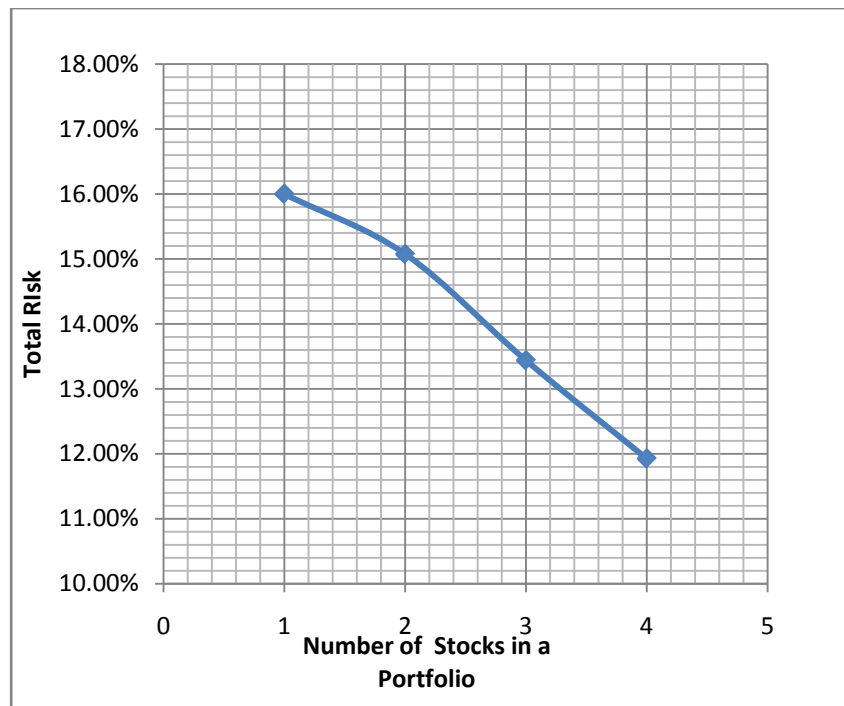


Figure 2 : Portfolio Risk vs. Number of Stocks in a Portfolio for the Pharmaceutical Sector

e) *Performance of Portfolio*

To estimate the performance of portfolio we need the risk and return profile of the individual stocks as well as that of the market. Thus, we need to find the return as well as the standard deviation of the market. Using all these information, we calculate the Sharp Ratio and M Squared of the portfolios.

Below, the risk-return profiles are presented. All the stocks, with the exception of Ambee Pharmaceutical performed poorly with respect to the market. All the stocks show high volatility when compared to the volatility of the market.

To make matter complex, it is observed that the monthly return of a 10 year Treasury bond is greater than that of market.

Table 5 : Monthly Return and Standard Deviation of Individual Stock

	Monthly Return	Standard Deviation
Square	-2.71%	16.00%
Ambee	2%	23.77%
Renata	-3%	16.05%
Beximco	-1.87%	13.24%
Market	0.56%	9.64%
Risk free Rate	0.78%	

i. *Sharp ratio and M Squared for the Portfolio*

To calculate the Sharpe Ratio and M-Squared we first estimate the risk- return profile of the portfolio.

Using the same assumption that we invest equally in all the different stocks in the portfolio we calculate the risk-return profile of the portfolios. We took the portfolios in accordance to that investment profile used to calculate risk profile for diversification. The return-risk profiles of the portfolios are presented below:

Table 6 : Portfolio Return and Risk Sharpe Ratio

As we know investors are by nature risk averse, they require higher compensation for higher risk in the form of higher return. A common measure of performance is the Sharpe Ratio, also known as the reward-to-variability ratio. The portfolio with the greatest Sharpe ratio has the best performance while the lower the Sharpe ratio, the worse the performance of the portfolio.

Table 7 : Sharp Ratio Computation

Sharp Ratio of Portfolio:	
Square & Ambee	-0.06982688
Square, Ambee & Renata	-0.136894851
Square, Beximco, Renata & Ambee	-0.171278425

From this table above, we see that the portfolio consisting of Square Pharmaceutical and Ambee Pharmaceutical has the highest Sharpe ratio, thus this portfolio has the best performance. At the same time, the portfolio having Square, Beximco, Renata & Ambee stocks has the worst performance.

M-Squared (M^2)

M^2 gives rankings similar to that of Sharpe ratio. But these rankings are easier to interpret as these are expressed in percentage performance. Negative values here mean that the portfolios constructed based on stocks of this sector are performing poorer to the market. From the ranking perspective, portfolio consisting of Square Pharmaceutical and Ambee Pharmaceutical stocks is best while portfolio consisting of the four different stocks is performing the poorest. But these values also indicate that these portfolios perform poorer to the market on a risk-adjusted basis.

Table 8 : M-Squared Estimation

M^2	
Portfolio consisting of Square and Ambee	-0.453%
Portfolio consisting of Square, Renata and Ambee	-1.100%
Portfolio consisting of Square, Renata, Beximco and Ambee	-1.431%

V. RECOMMENDATION

From the above findings, we can interpret that diversification works for this sector but the performance of the portfolios are poorer than the market. Thus, this analysis creates room for skepticism. Although diversification leads to reduction of risk but it takes a hit in the return analysis. From the investors' perspective, they should invest in stocks outside this sector. On top

	Monthly Return	Total Risk (Standard Deviation)
Portfolio consisting Square stocks	-2.71%	16.00%
Portfolio consisting Square and Ambee stocks	-0.71%	15.08%
Portfolio consisting Square, Ambee and Renata stocks	-1.06%	13.44%
Portfolio consisting Square, Ambee ,Renata and Beximco stocks	-1.26%	11.93%

of all these, the return on 10 year Treasury bonds is greater than of the market it can be suggested that a risk-averse investor should rather invest in the bonds. From the various companies' perspective, they should look at the business structure, operational mechanism and capital structure of Ambee Pharmaceutical as it is the only stock that is outperforming the market.

VI. CONCLUSION

We can see that for this pharmaceutical sector, the effects of diversification hold. As the number of securities of different companies is introduced the total risk is reduced as the unsystematic risk minimizes. But, we see that the performance evaluated by the Sharpe ratio and M-Squared does not provide any positive reading. The period analyzed was just after the Global Recession so this can be one reason why the return on the market as a whole was poorer than that of 10 year Treasury bond. There is scope for further studies to check if investors diversified in different sectors, rather than one, could they avail better returns along with the effects of diversification.

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Evaluation of the Financial Performance of Banking Sectors in Ethiopia: The Case of Zemen Bank

By Muhabie Mekonnen Mengistu

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Keywords: *financial performance, ratios, banking sectors, zemen bank, ethiopia.*

GJMBR - C Classification : *JELCode : G32*



Strictly as per the compliance and regulations of:



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Muhabie Mekonnen Mengistu

Abstract- This study is aimed at evaluating the financial performance of the banking sectors in Ethiopia with a special focus on Zemen Bank S.C. for the period 2009 to 2014. To meet the objective of the study, secondary sources of data, such as annual reports of the bank have been utilized. After collecting the necessary data, appropriate financial ratios and descriptive statistical techniques were employed for analyzing, interpreting and giving a condensed picture of the collected data. Accordingly, the results of the study revealed that the financial performance of the bank had kept on improving, if not fluctuating over time. Besides, the bank has performed well in profit earning and efficiently managing its assets for generating revenue, whereas there is a need for improvement in its much dependence on outside financing and the high proportion of non-performing loans.

Keywords: financial performance, ratios, banking sectors, zemen bank, ethiopia.

I. INTRODUCTION

a) Background of the Study

The history of banking in Ethiopia traces back to a century. However, before the introduction of the modern banking system in Ethiopia, traditional financial institutions such as 'Equb' and 'Idir' has contributed a lot in sharing risks, developing saving habits and by positively impacting on the economic betterment and social wellbeing of the society. Later on, following the agreement between emperor Menelik II and Ma Gillivray, representative of the British owned National Bank of Egypt, modern banking in Ethiopia has come in to birth in 1905. This agreement has made true the opening of the first bank of Ethiopia called Bank of Abyssinia in 1906. Moreover, historical records show that different types of banks (private and public, domestic and foreign) in different regimes have been seen in Ethiopia. However, the adoption of a free market economic system of EPRDF is believed to be the root for the emergence of the current banks in the country.

Banking sector in Ethiopia is expanding through time. Particularly starting from the 1990s to the present days, numbers of banks have come into existence. Among these, Zemen Bank is the newly emerging one. Having the vision of bringing a new dynamism of the financial sector and the banking business in Ethiopia,

Zemen Bank was introduced in 2008. Its adoption of more advanced banking technologies such as ATMs, Internet and Mobile banking within a short period of time enables the bank to deliver incomparable customer services. According to Ermyas T. Amelga, the then board chairman of the bank, at times of its opening, Zemen has faced numerous challenges both from outside and inside macroeconomic pressures. However, by challenging the challenges, it has realized to be one of the highly competing banks in Ethiopia.

These days, the bank is very profitable and has made excellent progresses, especially due to the favorable dynamic macroeconomic environments, including Strong GDP growth, low inflation, and the ongoing execution of large scale projects and with growing customer deposits, increasing loan demand, and rising requests for trade facilities (Berhane Ghebray, 2014). But more importantly, the researcher has come across with the idea of assessing the current performance of the bank through scientific ways, which would have a big plus. Scholars in the field stated that expressing financial statement information in the form of ratios enhances its usefulness. Ratios permit comparisons over time and among companies, highlighting the similarities, differences, and trends. This by and large benefits internal and external users of financial information. Hence, it is worth noting that evaluating the performance of financial institutions such as banks can improve the managerial performance, inform government policy by assessing the effects of deregulation, mergers and market structure on efficiency and make possible a wide range of users in making economic decisions.

b) Statement of the Problem

The performance evaluation of companies is essential to provide information about company's operating performance and its net worth. Knowing organization's competitiveness and potentials of the business through financial statement analysis is useful for decision making for users of financial statement information, including managers, creditors, stockholders, potential investors, and regulatory agencies.

With the objective of mobilizing resources and enhancing investments, financial institutions have

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irreplaceable roles in economic development of a country. Being one and may be the major category of financial institutions, banks have a very determinant role in the healthy functioning of the economy. Meanwhile, notwithstanding with its merits, banks can be challenged by different factors. These include: individual bank characteristics which could be swayed by the internal decisions of the management and the board and the wide-ranged external factors which are out of the control of the banks (Flamini, C., Valentina C., McDonald, G., Lilliana, S. (2009)).

To Nada Dreca (2012), the banking sector is affected by the global financial crisis. He argued that this crisis produces many adverse effects towards banks. Some to mention, 'stagnation of the sector, decline in profitability, increase of the non-performing assets and loans, past due receivables, loan loss provision and deterioration of other key indicators of banks' performance'.

Banking sector in Ethiopia, according to Admassu Bezabeh and Asayehgn Desta, (2014), is undeveloped and delicate. They furthermore stated that the sector is very limited, relatively weak, closed and characterized by a large share of state ownership. For them, the repressive policies imposed by the government are negatively affecting the performance of money and foreign exchange markets and weaken private commercial banks. Controlling interest rates on deposits and the loan policies are also other impinging factors for the development of the sector. In due course of this study, the results reveal that the extent of financial repression has negatively affects savings, capital formation and financial development. This finding congruent with the research result of Tom Keatinge (2014) which confirms that the banking industry's nonperforming loan ratio is commendably low, and profitability is good, but the dominance of public sector banking significantly restricts financial intermediation and economic growth.

Irrespective of the aforementioned predicaments of the sector, the number of banks in Ethiopia is increasing from time to time. This is resulted with the increasing in competitions among banks. This in turn leads to dramatic effect on the performance of banks, particularly in financial and technological innovations. Under these stiff competitions, Zemen Bank is one of the newly emerging banks of the country. The Bank was established in Addis Ababa in 2008 and registered as a share company in accordance with the provisions of the Licensing and Supervision of Banking Business Proclamation no. 84/94 and the Commercial Code of Ethiopia of 1960. Principally, the bank's activity

is commercial banking — collecting deposits, providing loans, and securing the foreign exchange funds needed to facilitate trade related services.

Since banks in Ethiopia are playing an important role in intermediating finance and wheeling the economy to function, studying the financial performance of banks in the country is timely and necessary. Measuring the performance of banks generally in the world and particularly in Ethiopia has attracted augmented attention over the past years. Meanwhile, little has been done. This is more prevalent when it comes to Zemen Bank. Thus, this study aimed at evaluating the financial performance of the banking sectors in Ethiopia, particularly Zemen Bank at a focus.

c) *The Objective of the study*

The objective of the study is to evaluate the financial performance of the banking sectors in Ethiopia with a particular focus on Zemen Bank S.C.

II. METHODOLOGY OF THE STUDY

The study was entirely depends on secondary sources of data; in one hand, different literatures were extracted to establish a theoretical framework of the study and on the other, audited financial statements of the sample bank i.e. Zemen Bank S.C. were the major sources of data. The study, Moreover, delimited to 2009-2014 financial reports of the bank. After collecting the data from the bank's website, the data were analyzed using (1) descriptive statistical methods to summarize and give a condensed picture of the quantitative data and (2) methods of the financial ratio analysis to measure, describe and analyze the performance of the bank were employed. These ratios include:

a) *Profitability Ratios*

It is the most common method of financial ratios which is used to measure the performance of banks. Profitability enables to evaluate how well the bank is performing in terms of profit. As a rule, if a profitability ratio is relatively greater than its competitors or the industry average, then it is considered to be indication of better performance of the bank. It is mostly measured using the following criteria:

i. *Return on Assets (ROA)*

The ROA reflects the ability of a bank's management to generate profits from the bank's assets. It shows the profits earned per birr of assets. It also indicates how effectively the bank's assets are managed to generate revenues, although it might be biased due to off-balance-sheet activities.

ROA can be computed as: $ROA = \text{Net Profit after Tax} / \text{Total Assets}$

ii. *Return on Equity (ROE)*

ROE indicates the profitability to shareholders of the firm after all expenses and taxes (Van Horne 2005).

According to Ross, Westerfield, Jaffe (2005), the higher ROE means better managerial performance; however, a

higher return on equity may be due to debt (financial leverage) or higher return on assets.

ROE can be computed as: $ROE = \text{Net profit after tax} / \text{Shareholders' Equity}$

iii. Net Interest Margin (NIM)

NIM is the difference between interest income and interest expenses as a percentage of total loans and advances which includes deposits with foreign

NIM can be computed as: $NIM = (\text{Interest Income} - \text{Interest Expense}) / \text{Total Asset}$

b) Liquidity Ratios

This ratio indicates the ability of the bank to meet its financial obligations in a timely and effective manner. The high liquidity ratios mean a bank has a larger margin of safety and ability to cover its short-term obligations. This is measured by using:

i. Cash Deposit Ratio (CDR)

Cash is the most liquid asset of the banks. A higher CDR indicates that a bank is relatively more liquid than a bank which has lower CDR.

CDR can be computed as: $CDR = \text{Cash} / \text{Deposit}$

ii. Loan Deposit Ratio (LDR)

This ratio indicates the percentage of the total deposits locked into non-liquid assets. A higher LDR denotes lower liquidity.

LDR can be computed as: $LDR = \text{Loan} / \text{Deposit}$

iii. Loan to Asset Ratio (LAR)

This ratio measures the percentage of assets that is tied up in loans. The higher the ratio indicates the less liquid is the bank.

DER can be computed as: $DER = \text{Total Debt} / \text{Shareholders' Equity}$

ii. Debt to Total Asset Ratio (DTAR)

It measures the amount of total debt a firm used to finance its total assets. The higher DTAR means the

DTAR can be computed as: $DTAR = \text{Total Debt} / \text{Total Assets}$

iii. Non- Performing Loans to Total Loan Ratio (NPTL)

Loans become nonperforming when borrowers stop making payments and the loans enter default. A

NPTL can be computed as: $NPTL = \text{Non-performing Loans} / \text{Total Loans}$

d) Leverage/ Efficiency ratios

These ratios measure how effectively and efficiently the firm is managing and controlling its assets. The efficiency ratios also indicate the overall effectiveness of the firm in utilizing its assets to generate sales, quality of receivables and how successful the firm is in its collections, the promptness of payment to suppliers by the firm, effectiveness of the inventory management practices, and efficiency of firm in controlling its expenses. The higher value of these ratios

The AU can be computed as: $AU = \text{Total Revenue} / \text{Total Asset}$

banks, treasury bills and other investments. The higher NIM the cheaper the funding or the higher the margin the bank is obtaining.

LAR can be computed as: $LAR = \text{Loan} / \text{Asset}$

c) Risk and solvency ratios

The extent to which a firm relies on debt financing rather than equity is measured using these ratios. Furthermore, Risk and solvency ratios evaluate the risks associated with the bank's asset portfolio, i.e. the quality of loans issued by the bank. If the amount of assets is greater than the amount of its all types of liabilities, the bank is considered to be solvent. The following ratios can be used for measuring the Risk and solvency of the banks.

i. Debt to Equity Ratio (DER)

It measures the ability of the bank capital to absorb financial shocks. In case, creditors default in paying back their loans or the asset values decrease, the bank capital provides shielding against those loan losses. Mostly, the lower DER is considered better relative to higher DER.

bank has financed most of its assets through debt as compared to the equity financing. This implies the bank is involved in more risky business.

lower NPL ratio indicates smaller losses for the bank, while a larger (or increasing) NPL ratio can mean larger losses for the bank as it writes off bad loans.

indicates the firm is doing well. It is mostly measured using the following criteria:

i. Asset Utilization Ratio (AUR)

It is used to measure how effectively the bank is in utilizing its total assets. If the ratio of AUR is lower, the bank is not using its assets to their capacity and should either increase total revenues or dispose of some of the assets (Ross, Westerfield, and Jaffe 2005).

ii. *Income Expense Ratio (IER)*

It is the ratio that measures the amount of income earned per birr of operating expenses. The Higher IER is preferred over the lower one as this

$$IER \text{ can be computed as: } IER = \text{Total Income} / \text{Total Operating Expenses}$$

iii. *Operating Efficiency (OE)*

The OE is the ratio that measures the amount of operating expense per dollar of operating revenue. It is also used to measure the managerial efficiency in

$$OE \text{ can be computed as: } OE = \text{Total Operating Expenses} / \text{Total Operating Revenue}$$

III. DATA ANALYSIS AND INTERPRETATION

In this part of the research, the collected financial data have been analyzed, discussed and interpreted accordingly. The first part of it presents the financial highlights of the bank. In the second place, based on the data already uncovered in the first part, different ratio analysis has been undertaken.

a) *Financial Highlights of The Bank*

i. *Incomes and Expenses*

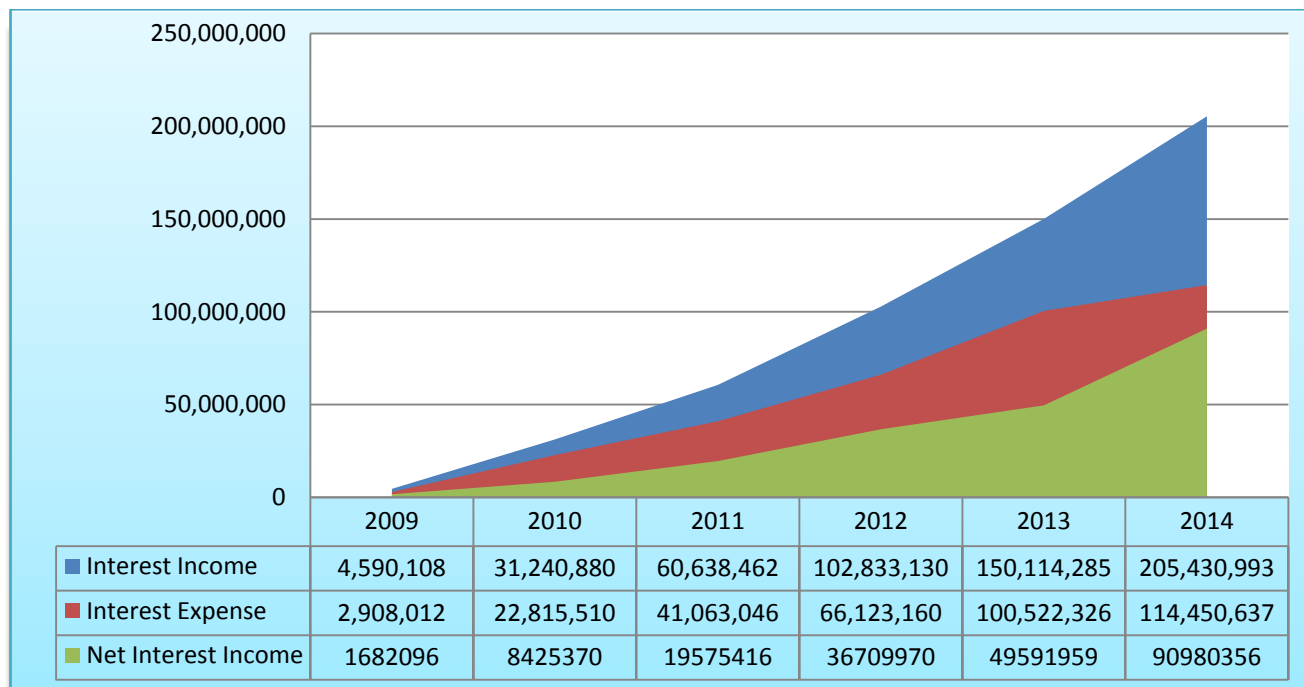
a. *Interest Income and Interest Expenses*

Zemen Bank, hereafter referred to as the bank, has shown a remarkable growth in earning interest

indicates the ability and efficiency of the bank in generating more total income in comparison to its total operating expenses.

generating operating revenues and controlling its operating expenses. The Lower OE is preferred over the higher OE as lower OE indicates that operating expenses are lower than operating revenues.

incomes. As explicitly depicted in the following graph and/or table (figure 3.1 & table 3.1), the Bank's interest income has averagely grown by 62% in the last six consecutive years. Correspondingly, the 2010 interest income growth in accordance with the base year is recorded at 581%. This is very substantial in comparison with the later years. Likewise, the interest expenses which have been incurred to earn the interest incomes have also increased significantly. Furthermore, on average; the bank has earned Br 92,474,643, and incurred Br 57,980,449 as interest income and interest expenses in the last six years of its operation, respectively.



Source: Bank's Annual Reports (2009-2014)

Figure 3.1 : Interest Income and Interest Expense

b. *Operating Income and Operating Expense*

Like that of the interest income and interest expenses, the operating income and operating expenses disclose an altogether increasing trend throughout the study periods of the bank. Table 3.1 below clearly exhibits that the net operating income of

2010 has revealed an 831% positive change from the previous year. It seems inflated. However, since the first year was the beginning of the bank, it might perform below the expectations. In the same token, the net income of the bank averagely increases by 53% in the remaining budget years. This denotes that both

operating income and operating expenses has increased significantly all over the study periods.

Table 3.1 : Operating Income and Operating Expenses of the Bank

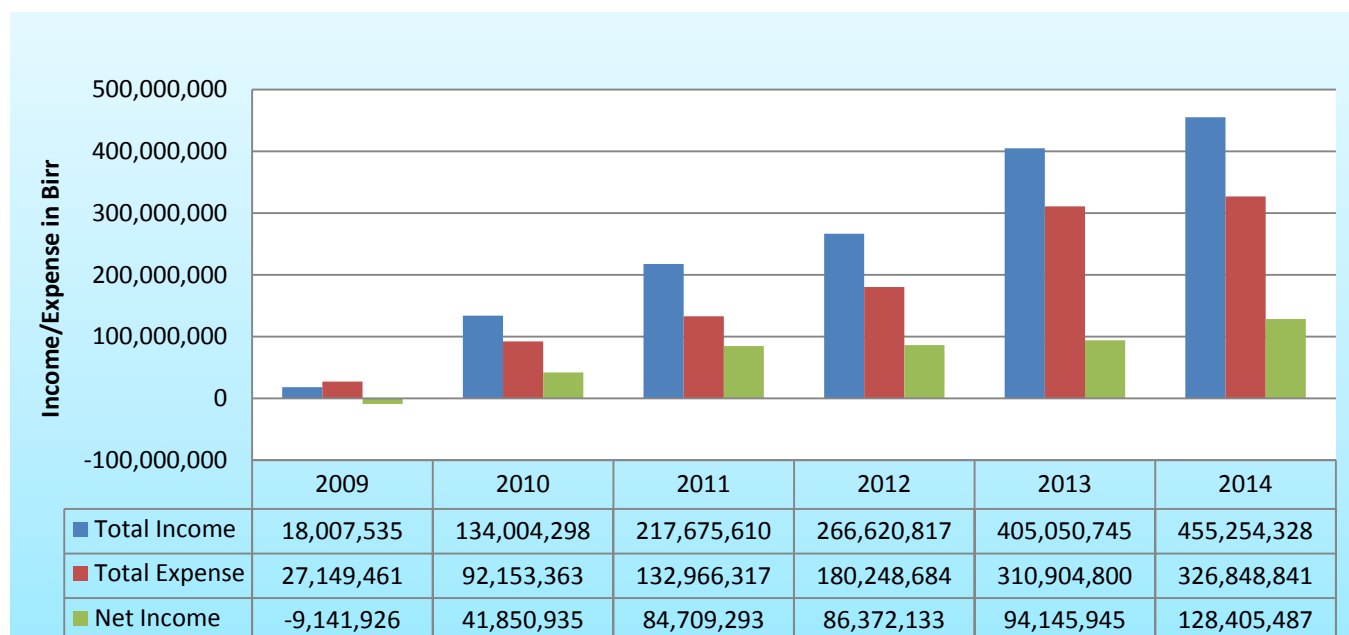
Description/Fiscal Years	2009	2010	2011	2012	2013	2014
Operating Income	13,417,427	102,763,418	157,037,148	193,856,129	304,528,419	340,803,691
Operating Expenses	22,267,676	38,029,526	49,985,178	70,544,203	82,120,977	120,309,534
Net Operating Income	-8,850,249	64,733,892	107,051,970	123,311,926	222,407,442	220,494,157
Percentage Growth	-	831%	65%	15%	80%	(0.9%)

Source: Bank's Annual Reports (2009-2014)

c. Total Income and Total Expense

During the last six years of its operation, Zemen Bank has recorded a mean total income of Birr 249,435,556 which ranges between Birr 18,007,535 and 455,254,328 in 2014 and 2009 respectively. The general income growth rate of the bank in these periods was steady. Besides, the average total expense of the bank

was Birr 178,378,578. Meanwhile, the net income after tax has loss and profit trend. In 2009, the bank had faced a loss of Birr 9,141,926 though it has enjoyed a large sum of profit during the remaining fiscal years that varies between Birr 128,405,487 in 2014 and Birr 41,850,935 in 2010.



Source: Bank's Annual Reports (2009-2014)

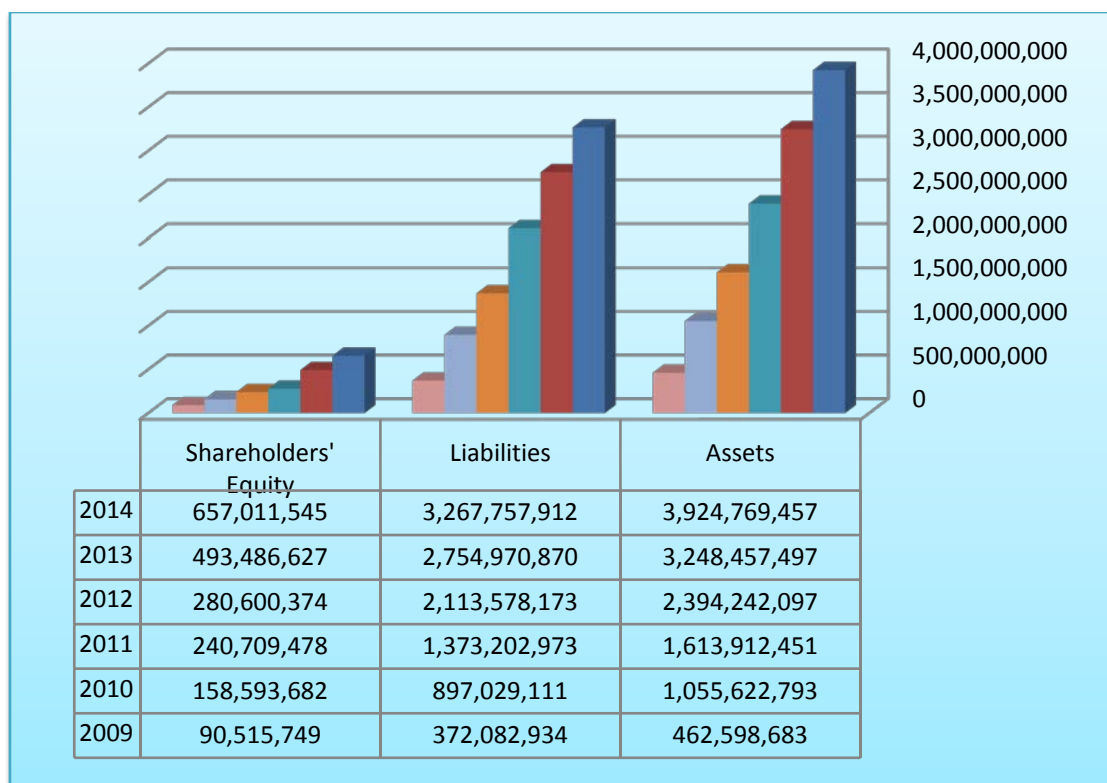
Figure 3.2 : Total Income and Total Expense

d. Assets, Liabilities and Shareholders' Equity

The total asset and liability of the bank had increased in an increasing rate. With those limited years of its business undertakings, the bank had increased from millions to billions of Birr as far as asset and liability is concerned. This is one of the manifestations of the good fortune of the bank. To be more specific; the bank's asset, liability and shareholders' equity averagely were Birr 2,116,600,496; 1,796,436,996 and 320,152,909 respectively. In the case of assets, Birr 3,924,769,457 in

as the maximum and minimum amounts during the study periods respectively. Similarly, Birr 3,267,757,912 and 372,082,934 were the highest and lowest liability sums. Besides, the maximum and minimum shareholders' equity had been reflected as Birr 90,515,749 and 657,011,545, respectively.

To sum up, the above trend analysis of assets, liabilities and shareholders' equity signify a consistence increment of these items from year to year. This is basically an indication of the better future of the bank to grow as it has been seen during those periods.



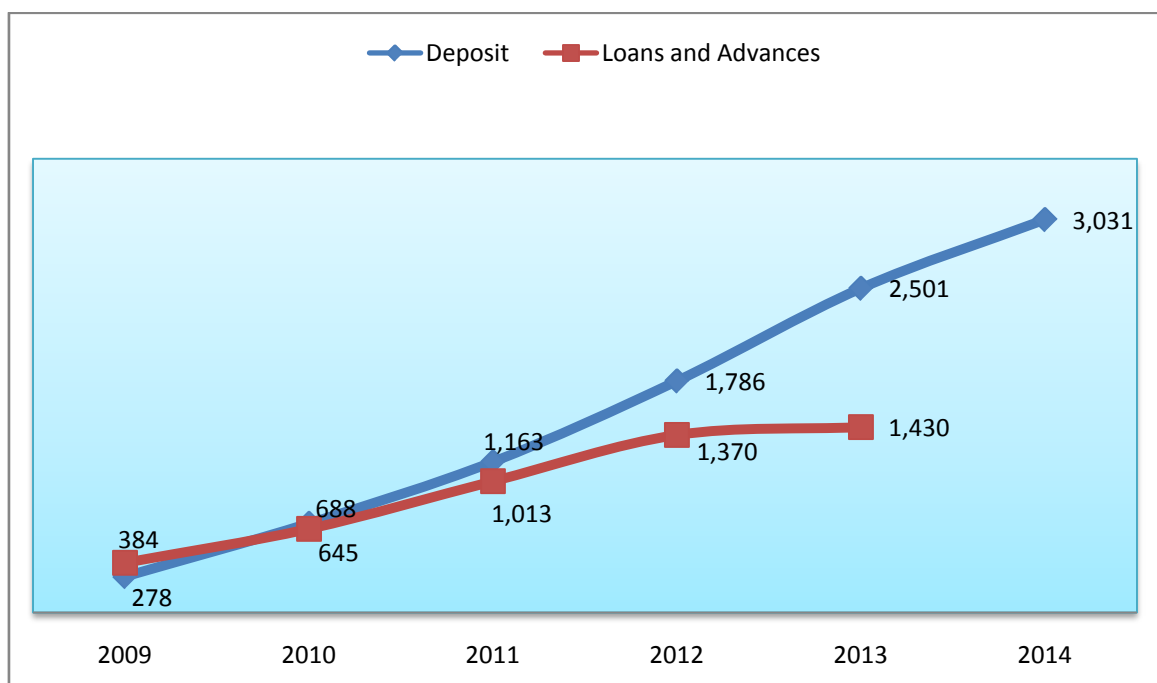
Source: Bank's Annual Reports (2009-2014)

Figure 3.3 : Assets, Liabilities and Shareholders' Equity

e. Total Deposit and Total Loans & Advance

It is evident that both the deposit and loans and advances had been increased from year to year. During the study years, the average total deposit and total loans and advances were Birr 1,574,373,801 and

838,363,532 respectively. The loans and deposits trends of the bank were consistently progressive. Nonetheless, the rate of advancement of deposits was higher than the loans and advances.



Source: Bank's Annual Reports (2009-2014)

Figure 3.4 : Total Deposits and Total Loans & Advance

b) Ratio Analysis

i. The Profitability Performance of the Bank

To measure the profitability of the bank, ratios such as ROA, ROE, and NIM have been utilized. Accordingly, the results are presented as follows.

a. Return on Asset (ROA)

This ratio helps us to evaluate how well the bank uses its assets in its operations. The lower the ROA means the less profitable is the bank and vice versa. Based on this line of reference, the ROA of Zemen bank looks like as follows.

As it can be possible to recognize in the following table and figure (see Table 3.2 & figure 3.5), Zemen Bank has shown a notable increase in ROA of the first two years of its operation. But after sometime, particularly starting from 2012, its performance on ROA

fluctuates. This implies that the bank has shown a better level of efficiency in utilization of assets to generate profit in the initial periods (excluding 2009) than the succeeding years of operation. But on average, the bank had shown a 2.84% performance of ROA. The different sizes of loans by the national bank of Ethiopia in different fiscal years have been mentioned as a significant factor for the fluctuation of the return on Asset of the bank. Thus, from the computation made below, one can deduce that for every Birr invested in assets, Zemen Bank had earned about 39.6, 52.5, 36.1, 29.0, and 32.7 cents in 2010, 2011, 2012, 2013, and 2014, respectively. But in 2009, the bank incurs a loss of 19.7 cents while it had invested 1 Birr on Assets. In general, averagely, the bank had earned about a 2.84% from its each and every asset invested.

Table 3.2 : Profitability Ratios

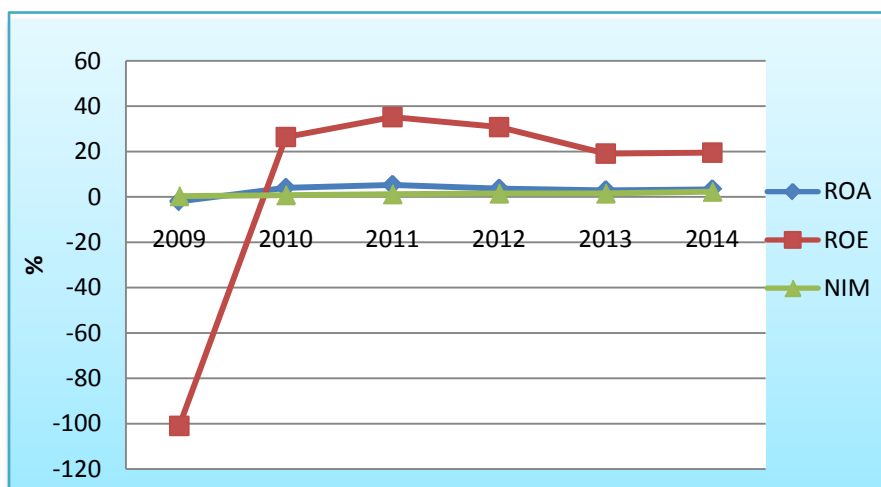
Ratios/Years	Computation Formulas	2009	2010	2011	2012	2013	2014	Average
Return on Asset (ROA)	$\frac{\text{Net Profit after Tax}}{\text{Total Assets}}$	(1.97%)	3.96%	5.25%	3.61%	2.90%	3.27%	2.84%
Return on Equity (ROE)	$\frac{\text{Net profit after tax}}{\text{Shareholders' Equity}}$	(101%)	26.39%	35.19%	30.78%	19.08%	19.54%	5.0%
Net Interest Margin (NIM)	$\frac{(\text{Interest Income} - \text{Interest Expense})}{\text{Total Asset}}$	0.36%	0.80%	1.21%	1.53%	1.53%	2.32%	1.29%

Source: Bank's Annual Reports (2009-2014)

b. Return on Equity (ROE)

The ROE is the ratio of the net income that shareholders receive to their equity in the stock. The lower value of this ratio shows the lower is the financial performance and vice versa. In view of that, the Return on Equity of Zemen bank in 2009 was very incomparable with respect to the rest of the accounting periods. It was relatively very low. This is why? Because, the year 2009 is the starting year of the bank. Thus, in

this year, Zemen had spent more than it makes. Meanwhile, the bank shows a continuous increase in the following two years, i.e. 26.39% in 2010 and 35.19% in 2011. Again in the year 2012 and 2013, the ROE drastically decreases by 4.41% and 11.7%, respectively. However, in 2014, it had shown a slight (at 0.46%) increment. In a nutshell, averagely, the shareholders of Zemen Bank had earned 5.0% of their investment throughout the study period.



Source: Bank's Annual Reports (2009-2014)

Figure 3.5 : Trends of ROA, ROE & NIM

c. *Net Interest Margin (NIM)*

This ratio is used to measure the amount of operating income to earning asset. The lower the NIM ratio means the lower is the quality of the management decision. As far as Zemen bank is concerned, unlike that of the above two profitability ratios, the Net Interest Margin of the bank had shown a continuous percentage increase from the year 2009 to 2013. Meanwhile, it had shown a petite decrement in the year 2014 (see table 3.2 & figure 3.5). Hence, the decision making quality of the management of the bank in generating the net interest income vis-à-vis the total assets has improved over the study periods.

ii. *Liquidity Ratios*

The Liquidity ratios are ratios which are used for measuring the ability of the bank to meet its financial obligations as they become due and are crucial to the sustained viability of the banking institutions.

a. *Loan to Deposit Ratio (LDR)*

The LDR is a ratio that is used in determining the amount of loans that a bank has out versus the

amount of current deposits on hand at the same time. The LDR also shows the bank's ability to cover loans. If the ratio is too high, it means that banks might not have enough liquidity to cover any unforeseen fund requirement and vice versa. For that reason, a lower LDR has been always favorable than the higher LDR. In this study, Zemen Bank had shown approximately a steady performance. It is cognizant that the minimum (47.18%) and the maximum (67.93%) LDR had been seen in the last and first years of the study, respectively. Nonetheless, in the remaining years of the study, the bank had shown less than one percent variations. Even though it was not much significant, a relative diminution of the LDR in the later years of operation indicates the improvement of the bank's position or the shift of the focus of the bank from loan to deposit. At the last, since the bank's LDR in all years of operation (2009 to 2014) is below 100%, one can conclude that the bank relied on its own deposits to make loans to its customers, without any outside borrowing.

Table 3.3 : Liquidity Ratios

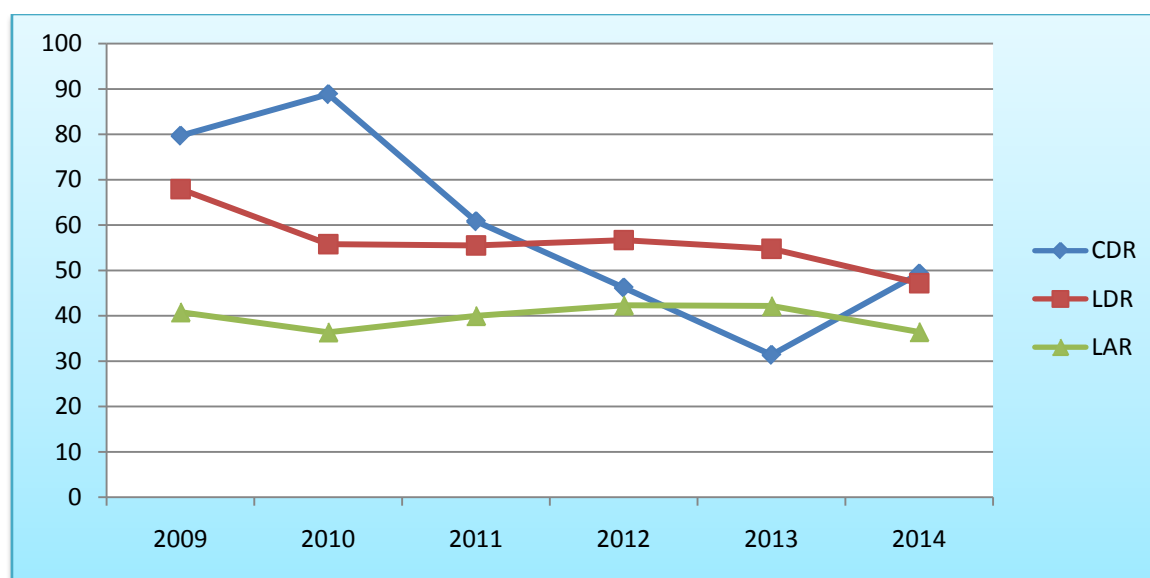
Ratios/Years	Computation Formulas	2009	2010	2011	2012	2013	2014	Average
Loan to Deposit Ratio (LDR)	$\frac{\text{Loan}}{\text{Deposit}}$	67.93%	55.80%	55.50%	56.69%	54.77%	47.18%	56.31%
Loan to Asset Ratio (LAR)	$\frac{\text{Loan}}{\text{Asset}}$	40.80%	36.37%	39.98%	42.30%	42.16%	36.43%	39.67%
Cash Deposit Ratio (CDR)	$\frac{\text{Cash}}{\text{Deposit}}$	79.68%	88.83%	60.82%	46.20%	31.38%	49.29%	59.37%

Source: Bank's Annual Reports (2009-2014)

b. *Loan to Asset Ratio (LAR)*

The LAR is used to measure the total loans outstanding as a percentage of total assets. The lower this ratio signifies a bank is more liquid. So, the lesser the ratio means the less risky a bank to higher defaults.

The LAR trend of Zemen bank from 2009 to 2014 was a mix of ups and downs. The deviation ranges between 42.30% in 2012 and 36.37% in 2010. This unstable drift of LAR implied that the bank was not in a stable financial position. As the table and figure indicates the bank's LAR is below 50% in all years of the study. Hence, one can conclude that the bank is not much loaned up and its liquidity is in a good position.



Source: Bank's Annual Reports (2009-2014)

Figure 3.6 : Trends of LDR, CDR & LAR

c. Cash Deposit Ratio (CDR)

The CDR is the ratio of average cash balance held by the bank against the total deposits. If the amount of money the bank have as a percentage of the total amount of money the customer have deposited into the bank is high, the confidence and trust of the depositors will increase. Therefore, always the higher CDR has been favorable than the lower. According to the table above and the figure below (see figure 3.6 & table 3.3), CDR has shown a slight improvement in the first two years and then it drastically decreases from 2011 to 2013. But in the last year, there was an increment of 17.91% as compared to the preceding year. Therefore, one can conclude that Zemen Bank was better in the first years of its business than the later ones.

iii. Risk and Solvency Ratios

Using risk and solvency ratios, the degree of the financial risk that the bank faces has been discussed hereunder.

a. Debt to Equity Ratio (DER)

The ratio of debt to equity or net worth connotes that the degree of financial leverage that the bank is using to enhance its return. Furthermore, DER indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders' equity. A higher DER generally means that a bank has been aggressive in financing its growth with debt.

The DER of Zemen bank has shown a continuous increase from 2009 to 2012. To the reverse, it has been recorded as a bit lower in 2013 and 2014. But in a nutshell, in those six years of operation, the bank had a 5.59% mean of DER. This denotes that the bank has taken a little debt and thus has low risk. However, it should not be forgotten that if the bank has used much debt to finance the growing operations (high DER); it could potentially generate more earnings than it would have without this outside financing.

Table 3.4 : Risk and Solvency Ratios

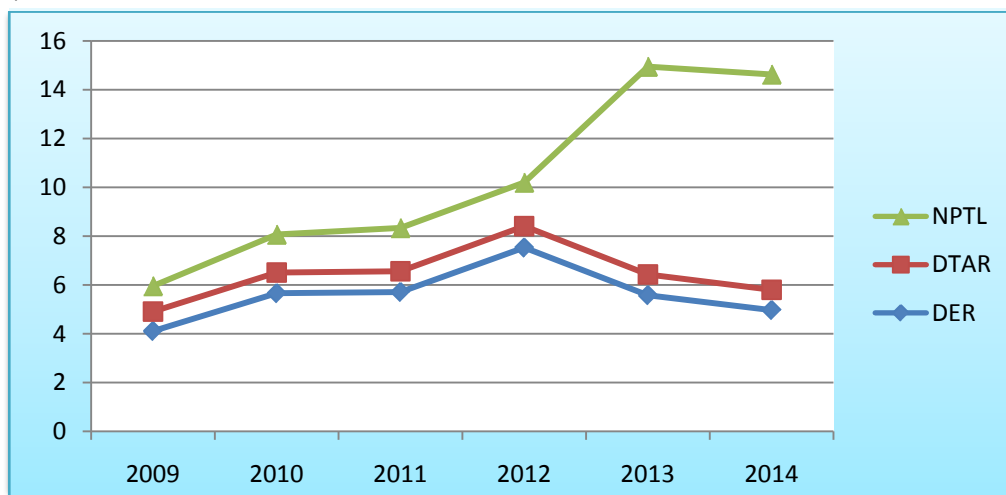
Ratios/Years	Computation Formulas	2009	2010	2011	2012	2013	2014	Average
Debt Equity Ratio (DER)	$\frac{\text{Total Debt}}{\text{Shareholders' Equity}}$	4.11	5.66	5.71	7.53	5.58	4.97	5.59
Debt To Total Asset Ratio (DTAR)	$\frac{\text{Total Debt}}{\text{Total Assets}}$	0.80	0.85	0.85	0.88	0.85	0.83	0.84
Non- Performing Loans to Total Loan Ratio (NPTL)	$\frac{\text{Non - performing Loans}}{\text{Total Loans}}$	1.05	1.56	1.78	1.79	8.52	8.83	3.92

Source: Bank's Annual Reports (2009 2014)

b. Debt To Total Asset Ratio (DTAR)

The DTAR is used to measure the percentage of a bank's assets that are financed with debt. The higher the ratio means the higher the degree of leverage, and consequently, the bank may face a financial risk or potential problems such as incapability to meet the debt payments. Traditionally, a less than 50% DTAR is considered as prudent.

In the last six consecutive years of business operations, The DTAR of Zemen Bank was all in all above 50%. In addition, it had almost similar values (range between 80 to 88 percent). This implies that the bank had a high degree of leverage and thus a lower degree of financial flexibility. In other words, it indicates that 84% (on average) of the Zemen Bank's total assets have been financed by debt.



Source: Bank's Annual Reports (2009-2014)

Figure 3.7 : Trends of DER, DTAR, & NPTL

c. Non- Performing Loans to Total Loan Ratio (NPTL)

This ratio is used to measure the percentage of gross loans which are doubtful in banks' portfolio. The lower the ratio of NPTL indicates the better is the asset/credit performance of a bank.

Both table 3.4 and figure 3.7 shows that the NPTL of Zemen Bank continuously increased throughout the study period, except the 2014 insignificant reduction. This signifies that the asset quality of the bank lowers and the risk associated increases over time. Therefore, it is advisable for the bank to reduce the size of doubtful loans in its portfolio.

iv. Leverage/ Efficiency Ratios

The efficiency or commonly called as leverage ratios are financial ratios which are used to measure the

manner of the bank in controlling and managing its assets effectively and efficiently.

a. Asset Utilization Ratio (AUR)

The AUR is an analysis tool that is used to recognize whether a bank is wasting its assets or putting them to generate revenue. A higher AUR means good for the bank (or) it indicates the bank is utilizing its assets well. As the following table reveals Zemen bank has shown an increasing trend in the first three years (2009, 10 & 11) and it turns down and again up and down at the last. Therefore, it is possible to say that Zemen bank is performing well in employing its assets for making revenue. Nonetheless, the unstable flow of the AUR trend reminds the bank to find solutions which could evade the continuous fluctuations of the asset utilization.

Table 3.5 : Efficiency Ratios

Ratios/Years	Computation Formulas	2009	2010	2011	2012	2013	2014	Average
Asset Utilization Ratio (AUR)	$\frac{\text{Total Revenue}}{\text{Total Asset}}$	3.89	12.79	13.49	11.14	12.47	11.60	10.90
Income Expense Ratio (IER)	$\frac{\text{Total Income}}{\text{Total Operating Expenses}}$	0.81	3.52	4.35	3.78	4.93	3.78	3.53
Operating Efficiency (OE)	$\frac{\text{Total Operating Expenses}}{\text{Total Operating Revenue}}$	165.96	37.01	31.83	36.39	27.00	35.30	55.58

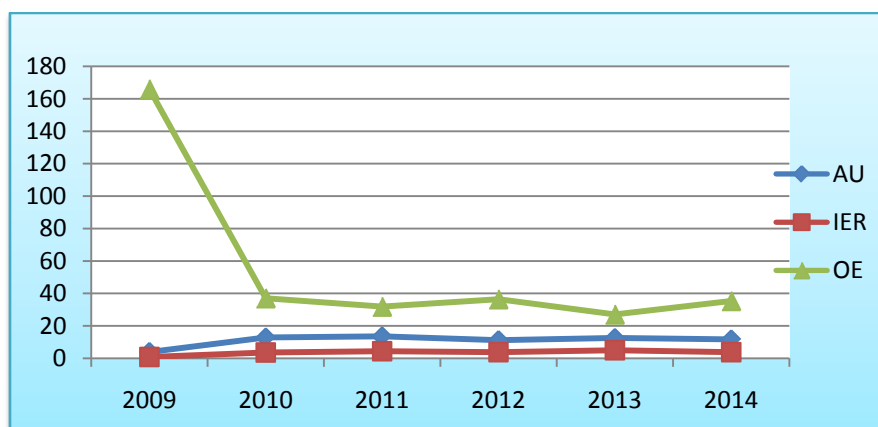
Source: Bank's Annual Reports (2009-2014)

b. Income Expense Ratio (IER)

This ratio is a broadly used efficiency ratio that is used to measure the managerial efficiency of the bank in generating a total income while controlling its operating expenses. The higher the IER is always favorable than the lower one.

In the case of Zemen bank, during the last six years, it has earned Birr 0.81, 3.52, 4.35, 3.78, 4.93 and

3.78 per Birr 1 of operating expenses in 2009, 2010, 2011, 2012, 2013 and 2014, respectively. In short, on average, the bank earned Birr 3.53 while expensing a single birr for its operating activities. Plus to that, the trend progression of the bank was just like the Asset Utilization Ratio (AUR). It has shown a swinging pattern over the years (see figure 3.8 and table 3.5).



Source: Bank's Annual Reports (2009-2014)

Figure 3.8 : Trends of AU, IER & OE

c. Operating Efficiency (OE)

It is one of the mostly used efficiency ratios which are used for measuring the amount of the operating expense of the bank vis-à-vis its operating revenue. The lower OE means that the operating revenues are higher than the operating expenses.

Table 3.5 and figure 3.8 clearly depicted that Zemen Bank has incurred Birr 1.66, 0.37, 0.32, 0.36, 0.27, and 0.35 of operating expenses per a one Birr operating revenue in 2009, 2010, 2011, 2012, 2013, and 2014, respectively. The only year where the operating expenses are higher than operating revenue was the 2009. In this year, the operating expenses outweigh the operating revenue by almost 66%. This implies, in other words, the bank incurs a 0.66 cents extra expense in earning every single Birr. Since the operating expenses to operating revenue was lower than 100% (a 55.58% on average), one can conclude that the bank's managerial efficiency in making operating revenues over its operating expenses was in a good position. Furthermore, the lowest (best performance) of all of the operating efficiency of the bank has been revealed in 2013, whereas the highest of all has been exhibited in 2009. In the first three years of operation, the OE has been decreasing in at increasing rate. However, in the later years, the OE of the bank had a rise and fall patterns. But still, the percentage changes were very minimal.

IV. CONCLUSION AND RECOMMENDATION

This paper was typically an analytical type of research which was aimed at measuring the financial

performance of Zemen bank over the periods of 2009-2014. It has employed financial ratios and descriptive statistical tools to analyze the data. In doing so, the discussions, analysis and interpretations of the data have come across with sound findings. Thus, based on the results of the study, the researcher draws the following conclusions and suggestive solutions.

The overall result of the study shows that except in 2009, in the remaining years of the study, the financial performance of the bank had kept on improving, if not fluctuating over time. The case in point is the remarkable growth of the bank's interest incomes over interest expenses, the earning of large sums of profits, the augmentation of total assets over total liabilities and an all-together advancement of the deposits and loans and advances from year to year.

To measure the Profitability of the Bank, ratios such as ROA, ROE, and NIM have been employed. The result of the ratios revealed that the bank had an experience of an increasing pattern of those ratios in the first few years of its functioning. However, it has consistently fluctuates in the remaining years of the study. Particularly, so far as ROA is concerned, the bank has shown a better level of efficiency in the utilization of its assets to generate profit in the initial periods (excluding 2009) than the subsequent years of operation. Therefore, it is recommended that the bank should assess how well it performs in utilizing its assets in its operations. Likewise, the ROE of the bank follows the same trend of ROA. However, unlike that of the above two ratios, the NIM has kept on increasing with the passage of time. Hence, this shows that the quality

of the management decision making of the bank in generating the net interest income vis-à-vis the total assets has improved over the study periods.

The study also uncovers that the liquidity of the bank has been improved through time. It was evident that both LDR and LAR have shown advancement though sometimes they had ebbed and flow. This swinging dimension of these ratios connotes that the bank was not in a stable financial position. Wherefore, the bank should find solutions which may save it from such type of financial wavering. Furthermore, since the CDR of the bank has shown a decreasing trend, it might negatively affect the general performance of the bank. As a result, the bank should increase its cash balance against its total deposits. In doing that, the confidence and trust of the depositors will increase.

The degree of the financial risk associate to the bank has also been analyzed using the risk and solvency ratios. The findings of these ratios (DER, DTAR and NPTL) show that an initial tremendous increments and a drastic fall in the succeeding periods. For instance, according to the result of the DER, Zemen bank was initially more financed by debt than its stakeholders' contributions. But later on, the debt to owners' equity proportion has shown a decreasing pattern. This indicates that the bank has taken a little debt and thus has low risk. However, it should not be forgotten that if the bank has used much debt to finance the growing operations (high DER); it could potentially generate more earnings than it would have without this outside financing. Besides, the DTAR of the bank indicates that it had a high degree of leverage and thus a lower degree of financial flexibility. This implies that a higher proportion of the Bank's total assets have been financed by debt. Therefore, it is highly recommended that Zemen bank has to decrease its much dependence on outside financing. It is also advisable that the bank should reduce the size of doubtful loans in its portfolio since the result of NPTL revealed that the percentage of non-performing loans to the total loans has continuously increased.

Finally, the efficiency level of the bank has been measured. The results of the ratios analysis disclosed that the bank had a good rate of efficiency. It is for example underpinned by the result of AUR in which Zemen bank has performed well in employing its assets for generating revenue. Meanwhile, the unstable flow of the AUR trend signifies that the bank should find solutions, which could evade the continuous fluctuations of the asset utilization. Plus to that, the IER ratio depicts that the managerial efficiency of the bank in generating a total income while controlling its operating expenses was good except its oscillations. Eventually, the OE of the bank asserts that the bank's managerial efficiency in making operating revenues over its operating expenses was in a good position.

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APPENDICES

Appendix A: Consolidated Profit and Loss Account of Zemen Bank

Zemen Bank S.C.
Consolidated Profit And Loss Account
For The Year Ended 30 June

Currency: Birr

Description/Fiscal Years	2009*	2010	2011	2012	2013	2014
INTEREST INCOME	4,590,108	31,240,880	60,638,462	102,833,130	150,114,285	205,430,993
INTEREST EXPENSE	(2,908,012)	(22,815,510)	(41,063,046)	(66,123,160)	(100,522,326)	(114,450,637)
NET INTEREST INCOME	1,682,096	8,425,370	19,575,416	36,709,970	49,591,959	90,980,356
Provision for doubtful loans and advances	(1,973,773)	(4,022,195)	(5,494,767)	(6,641,528)	-	-
	(291,677)	4,403,175	14,080,649	30,068,442	-	-
Fees and commission income	7,368,226	52,390,368	88,204,861	101,747,913	151,144,416	158,569,298
Gains on foreign exchange dealings & fluctuations (net)	3,058,573	47,331,338	65,648,552	57,446,887	101,788,481	90,547,868
Other income	2,990,628	3,041,712	3,183,735	4,592,887	2,003,563	706,169
OPERATING INCOME	13,417,427	102,763,418	157,037,148	193,856,129	304,528,419	340,803,691
OPERATING EXPENSES	22,267,676	38,029,526	49,985,178	70,544,203	(82,120,977)	(120,309,534)
Impairment losses on loans and advances	-	(9,141,926)	-	-	(98,596,589)	(55,476,734)
PROFIT (LOSS) BEFORE TAXATION	(9,141,926)	59,995,141	121,132,619	123,311,926	123,810,853	165,017,423
TAXATION CHARGE	-	(18,144,206)	(36,423,326)	(36,939,793)	(29,664,908)	(36,611,936)
PROFIT AFTER TAXATION	-	41,850,935	84,709,293	86,372,133	94,145,945	128,405,487
Board of Directors' remuneration	-	(922,957)	(395,833)	(383,333)	(415,890)	(450,000)
Transfer To Legal Reserve Allocation for Promoters	-	(12,748,215)	(21,177,323)	(21,593,033)		
	-	(2,910,272)	(6,353,197)			
Transfer to Retained Earnings	-	25,269,491	56,782,940	64,395,767	93,730,055	127,955,487
EARNINGS PER SHARE (of Birr 1000 each)	-	387	581	577 **	410.55	320.80

* The 2009 income statement indicates only the period from 1 OCTOBER 2008 TO 30 JUNE 2009

** It includes transfer of retained earnings from the previous years' income.

Appendix B: Consolidated Balance Sheet of Zemen Bank

Zemen Bank S.C.
Consolidated Balance Sheet
As At 30 June

Currency: Birr

Description/Fiscal Years	2009*	2010	2011	2012	2013	2014
ASSETS						
Cash And Balances With National Bank Of Ethiopia And Other Banks	221,392,943	611,141,902	707,024,122	825,278,173	784,637,806	1,493,765,017
Government Securities	-	-	216,483,887	465,511,387	1,067,549,387	947,081,887
Loans And Advances To Customers	186,759,803	377,920,104	633,735,915	994,558,320	1,252,925,820	1,303,682,120
Investment In Equity Shares	-	-	-	1,259,000	5,031,000	5,031,000
Other Assets	18,931,816	18,394,934	12,947,472	59,521,073	69,601,517	100,609,223
Property Held For Sale	-	-	-	1,103,050	8,644,675	8,320,023
Property, Plant And Equipment	20,318,570	20,785,007	22,832,809	22,774,916	28,023,709	32,942,596
Intangible Assets	10,341,854	12,878,029	20,903,291	24,172,628	24,582,052	26,002,054
Leasehold Land	-	-	-	-	7,461,531	7,335,537
TOTAL ASSETS	462,598,683	1,055,622,793	1,613,912,451	2,394,242,097	3,248,457,497	3,924,769,457
Liabilities						
Customer Deposits	277,847,796	688,024,663	1,162,559,428	1,792,882,830	2,504,926,543	3,033,129,659
Other Liabilities	21,544,966	60,461,114	117,938,639	203,404,755	105,235,534	106,676,613
Finance Lease Obligation	-	-	-	-	6,047,650	6,047,650
Margins Held On Letters Of Credit	72,690,172	130,399,128	56,281,580	80,414,345	109,118,199	85,363,953
TOTAL LIABILITIES	372,082,934	897,029,111	1,373,202,973	2,113,578,173	2,754,970,870	3,267,757,912
Shareholders' Funds						
Share Capital	99,657,675	120,575,976	149,576,000	149,576,000	343,813,000	449,576,000
Share Premium			425,000	425,000	425,000	425,000
Retained Earnings	(9,141,926)	25,269,491	56,782,940	75,080,803	70,193,569	95,854,115
Legal Reserve		12,748,215	33,925,538	55,518,571	79,055,058	111,156,430
TOTAL CAPITAL AND RESERVES	90,515,749	158,593,682	240,709,478	280,600,374	493,486,627	657,011,545
TOTAL LIABILITIES, CAPITAL AND RESERVES	462,598,683	1,055,622,793	1,613,912,451	2,394,242,097	3,248,457,497	3,924,769,457

* The 2009 financial position indicates only the period from 1 OCTOBER 2008 TO 30 JUNE 2009



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Analysis of Sovereign Wealth Funds: From Asset Allocations to Growth

By Antonia Ficova

Pan European University, Slovakia

Abstract- This paper explores forecast of future growth of Sovereign Wealth Funds, we used data of number of funds that were created during period from 1976 to 2012. In this regard, we found that number of SWF's will rise during period 2013-2030 by 61 from 74 to 135, it means an increase of number of funds by 82.43 percent more compared with during period 1876 till 2012. Second, we provide asset allocations of 14 observed SWFs and different strategies. Third, we examine if Sovereign Wealth Funds will play important role in the future, moreover in terms of assets under management of 74 observed funds in 2014. In addition to this, we found that that 93.21 percent of changes in assets under management of Sovereign Wealth Funds can be attributed to changes (investments) in each future quarters.

Keywords: *sovereign wealth fund, asset allocation, SWOT analysis.*

GJMBR - C Classification : *JELCode : H63, F65*



Strictly as per the compliance and regulations of:



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Abstract- This paper explores forecast of future growth of Sovereign Wealth Funds, we used data of number of funds that were created during period from 1976 to 2012. In this regard, we found that number of SWF's will rise during period 2013-2030 by 61 from 74 to 135, it means an increase of number of funds by 82.43 percent more compared with during period 1876 till 2012. Second, we provide asset allocations of 14 observed SWFs and different strategies. Third, we examine if Sovereign Wealth Funds will play important role in the future, moreover in terms of assets under management of 74 observed funds in 2014. In addition to this, we found that that 93.21 percent of changes in assets under management of Sovereign Wealth Funds can be attributed to changes (investments) in each future quarters. Fourth, we examine whether the investments of country that set up Sovereign Wealth Fund is closely related to following variables x: gross domestic product, gross national savings, volume of exports of goods and services and general government gross debt, ergo, we observe data in 2013 of 45 countries with Sovereign Wealth Funds. Moreover, we found that 28.64 percent changes of total investments of the country that set up Sovereign Wealth Fund is attributed by changes of variables that are mentioned above.

Keywords: *sovereign wealth fund, asset allocation, SWOT analysis.*

I. INTRODUCTION

Sovereign Wealth Funds (SWFs) has primarily focused on their unique ability to merge the most feared elements of the public and private sectors: the power of private finance and state coerciveness. More to the point, SWFs were not originally created to establish the perfect blend of state centric coercive power and market oriented financial acumen, but to solve very real economic policy dilemmas. In other words, SWFs increased their importance in the global financial system in the last decade and especially during the financial crisis period. Ergo, the overall investment appraisal framework plays an important role in ensuring that the SWFs strategic objectives are achieved, in other words that the acquisition process is supported by rigorous, robust financial analysis. In sum, this will help SWFs to satisfy their fundamental aims, including capital preservation, value creation and furthering the national agenda.

However, the investment appraisal framework is a fundamental part of a SWFs operations and this can,

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and should, be continually reviewed to identify areas for improvement. Viewed in this light, the cause for deals proving successful or unsuccessful can, in a large part, be tracked by following factors: first, back to the original investment, second, the quality of the decision-making and lastly, level of challenge arising from the investment appraisal framework. However, investments of SWFs is already increasing. On the one hand, SWFs work to boost economic diversification, on the other hand they seek performance and returns when they invest internationally. Nonetheless, the influence of SWFs has become undeniable, with total assets topping USD 6.585 tn in June 2014, these investors have reached a size comparable to that of the entire alternative assets industry. According to International Sovereign Wealth Fund Institute 2012 report comparing the assets under management (AUM) of these funds with the market capitalization of 16 top stock exchanges of the world suggests, that the AUM of SWFs are more than all the exchanges except NYSE Euronext (US) with market capitalization of USD 12.6 tn.

a) *The Objectives*

The research objectives of this paper are presented as follows: What is forecast of future growth of SWFs? Will play SWFs important role in the future? Are investments of the country that set up SWF closely related to gross domestic product, gross national savings, volume of exports of goods and services and general government gross debt?

b) *Data and Methodology*

The methods to be deployed in this thesis are qualitative and quantitative analysis, comparative research. On the other hand, literature concerning these funds is contained mostly in financial institutions research, macroeconomic publications of countries, academics. In this regard, we also use analytic, statistical methods, regression analysis, moving average, SWOT analysis. We present forecast of future growth of SWF's, for calculations we used data of number of funds that were created during period from 1976 to 2012 according to the data from SWF Institute, last updated July 2014. We used linear trend by method of least squares. In addition to this, testing hypothesis we examine through method of least squares MLS, analysis of variance ANOVA. We examine if SWFs will play important role in the future, moreover in terms of AUM of 74 observed funds, and we used quarterly data

from website of Sovereign Wealth Funds Institute, last updated July 2014. Then we examine whether the investments of country that set up SWF is closely related to following variables x : gross domestic product, gross national savings, volume of exports of goods and services and general government gross debt. Ergo, we observe 45 countries with SWFs according to the data from Sovereign Wealth Fund Institute, and World Economic Outlook of IMF, 2013.

c) *Structure of the Study*

The remainder of this paper proceeds as follows: Section 2 provides variety of definitions on this subject. First, we present a number of studies on the subject of SWFs since 2007 till 2014, more to the point among authors examined this subject. Second, we present where SWFs invest, in short we provide latest available asset allocation of 14 observed SWFs. Then, we also focus on future growth of SWFs. Section 3 includes testing hypotheses, section 4 contains SWOT analysis and section 5 concludes the paper.

II. LITERATURE REVIEW

However, for better understanding how a Sovereign Wealth Fund (SWF) may impact to foreign economic policy it is necessary to describe variety of definitions of this subject. More to the point, McKinsey & Company (2007) describes that SWFs are funded by the Central Bank's reserves, aimed to maximize the returns within manageable risk bands. On the one hand, according to the Organisation for Economic Cooperation and Development (OECD–August 2008) SWFs are essentially: foreign exchange reserves, the sale of scarce resources such as oil, or from general tax and other revenue. On the other hand, the EU Commission (2008) describes SWFs as state owned investment vehicles, which manage a diversified portfolio of domestic and international financial assets. In other words, SWF's are mainly created when countries have surplus revenues, reserves and their governments feel it would be advantageous to manage these assets with a view to future liquidity requirements and as a way of stabilising irregular revenue streams argued by Gugler, P.; Chaisse, J. (2009). Alter, Miracky and Bortolotti (2009) presented definitions of SWFs as follows: (i) an investment fund rather than an operating company, (ii) that is wholly owned by a sovereign government, in other words organized separately from the central bank or finance ministry to protect it from excessive political influence, (iii) that makes international and domestic investments in a variety of risky assets, (iv) that is charged with seeking a commercial return, and (v) a pension fund, the fund is not financed with contributions from pensioners and does not have a stream of liabilities committed to individual citizens.

It is important to mention a number of studies on the subject of SWFs since 2007. In this section we

present related research of academics. Jones, S. G. - Ocampo, J. A., (2008) presented in details the evolution of foreign exchange assets in different parts of the developing world, optimal reserves, developed a broader framework for the analysis of the motives for the accumulation of foreign exchange assets. Matoo, A. - Subramanian, A. (2008) described imbalances between undervalued exchange rates and SWFs. They proposed new rules in the WTO to discipline cases of significant undervaluation that are clearly attributable to government action. Beck, R.; Fidora, M. (2008) provided background of the impact of sovereign wealth funds (SWFs) on global financial markets, impact of a transfer of traditional foreign exchange reserves to SWFs on global capital flows. Among authors examined subject of SWF, Baptista, A. M. (2008), Miracky *et al.* (2009), Bernstein, S.; Lerner, J.; A. Schoar (2009). Al-Hassan, A. *et al.* (IMF, 2013) presented a systematic (normative) manner the salient features of a SWF's governance structure, in relation to its objectives and investment management that can ensure its efficient operation and enhance its financial performance. Bortolotti *et al.* (2013) examined of 1.018 SWF's equity investments in publicly traded firms and a control sample of 5.975 transactions by private-sector financial institutions over 1980-2012. They found that announcement-period abnormal returns of SWF investments are positive, but lower than those of comparable private-sector investments by approximately 2.67 percentage points. Bodie, Z., Brière, M., (2013) described management of sovereign wealth from the perspective of the theory of contingent claims. They suggest institutional arrangements that could overcome this obstacle and enable efficient coordination. Chen, S. Y. (2013) addressed certain issues that may arise where a SWF is a claimant in investor-State arbitration. In short, SWFs should not be discouraged from settling issues with a host State through investor-State arbitration. Rose, P. (2014) described the evolution of foreign investment regulation in recent years, analysis of Foreign Investment in the United States Act (FISIA), including the key statutory definitions that determine the regulatory pathway of a foreign investment transaction. Gelb *et al.* (The World Bank, 2014) focused on the main priorities concern the criteria for selecting investments, partnerships, external and internal governance arrangements, transparency, reporting and consistency with macroeconomic policy. Backer, L. C. (2014) described that SWFs incarnate and replicate the collisions between two tectonic forces that are grinding their way to a new normative framework of governance and power. Etemad, A. (2014) has explored the effect of the sovereign funds on the volatility of macro-variables. His results showed that a larger size of funds seems to slightly reduce the volatility of government spending. Gilligan *et al.* (2014) noted that there are inescapable political dimensions to SWFs and other forms of state

capital. Exempli gratia, Australian political context, where the current national government has been finalising bilateral trade deals with Japan and South Korea.

a) Objectives of SWF's

There are many SWFs with multiple objectives, based on Al-Hassan, A. et al. (IMF, 2013) and the Santiago Principles taxonomy, five types of SWFs can be distinguished as follows: First, stabilization funds are set up to insulate the budget and economy from commodity price volatility and external shocks (e.g., Chile (Economic and Social Stabilization Fund), Timor-Leste, Iran, and Russia (Oil Stabilization Fund)). Their investment horizons and liquidity objectives resemble central banks reserve managers, in view of their role in countercyclical fiscal policies to smooth boom/bust cycles. They tend to invest largely in highly liquid portfolio of assets (and sometimes in instruments that are negatively correlated with the source of risk being addressed with the fund) by allocating over 80 percent of their assets to fixed income securities, with government securities consisting around 70 percent of total assets. Second, savings funds intend to share wealth across generations by transforming nonrenewable assets into diversified financial assets (Abu Dhabi Investment Authority, Libya, Russia (National Wealth Fund)). Third, development funds are established to allocate resources to priority socio-economic projects, usually infrastructure (e.g., UAE (Mubadala) and Iran (National Development Fund)). Fourth, Pension reserve funds are set up to meet identified outflows in the future with respect to pension-related contingent-type liabilities on the government's balance sheet (e.g., Australia, Ireland, and New Zealand). They held high shares in equities and other investments to offset rising pension costs. Fifth, reserve investment corporations intend to reduce the negative carry costs of holding reserves or to earn higher return on ample reserves, while the assets in the funds are still counted as reserves (e.g., China, South Korea, and Singapore). To achieve this objective, they pursue higher returns by high allocations in equities and alternative investments, with up to 50 percent in South Korea and 75 percent in Singapore's Government Investment Corporation.

b) Asset Allocations

Moreover, asset allocation designs the long-term strategic neutral benchmark for the total portfolio, with goal of maximise expected returns subject to risk tolerances and liquidity constraints. However, risk is defined as the probability of a loss or underperformance relative to a reference asset, such as T-bill or a government bond, over a given horizon. On longer horizons, equities are less volatile than short-term

instruments because of the reinvestment risks associated with short-term investments. In nuce, infrastructure, real estate, and private equity are long investment horizons because of ability to invest in illiquid assets to enjoy the illiquidity premium. In other words, SWF's assets and the returns can have a significant effect especially on public finances, monetary conditions, external accounts and balance sheet linkages with the rest of the world. IMF (2013) presents following factors: First, *Fiscal policy* might be affected by SWF funding and withdrawal rules that are usually derived from a fiscal rule. Second, *monetary policy* may be impacted by wide fluctuations in fiscal revenues and procyclical implications for aggregate demand that typically affect inflation and the real *exchange rate*. Third, exchange rate variations could be mitigated by investing the SWF's resources abroad.

i. Analysis of observed asset allocations

Strategic asset allocation optimize allocation proportions of each asset class (bonds, equities, alternative investment). We provide latest available asset allocation of 14 observed SWFs. Therefore, the section follows compares the actual asset allocations of savings funds, stabilization/savings funds, pension reserve funds, reserve investment funds. For this purpose, we categorize assets into four classes: alternative assets, fixed income, cash and public equities. Alternative assets may include private equity, hedge funds, property, commodities, infrastructure, forests, absolute return. Infrastructure projects include transportation/logistics, power/energy and utilities (e.g., water, waste water, natural gas networks). Fixed income includes bills, notes, and bonds of the treasury, and corporate bonds. Cash includes current accounts and other cash-equivalent instruments. Public equities comprise domestic and global stocks, including those of both developed and emerging markets.

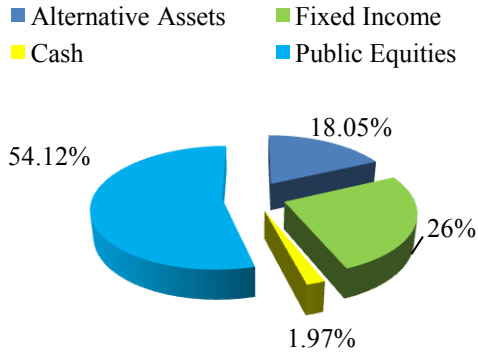


Figure 1 : Asset allocations of savings funds

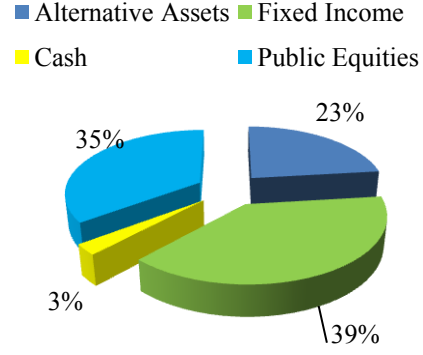


Figure 2: Asset allocations of stabilization/ savings funds

Source: Author’s comparison according to available data from SWFs websites, reports and authors' calculations.

Figures 1 above illustrates allocation of savings funds that includes average of data of following observed funds: Government Pension Fund Global - Norway - 1Q 2014, Botswana - Pula Fund - 2Q 2013, Alberta Heritage Savings Trust Fund - 1Q 2013, Alaska Permanent Fund Corporation – 2013. In other words, Alberta Heritage Savings Trust Fund - Canada (AHSTF) had asset allocation composed from 53 percent in public equities, 20 percent in fixed income and 27 percent in alternative assets in 1Q 2013. Alberta’s revenue is from non-renewable resource, supports government programs like health care and education. Cash is excluded from portfolio of Savings funds, except Botswana holds 7.86 percent. Alaska invested by 6.6 percent more in equities than Alberta. On the other hand, Botswana - Pula Fund invested by 5.27 percent more in public equities than GPFG Norway. GPFG Norway invested by equity in 1Q 2014 in financial sector, industrials and consumer goods. The fund’s largest equity holdings are follows: Nestlé SA, Royal Dutch Shell Plc, Novartis AG. On the other hand, fund’s largest bond

investments includes United States of America, Japanese government, Federal Republic of Germany. Figure 2 presents average of observed data of Timor Leste Petroleum Fund – 2013, Nigeria Sovereign Investment Authority – 2012, National Development Fund of Iran – 2013, Hong Kong Monetary Authority Investment Portfolio – 2013. Timor Leste’s fund increased by 31 percent investments in public equities, decreased from 95 percent to 65 percent investments in fixed income from period 2011 till 2013. Hong Kong’s fund maintain same asset allocations in 2011, 2012 and in 2013 increased by 1 percent investments in public equities and decreased by 1 percent in fixed income. Nevertheless cash figures are excluded from Timor Leste and Hong Kong’s fund. Iran’s NDFI plans to strengthen economy through assistance of private sector and cooperation of provincial governors. Hong Kong Monetary Authority in terms of target currency mix, 77 percent of his assets are allocated to the US dollar and the Hong Kong dollar, and the remaining 23 percent to other currencies.

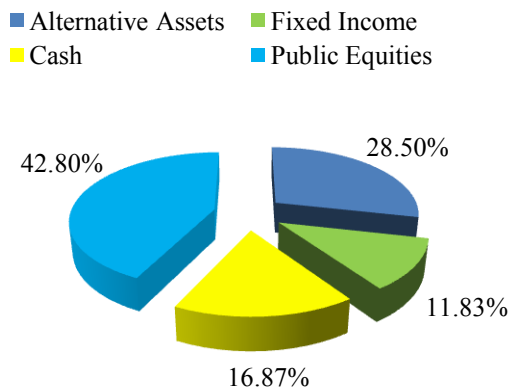


Figure 3: Asset allocations of pension reserve funds

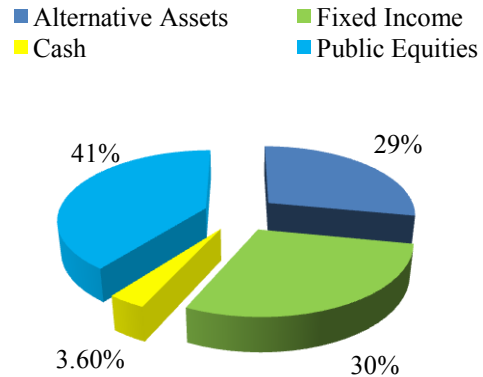


Figure 4: Asset allocations of reserve investment funds

Source: Author’s comparison according to available data from SWFs websites, reports and authors' calculations.

Figure 3 includes average of data of Ireland, National Pensions Reserve Fund - 1Q 2014, Australia Future Fund - 1Q 2014, New Zealand Superannuation Fund - 2Q 2013. NPRF Ireland decreased investments in public equities from 33.7 percent in 2012 to 24.1 percent in 1Q 2014, and also by 13.3 percent decreased investments in alternative assets. Australia's fund invested 34.70 percent in alternative assets, an increase by 4.70 percent in comparison with New Zealand Superannuation Fund. New Zealand holds by 18.4 percent more in public equities compared with Australia's fund. Australia's fund focus on more liquid credit sectors this includes areas such as investment grade corporate credit, higher quality asset backed securities, and some areas of the liquid high-yield and corporate loans markets, exposure to alternative or non-traditional risk premia such as commodities, volatility and re-insurance. Figure 4 shows average of data of China Investment Corporation – 2012, Government of Singapore Investment Corporation – 2013, Korea Investment Corporation – 2012. China Investment Corporation is composed from 45,1 percent of alternative assets, 32 percent of public equities. Government of Singapore Investment Corporation increased assets in cash by 4 percent, and decreased investments in public equities from 49 percent to 46 percent during period from 2012 to 2011. Korea Investment Corporation increased by 5.20 percent investments in alternative assets, and conversely decreased from 46.70 percent to 38.80 percent investments in fixed income from 2010 to 2012. Cash figure is excluded from KIC fund.

c) Size

What explains the size differences of SWFs? The size of a SWF's depend primarily on its purpose and the size and wealth of the state funding it. Nevertheless the exact size of the funds is uncertain due to the opaque nature of SWF's. More to the point, the relative size of an SWF compared to the whole economy can be quite substantial, especially for the older SWFs. Viewed in this light, in case of the Republic of Kiribati's Revenue Equalization Reserve Fund, SWF assets amount to three times the country's GDP explained by Curzio/Miceli (2010). In sum, the SWF puts the country in a relatively comfortable position, because it represents a cushion for future governmental funding gaps.

i. Forecast of increase number of SWFs

At this point we focus on future growth of SWF's, for calculations we used data of number of funds that were created during period from 1976 to 2012 according to the data from SWF Institute last updated July 2014. We used linear trend by method of least squares. According to the number of funds we see an increase by 3 funds annually, forecast from 2013 to 2030 illustrated in Figure 5 and 6. By using values (years; T, y) through graphs we obtained formula $y = 0.0254x - 47.915$, $R^2 = 0.1777$ (see Figure 2). Then we calculated by using this formula others variables in Table Y~; $(y/Y~)*100$; % coefficient. Then by using T* and y, we may obtain formula $y = 0.0254x + 2.6762$, $R^2 = 0.17771$. We used this formula for calculations of forecasts, moreover our value y from 2013 till 2030.

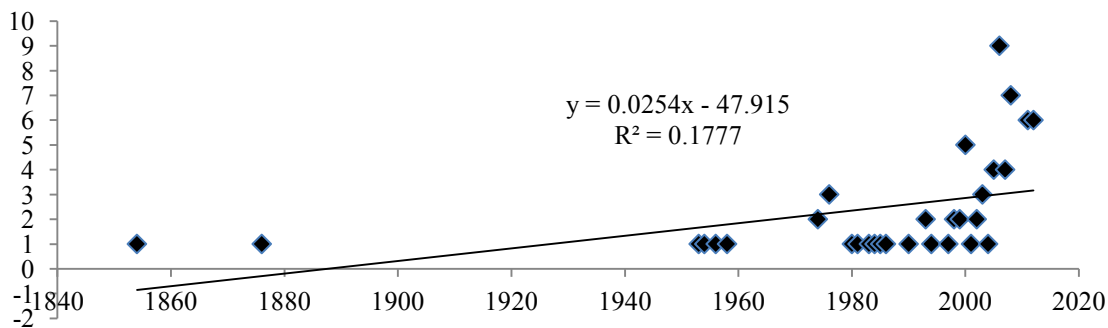


Figure 5: Regression function

Source: Author's estimation according to data from SWF Institute, last updated July 2014 *Year of Saudi Arabia is not available.

Regression output which depicted in Figure 5-6 is much more positive in the favor of positive linear relationship. The most important statistics here is that coefficient of determination R^2 is 17 percent of total variation around the mean value of y is explained by the variable x included in the model, so quite well for a cross sectional regression analysis. And 17.77 percent of

change of numbers of funds is caused by year, so 82.23 percent change of number of funds is not attributed by year of set up. However, number of SWF's will rise during period 2013-2030 by 61 from 74 to 135, it means an increase of number of funds by 82.43 percent more compared with during period 1876 till 2012.

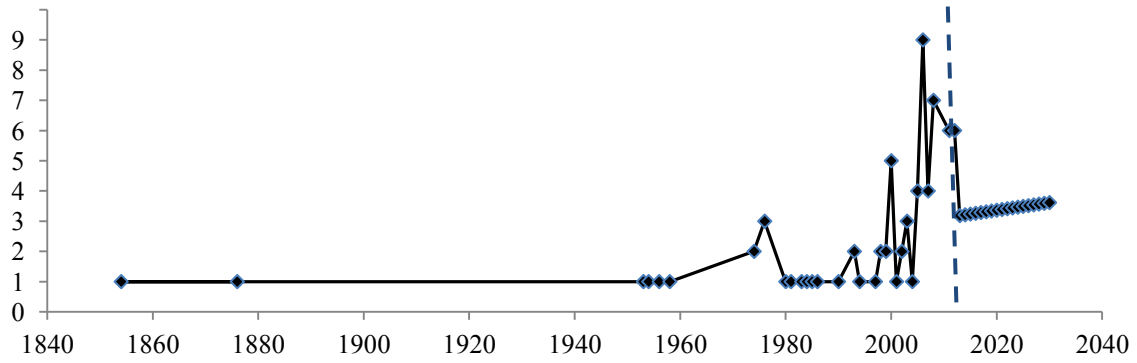


Figure 6 : The forecast of SWFs

Source: Author’s estimation according to data from SWF Institute, last updated July 2014 *Year of Saudi Arabia is not available.

In short, SWF’s are not a new phenomenon, but by increasing number of funds show their presence in global finance and economic and financial relations.

III. HYPOTHESES

Based on data analyzed for the paper, we developed following hypothesis and preliminary results are demonstrated in this section. In sum, presented calculations are the best author’s estimation.

a) Testing Hypothesis I.

We formulate next hypothesis in terms of Assets Under Management of 74 observed funds, and we used quarterly data from website of Sovereign Wealth Funds Institute, last updated July 2014. We composed hypothesis as follows:

H_0 : SWFs will play an important role in international finance in the future.

H_1 : SWFs will NOT play important role in international finance in the future.

If we look at moving average, one of the basic tools of technical analysis, was based on the fact that determining the trend from the graph can be quite difficult and inaccurate, due to cyclical fluctuations. We used functions of a moving average, presented in Appendix B, for identifying trends and measure the strength of an AUM of SWFs. Moving averages can be beneficial in setting stop-losses. The number of periods for moving average is $K=3$ constant. A simple moving average is calculated as the sum of values in a given time period divided by the number of values.

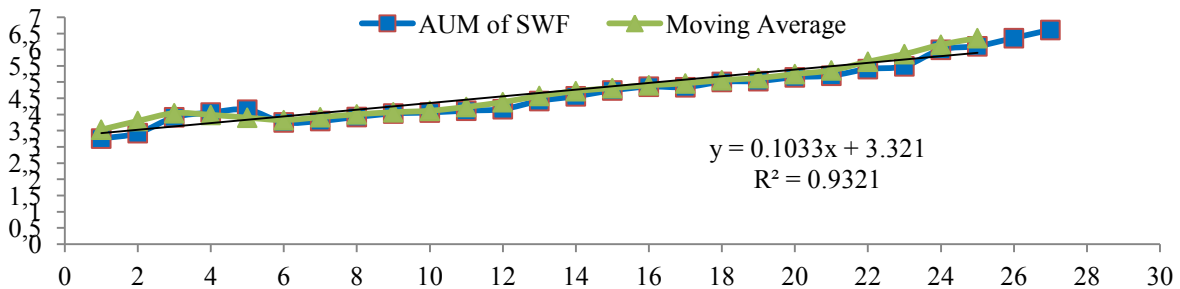


Figure 7 : Moving average

Source: Author’s estimation according to data from SWF Institute, last updated July 2014

As is revealed by Figure 7 the coefficient of correlation is positive and the coefficient of determination is $R^2=0.9321$; what means that 93.21 percent of changes in AUM of SWFs can be attributed to changes (investments) in each future quarters. In short, we may say that SWF will be bigger than today, more highly liquid, and focus long-term, less sensitive than for example Hedge Funds, Private Equity.

b) Testing Hypothesis II.

At this point we want to know whether the investments of country that set up SWF is closely related to following variables x: gross domestic product, gross national savings, volume of exports of goods and services and general government gross debt. We will use regression analysis, transferring observed data using the least squares method. Lets analyze the impact

of variables that are mentioned above on the investments of the countries. We observe 45 countries with SWFs according to the data from Sovereign Wealth Fund Institute, and IMF. Results coming out from regression statistics below and ANOVA show that the correlation coefficient is 0.5351 (Multiple R), positive in the favor of positive linear relationship, it means high dependency between y (investments of country) and

observed variables. The coefficient of determination $R^2 = 0.2864$ means that 28.64 percent changes of total investments of the country that set up SWF is attributed by changes of our variables X ; so 71.36 percent of changes of investment of countries is attributed by other variables. Standard error indicates that the average of prediction error in total investments of countries is 9.5544.

Table 1 : Regression statistics

Multiple R	0.535
R square	0.286
Adjusted R square	0.194
Standard Error	9.554
Observation	45

Source: Author's estimation

Table 2 : ANOVA

	Difference	SS - sum of squares	MS - mean squares	F	The significance of F
Regression	5	1429.069	285.813	3.130	0.018
Residues	39	3560.182	91.286		
Total	44	4989.251			

Source: Author's estimation.

The significance of F is $0.0180 < 0.05$; what is statistically significant (+). The parameter β is high statistically significant because the P-value is $0.000159466 < 0,01$; (++)). The parameter x_1 is not statistically significant because the P-value is $0.383368228 > 0,05$; (-). The parameter x_2 is high statistically significant because the P-value is $0.000786096 < 0,01$; (++)). The parameter x_3 is not statistically significant because the P-value is $0.18496218 > 0,05$; (-). The parameter x_4 is not statistically significant because the P-value is $0.492766467 > 0,05$; (-). The parameter x_5 is not

statistically significant because the P-value is $0.556055605 > 0,05$; (-). And we obtained regression function as follows: $y = 15.54359971 + 0.000481477x_1 + 0.3790898x_2 - 0.269225351x_3 - 0.126713805x_4 - 0.027351623x_5$. More to the point, if we want to calculate the total investments of the country of Angola, we get after substituting into the regression function; $y = 15.54359971 + 0.000481477 * 121.704 + 0.3790898 * 18.242 - 0.269225351 * 9.291 - 0.126713805 * 0.959 - 0.027351623 * 26.638 = 19.16607$; that shows 19.16 percent of total investments of GDP.

Table 3 : ANOVA

	Coefficients	Standard Error	t Stat	P-value
Investment	15.543	3.718	4.179	0.000
Gross domestic product, current prices	0.000	0.000	0.881	0.383
Gross national savings	0.379	0.104	3.641	0.000
Volume of imports of goods and services	-0.269	0.199	-1.349	0.184
Volume of exports of goods and services	-0.126	0.182	-0.692	0.492
General government gross debt	-0.027	0.046	-0.593	0.556

Source: Author's estimation

At this point we want to test the assumption of mean value of random residuals will be zero, according

to the results from Residual outputs below. We formulate hypothesis as follows:

$$\begin{aligned}
 \mathbf{H}_0: & \quad E\left(\vec{u}\right) = 0 \\
 \mathbf{H}_1: & \quad E\left(\vec{u}\right) \neq 0
 \end{aligned}
 \quad
 \bar{x}_e = \frac{\sum e_i}{n} = -1.53951E - 15$$

We may use formula above. As a result coming out from this formula we can say that average residuals is low, the mean value is close to zero, so we accept null hypothesis.

use these an analytic method to determine competitive strengths, competitive weaknesses, opportunities and threats of the funds. In this regard, through clearly identifying these factors may funds, companies, etc. determine the future development, formulate strategy and an appropriate policy strategy.

IV. SWOT ANALYSIS

At this point, after our research, we provide SWOT analysis below that briefly analyzes SWFs. We

Table 4 : SWOT analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • strong growth (rise in oil prices, commodities or others) • long-term investment horizon • investments worldwide (shift in the structure of global finance) • already approved Santiago principles (their observance is arguable) • stabilize the country's economy through diversify of investments • create wealth for future generations • due the surpluses that are held outside the domestic economy (reduces the risk of domestic inflation) 	<ul style="list-style-type: none"> • lack transparency (the management, strategy and investment objectives some of funds) • low reporting (some of funds do not provide annually, quarterly reports)
Opportunities	Threats
<ul style="list-style-type: none"> • transfer voting rights from management to shareholders due the acquisitions of firms • implementation the principles of responsible investments (environmental, social, governance issues) like Norway's fund • potential entrance to new markets (South America, Sub-saharan Africa) • may play a major role in shaping the world economy in the future (due to growing economic power) 	<ul style="list-style-type: none"> • investments for strategic political purposes • possible regulation of their investments in host country (protectionism of host country) • the excessive market fluctuation (influenced by the sub-prime crisis, losses in financial sector) • risk of exchange rate, interest rate etc.

Source: Author's analysis

V. CONCLUSIONS AND IMPLICATIONS

Consequently, we identified that savings funds invest 1.97 percent in cash, and the most part of assets holds 54.12 percent in public equities. Stabilization/savings funds invest 39 percent into fixed income, pension reserve funds invest into 42.80 percent into public equities, and reserve investment funds holds 41 percent in public equities. Moreover, we identified differences of 14 observed funds in their investment strategies. Whereas savings funds have varying proportions of public equities in their portfolios, cash figures are excluded except Botswana Pula Fund. Funds with stabilization/savings objectives usually invest more in fixed income. Pension reserve funds had the most assets in cash and on the other hand reserve investment funds holds assets in fixed income.

We found that forecast of numbers of SWFs shows that coefficient of determination R^2 is 17 percent of total variation around the mean value of y is explained by the variable x included in the model, so quite well for a cross sectional regression analysis. Viewed in this light, 17.77 percent of change of numbers of funds is caused by year, so 82.23 percent change of number of funds is not attributed by year of set up. However, SWF's must provide frequent reports for ministry of finance, the central bank and the fund's independent management checks and balances by the legislative branch.

We examined that SWF will play important role in the future. In short, coefficient of correlation is positive and the coefficient of determination is $R^2=0.9321$; that resulted that 93.21 percent of changes in assets under management of SWFs can be attributed to changes (investments) in each future quarters. In sum, we may say that SWF will be bigger than today, more highly liquid, and focus long-term, less sensitive than for example Hedge Funds, Private Equity.

We came to the conclusion that investments of country that set up SWF is closely related to following variables x : gross domestic product, gross national savings, volume of exports of goods and services and general government gross debt. In this regard, the correlation coefficient is 0.5351 (Multiple R), positive in the favor of positive linear relationship, it means high dependency between y (investments of country) and observed variables. The coefficient of determination $R^2 = 0.2864$ means that 28.64 percent changes of total investments of the country that set up SWF is attributed by changes of our variables X ; so 71.36 percent of changes of investment of countries is attributed by other variables. On the other hand, the significance of F is $0.0180 < 0.05$; what is statistically significant (+). The parameter β is high statistically significant because the P -value is $0.000159466 < 0,01$; (+ +).

Notwithstanding, SWFs have recently drawn a great deal of attention, both in the popular press and academic research. Moreover, some of the attention is based on world leaders' and policy makers' discomfort with the unknown, as SWFs often fail to disclose their investment objectives. However, we can say that SWFs will play important role in future as a global investors.

VI. DISCUSSION

The question are: Do SWFs appear to be similar with regard to their type and funding? What did cause their different asset allocations, growth across them? We contributed with findings that are mentioned in previous section, in short, in terms of asset allocation of SWF, whereas savings funds have varying proportions of public equities in their portfolios, debt (fixed income) are typically for stabilization SWFs. In sum, differences in observed asset allocations of SWFs may be due to reasons, including the investment objective, investment strategy (investment horizon), investment portfolio (strategic, tactic, target asset allocation), investment risk (portfolio, credit, liquidity, currency and interest rate, risk due to fact uncertainty in financial markets), investment return, opportunity cost, the funding source or sovereign balance sheet.

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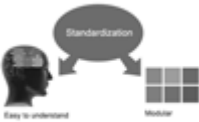




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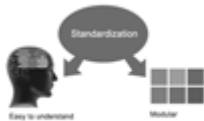


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Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.



Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.



Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-- must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
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- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
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- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.



- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
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Materials:

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- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
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- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
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- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.



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<i>Introduction</i>	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
<i>Methods and Procedures</i>	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
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<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



INDEX

A

Afonso · 10, 16
Arellano · 12, 13, 15, 16, 19

B

Baigent · 48, 53
Baptista · 69
Beximco · 46, 49, 50, 51, 52
Bortolotti · 69, 79
Brealey · 46, 47, 48, 53
Breusch · 13
Burayda · 2

C

Carolina · 79
Castilla · 78

D

Dummies · 10, 12, 13

E

Ermyas · 54, 65

K

Kurtosis · 30, 32, 36

M

Mengistu · 54

P

Papaioannou · 78

W

Wachowicz · 65
Wignall, · 78

Z

Zechner · 20, 25, 43, 44



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