THE EFFECT OF PORTFOLIO MANAGEMENT ON THE PROFITABILITY

OF COMMERCIAL BANKS IN KENYA

BY

VICTOR NGATHO NGARI

D61/88148/2016

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE MASTER OF BUSINESS

ADMINISTRATION DEGREE, THE UNIVERSITY OF NAIROBI

2018

DECLARATION

I declare that this research project is my original work and has not been submitted before for a degree in any other University.

Signed: .... Date: ....

Victor Ngatho Ngari

D61/88148/2016

This project has been submitted for presentation with my approval as the University Supervisor.

Signed…………………………………. Date………………………………………….

Mr. Joseph Barasa

Department of Finance and Accounting.

University of Nairobi

ACKNOWLEDGEMENTS

I foremost wish to give thanks to the Almighty God for enabling me finalize on this project. I wish to express my sincere gratitude to my supervisor Mr. Barasa for his guidance and extensive, useful and intellectual comments and directions during my research work period.

I would also wish to sincerely appreciate my family and friends for their financial and emotional support plus their inspiration and motivation they accorded me throughout my academic undertaking.

DEDICATION

This work is dedicated to my supervisor, family, friends and workmates for the support and encouragement they gave me to the successful completion of my studies.

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

The main goal for banks is making profits from different assets or class of assets. However, some of these assets can be non-productive in terms of generating income directly. Banks like other investors need to categorize investments in divisions of each asset group that can have varied performances in varying market conditions and they need to examine the past history and projected outlook in terms of risk, return and correlation of each of those investments (Perez, 2015). Commercial Banks have embarked on portfolio management aimed at increasing their income sources. However, the impact of portfolio management on the commercial banks especially after the interest rate capping laws of Kenya remains unknown. Additionally, various researches provide important insight into effects of portfolio management of commercial banks, investment firms listed in the NSE and Insurance companies, the aspect of tenor, mix of deposits and sector concentration has not been explored. Hence this study sought to address this research gap. The study objective was to establish the effect of portfolio management on the financial performance of commercial banks in Kenya. The research is valuable to commercial bank managers as it informs them on necessary considerations to make while selecting the class of assets in a portfolio, the industry policy makers and contributes to a broader realm of academic research. This study used descriptive research design and explored a sample of all the eleven listed banks in Kenya which are licensed by Capital Markets Authority and trading at the Nairobi Securities Exchange. This was 27% of the entire population and represents 68% of the combined market share. The study used secondary data collected from the financial statements, other management reports and the bank supervisory report of the CBK for a period of four years from 2014-2017. Statistical Package for Social Sciences (SPSS) version 21.0 was be used in data analysis through a regression model. The resultant data was summarized and tabulated for ease of understanding and interpretation. The study established that 63% of the deviations in profitability of commercial banks was jointly accounted for by portfolio management aspects; liquidity, financial assets, tenor, deposit mix and sector concentration. The study findings established that the amount of financial assets and liquidity held by a commercial bank had a significant contribution to the profitability while tenor, deposit mix and sector concentration did not have a significant effect on the profitability of banks in Kenya over the study period.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today's unpredictable economic situation needs well-organized and effective financial structures for specializing in offering services and production, to win and maintain a friendly relationship with investors' and maintain competitive advantage in the market so as to boost economic transaction (Marcia, Otgontsetseg & Hassan, 2014). Therefore, having a financial system which is efficient and stable is vital. Due to volatile economic environment, commercial banks are focusing on new ways of enhancing their operations through cost management measures and diversifying their revenue streams. This is aimed at increasing profitability, reducing risk, increasing share of the market, increasing debt ability, more growth and prolonging the life cycle of business.

As argued by Cernas (2011), portfolio management continues to be a key strategy employed by the majority of businesses globally in the recent past modern business world. This is inclusive of banks. Perez (2015) argues that commercial banks need to have assets that earn more income especially in this period of increasing adoption and utilization of technology-enabled products and services. This is based on the fact that different assets achieve different performance when subjected to different economic settings, and the performance realized from such assets seems to have no correlation.

This study therefore sought to determine how combining different asset classes by banks in Kenya affect their profitability. The study was anchored on the risk aversion theory, Markowitz portfolio theory, modern portfolio theory and the theory of active portfolio management. The modern theory argues that through diversification, risk can minimized. The portfolio manager can achieve

diversification by having a number of class of assets, investing in different sectors, combining long term and short term investments, combinig risky and risk free assets, among other ways (Campbell & Vicera, 2002). Like any rational investor, banks seek the least risk with the highest return when constructing and maintaining a portfolio. With the introduction of the interest rate capping which reduces the gross interest income for banks, it is very important for banks to establish the effect of portfolio management on their bottom line. This was done by assessing key portfolio drivers such as, liquidity, financial assets, tenor, deposit mix and sector concentration vis a vis their effect on the profitability of banks in Kenya.

1.1.1 Portfolio Management

Portfolio Management is part of risk-limiting and investment strategy, also known as diversification. It involves holding several assets or class of assets, in order to reduce, eliminate certain types of specific risks. The first step of portfolio management is selection which involves making a decision on what assets to buy, hold or sell, how much and when (Markowitz & Harry, 1999).

After a period of time the portfolio manager should evaluate the portfolio by most typically measuring the risk related to the likely return on the portfolio with this return. Then expected returns from the given portfolios, composed of totally different asset classes are evaluated alongside each other. Every investor is unique in terms of their goal, horizon, risk appetite and circumstances. These factors should be considered objectively. Certain techniques should be deployed while constructing an optimal portfolio holding based on the investor's risk appetite, objectives, circumstances and horizon (Ross, 1977).

The deemed optimal portfolio is then reviewed during the life of the investment based on the prevailing conditions in the market. The Portfolio Management theories focus on this whole

2

process of how two or more assets or class of assets are combined, reviewed and evaluated to achieve the set investor goal. Modern portfolio theory emphasizes the combinations of the right mix of assets to deliver beneficial or desired results if the assets are combined in a manner to achieve a higher return than the risk levels (Merton, 1973). The effect of portfolio management can be measured by assessing how holding different sizes of asset classes change the profitability over a period of time.

1.1.2 Financial Performance

It is used as an overall mode of evaluating the general financial health of firms over an era, is highly used to assess and draw comparisons of firms either in a similar industry or industries and sectors that are related. Boru (2011) adds that financial performance is an important element as it shows whether a firm is profitable or making losses.

Stoner (2003) argues that there exist different techniques of measuring financial performance, but the common trend is that the measure is based on aggregation. He advanced his argument by saying that no single financial performance measure should be considered solely. Stoner (2003) concludes that revenue realized from business operations, aggregate unit sales, cash flows realized and operating income can well be utilized used. Kent (1994) argues that measures of performance comprise various indicators including growth of revenue and profit, return on assets and return on injected capital. Hitt (1996) point out that financial ratios tool can be used to enable owners of business measure how their businesses are doing in regard to financial performance. The financial performance can be measure by either absolute figures of ratios. For the purpose of this study, absolute profit before tax.

1.1.3 Portfolio Management and financial performance

The discretionary management of portfolios not only requires systematic analysis, but also actions, and the right judgments. For example, Portfolio management focuses on level of risk and potential returns are considered in analysis since assets have different risk/ return profiles, which affect the portfolio performance, while the aim is to optimized return while maintaining low risks for the investments (Campbell, 2002). Various theories are used to explain the impact of portfolio management strategies on financial performance and especially optimization when risks and returns are taken into consideration.

Rational investors seek to choose a portfolio with several assets rather than investing in a single asset, since opting for a portfolio of assets (diversification) to reduce the level of the risk exposure, while maintaining the expected level of profitability (Markowitz, 1953). Risk indicates volatility, and investors are more likely to prefer those that are less risky if the investment returns are the same (Fischer, 1972).

1.1.4 Commercial Banks in Kenya

There are 43 registered commercial banks where one is a mortgage bank and 3 of the banks are under receivership operating currently in Kenya (CBK, 2018). The Kenyan Banking industry is regulated by Banking Act (Cap 488), Companies Act (Cap 486), CBK Act (Cap 491) and additional regulatory guidelines originating from Kenya Bankers Association (PriceWaterhouse Coopers Consultants, 2012). Banking industry has experienced tremendous changes in the last two decades anchored by the need to strengthen the financial systems (Mwau, Tarus & Kosgei, 2015).

While banks continue to innovate creative portfolio management strategies to overcome the reduced profit spread and competition, quite a number of issues still remain unresolved and which

this study seeks to address was how portfolio management affect commercial banks profitability in Kenya. Adding to this Mwau and Kosgei (2016) argue that commercial banks in Kenya have posted good financial performance while others have not as indicated by ROA and ROE. This is despite banks being allowed to diversify their business income streams while still operating the brick and mortar banking business of taking deposits and lending. For example, all commercial banks in Kenya have added mobile, internet, and agency banking services in their lines of business. Some banks have also ventured into bancassurance to uphold competitiveness in operating markets.

According to Kato, Otuya, Owunza and Nato (2014), there had been improvements in financial performance of commercial banks while others have recorded loses. For instance, three commercial banks in Kenya have been placed under receivership by CBK over a period of less than one year. These include Dubai Bank Kenya, Imperial Bank Limited (IBL) and Chase Bank. This triggers concerns on portfolio management by banks. This has been attributed to increased portfolio management without certainty on the expected outcome (Mwakio, 2015). Mwakio (2015) point out that these setbacks in the banking sector are eroding depositors' confidence in the mid and smaller tier banks, as a result, weakening their deposit franchises and potentially curbing any contagion effects one may anticipate.

1.2 Research Problem

Portfolio management is an area with huge research gaps both internationally and locally (Campbell, 2002). Portfolio Management and its implications for performance is now drawing considerable attention from scholars, policymakers and donors, because of the relevance of the theme to policy and development action. Chakrabarti et al. (2007) put forth an argument that portfolio management contributes to improving performance in developing institutional

5

environments. Adding to this argument, Ishak and Napier (2006) point out that portfolio diversification doesn't lower value of firm, however, the firm value escalations with increased diversification levels.

The banking industry in Kenya has experienced a tremendous growth resulting from sector liberalization and deregulation. This together with entry of non-bank institutions has resulted into very stiff competition. In order to survive in this competitive environment banks have resulted into diversifying their portfolio of assets in order to remain profitable. However, Perez (2015) acknowledges that some of these assets can be non-Productive in terms of generating income directly. He concludes that revenue obtained from assets that trading is unstable and bad trading eventuates to losses. Therefore banks need to classify investments in subgroups depending on performance variability attributed to various market situations and they need to examine the past history and projected outlook in terms of risk, return and correlation of each of those investments.

According to scholar's understanding, no research had been conducted on how portfolio management (with regard to liquidity, financial assets, tenor, deposit mix and sector concentration) affects the profitability of banks in Kenya. The most recent studies in this area was by Mutega (2016) who investigated the possible effect of asset diversification on the financial performance of Kenyan commercial banks. The researcher recommends for further research into the cash and cash equivalents, and other investments diversification in banks in order to have an exhaustive knowledge of the asset diversification. Micheni (2013) sought to establish portfolio management strategies used by Centum Investments. The results drew the conclusion that there was a correlation on the financial performance and the deployed portfolio management strategy. Lastly, Oyedijo (2012) studied how diversification of product and market affected the corporate financial growth and performance of selected Nigerian companies.

With the recent changes in the banking sector after the introduction of the interest capping laws and receivership of three banks it was important to carry out a recent study. The study also introduced three new variables that has never been examined in this area. Hence, the study sought to fill this knowledge gap by etablishing answers to this study question; what is the effect of portfolio management on the profitability of commercial banks in Kenya?

1.3 Research Objective

This study objective was to establish the effect of portfolio management on the profitability of Kenyan commercial banks.

1.4 Value of the Study

The research findings are valuable to commercial bank managers as the primary focus of the study is on the effect portfolio management on the profitability of Kenyan commercial banks. The findings can inform the managers on necessary considerations to make while selecting the degree of asset diversification.

The results of this research are also valuable to the government institutions and policy makers that regulate the banking sector in Kenya. Through this study, they have insights enabling them to enact and implement policies that regulate asset diversification.

The study findings are also useful to other industry players such as mutual fund managers, equity investors, venture capitalists and stock brokers worldwide. The effect of Portfolio management on the profitability of a firm is very central to their operations. It provides them with information on how combination of the selected variables play out to the enhancement of profitability.

Finally, this study contributes to the broader realm of academic research as it adds significance to academic investigations and research in field of portfolio management. Upcoming researchers would make references using this study, as well as suggesting future research activities that can be explored.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented the theories which educate on portfolio management and profitability. Reviewing and summarizing the literature on portfolio management, financial performance, establishes how different researchers have explored the subject. As such, the chapter reviews the relevant theories and empirical evidence is reviewed. Grant (1998) points out that in the twentieth century there was growing interest on the effectiveness portfolio management to spur growth, and now there are more underlying assets in portfolios and complex financial instruments.

2.2 Theoretical Review

Portfolio management involves investment and administration of a portfolio of securities, in accordance with the investors' preference while reducing risk and increasing the returns. Typically, the investor delegates the investment decision making to a managing entity, which makes the decisions that are most convenient. Rubinstein (2006) concluded that other peripheral aspects depend on the investors' needs including appreciation of capital, constant income or regular return, safety of investment marketability and liquidity, and minimizing of tax liabilities. In portfolio management, investment strategies are used to manage the assets and securities, which are structured continuously or few times. The discretionary management of portfolios not only requires systematic analysis, but also actions, and the right judgments. For example, Portfolio management focuses on level of risk and potential returns are considered in analysis since assets have different risk/ return profiles, which affect the portfolio performance, while the aim is to optimized return while maintaining low risks for the investments (Campbell, 2002). Various

theories are used to explain the impact of portfolio management strategies on financial performance and especially optimization when risks and returns are taken into consideration thus:

2.2.1 Risk Aversion Theory

This is defined as investor's reluctance to take risks and is associated with avoiding risky business ventures (Fischer, 1972). Investors prefer to optimize their return while taking the lowest level of risk. Investors choose between various assets and their attitudes towards risks differ and this influences their willingness to choose low risk investments if they are risk averse with low returns, and volatility.

When investors are presented with two business opportunities with the same return, a rational investor will pick the one with the least risk. This is explained by the rationale that there is no point of choosing an investment with a higher risk without a compensating additional return. A good example of risk aversion is the use of insurance products. For instance, since there is a likelihood of motor vehicle accidents, a car owner is better placed to pay insurance and minimize the risk of huge losses if there is an accident.

2.2.2 Markowitz Portfolio Theory

Markowitz (1953) proposed the portfolio model, and prior to this, investors mainly looked at simply to maximizing the expected level of returns. Markowitz paid attention to the practice diversifying portfolios, where investors generally prefer asset portfolios rather than individual assets, which diversifies risk. This model focuses on the expected return (profitability), and the magnitude of risk for a given return. Investors ought to choose a portfolio with several assets rather than investing in a single asset, since opting for a portfolio of assets (diversification) can reduce the level of the risk exposure, while maintaining the expected level of profitability. Risk indicates

volatility, and investors are more likely to prefer those that are less risky if the investment returns are the same.

2.2.3 Modern Portfolio Theory

This is a theory which focuses on optimizing the expected return of a portfolio for a particular measure of portfolio risks, or equally limit risks for a given level of expected return, by choosing the right and appropriate mix of assets. Even though, MPT is still popular in the fiancé essential presumptions and hypotheses of the theory have been challenged in elated fields like behavioral economics.

MPT is based on the idea of diversification where there is optimization of the investment portfolios through combining different asset types, while there is also measurement of returns and risk of the assets. Calculation of the expected return depends on the historical performance, while calculation of the risk is based on past volatility. Evaluating risks and profitability for total investment portfolio is important rather than simply focusing on the specific assets that change in value, which allows building a portfolio with several assets to maximize returns for a given level of risk (Merton, 1973).

2.2.4 Theory of Active Portfolio Management

This is a dynamic portfolio management strategy where the active managers seek to influence returns and beat the market benchmarks and value, but this also depends on the risk exposure and stock risk. The investors or mutual funds mostly seek to replicate the benchmark index including the weighting and returns of the index and is mostly associated with the buy and hold strategy of investment (Fama, 1992). Active managers' objective is to achieve a higher return than the benchmark index unlike the passive managers. Typically, active managers seek for valuable

information including from research analysts as they aim to exploit market inefficiencies to make a profit like buying undervalued stocks and short selling the overvalued ones. At other times, the goal of the mutual fund, investment portfolio or hedge fund is to reduce risk below the benchmark index and this is possible through actively managing the fund portfolio.

According to Merton (1973) constructing a portfolio depends on the investor's aim, their risk profile, constraints and desired return. Assessing the portfolio performance is conducted continuously reviewing the prevailing micro and macro-economic factors (Campbell, 2002). The works of Markowitz and Merton on the construction of efficient frontiers for the periods considered paved the way for studies on diversification and effective portfolio management strategies to improve growth as well as maximize value and growth. Merton (1973) highlighted the need to identify the investment goals and objectives where there is consideration of factors like the time required to cash out the investments, the expected value of investments and this is imperative since the efficient investment combination is utilized to meet the investment goals which eventually lead to an optimal portfolio mix. Campbell (2002) pointed out that while cash is more of a riskless asset, the asset allocation decisions are critical to achieving the long-term portfolio performance. Portfolios differ in the mix and type assets or securities allocated, and a customized investment policy statement is useful to create an efficient investment combination.

In asset allocation, the investors may seek shifting the portfolio if the risk premium changes and the selection of investment meet the criteria for optimal investment mix. Monitoring changes in the portfolio value focuses on the performance of the mix of asset classes and whether the investor's unique needs are met, and this is necessary to rebalance the optimal investment mix (Fama, 1992). The level of risk and returns are essential elements in evaluating a portfolio. "Risk is the likelihood that the return and value of an asset (security) has other alternative outcomes,

where reducing risk lowers volatility (William, 1964)". In portfolio risk management a basket of assets (securities) is one way to spread risk, and this is indicated in the portfolio variance and standard deviation as they indicate the level of volatility.

The stocks from one industry may affect other industries, while others are cyclical, but traditional portfolio analysis is still useful. As such, it is necessary to establish the objectives of the portfolio and identify the securities in the portfolio. Fischer (1972) argued that this is done in four to six steps the constraints of the investor are first analyzed and linked to the formulated objectives. There is then evaluation of the securities' risk and return. The investor assess their risk profiles and categories where there is a need to minimize the risks. There is also compromise of the risk and non-risk factors, and this is followed by assigning the corresponding portfolio weights to the securities like debentures, equities and bonds and their diversification is undertaken based on the mix of securities and risk preference.

2.3 Determinants of Financial Performance

Financial performance is used as an overall mode of evaluating the general financial health of firms over an era, is highly used to assess and draw comparisons of firms either in a similar industry or industries and sectors that are related. Boru (2011) adds that financial performance is an important element as it shows whether a firm is profitable or making losses. Micheni (2013) concluded that there was a correlation on the financial performance and the deployed portfolio management strategy hence;

2.3.1 Portfolio Management Strategies

The efficient management of a portfolio of clients creates value and maximizes returns at the lowest possible risks. Broadly speaking, portfolio management is divided into, active management strategy and passive management strategy (Mehring, 2005).

Active Portfolio Strategy

This strategy depends on analysis or management to generate greater returns above the market benchmark or index. The strategy has higher than average costs and is most effective when it is possible to exploit the market inefficiencies. Active portfolio managers rely on the advice of security/investment analysts and managers to determine the nature of inefficiencies. The active portfolio management techniques are top-down and bottom-up. The top-down approach focuses on using the large macroeconomic variables and overall market llike GDP and demographic trends and the top-down managers allocate the asses based on analysis of the markets and forecast future trends. On the other hand, the bottom-up managers mainly focus on factors affecting the companies and there is monitoring the annual financial reports and statements, which are evaluated to determine the likely share price changes.

Passive Portfolio Strategy

The passive asset management strategies are based on the premise that it is impossible to beat the markets because of the theory of efficient markets, and the strategy has lower costs compared to the active management approach. It seeks to beat inflation and ensuring there is consistent performance based on the market returns earnings grow and the dividend payments. The approach focuses on buying and holding well-known stocks for long periods of time, and stocks are mostly companies with consistent growth and high earnings in the present and future.

2.3.2 Liquidity

According to Harford and Haushalter (2000), liquidity is presented on company's statement of financial position and show the firm's assets value that are already in cash or can be easily converted into available cash. Cash and its equivalents' constitutes asset of a business, presented on the financial statement revealing the business financial situation and comprises of currency a firm holds (in hand and in bank accounts) and cash equivalents. As pointed out by Harold (2014), cash and cash equivalents comprise of coins, currency, petty cash, checking and savings accounts, money market accounts, checks that have not yet been banked despite being received and investments that are highly liquid and short-term, having maturity period not exceeding three months from the buying time. Harold (2014) further argues that cash and cash equivalents are leading in terms of the ability to be liquidized in comparison with all other assets. Therefore, cash equivalents assets are readily changeable into cash and are different compared to other investments, they have maturity of within three months whereas, their existence is short-term of about twelve month or a lesser period, different from long-term investments which matures with a period exceeding twelve months (Catherina, Torng-Her, Haimin & Da-Quan, 2013).

2.3.3 Financial Assets

According to Laurie (2013), "financial assets are intangible asset whose value is a derivative of contractual claim, such as bonds, bank deposits and stocks". They mostly include financial claims which originate from contractual dealings ventured into when funds are provided to an institutional unit by another. Such contracts initiate creditor relationship with debtor and asset owners in turn have unconditional claims on the assets of another company. Laurie further notes that financial assets are easily liquidized compared to other tangible assets including real estate, commodities, and are tradable on financial markets. Laurie (2013) concludes by saying that financial asset increases a company's worth. This is in line with Cernas (2011) who affirm that increase in

company's financial assets, results to increase in its net worth. Cernas (2011) adds that a company with multiple assets also gets to depreciate the value of those assets, which is used as a deduction during tax reporting. Foster (1975) reports that financial assets which are more speculative have the capability of resulting to increasing returns in the short-run, and with similarly higher unpredictability as to the value they possess in the long-run.

2.3.4 Tenor

Perez (2015) acknowledges that loans ranks as the key and the most valuable types of asset that is held by banks because it's from them that banks receive income. Same views are raised by Bismark and Chengyi (2015) who argue that the largest assets the source of income and asset for bank is loan portfolio. The period of time a loan is advanced to a client is referred to as the tenor. According to Morsman (2003), loan portfolio of long term loans tend to have higher portions of non-performing loans as opposed to short term loans hence lower profitability. Other interesting trends is that loans are not very much valued by for larger banks, reason being such large banks diversify their asset portfolio to a large extent. According to Dang (2011), loan portfolio quality defines how profitable a banks can be. Dang notes that loan portfolio has a positive relationship with bank profitability when the loan portfolio is of high quality.

2.3.5 Deposit Mix

Bank deposits consists of; Savings Bank Accounts, Current Accounts and Term Deposits. Savings Account and Current Account put together are called "CASA" (Current Account, Savings Account) which is of enormous importance where as of now CA is no cost and SA is low cost (say 3%). Normally anything above 40% CASA is considered good for any Bank's deposit portfolio. The remaining 60% deposits will be all kinds of term deposits which as of now carry an interest rate of 6 – 15% per annum. For any business to have good margins buy low sell high is the dictum

and the same holds good for a bank too. Banks' margins depend on Net Interest Income ((Yield on Advances - Cost of Funds). If a bank's cost of funds is low, they tend to make good profits since the percentage of Yield on Advances is more or less constant among all banks with severe competition in interest rates on Advances. The cost of acquisition of funds is of crucial importance. With market dynamics in place, the one which sells at a lower rate tends to get more loan borrowers and hence more profits. In view of this low cost funds and mix of deposits play a vital role for a bank's profitability.

2.3.6 Sector concentration

Offering loans remains the major income earner for banks. However, these loans despite being a profitable pose some risks to the banks. While managing the loan portfolios, banks ought to not only consider the credit risks in terms of their customers' ability to repay but also consider the concentration risk, which raises in credit portfolios from uneven credit distribution among separate borrowers or industrial or regional sectors. Concentration risk in banks' can also be derived from too much lending to certain names or related parties and not only from lending to a single sector or (Dang, 2011).

2.4 Empirical Review

Jeroz (2007) carried out a research on investment companies and recommended that from time to time portfolios should be monitored, reviewed and modified based on the prevailing market conditions. He was very specific that the portfolio evaluation should be done by benchmarking the set risk and return targets. The portfolio changes are to be done in such a way to achieve the changing market conditions. The study does not appreciate the fact that some investors are passive and that active portfolio management is costly and therefore likely to dilute the marginal benefit.

Miriti (2008) on his study of how easy the investors access information and how firms make disclosures of their financials established a situation where the precision of an inside investor's private signal increases with the increase in their shareholding. Understandably so, an insider who has more internal and confidential information regarding the status of a project or the entire company performance may be expected to engage in larger information-motivated dealings and achieve greater returns. The study did not explain to what extent the insider dealings, information asymmetry and financial disclosures affect the portfolio of investments in firms.

Omondi (2009) on his study of portfolio management and Liquidity risk in centum investments, investigated the results of induced liquidity shock by investor's behavior on the portfolio management in the course of financial crises in a banking era that lacks deposit insurance funds. It was established that investors responded to the liquidity shock selectively by increasing their cash holdings by selling their securities in the financial market and not by liquidating their bank loans. It is not clear in a way that we can safely conclude that the presence of an institutional lender of last resort would have mitigate the liquidity constraints with regard to the portfolio adjustments by the investors. The study ignored the role of CBK in regulating the market liquidity and inflation.

Tanui (2010) argued that the most predominate source of banks' income is lending through prudent risk management. Therefore, credit risk is the greatest risk to any investor in this sector. The study concluded that majority of the banks have failed and succeeded due to poor and proper management of the loan portfolio risk. He added that this applies irrespective of the prevailing macro-economic factors. The study however did no establish the best credit risk strategies to be used to manage loan portfolios.

Oyedijo (2012) studied how diversification of product and market affected the corporate financial growth and performance of selected Nigerian companies. The regression analysis results implied that diversification done based on relationship significantly impacted on performance whereas diversification which was unrelated negatively an insignificantly affected growth and performance. The study concentrated on only three companies in a country with thousands of companies and therefore a small sample size that would help draw a solid conclusion of the subject matter with regard to Nigerian Companies.

Micheni (2013) sought to establish portfolio management strategies used by Centum Investments and to "determine the effects of portfolio management strategies on financial performance of Centum Investments Limited". He concluded that the performance of the company was a result of combined strategies and cannot be attributed to a certain strategy. A further research should be carried out to establish to what extent each strategy contributes to the financial performance of the company.

Wafula (2014) studied the "diversification effect on portfolio returns focusing on mutual funds in Kenya". The study deduced that diversification has a positive effect on the portfolio returns of mutual funds in Kenya. He recommended that mutual funds should evaluate and adjust their portfolio from time to time with the changing economic conditions. The study does not appreciate the fact that some investors are passive and that active portfolio management is costly and therefore likely to dilute the marginal benefit.

Mutega (2016) studied the effect of asset diversification on the financial performance of Kenyan commercial banks. The research concluded that there was a positive correlation between the financial performance and other investments, financial assets, cash and cash equivalent and loans.

The researcher recommends for further research into the cash and cash equivalents, and other investments diversification in banks in order to have an exhaustive knowledge of the asset diversification.

2.5 Conceptual Framework

Ngechu (2006) defines conceptual framework as a figure demonstrating how predictor variables and dependent variables link. Dependent variable was profitability of commercial Banks in Kenya measured by absolute profit before tax whereas the independent variables were liquidity, financial assets, tenor, deposit mix and sector concentration.

Independent Variables		Dependent Variable

Liquidity

Financial Assets

Tenor

Deposit Mix

Sector Concentration

Profitability of Commercial Banks
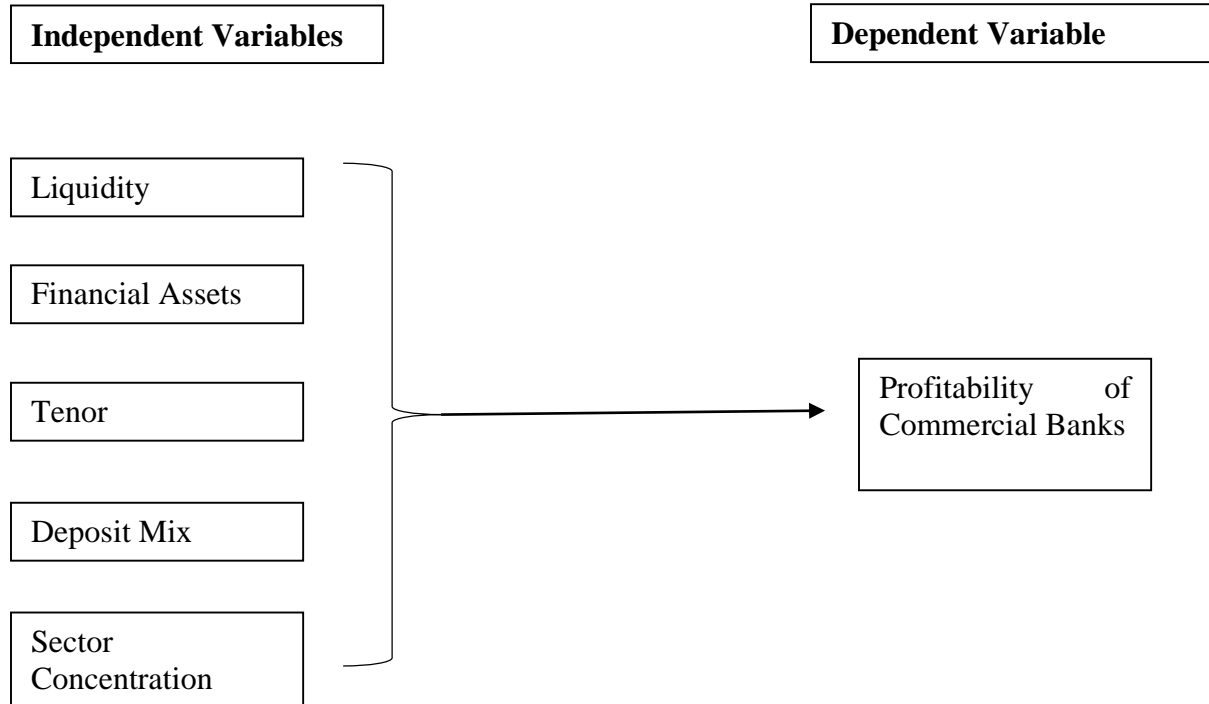
Several studies have been reviewed which are related to portfolio management and financial performance or profitability such as Jeroz, 2007; Miriti, 2008; Omondi, 2009; Tanui, 2010; Oyedijo, 2012; Micheni, 2013; Oyewobi et al., 2013; Mutega, 2016. However, these studies did not investigate the effect of portfolio management with regards to liquidity, financial assets, tenor, deposit mix and sector concentration on the profitability of Kenyan commercial banks. Hence, this study sought to fill the existing gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design, data collection, data analysis and research analytical model. It elaborates how and where data was collected, how it was analyzed and presented. It also discusses the research model used in the study.

3.2 Research Design

This is the organization and linkage of situations for collection and analysis of gathered data in a way that intents at achieving the study goals (Rajendra, 2008). Rajendra also states that study plan concentrates on the arrangement of a study, which leads to the lowering of the probability of making wrong inferences and conclusions from the research data. Descriptive research design was used justified by its ability to enable researcher to establish the phenomenon under study without any manipulation. As argued by Polit and Beck (2003), descriptive research design allows for determination of current situation of a phenomenon without manipulation.

3.3 Population & Sample

This is the population, a researcher or investigator aims at generalizing study finding to (Mugenda & Mugenda, 2003). It is the entire spectrum of a process or system researcher is interested in (Johnston & VanderStoep, 2009). This study explored a sample of all the eleven listed banks in Kenya which are licensed by Capital Markets Authority and trading at the Nairobi Securities Exchange. They included, National Bank of Kenya, Barclays Bank, Standard Chartered Bank,

Equity Bank, Diamond Trust Bank, Co-operative Bank, CFC Stanbic Bank, Housing Finance Company, I&M Holdings Ltd, NIC Bank and KCB Bank. All commercial banks operate in a standard way and report their financials as required and regulated by CBK.

3.4 Data Collection

This study used secondary data. According to Kothari (2004), secondary data is already gathered and available, which has been collected already by someone else. The secondary data on profitability, liquidity, financial assets, tenor, deposit mix and sector concentration as gathered from the banks' annual reports, management reports and bank supervisory reports as published by CBK annually. Data on profit before tax, liquidity measured as absolute cash and cash equivalents, total financial assets, average life of loans and investments, ratio of CASA to fixed deposits and ratio of loan portfolio advanced to a largest sector to the whole loan book was collected.

The study was limited to a time scope of 4 years starting 2014 to the year 2017. The time scope was considered adequate for inferring on portfolio management effect on the profitability of Kenyan commercial banks.

3.5 Diagnostic Tests

These are preliminary tests that are undertaken before the analysis of the raw data to establish whether there are any anomalies and inconsistences. The following tests were used;

3.5.1 Normality Test

This test helped establish whether the set of data followed a normal distribution. Since the data analysis was aided by the use of SPSS tool, there are two methods of normality test namely;

Shapiro - Wilk test where there are less than two thousand data elements and Kolmogovor – Smirnov test where there are more than two thousand data elements for analysis. Since this study had less than two thousand data elements, Shapiro - Wilk test was used. The test rejected the hypothesis of normality if the P value was less than or equal to 0.05.

3.5.2 Heteroskedasticity Test

This refers to the error variance within a given sample data set. It is normally used to establish the margin of error between data sets. Some of the tests used to detect heteroskedasticity include; white test, park test and glejser test. This study used the glejser test, the score test and the F- test.

3.5.3 Collinearity Test

This is also known as multicollinearity. It occurs when the independent variables in a regression model are correlated. The variance inflation factor (VIF) method was used in this study to test for multicollinearity. This test helped identify the correlation between independent variables and also the strength of the correlation. In short, it helped to established how much the variance was inflated.

According to Gujarati, (2003) Farrar – Glauber is the best three set of tests for multicollinearity. The Chi-square is the first one which detects severity of multicollinearity. F-test is the second that tests for location of multicollinearity while T-test is the last that tests for the pattern of the multicollinearity.

23

3.5.4 Autocorrelation

This is the similarity between data sets as a function of the time lag between them. This study used the Darbin Watson test method since the study used time series data. The Darbin Watson statistic is a number that establishes autocorrelation in the error term from a regression analysis. A number between 0 and 2 showed positive autocorrelation, a number greater than 2 to 4 showed negative correlation while a value of 2 showed no autocorrelation at all.

3.6 Data Analysis

The data was analyzed through descriptive means and interpreted using inferential statistics. The data analysis was aided by Statistical Package for Social Sciences (SPSS V. 21.0) tool. The research results were presented and summarized using tables and figures.

3.6.1 Analytical Model

Analytical model is the study technique that determines the link existing between the research variables. Analytical model here was based on Kahloul and Hallara (2010) who researched on diversification, risk and performance relationship. The following regression model was used to establish the relationship among the study variables.

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where;

Y = Profitability measured by Absolute Profit before Tax

X_1 = Liquidity measured by the absolute cash and cash equivalents.

X2= Financial Assets measured as a ratio of the total banks' financial

Assets such as treasury bills, bonds, commercial papers to the total

assets.

X3=Tenor measured in years as weighted average of the life of the loan and

investment portfolio.

X4= Deposit Mix measured as ratio of Current Accounts – Savings Account (CASA)

to the total deposits.

X5= Sector Concentration measured as the ratio of loan portfolio advanced to a largest

sector (such as real estate, manufacturing, transport and logistics etc) to the whole

loan book.

$\boldsymbol{\beta}$ = regression constant

$\boldsymbol{\beta1, \beta2, \beta3, \beta4, \beta5}$ = coefficients associated with independent variables

e= Residual (error) term

3.6.2 Test of Significance

The study used inferential statistics to test the significance of the relationship between the

independent variables and the dependent variable. This technique included the Analysis of

Variance (ANOVA) to test the significance of the overall model at 5% margin of error and 95%

level of significance. The Co-efficient (R) was used to establish the magnitude of the relationship

between the variables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1. Introduction

This chapter contains the data analysis, obtained results and subsequent discussion in an attempt to achieve the answer to the research question. The purpose was to establish how a bank's liquidity, financial assets, tenor, deposit mix and sector concentration affect the bank's profitability. To achieve this, secondary data was collected from banks, analyzed and presented using charts and tables.

4.2. Descriptive statistics

This section presents the descriptive statistics for the data analyzed and the derived statistics include mean, standard deviations, skewness and kurtosis values. Table 4.1 below displays results obtained.

Table 4.1: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Profit before tax ('000)	44	-1,684,000	52,000,000	12,965,000	14,078,000
Liquidity ('000)	44	1,585,000	43,433,000	13,937,000	9,823,000
Financial Assets (ratio)	44	.004	.33	.1350	.10611
Tenor	44	3.00	7.00	4.9795	1.22372
Deposit Mix	44	.53	.68	.5957	.04633
Sector Concentration	44	.80	.85	.8260	.01305
Valid N (listwise)	44				

According to the findings above, the mean value for profit before tax of commercial banks was 12.9 billion This was affected by some banks making losses over the period, thus pulling the mean down, as evidenced by the standard deviation of 14 billion. Similarly, the mean value for liquidity

(absolute cash and cash equivalents) was 13.9 billion, with a similarly large standard deviation of 9 billion, showing that there was variability in the profitability of commercial banks over the period of assessment. Descriptive statistics for other variables are as shown in the table above.

4.3. Diagnostic tests

Multi-collinearity of the variables was examined, to test for correlation between the independent variables. For a good regression model, the independent variables should remain independent, thus reducing predictability based on the other independent variables. The test for multi- collinearity was done using tolerance and variance correlation analysis techniques. The results are as shown in table 4.2 below;

Table 4.2 Diagnostic tests

Model		Collinearity Statistics	
		Tolerance	VIF
	Liquidity	.653	1.532
	Financial Assets	.706	1.417
	Tenor	.895	1.118
	Deposit Mix	.845	1.183
	Sector Concentration	.783	1.278

From the findings, the tolerance values obtained for liquidity, financial assets, tenor, deposit mix and sector concentration were 0.653, 0.706, 0.895, 0.845 and 0.783 respectively which is an indication that there was no perfect linear relationship between the predictor variables as the values were not close to 0. The Variance Inflation Factor (VIF) measures collinearity impact related to regression model variables. VIF values less than 1 and exceeding 10 imply multi-collinearity. From the findings, liquidity, financial assets, tenor, deposit mix, sector concentration were 1.532, 1.417, 1.118, 1.183 and 1.278 respectively. This shows that there is no multi-collinearity between

the variables. Hence it can be construed to imply that there was stability of the beta coefficients hence the beta weights were well estimated.

4.4. Normality tests

The normality of data for the variables was tested by use of Shapiro-Wilk test. This was because Shapiro-Wilk Test is advocated for in a scenario whereby sample sizes are lower than 50. Conclusions were based on significance value obtained, whereby a significance value of the Shapiro-Wilk test exceeding 0.05 implies that the data is normal. The findings are presented in table 4.3 below.

Table 4.3 Normality tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Profit before tax	.233	44	.000	.777	44	.000
Liquidity	.153	44	.011	.899	44	.001
Financial Assets	.100	44	.200*	.963	44	.162
Tenor	.159	44	.007	.906	44	.002
Deposit Mix	.155	44	.009	.926	44	.008
Sector Concentration	.119	44	.126	.958	44	.111

According to the findings, the banks' financial assets and sector concentration were normally distributed, as their Shapiro-Wilk statistics of 0.162 and 0.111 were greater than 0.05, which is the significance level of the study. From the findings, deposit mix, tenor, liquidity and profit before tax were not normally distributed, as their corresponding Shapiro-Wilk statistic was below 0.05.

4.5. Autocorrelation

Durbin-Watson Test was used to test the independence of variables under study. Durbin-Watson tests existence of any serial correlation amongst residuals. The findings are as shown in the table below;

Table 4.4 Autocorrelation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793[a]	.630	.581	9114.05921	1.517

a. Predictors: (Constant), Sector Concentration, Financial Assets, Tenor, Deposit

Mix, Liquidity: Absolute cash and cash equivalents

b. Dependent Variable: Profit before tax

Durbin-Watson outputs a statistic that is between 0 to 4, where residuals are uncorrelated if Durbin Watson statistic is 2. Values from 0-2 imply a positive autocorrelation, while values from 2-4 imply a negative autocorrelation. However, it is generally accepted that if the test statistic value is in the range of 1.5 to 2.5, the residuals are relatively normal. From the analysis, the value of Durbin-Waston of 1.517 was obtained. Given that this value is between 1.5-2.5 (thus close to 2), a conclusion was made that there is no autocorrelation between variables.

4.6. Analysis of Variance (ANOVA)

Analysis Of Variance (ANOVA) was also used to test whether the model predicting the relationship between portfolio management and profitability of commercial banks was statistically significant. The findings are as shown below in table 4.5.

Table 4.5 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5365779530.807	5	1073155906.161	12.919	.000[b]
	Residual	3156510862.738	38	83066075.335		

29

	Total	8522290393.545	43			

a. Dependent Variable: Profit before tax

b. Predictors: (Constant), Sector Concentration, Financial Assets, Tenor, Deposit Mix, Liquidity

As shown in the findings above, the p-value from the ANOVA test is 0.000, which is less than 0.05. As such, the conclusion was that the model predicting the relationship between portfolio management and profitability of financial banks was statistically significant.

4.7. Regression analysis

In this study, multivariate regression was done to establish the relationship between portfolio management and profitability of commercial banks in Kenya. The analysis was undertaken at 5% significance level. The findings are as shown below;

Table 4.6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.793ᵃ	.630	.581	9114.05921	1.517

a. Predictors: (Constant), Sector Concentration, Financial Assets, Tenor, Deposit Mix, Liquidity
b. Dependent Variable: Profit before tax

From the findings in the table above, the regression model had a coefficient of determination (R2) of 0.630. This means that 63% of the deviations in profitability of commercial banks was jointly accounted for by portfolio management aspects (liquidity, financial assets, tenor, deposit mix and sector concentration). To further understand the relationship between the dependent and independent variables in the study, the coefficients from the regression model are as shown in table 4.7 below;

Table 4.7 Regression coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	110259.009	108063.261		1.020	.314
Liquidity	.661	.175	.461	3.772	.001
Financial Assets	.045	.012	.429	3.647	.001
Tenor	-.003	.012	-.027	-.261	.795
Deposit Mix	-.197	.326	-.065	-.603	.550
Sector Concentration	-1.252	1.227	-.114	-1.020	.314

From the findings, the resulting regression model was;

Y = 110259.009 + 0.661X1 + 0.045X2 – 0.003X3 – 0.197X4-1.252X5

Where Y= Profit before tax, X1= Liquidity, X2= Financial assets, X3=Tenor, X4= Deposit mix and X5=Sector concentration.

4.8 Interpretation of the Findings

The findings show that holding all other factors constant, profit before tax would be 110259.009. Further to that, all factors held constant, a unit change in liquidity would change profitability before tax by 0.661 units, while all factors held constant, a unit change in financial assets would change profit before tax by 0.045 units. Additionally, if all factors held constant, a unit change in tenor would change profit before tax by -0.003 units, while a change in deposit mix would change profits by -0.197 units. Similarly, a unit change in sector concentration, all factors held constant, would change profitability before tax by -1.252 units.

The results further reveal that liquidity (p=0.001) and financial assets (p=0.001) were significant in predicting the profitability of commercial banks since all the p values were less than 0.05.

On the other hand, tenor ($p=0.795$), deposit mix ($p=0.550$) and sector concentration ($p=0.314$) were not significant in predicting the profitability of commercial banks, as all their p values were more than 0.05.

The study is in agreement with Laurie (2013) who concluded that financial asset increases a company's worth. Same findings are supported by Cernas (2011) who affirm that increase in company's financial assets, results to increase in its net worth. Opler, Lee, Rene and Rohan (2001) also concluded that the values of cash and cash equivalents held by company is vital and needs to be in with Opler, Lee, Rene and Rohan (2001) who asserted that the values of cash and cash equivalents held by company is vital and needs to be in large volumes and incorporated in operating strategy of a company. They argued that companies that had large liquidity bases performed well in turbulent times.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter is about succinctly summarized findings. In addition, conclusions are drawn and recommendations for policy are made. Further, some of limitations of the study are highlighted. Finally, suggestions are made for further research.

5.2 Summary of Findings

From the multiple regression analysis, a coefficient of determination (R^2) of 0.630 which implied that 63.0% of the variations in profitability of commercial banks was accounted by liquidity, financial assets, tenor, deposit mix and sector concentration. Further, it emerged that, the model predicting the link between portfolio management and profitability of banks was statistically significant based on Probability value of 0.000.

The study findings established that the amount of financial assets and liquidity held by a commercial bank had a significant contribution to the profitability. Further, the findings of the study revealed that tenor, deposit mix and sector concentration did not have a significant effect on the profitability of banks in Kenya over the study period.

5.3 Conclusion

Financial assets and liquidity have a significant relationship with profitability of commercial banks in Kenya. Therefore, any increase in portfolio held of financial assets and level of financial assets results to increase in the profitability of the commercial banks in kenya. As a result, this in turn translates to improved net worth of the commercial banks. In addition, there has been increase in

financial assets especially the government securities held by commercial banks over the study period, that is, year 2014 to year 2017. Liquidity which was measured by cash and cash equivalent has a statistically significant relationship with profitability of commercial banks whereby they have a positive relationship. The trends of cash and cash equivalents over the study period imply that there are fluctuations for the last five years with year 2017 being the lowest and year 2015 being the highest.

On the other hand, tenor, sector concentration and deposit mix were not significant in predicting the profitability of commercial banks. They had a negative relationship with the profitability of commercial banks in Kenya. This means that holding all other factors constant we cannot attribute the portfolio holding of tenor, sector concentration and deposit mix on the profitability of commercial banks.

Finally, the study deduces that a direct relationship exists between financial asset, liquidity and profitability of commercial banks in Kenya. This relationship is significant. Such impact could be attributed to the positive influence of financial assets through government securities on company's chances of earning a good return through guaranteed returns. Also, with the reduced margins in loans after the interest rate capping, high liquidity gave the banks chances of making more money from other short term investments.

5.4 Recommendations

From these findings, it is recommended to commercial bank managers to put into place strategies and plans with regard to financial assets portfolios. They should develop robust strategies of managing their investments in financial assets. This could help improve their profitability.

Further, the study revealed that liquidity affect the financial performance of commercial banks in Kenya to a great extent. Hence, it is recommended to commercial bank managers to reviews existing liquidity management plan, specifically on near cash items in order to realign their portfolio holdings to the desired profitability goals. This should involve putting across strategies and plans for diversifying and utilizing cash reserves in a way that translates to positive performance.

As a recommendation for policy, this study recommends to the policy makers and the government institutions that regulate the banking sector in Kenya to put into place conducive regulations that support portfolio management efforts by commercial banks. This should involve a joint effects by all stakeholders to review the regulations, analyse the impact and finally review them based on the findings.

5.5 Limitations of the Study

The audited and published financial statements did not provide publicly some information especially on the sector concentration, tenor and deposit mix. It was through a lot of intervention and lobbying that I got the information through CBK. The supervisory body such as the Capital

Markets Authority and Central Bank of kenya should push for full disclosure of all material information directly to the public.

Some of the commercial banks have their annual financial statements based on their group operations which fails to have specific impact of portfolio management on profitability in relation to the bank operations only.

5.6 Suggestions for Further Research

The study further revealed that 63.0% of the variations in profitability of the commercial banks was explained by portfolio management. Further research should be carried out to establish the factors affecting the remaining 37.0% variation in profitability of banking business.

REFERENCES

Aluenberger, D. G (1997). *Investment science*. Oxford University Press.

Arnoud (2010). Project portfolio management: balancing risk and performance in turbulent times. *Chartered Institute of Management Accountants (CIMA)* pg. 10–11.

Arnold, Glen (2005). *Corporate financial management* (3. ed. ed.). Harlow [u.a.]: Financial Times/Prentice Hall. pg. 354.

Black, Fischer., Michael C. Jensen, and Myron Scholes (1972). *The capital asset pricing model: some empirical tests*, pp. 79–121 in M. Jensen ed., Studies in the Theory of Capital Markets. New York: Praeger Publishers.

Campbell, J & Vicera, M "strategic asset allocation: portfolio choice for long term investors". Clarendon Lectures in Economics, 2002.

Cowles, Alfred; H. Jones (1937). "Some a posteriori probabilities in stock market action". *Econometrica* 5 (3): 280–294.

De Brouwer, Ph. (2009) Maslowian portfolio theory: an alternative formulation of the behavioural portfolio theory. *Journal of Asset Management***9** (6): 359–365.

Fama, Eugene F.; French, Kenneth R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics***33** (1): 3–56.

French, Craig W. (2003). *the treynor capital asset pricing model*, journal of investment management, Vol. 1, pg. 60–72.

Lintner, John (1965). *The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets*, review of economics and statistics, 47 (1), 13-37.

Mark T. Hebner, *Index Funds: the 12-step program for active investors*, IFA Publishing, 2007.

Markowitz, H.M. (1959). *Portfolio selection: efficient diversification of investments*. New York: John Wiley & Sons. (Reprinted by Yale University Press, 1970,; 2nd ed. Basil Blackwell, 1991)

Markowitz, Harry M. (1999). *The early history of portfolio theory: 1600-1960*, Financial Analysts Journal, Vol. 55, No. 4

Mehrling, Perry (2005). Fischer black and the revolutionary idea of finance. Hoboken: John Wiley & Sons, Inc.

Merton, R.C. (1973) an intertemporal capital asset pricing model. *Econometrica* 41 (5): 867–887.

Mossin, Jan. (1966). *Equilibrium in a capital asset market*, Econometrica, Vol. 34, No. 4, pp. 768–783.

Ross, Stephen A. (1977). *The capital asset pricing model (CAPM), short-sale restrictions and related issues*, Journal of Finance, 32 (177)

Rubinstein, Mark (2006). A history of the theory of investments. Hoboken: John Wiley & Sons, Inc.

Sharpe, William F. (1964). *Capital asset prices: a theory of market equilibrium under conditions of risk*, journal of finance, 19 (3), 425-442

Shefrin, H.; Statman, M. (2000) Behavioral portfolio theory. *Journal of financial and quantitative analysis* **35**(2): 127–151.

Tobin, James (1958). *Liquidity preference as behavior towards risk*, the review of economic studies, 25

Treynor, Jack L. (1962). *Toward a theory of market value of risky assets*. Unpublished manuscript.

a final version was published in 1999, in asset pricing and portfolio