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Portfolio Management in Recessions

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Abstract: **The purpose of this paper is to measure and compare the performance of active and passive portfolios during normal times and the recession of 2007-2009. We start with a comparison between the returns performance of actively-managed portfolio theory and the passively-managed portfolio theory. The study will examine how the correlations between securities behave during market recession times, by comparing the correlation matrixes of securities before and during the financial crisis. This paper will focus on actively-managed portfolio, and examine whether actively-managed portfolios outperform or underperform the passively-managed portfolios. The performance of mutual funds will be compared to the performances of the market's exchange-traded funds (ETFs) such as SPY500, DIA, and QQQ. We found that in S&P500 active and passive did performed similarly within 5, 10 and 15 years, whereas passive strategy outperformed active in 20 years. In the industrial market, and the technology market, the active strategy significantly outperformed passive strategy within 5. 10, 15, and 20 years. Also, volatility indicators such as State Street's Investor Confidence Index" and Chicago Board Options Exchange Market Volatility Index (VIX), "Mahalanobis distance" may detect a potential crisis. Studying the correlations between securities before and during financial crises confirm results of previous studies of higher correlations during crises. We found that most of correlations between stocks increased during the period from 2002-2006 than the period from 2007-2011.**

Keywords: **portfolio theory, during market recession times, exchange-traded funds (ETFs), mutual funds.**

1. INTRODUCTION

Looking for safe haven for their investments, many individual investors avoid risky financial securities during market's unstable conditions. In contrast, portfolios' managers have to look for investment opportunities during those times or they have to invest in specific industries due to investment policies. Stock mass selloffs create an issue for market professionals and officials in that this frequent selloff may disturb long-term investors and financial system. In academic field, this market behavior also challenges the conventional financial theory. This paper tries to find a portfolio's structures for fluctuating times that alleviate losses to encourage investors keep their money in the market even during turbulent times. Shifting the portfolio's structure from traditional or the base structure to more defensive stocks structure would stabilize the portfolios returns. The paper will focus on the financial crisis of 2007-2009. We examine which investment strategy did better during the financial crisis? Then the study focuses on the Modern Portfolio Theory during financial crises. Also, it will measure the change of correlation between portfolios' assets during financial crises, and analyze the characteristics of portfolios' securities were hold at those times. Next section will briefly discuss the literature. The methodology will be in the following section to present the approach of the study. Then, the results and conclusion are in the following sections respectively.

2. LITERATURE REVIEW

Many articles have been written about portfolio management in unstable times. Each researcher or a group of researchers have their own method in how to study, analyze, and explain this topic. German, Hocht, Neugebaer and Zagst (2011) attempt to explore the correlation behavior within assets classes stocks, corporate bonds, and government securities during normal and stress times in the U.S., European, and Asian markets. Their results indicate that correlation between the examined securities increase dramatically during turbulent times, leading to less efficiency of diversification. However, even during unstable periods, still there is beneficial between asset class correlation structures, particularly between stocks and government bonds, likewise corporate bonds and stocks. Also, it found out that the U.S and European markets are

much more correlated to each other than to Asian markets. In contrast, Asian markets experienced more and longer market disorders. The results of this study proved that market regimes have vast prospects with regard to assets allocation. All tested frameworks and risk-aversion levels, strategies incorporating various market regimes outperformed the multidimensional Black-Scholes model. This research will provide us with different applications of assets allocation with regard to the movement of correlations between securities in times where markets are unstable. Also, it determined the correlations with international markets as well as the characteristics of those markets. Kritzman and Li (2010) simulated the methodology of Mahalanobis. This approach was used by an archeologists in 1927 to analyze the characteristics of human skulls, and later on in 1999 was improved mathematically by four economists Chow, Jacquier, Lowrey, and Kritzman to analyze the characteristics of financial securities during normal and turbulent times. This paper provides us with mathematical measurements, which test the unusualness of a group of returns statistically given their historical pattern of behavior during times where the market was unstable. The research discovered two essential results. First, during financial turbulences, return to risk ratio is remarkably lower than in normal times. Second, fluctuations are resistant meaning they come suddenly, and take some time to fade. Teresiene and Paskevicius (2009) concluded that the main key of portfolio management during financial crisis is to monitor and update the financial instruments that are being used. Moreover, they showed that the best investment during financial crisis for one year period is investing in gold and commodities, but that does not last long. Stocks seize the potential profits once an economy starts recovering. Also, irrelevant events like crowd psychology became a very important element with respect to determining stocks prices. This article will assist us to measure the efficiency of updating the portfolio's components with regard to the changes in the business cycle and the macroeconomic indicators. Also, this article provides useful resource of theoretical explanations and facts about the financial crisis of 2008.

3. METHODOLOGY

First part of this study used qualitative approach to order the events of the financial crisis of 2007-08 in order to exhibit a full picture of what had happened. So the research will gather the events that happened before and during the crisis from previous studies, the government documents, newspapers, books, and magazines and then interprets how those events were dangerous economic and financial signs for a definite crisis. The second part used simple comparison to compare performances of passive and active strategies. ETFs will present the passive strategy and three comparable active funds. Thus, we choose SPDR S&P 500 (biggest companies), DIA (industrial companies), and QQQ (technologies) to represent passive strategies to be compared with Vanguard 500 Index Investor shares (biggest companies), Fidelity Select Industrial Equipment (industrial companies), and Fidelity Select IT Services (technologies) respectively. The comparison represented the returns of one dollar that was invested five, ten, 15, and 20 years ago. We will present the tools that are used to detect financial crises by providing what have been improved on previous studies by specialists. The correlations between securities by two approaches; first we will exhibit what has already have been proven by previous extensive studies. Second, support them by running pairwise-correlation matrix between the ten biggest U.S. Companies in two periods, one start from Jan-1-2002 to Dec-31-2006 representing a normal market and the other one starts from Jan-1-2007 to Dec-31-2011 representing a turbulent market.

4. FINDINGS

The Background of the Financial Crisis of 2007-08

The incentives of the financial crisis of 2008 go back to around 2003, when the interest rate and mortgage rate was very law. The low cost of debt encouraged U.S citizens to borrow for buying homes. This situation motivated banks and mortgage institutions as well to lend more money and double their profits. This high demand on houses escalated real estate prices, which gave the householders more excess to loans. Unfortunately, in the hope of getting more commission, credit representatives of many banks and mortgage institutions provided loans to unqualified borrowers and even to people with bad credit histories. Also, the way that financial institutions used to manage the loans exacerbated the problem. They securitized those toxic loans to create more credits (Turnbull, et al., 2008). The ratios of assets to equity for some investment banks were 30, where it should have been around ten (Moyer, McGuigan, Rao, & Kretlow, 2012). Over time, the Fed increased the interest rate, and householders could not afford to pay the mortgage payments. Also, the house prices dropped down 31 percent. So, many mortgage institutions started to file their clients as delinquents and offered their houses to sale (Couldey, & Thies, 2012). Then, rating agencies such as Standard & Poor's and Moody's

started decreasing ratings for many institutions that hold those toxic assets in their balance sheets (Turnbull, et al., 2008). In such an environment, the financial institutions were panic to lend each other and the loans among banks have dropped 47 percent (Ivashina, 2010). During the crisis many insurance companies and banks were filed bankrupt, Lehman Brothers one of the biggest investment bank that was filed bankrupt on September 15, 2008 because no bank wanted to buy its commercial paper (Moyer, et al., 2012). In 2007, two Bear Stearns funds had filed for bankruptcy after they lost a lot of their investments in subprime mortgage market. In March, 2008, J.P. Morgan purchased Bear Stearns for $2 per share. Moreover, after heavy losses, Merrill Lynch could face bankruptcy before it was bought by Bank of America. And while the largest saving institution in the U.S (Washington Mutual) was looking for a buyer, one of the largest insurance companies in the world (AIG) met with the officials to raise cash (Saunders, and Cornett, 2012).

The U.S. Government Interventions

To prevent the financial system from a possible collapse, the U.S. government intervened on September 8, 2008 and seized Fannie Mae and Freddie Mac, after the two organizations declared roughly $9 billion losses in the second half of 2007. Also, to rescue investment banks from potential collapse, the Fed took unprecedented actions and for the first time in history, the Fed lent money directly to the investment banks through the Primary Dealer Credit Facility (PDCF). Also, the Fed decreased the interest rate sharply to reduce the cost of debt, and alleviate the panic among financial market intermediaries. However, the U.S. government needed more drastic actions to safe the economy. On October 3, 2008 the president of the US signed the Troubled Asset Relief Program (TARP) after two weeks of tough deliberation in the Congress. This program provided $700 billion to be injected in the financial system and buy the toxic assets from the financial institutions (FIs). On February 10, 2009, this program expanded to Term Asset-Backed Securities Loan Facility (TALF), which gave the Fed more money to lend for the FIs and reduce the cost of lending (Saunders, and Cornett, 2012).

More steps were needed. The treasury, the Fed, and private investors established the Public-Private Investment Fund (PPIF) to buy the off-balance-sheet assets from FIs which led to reduce their balance sheet risk, gave them the ability for new lending, and improve the financial system. Finally, in July 2010, the 2010 Wall Street Reform and Consumer Protection Act was signed, which is considered the most extensive proposal to restore the financial rules since the Great Depression. This Act aimed to boost supervision and regulation of financial firms, establish comprehensive supervision of financial market, protect consumers, gives the government tools to manage financial crises, and establish global regulatory standards (Saunders, and Cornett, 2012).

The performances of active and passive strategy

In this comparison, we used a simple method to compare between the performances between active and passive strategy. Comparable active funds were selected to be compared with their matched passive index funds (ETFs). We compared the performance of SPDR S&P 500 (passive) with Vanguard 500 Index Investor shares (active) because they are both invested in S&P500. We compared the performance of DIA (passive) with Fidelity Select Industrial Equipment (active) because they are both invested in the same category. Finally, we compared the performance of QQQ (passive) with Fidelity Select IT Services (active). We compared the performances of active and passive strategies as the money was invested since last five, ten, 15, and 20 years. The close price of November 27, 2013, based on Yahoo.com, compared to the close prices of November of 2008, 2003, 1998, and 1993 to calculate the return of the periods 5, 10, 15, and 20 years.

Table 1: Comparison of the performances of passive and active strategies for 5, 10, 15, and 20 years

The performance for the last	5 years	10 years	15 years	20 years
SPDR S&P500	101%	70%	56%	291%
VFINX	102%	71%	54%	281%
DIA	82%	64%	77%	-
FSCGX	157%	107%	81%	-
QQQ	194%	142%	36%	-
FBSOX	236%	161%	193%	-

From the table above, we found that for the biggest 500 companies, active and passive strategy are almost had same performances within 10 years investment (101% to 102% in 5 years and 70% to 71% in 10 years), but the passive strategy beat active strategy in 15 and 20 years (56% to 54% in 15 years and 291% to 281% in 20 years). In contrast, in both the industrial and technology markets, active strategy beat passive strategy significantly. In the industrial market, the passive strategy achieved 82%, 64% , and 77%. While the active strategy gained 157%, 107%, and 81% for the same period of investment. In the technology market, the passive strategy achieved 194%, 142%, and 36%. While the active strategy gained 236%, 161%, and 193% for the same period of investment.

Tools used to detect financial crises

There are many tools have been used to detected potential financial crises. A part of these tools use risk-aversion to detect financial crises such as "State Street's Investor Confidence Index" and Chicago Board Options Exchange Market Volatility Index (VIX). One of the most used tools to detect financial crises is risk-aversion indicators, which are capable of indicating the shift in the financial market from calm liquid market to unstable market. The first risk-aversion indicator is "State Street's Investor Confidence Index" this indicator compares the volume of money invested into assets that are well known as risky assets to the volume of money invested in assets that are well known as safe assets. But the essential defect of the use of State Street's Investor Confidence Index is that it can be manipulated because selection bias based on the investors' profiles. The second indicator is "Chicago Board Options Exchange Market Volatility Index (VIX)" this model gauges the immediate uncertainty and nervousness in the market by reflecting the implied volatility of options on the S&P500. This indicator is able to measure the investors' expectations for risk ahead of time for example a month ahead. The weakness of this indicator is that it is not able to distinguish between real and local benign stresses. So it may leads to the generation of false alarms (Guilleminot, Ohana, and Ohana, 2013).

Kritzman and Li (2010) have taken a different approach to detect the shift in the market. They used "Mahalanobis distance" the methodology of the archeologist Mahalanobis. The main purpose of their study was to find formula that is able to quantify the abnormality of a vector of returns at a specific period of time with respect to a certain behavior, which corresponds to the standard or normal regime of markets. This method was applied on stocks and bonds. The center of each group of investment represents the average of returns of that group (stocks or bonds). And the points orbit around that center represents the returns of stocks or bonds. When we have points that are closer to their center, which means we have a stable market. And when those points started to go way from their center, that means the market started shifting. And during turbulent market, most of the returns are away from their averages (Kritzman, and Li, 2010).

Correlations between Assets before and during the crisis of 2007-08.

In this part we will examine the correlations between securities before and during the financial crisis of 2007-08 based on our correlation matrix that we run on small sample of ten significant U.S. stocks: Amazon, Apple, Microsoft, AT&T, Bank of America, J.P. Morgan, Chevron, DuPont, Exxon, and GE. The correlations will calculated during two periods: first period lasts from January 1, 2002 to December 31, 2006 which represents the correlation between securities during a normal period. The second period lasts from January 1, 2007 to December 31, 2011 which represents the correlation between securities during an unstable period. We had 45 correlations all of them were significant before the crisis and 6 were not significant during the period of the crisis. It obviously can be seen in table 2 below 35 correlations out of 39 significant correlations (90%) have significantly increased during the crisis. And 4 remained the same or decreased. This results support a previous extensive study by German, Hocht, Neugebaer and Zagst (2011).

Table 2: comparison between the stock correlations for the period (2002-06) to the period (2007-11)

The correlation	2002-2006	2007-2011
Amazon- Apple	0.251	0.525
Amazon- Microsoft	0.302	0.525
Amazon- AT&T	0.175	0.445
Amazon- Bank of America	0.241	0.358
Amazon- J.P Morgan	0.291	0.418
Amazon- Chevron	0.16	0.456
Amazon- DuPont	0.258	0.470

Amazon- Exxon	0.161	0.443
Amazon- GE	0.256	----
Apple- Microsoft	0.394	0.535
Apple- AT&T	0.247	0.499
Apple- Bank of America	0.292	0.429
Apple- J.P Morgan	0.344	0.475
Apple- Chevron	0.252	0.501
Apple- DuPont	0.305	0.521
Apple- Exxon	0.291	0.466
Apple- GE	0.320	----
Microsoft- AT&T	0.399	0.594
Microsoft- Bank of America	0.432	0.455
Microsoft- J.P Morgan	0.534	0.507
Microsoft- Chevron	0.328	0.628
Microsoft- DuPont	0.453	0.618
Microsoft- Exxon	0.379	0.630
Microsoft- GE	0.553	-0.054
AT&T- Bank of America	0.376	0.495
AT&T- J.P Morgan	0.472	0.548
AT&T - Chevron	0.298	0.662
AT&T - DuPont	0.411	0.623
AT&T - Exxon	0.372	0.666
AT&T - GE	0.48	----
Bank of America- J.P Morgan	0.662	0.825
Bank of America- Chevron	0.382	0.49
Bank of America-DuPont	0.505	0.58
Bank of America- Exxon	0.441	0.443
Bank of America- GE	0.578	----
J.P Morgan- Chevron	0.404	0.516
J.P Morgan- DuPont	0.542	0.630
J.P Morgan- Exxon	0.44	0.485
J.P Morgan- GE	0.625	-0.088
Chevron- DuPont	0.415	0.712
Chevron- Exxon	0.808	0.902
Chevron- GE	0.368	----
DuPont- Exxon	0.5	0.687
DuPont- GE	0.559	----
Exxon- GE	0.459	-0.094

Portfolio Theory during Financial Crises

One of the differences between stable and unstable markets is that during normal market, money run into all channels of investments which let those investments move more independently, but when confidence is lost, most of those investment channels dry up at the same time (systematical risk) and let them all decline together and increase their correlations. That may raise a rational question whether Modern Portfolio Theory still works during financial crises or not? There no doubt that many portfolios suffer heavy losses and many funds file for bankruptcy during the previous financial crises. But in the end of the day, the Modern Portfolio Theory neither promises definite profits nor claims it prevents losses. The Modern Portfolio Theory provides well-structured model aims to minimize the risk for a given expected return or to maximize expected return for a given risk. So, it would be rational that for those investors who sought higher returns and

concentrated their portfolios on stocks (high beta) to suffer heavy losses because they carried very high risks. Those investors tend to gain more on average over the long run, but usually they lose more during turbulent markets. However, investors seek low risks usually gain lower than aggressive investors over the long run, but they do better during turbulent markets. For example, while all indices were felling in 2008, the 5-Year Government Fixed Income Index increased by 8.4% (Markowitz, Hebner, Brunson).

5. CONCLUSION

We have summarized the consecutive events that prepared the environment for the financial crisis of 2007-08 such as the low interest rate in 2000-2002, lack of professional ethics of some representatives of many banks and mortgage institutions, and financial leverage used by financial institutions to raise more funds backed by Mortgage-backed securities. Then, we covered the most drastic actions that the government has adopted since the crisis such as the seizure of Fannie Mae and Freddie Mac, (PDCF), (TARP), and (TALF). After we compared the passive strategy to active strategy, we have found that for the biggest 500 companies, active and passive strategy almost have same performance within 10 years, but in the long run (15-20 years) passive strategy beat the active. And for the industrial sector, and technology, the active strategy outperformed passive strategy. Also, we have seen some tools that used to detect financial crises such as State Street's Investor Confidence Index" and Chicago Board Options Exchange Market Volatility Index (VIX), "Mahalanobis distance". We have reached the same conclusions for previous studies of the correlations between securities before and during financial crises. We found that most of correlations (90) between stocks increased during the period from 2002-2006 than the period from 2007-2011. Although, most of correlations of the markets' securities have increased during the crisis, the Modern Portfolio Theory is still the best option for investors to maximize profit with specific acceptable risk.

REFERENCES

[1] German, B, Hocht S, Neugebaer, M, & Zagst R, (2011). Asset Correlation in Turbulent Market and The Impact oF Different Regimes on Asset Management. Asia-Pacific Journal of Operational Research, 28(1), 1-23.

[2] Gouldey, B. K., & Thies, C. F. (2012). Asset Bubbles and Supply Failures: Where Are the Qualified Sellers?. *Cato Institute*, *32*(3), 513-538

[3] Guilleminot, B., Ohana, J., & Ohana, S. (2013, August 28). Dynamic asset allocation and tail risk monitoring in turbulent financial markets. *Social Science research network*. Retrieved November 29, 2013, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2317321

[4] Ivashina, V. (2010). Bank Lending During the Financial Crisis of 2008 [Electronic version]. *Journal of Financial Economics*, *97*(3), 319-338. Retrieved Sep 22, 2012 from http://proxy.tamucommerce.edu:8049/science/article/pii/S0304405X09002396#

[5] Kritzman, M., & Li, Y. (2010). Skulls, Financial Turbulence, and Risk Management. Financial Analysts Journal, 66(5), 30-41.

[6] Markowitz, H. M., Hebner, M. T., & Brunson, M. E. Does Portfolio Theory Work During Financial Crises? . Retrieved December 2, 2020, from Microsoft Word - Does Portfolio Theory Work HMM mbedits 5-19-09.doc (ifa.com)

[7] Moyer, C. R., McGuigan, J. R., Rao, R., & Kretlow, W. J. (2012). *Contemporary Financial Management* (12th ed., pp. 28-30). Mason, OH: South-Western.

[8] Saunders, A., & Cornett, M. M. (2012). *Financial Markets and Institutions* (Fifth ed., pp. 25-35). Irwin: McGraw-Hill.

[9] Teresiene, D., & Paskevicius, P. (2009). Portfolio Construction and Management during the Period of Financial Crisis. *Economics & Management*, 195-201.

[10] Turnbull, S. M., Crouhy, M. G., & Jarrow, R. A. (2008). The Subprime Credit Crisis of 07. *Social Science Research Network*, *22*, 56. Retrieved October 3, 2012, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1112467