Security Selection

1. MSFT – Microsoft Corporation
2. WMT – Wal-Mart Stores Inc.
3. WPC – W. P. Carey Inc.
4. OLP – One Liberty Properties Inc.

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Introduction & Security Selection

As instructed, this term project will be conducted to assess the risk and return characteristics of the period of time between 2002 – 2013 for individual and portfolio security investments. Four stocks will be used as part of the security selections. Individual securities will be compared with each other when instructed, as well as comparisons of portfolio selections. The two equity stocks that will be assessed are Microsoft Corporation (MSFT) and Wal-Mart Stores Inc. (WMT). The two real estate investment trusts (REITs) that will be applied for assessment are W. P. Carey Inc. (WPC) and One Liberty Properties Inc. (OLP). Portfolio 1 will include only the REITs, WPC and OLP, with standard weightings of 70% and 30%, respectively. Portfolio 2 will consist of only the equity stocks, MSFT and WMT, with standard weighting f 40% and 60%, respectively. Last but not least, Portfolio 3 will be a blend of the securiti th 40% equity and 60% REITs. The standard weights to be applied in this Portfolio for MS MT, WPC, and OLP are 10%, 30%, 20%, and 40%, respectively. This can be seen ir t 1. The rational for the selected weightings will be covered further into the research anal

Exhibit 1

Portfolio 1 REIT	Weights
WPC	0.7
OLP	0.3
Portfolio 2 Equity	**Weights**
MSFT	0.4
WMT	0.6
Portfolio 3 Equity(40%) & REIT(60%)	**Weights**
MSFT	0.1
WMT	0.3
WPC	0.2
OLP	0.4

The entire time period between 2002 and 2013, and the three separate time period's within this time period, will be examined for each individual security and portfolio number, as seen in Exhibit 2. Period 1(Pre-Crisis) will be from January 1, 2002 to November 30, 2007. Period 2 (Crisis) will expand from December 1, 2007 to December 31, 2010. Finally, Period 3 (Post-Crisis) will consist of January 1, 2011 to October 1, 2013. Because of initial instructions, unexpected trends may be incurred in Period 1 since it consisted of most of the start of the recession in 2007.

Exhibit 2

Term Description	Start Date	--	End Date
Period 1 (Pre-Crisis)	1/1/2002	--	11/30/2007
Period 2 (Crisis)	12/1/2007	--	12/31/2010
Period 3 (Post-Crisis)	1/1/2011	--	10/1/2013

Investment Background Research

For the first stock I wanted to have a long-term sustainable growth stock, so I selected the largest tech giant in the world, Microsoft Corporation. Founded in 1975, Microsoft aims to enable consumers and businesses worldwide to realize their full potential by creating technology that transforms the way people communicate, work, and occupy their selves. Microsoft develops software, services, and hardware that deliver new opportunities, greater convenience, and enhances the value to peoples' lives. Microsoft does this with business and home offices in over 100 countries. Some of the company's main products are the windows operating systems for PCs, servers, phones, other intelligent devices (tables), productivity applications, business solutions applications, and software development tools. In addition, Microsoft develops video game devices such as its newest release for the 2013 holiday season, Xbox ONE, and many other Microsoft PC hardware products. Also, the company provides consulting and production solution support services and cloud-based solutions, for example, Microsoft Office, Xbox Live, Skype, and Bing, that provide customers with software, services and content over the web. For fiscal year 2012, Microsoft's revenue grew to a record of $73.7 billion, returning $10.7 billion to its shareholders. As you can see, Microsoft is incorporated with many technological services and products that people worldwide use on an everyday basis. This makes the investment a solid pick, as technology will only continue to advance in the future. (Microsoft 2012 Annual Report)

With a beta of 0.77 from Morningstar.com, Microsoft is less volatile than the market. Even with many strengths and advantages among the consumer electronics industry, there are still threats and weaknesses that Microsoft has to be cautious of so that they can continue to progress towards new future opportunities. With 94,000 employees, Microsoft's many strengths include brand loyalty, brand reputation, easy use of software, strong distribution channels, robust financial performance, acquisition of Skype, advanced technology, and advanced video games. Some of its weaknesses and threats are dependence on hardware manufacturers, criticism over security flows, mature PC markets, slow innovation, intense competition in software products changing consumer needs/habits, open source projects, and potential legal lawsuits. Because of Microsoft's advancement in technology and financial capacity, it has numerous opportunities to include advancing cloud based services, mobile advertising, advancing mobile device industry, and growth through better acquisitions. (Microsoft 2012 Annual Report)

The second equity stock I selected was Wal-Mart, which was founded in 1945. My reasons for picking Wal-Mart are for a conservative position based on its sustained growth and dominance in its industry, and for a steady source of income in dividend earnings. In addition, with a beta of 0.27 stated on Morningstar.com, the effects on the stock from the market is very low compared to firms like Microsoft, and firms with higher betas closer to and above one. During economic downturns, this company is a survivor as society turns to it for a more affordable living when going through economic hard times. Also, it consists of many market cycles with people who are looking to save financially. With 2.2 million employees, Wal-Mart operates retail stores worldwide and is comprised of three segments: Wal-Mart U.S., Wal-Mart International, and Sam's Club. With many types of business stores, such as retail stores, restaurants, discount stores, supermarkets, hypermarkets, warehouses, apparel stores, online store, and neighborhood markets, the company offers products that spread across an entire range of items. They sell groceries, toys, electronics, supplies, cellular phones/plans, entertainment, books, automotive accessories, apparel, pharmaceuticals, fabrics, house and outdoor products, and tons more. In 2012, Wal-Mart's earnings per share increased 10.6% to $5.02 EPS, with net sales of $22 billion, making them a $466 billion asset company. The company incurred growth in free cash flow by 18.1% to $12.7 billion. Wal-Mart enabled the company to return $13 billion to shareholders in dividends and share repurchases. As you can see, this cash cow will continue to feed the economy its affordable business products and services as the top discount variety store worldwide in a consolidating industry. (Walmart 2013Annual Report)

Just like Microsoft, Wal-Mart is the top competitor in its industry with plenty of strengths, opportunities for further advancement, and at the same time, a few weaknesses and threats. Some of its advantages are its scale of operations, competence in information systems, wide ranges of products, an excellent cost leadership strategy, and international operations. Like every firm, Wal-Mart has weaknesses and threats to include labor related lawsuits, high employee turnover rates, little differentiation, negative publicity, increasing competition from brick, mortar, and online competitors, increasing resistance from local communities, and rising commodity prices. Its main opportunities are retail market growth in emerging markets, a rising acceptance of its own labeled products, trends toward healthy eating, and online shopping growth. With so many discount products affordable to all population groups there will be obstacles, but Wal-Mart has overcome many as it continues to lead in its industry through its efficient business strategies. (Walmart 2013Annual Report)

Unfamiliar with the REIT market, I researched some of the top performing REITs in the past five years so that I could get an idea of how much wealth one could possibly bring. W.P Carrey Inc. (WPC) was the first REIT I selected after looking up its price history on Morningstar.com. As seen in Exhibit 4, they have a beta of 0.75, which means that it's less volatile than the market during unexpected changes. W.P. Carey Inc. was founded in 1973 in

New York. It is an independent equity real estate investment trust that provides long-term sale-leaseback and financing built to suit for companies. Investing in the real estate market worldwide, ~~it~~ WPC invests in commercial properties that are usually triple net leased to single corporate tenants, such as self-storage properties, R&D, hotels, retail, industrial warehouses, and office properties. With only 216 employees and owning over 850 commercial and industrial properties, the firm manages a series of publicly traded REITs. With $275 million in 2012 revenues and a record setting acquisition volume including more than $1.4 billion of investments of managed non-traded REITs, W.P. Carey seems to be one of the top competitors in the REIT market. (W.P. Carey 2012 Annual Report)

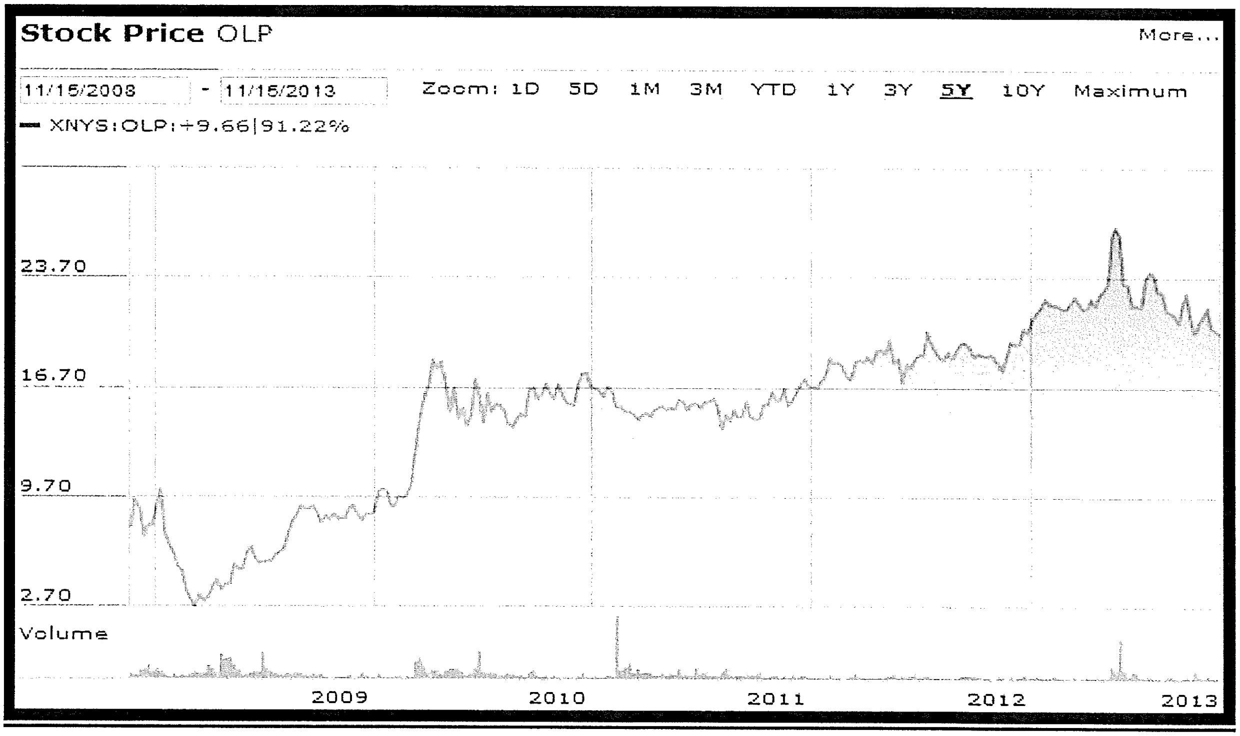
<u>Exhibit 3</u>

Just like the equity firms, W.P. Carey has many strengths and weakness to deal with. One of the major threats that REITs face in their industry is the highly diversified with competition in the commercial real estate industry with over a reported $200 billion ~~of~~

investment capital flowing into the US between 2010 and 2011. On the upside, some of the industry's strengths have been improving performance records, guaranteed dividends, and diversity of portfolio holdings. One of its biggest threats is the risk of recessions. The total return for the NAREIT ALL REIT Index was -14.30% in 2007 during the first year of the recession. The major opportunities for the company have been high growth and recovery in the market after ~~these~~ downturn periods through its aggressive acquisition strategy. With that said, W.P. Carey will serve as a prime example of a well oiled REIT for this security and portfolio research. (W.P. Carey 2012 Annual Report)

Next on the list from my industry research on top REITs I selected One Liberty Properties Inc (OLP). With a strong performance since the end of the recession in 2009, as seen in Exhibit 5, and a beta from Morninstar.com of 0.92, OLP is still less volatile than the market; however, they will have greater returns than W.P. Carey when the market changes favorably. Incorporated in Maryland in 1982, OLP is a real estate investment trust that engages in the acquisition, management, and ownership of commercial real estate properties in the United States. The primary business of the company is to acquire, own, and manage a geographically diversified portfolio of retail, industrial, office, and other properties under long term leases. Generally, all of the firm's leases are net leases under which the tenant is responsible for real estate taxes, insurance, and ordinary maintenance and repairs. As of now, OLP, with only seven full-time employees, is seeking all types of single tenant net leased acquisition opportunities in child care, gas station/ c-stores, and restaurants, in addition to the ones previously mentioned. Currently, OLP owns 107 properties in 29 states. In 2012 its revenues increased by $2.95 million, or 7%, with 2013's contractual rental income alone growing to approximately $45.8 million. With such a small employee base, this company is prime fit for growth in the years to come. We'll see how the REITs security portfolios have performed since 2002 compared to the equities. (Liberty Properties 2012 Annual Report)

Exhibit 4



Just like many other REITs, OLP possesses strengths, weaknesses, and opportunities. Its main strengths are their ability to produce a large amount of wealth and competition in the market with only the man power of seven full-time employees. Also, its acquisition strategy helps strengthen their organization. As part of this strategy, its tenants are responsible for real estate taxes, insurance, and maintenance and repairs, which leaves OLP more time to find bigger opportunities. Consequently, they risk company shortcomings if those tenants do not keep up the properties in prime condition, which may result in losses when it is time to sell or look for another tenant income source. If they are unable to re-rent properties upon the expiration of the leases, or if the tenants default, OLP's revenues would decline, incurring additional costs.

Furthermore, if something were to happen to its employees, this could threaten the ability of the company to thrive based off a small amount of employee power. Consequently, OLP should be open to the opportunity of expanding its man power to further increase its financial wealth. As previously discussed, OLP, with increasing financial capital, is now expanding its opportunistic properties such as child care, gas-stations/ c- stores, and restaurants. With OLP being smaller, but also vulnerable to more risks than WPC, we will see how the REITs security portfolio has fared with the equities since 2002, and amongst the three time periods. (Liberty Properties 2012 Annual Report)

Average Annual Returns for the Entire Period

In order to arrive at the average annual return for each equity stock, and for each REIT stock for the entire period, the holding period return formula was used based on a monthly price basis multiplied by 12. For example, step 1: $R_t = (P_t - P_{t-1}) / P_{t-1}$ and step 2: Annual $R_t = R_t * 12$. The resulting average returns are displayed in Exhibit 6 below, starting with the lowest average returns to the highest for the entire period of 2002 – October 2013. Wal-Mart, as the most conservative stock with the lowest beta, had the lowest average return. Microsoft was next. As you can see, there have been higher average returns for the REITs since 2002 with One Liberty Properties having the highest average returns and W.P. Carey immediately following.

Exhibit 5

Average Returns Smallest to Highest 2002 - Oct. 2013		
Stock	**Average Return**	**Standard Deviation**
WMT	4.97%	0.1675
MSFT	6.02%	0.2420
WPC	17.56%	0.2156
OLP	19.43%	0.4112

Risk and Standard Deviation

In order to compare the risk of each security over the entire period, the standard deviation of the monthly holding period returns where used to calculate the standard deviation, then they were multiplied by the square root of 12 for annual adjustments. The results are shown in Exhibit 7. Wal-Mart, which also had the lowest beta compared to the market, had the lowest standard deviation supporting my observation that this conservative stock has lower risks compared to the other three securities; making it the best choice for investment. The second stock with the lowest risks was W.P. Carey. , Microsoft had the third highest risks, ~~in~~ which ~~it~~ is expected for a tech company because it is more responsive to how well or bad the market economy is performing. The stock with the most risk was the smaller REIT, One Liberty Properties, which had a standard deviation of 0.41. This can be attributed to the fact that it had the highest beta, and it is the smallest and newest company compared to the other three securities, making it more volatile to unexpected changes in the market. As you can see, OLP which had the highest risk is also compensated with the highest average return and vice versa for Wal-Mart, with the lowest standard deviation and average return.

Exhibit 6

Standard Dev. Risk Smallest to Highest 2002 - Oct. 2013

Stock	Standard Deviation	Avergage Return
WMT	0.1675	4.97%
WPC	0.2156	17.56%
MSFT	0.2420	6.02%
OLP	0.4112	19.43%

Risk and Return Attributes for Individual Securities by Period

By breaking down the individual stock data, an analysis was conducted. It is summarized by the data presented in Exhibit 8, and can be used to compare the risk and return attributes of the individual securities over the Pre-crises Period (Period 1), Crises Period (Period 2), and Post-Crises Period (Period 3). First, in the Pre-Crisis period Microsoft had an average return close to its average return for the entire period. During the Crisis its return was close to zero, which is to be expected with a positive beta where the largest and most needed tech company thrives based off the health of the economy. Then in the Post-Crisis period, as technology advanced further, Microsoft's average returns after the recovery became higher than the first period by about 5% extra. As for Microsoft's standard deviation, it had an opposite pattern. During the Pre-Crisis, its standard deviation was in the middle. Then during the Crisis, its standard deviation risk level increased to 0.29, which was the highest of the three periods and is attributed to the downturn and volatile economy. Finally, the company's risk was the lowest in the Post-Crisis period, which can be attributed to more stability in the market, as well as, a more cautious industry since the housing crisis period. As you can see, Microsoft's risks increased as expected due to volatility in the market and as its returns increased due to improving economic markets and advancement in the technology industry.

Now I will discuss the changes in Wal-Mart's average returns and risk standard deviation over the three periods. Leading into the recession we see that Wal-Mart had a negative average return in period one. This could be attributed to the fact that the time period sets included most of the first year of the 2007 recession. If we took the average returns from the end of 2006, we would probably not see such a negative number. In fact, it is possible that we may even see a positive average return. After the shock of the recession hit the economy in 2007 and 2008, Wal-Mart's average return over the Crisis period improved to 7.47% as consumers looked to save more money due to the loss of savings in the market becoming more risk averse. Since then, the post crisis period has become more profitable for Wal-Mart as they have beefed up there business strategy with more variety discounts and superstores with grocery store chains. As a result, they are capturing more than just the consumers of the food industry. Moving forward, more consumers have found Wal-Mart to be a great saver and are reluctant to stop saving due to pessimism that the market could someday return to its recession state as more government budget crises are continuing to be on the edge. You can see that Wal-Mart's risk standard deviation remained pretty constant from the pre-crisis period to the crisis. However, Wal-Mart's advancement in variety and more commercial property acquisitions has helped to flood new growth areas with its supercenters decreasing there risk level standard deviation in the post crisis period to 0.15. As you can see, Wal-Mart is a great investment during a recession, leading into a recovery when the improving growth future has a cautious outlook.

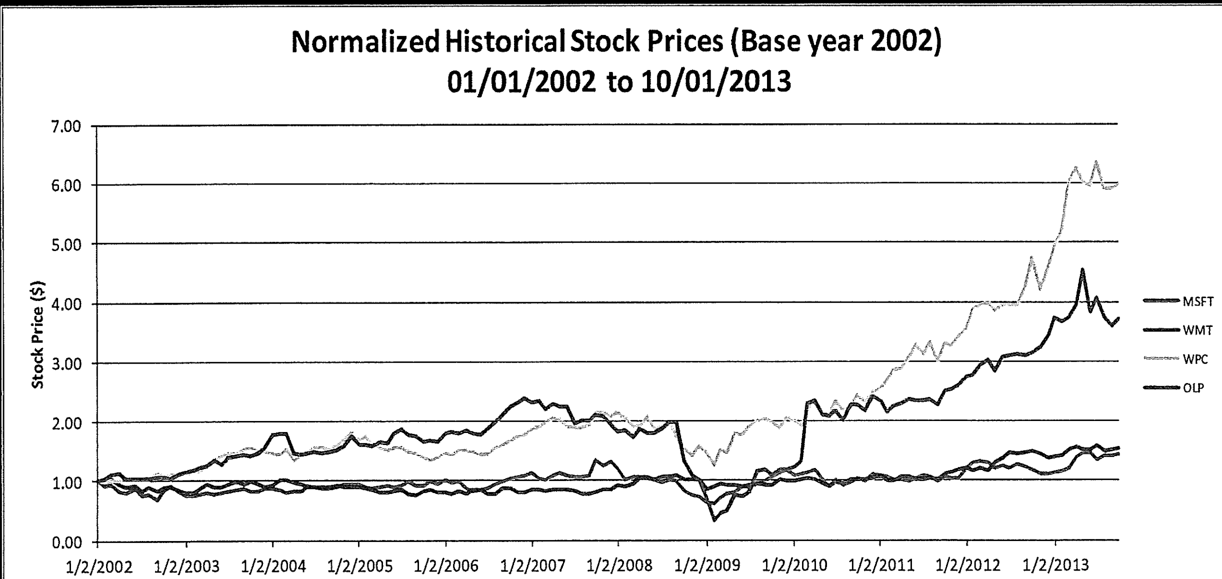
When looking at W.P. Carey, we see the same trends that Microsoft incurred over the three periods. Leading into the recession, its average return was 14.29% and, as expected when the recession and housing crisis hit, they were able to make a return. Unfortunately, ~~but~~ it fell to an average of 9.06%. After the recovery and growth of the economy spurred, the housing market improved. WPC's average return for the post-crisis period more than doubled that of the pre-crisis period to a high of 33.45%. As expected, the risk levels doubled during the recession crisis and lowered back down to 0.20 post crisis, which is due to investors being more cautious than in the pre-crisis period with a standard deviation of 0.15.

As we look at the One Liberty Properties, we can again see that its risk attributes trend in the same way as the previous security. Its pre-crisis standard deviation was close to 0.18. It increased substantially to almost 0.75during the recession, and back down to 0.20 for the post-crisis period. We saw a different trend in its average returns during the crisis period. Its average return of almost 14.12% was close to W.P. Carey's during the pre-crisis. Then during the crisis period, we see that OLP spiked to an average return of 31.56%. This could be attributed to the fact that the crisis period ranged from December 2007 to December 2010, which involved the recovery and spark of a new growth economy.. If we look at the normalized price graph in exhibit 8, we see OLP's prices plummet until the last year of the recession in 2009. They then came roaring back due to great strategizing as they quickly bought properties when they were at its lowest during the end of the recession, and reaping the gains as the economy spurred into a recovery and growth leading out of 2010.

Overall, on the normalized price graph in Exhibit 8, we see the fall in the price levels of the securities during the actual recession of 2007 – 2009. The equities, WMT and MSFT, grew steadily. Conversely, the REIT's have exploded since 2010. In 2013 we start to see a leveling off, or possibly another housing bubble starting to deflate. All of their risk levels increased during the recession, in turn decreasing in the post-crisis.

Exhibit 7

Stock Average Returns by Period	Period 1	Period 2	Period 3
MSFT	6.36%	0.25%	11.60%
WMT	-1.33%	7.47%	15.22%
WPC	14.29%	9.06%	33.54%
OLP	14.12%	31.56%	17.17%



Stock Standard Deviations by Period	Period 1	Period 2	Period 3
MSFT	0.2368	0.2924	0.1934
WMT	0.1715	0.1721	0.1532
WPC	0.1503	0.3096	0.2057
OLP	0.1778	0.7467	0.2029

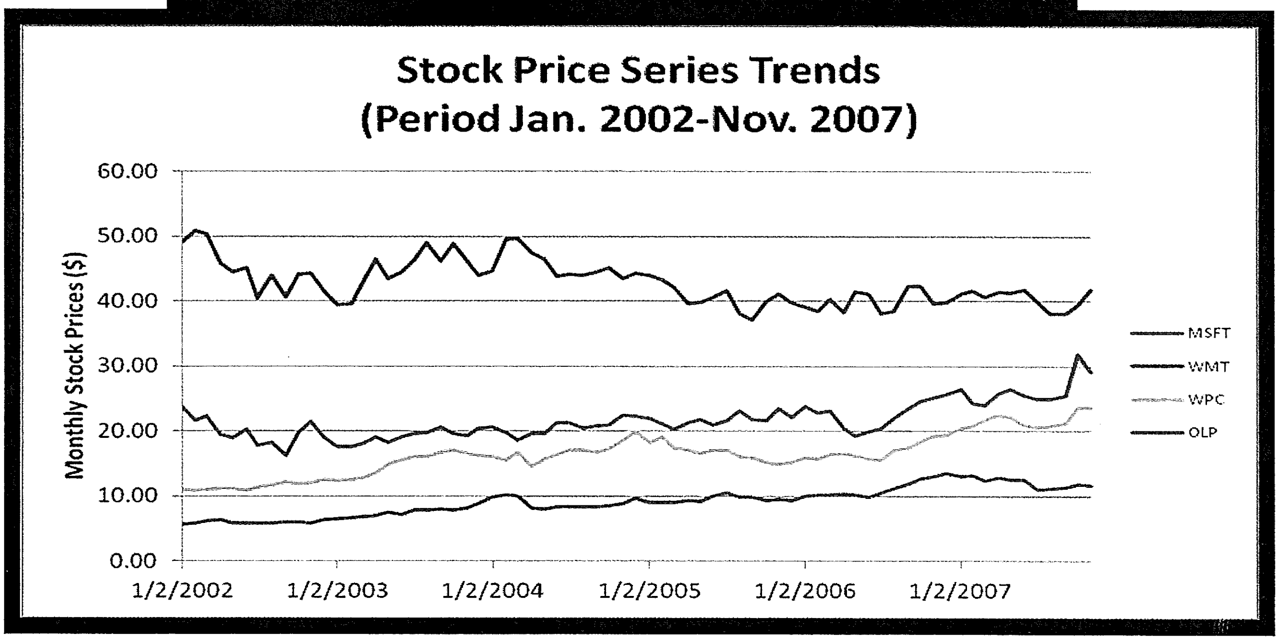
Cross Correlations Over Time

Exhibits 8-10 represent the trends and correlations amongst the individual securities over the three different crisis periods. During the Pre-Crisis Period we can see that the equity stocks are moderately positively correlated with each other, and the REIT's are strongly positively correlated with each other. Seen in Exhibit 8, because of Wal-Marts low correlation and a considerably lower beta with the market as compared with the rest of the securities, we see that it is actually negatively correlated with W.P. Carey during the Pre-Crisis. The rest of the cross correlations between the equities and REIT's are weakly positive correlated. As most of the equities were increasing leading up to the recession, we see Wal-Mart on a steady decline due to consumers not accounting for saving money for an unexpected recession.

Exhibit 8

Period 1: Pre-Crisis

	MSFT	WMT	WPC	OLP
MSFT	1			
WMT	0.2720	1		
WPC	0.0980	-0.0046	1	
OLP	0.0824	0.0408	0.4535	1

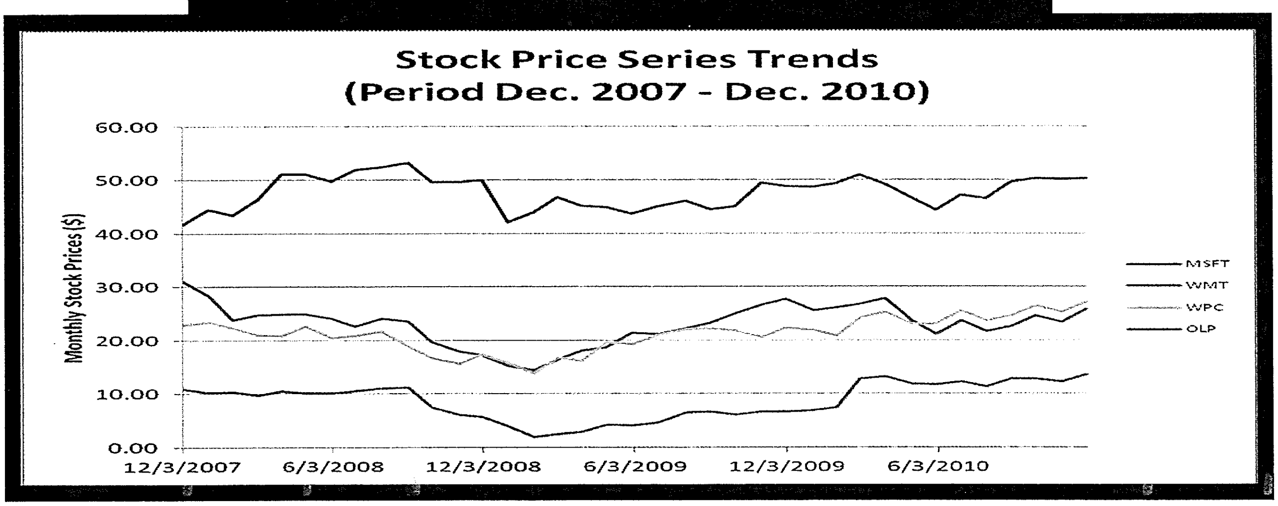


We can see in Exhbit 9 that, as the market economy is entering into the middle of the recession/housing crisis, not only do overall price levels fall, but the securities all become ~~all~~ considerably moderately positively or strongly positively correlated. We can see from the graph that Wal-Mart was least affected by the reccession, while OLP, was the most affected and unable to start recovering as quickly as the other REITs, WMT and WPC. This could be attributed to OLP's inability to implement diversed strategies in the light of so few employees. Sometimes too few employees can harm a company if it doesn't have enough muscle to quickly recover from a shock. We again see that WMT and WPC are still less correlated than any of the overall cross correlations between the securities. We also see that during the recession, MSFT is more positively correlated with the REITs than with the equity WMT. This could be expected due to WMT's relatively low beta. The other securities have higher betas closer to one, that would react more in line with the market above 0.75 than with WMTs beta of 0.29, which is closer to zero. Overall, we can predict that REITs with higher betas and greater risks would be more impacted by recessions than securities like WMT that have low betas and less risks during economic downturns.

Exhibit 9

Period 2: Crisis

	MSFT	*WMT*	*WPC*	*OLP*
MSFT	1			
WMT	0.4071	1		
WPC	0.4888	0.2799	1	
OLP	0.4427	0.3009	0.6982	1



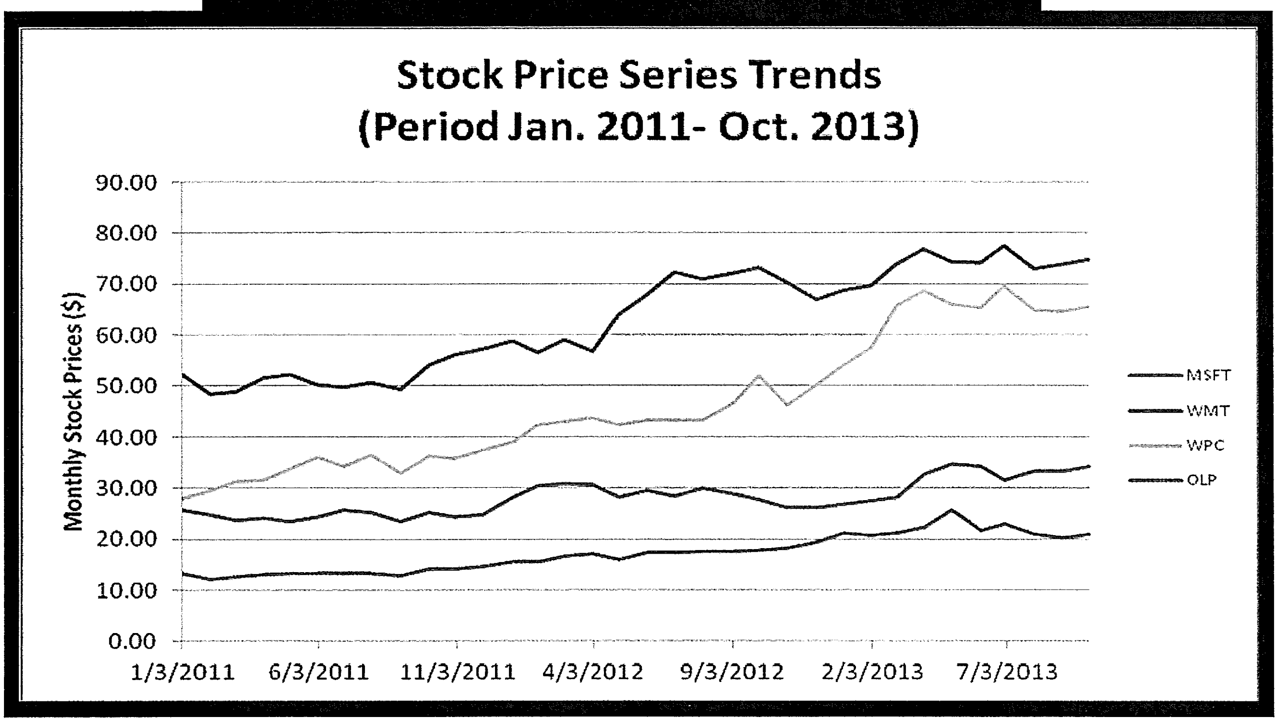
Leading into the post crisis period, the graph in Exhibit 10 shows that all the securities have upward rising trends. First, there is a surprisingly small negative correlation between equities WMT and

MSFT. This is due to WMT's ability to surge after the crisis as its average returns more than doubled due to refining its business strategy with more supercenters appealing to more consumer markets. MSFT seemed to have trouble being able to consistently increase since the recession. The rest of the oveall post-crisis correlations are moderatley positive correlcted more than in the pre-crisis period, but less than the strenght during the actual crisis period.

Exhibit 10

Period 3: Post-Crisis

	MSFT	*WMT*	*WPC*	*OLP*
MSFT	1			
WMT	-0.0549	1		
WPC	0.1462	0.2180	1	
OLP	0.3410	0.2020	0.2461	1



Portfolio Allocations and Performance

Exhibit 12 shows the portfolio allocations, in addition to the expected returns for each portfolio, with respect to each of the three different periods and the entire period. In order to arrive at the average expected return over each of the periods, I used the weightings of the allocations and the average returns corresponding to the same periods in the following formula: Rp = W1 R1 + W2 R2 + W2 R2 + W3 R3 + W4 R4

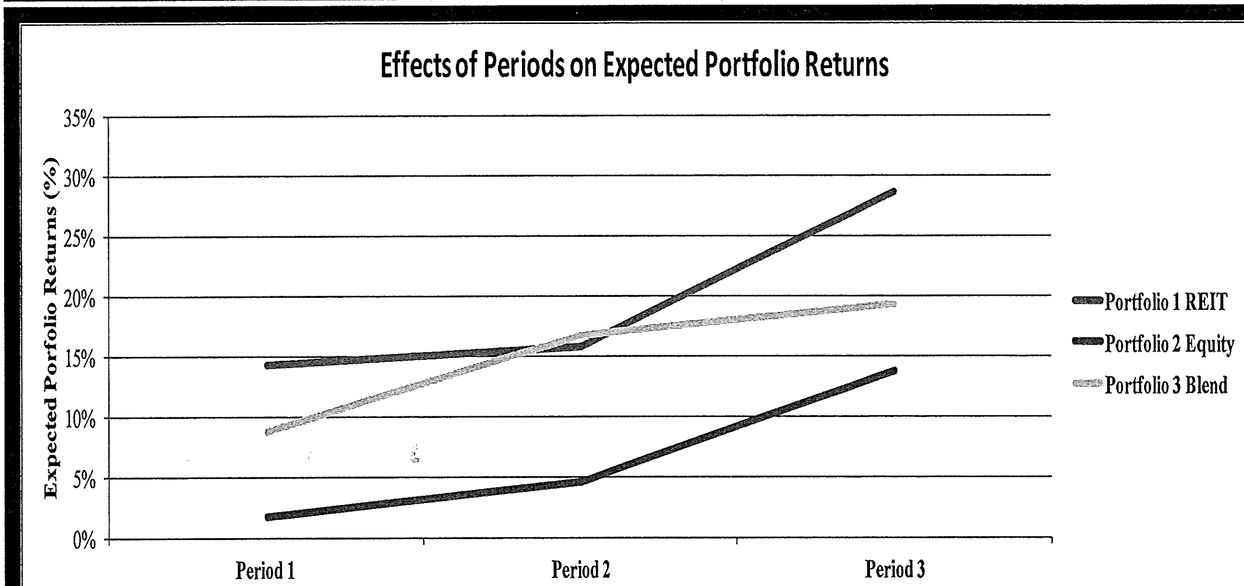
The portfolio that was least affected by the crisis was the blended portfolio 3. We can see this in Exhibit 12, as the curvature of the line is less volatile compared to the pure equity and pure REIT portfolios. Based on the increase in returns, Portfolio 2, consisting of the equity securities was the most affected by the Crisis Period Two as the average returns jumped almost more than doubling average returns (1.75% to 4.59%) compared to Portfolio1 REIT (14.24% to 15.81%) and Portfolio 3 Blend (8.74% to 16.70%). This can be attributed to Wal-Mart's ability to perform so well during and after an economic recession compared to more cyclical correlated securities with the market. With such mature giants in Portfolio 2 Equity, we would expect to see lower returns than the other portfolios consisting of booming REIT securities with higher returns. On the other hand, as you can see, diversifying amongst the four securities provided less volatile returns over the entire period, providing a solid return under the exploding REIT portfolio for compensating less risk.

Over the entire period, Portfolio 1 REIT performed the best with the highest average return of 18.12% increasing from 14.24% in the pre-crisis period to 28.63% in the post crisis period. The blended portfolio had the second highest average return performance with 13.38%, and Portfolio 2 Equity with the lowest performing average return over the entire period of 5.39%.

Exhibit 11

Portfolio 1 REIT	Weights
WPC	0.7
OLP	0.3
Portfolio 2 Equity	**Weights**
MSFT	0.4
WMT	0.6
Portfolio 3 Equity(40%) & REIT(60%)	**Weights**
MSFT	0.1
WMT	0.3
WPC	0.2
OLP	0.4

Effects of Periods on Portfolios' ExR	Portfolio 1 REIT	Portfolio 2 Equity	Portfolio 3 Blend
Period 1	14.24%	1.75%	8.74%
Period 2	15.81%	4.59%	16.70%
Period 3	28.63%	13.77%	19.30%
Entire Period	18.12%	5.39%	13.38%

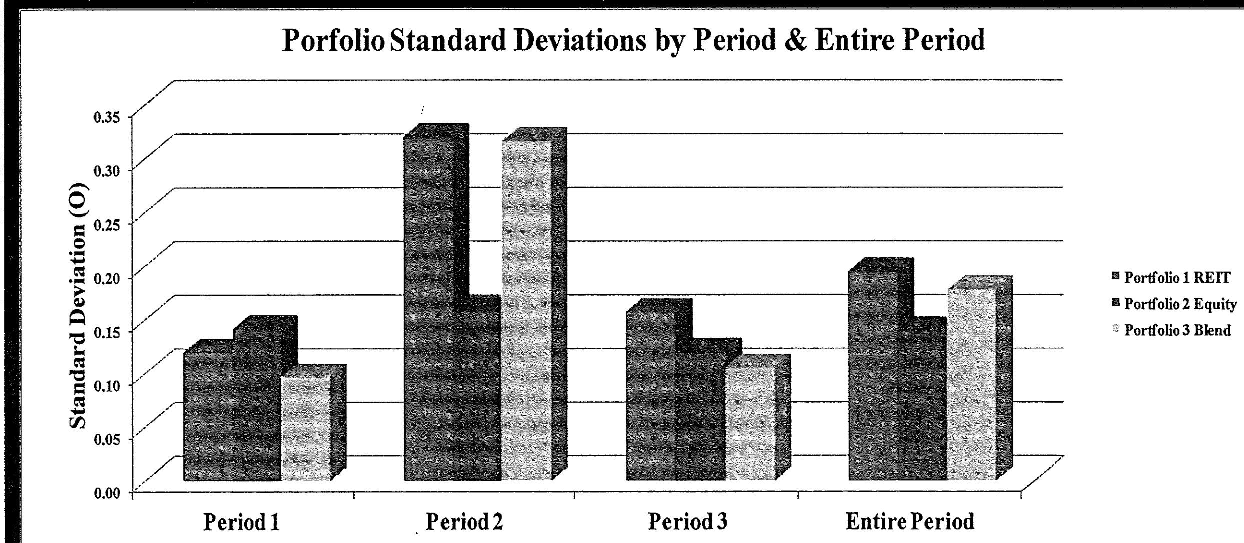


Portfolio Standard Deviations by Period and Entire Period

Exhibit 13 accounts for the calculated standard deviations for the three portfolios over the entire period, as well as for each of the three different periods. Standard deviations for the entire period correspond to the standard deviations for securities of the same time period with appreciated allocated weights. The standard deviations for each period include the standard deviations of the returns of the appropriate allocated securities for those specific corresponding periods. Portfolios 1 & 2 standard deviations were calculated using the following square root of the portfolio variance formula: $O^2p = W^2{}_A O^2{}_A + W^2{}_B O^2{}_B + 2W_A W_B Covar_{(A,B).}$ The four asset portfolio standard deviation was calculated using the extended following square root of the portfolio variance formula: $\sigma^2_{\text{4-asset portfolio}} = X^2_A\sigma^2_A + X^2_B\sigma^2_B + X^2_C\sigma^2_C + X^2_D\sigma^2_D +$ $2X_AX_B\sigma_A\sigma_B Corr(R_A,R_B) + 2X_AX_C\sigma_A\sigma_C Corr(R_A,R_C) + 2X_AX_D\sigma_A\sigma_D Corr(R_A,R_D) +$ $2X_BX_C\sigma_B\sigma_C Corr(R_B,R_C) + 2X_BX_D\sigma_B\sigma_D Corr(R_B,R_D) + 2X_CX_D\sigma_C\sigma_D Corr(R_C,R_D)$.

Exhibit 12

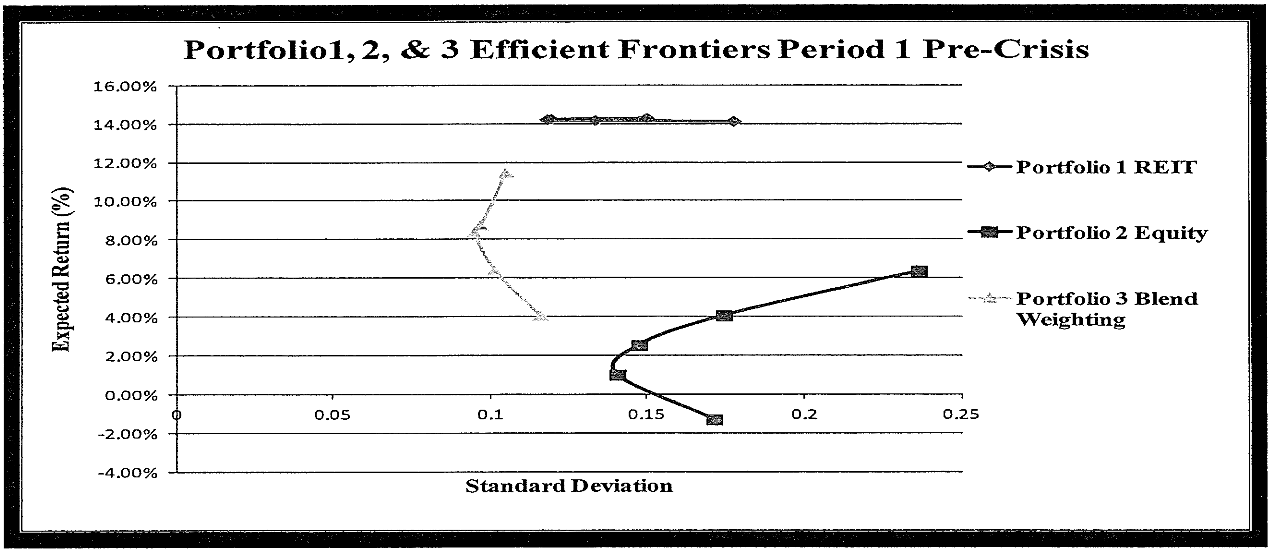
Portfolio Standard Deviations by Period	Portfolio 1 REIT	Portfolio 2 Equity	Portfolio 3 Blend
Period 1	0.1197	0.1414	0.0972
Period 2	0.3204	0.1586	0.3169
Period 3	0.1574	0.1199	0.1058
Entire Period	0.1949	0.1395	0.1790

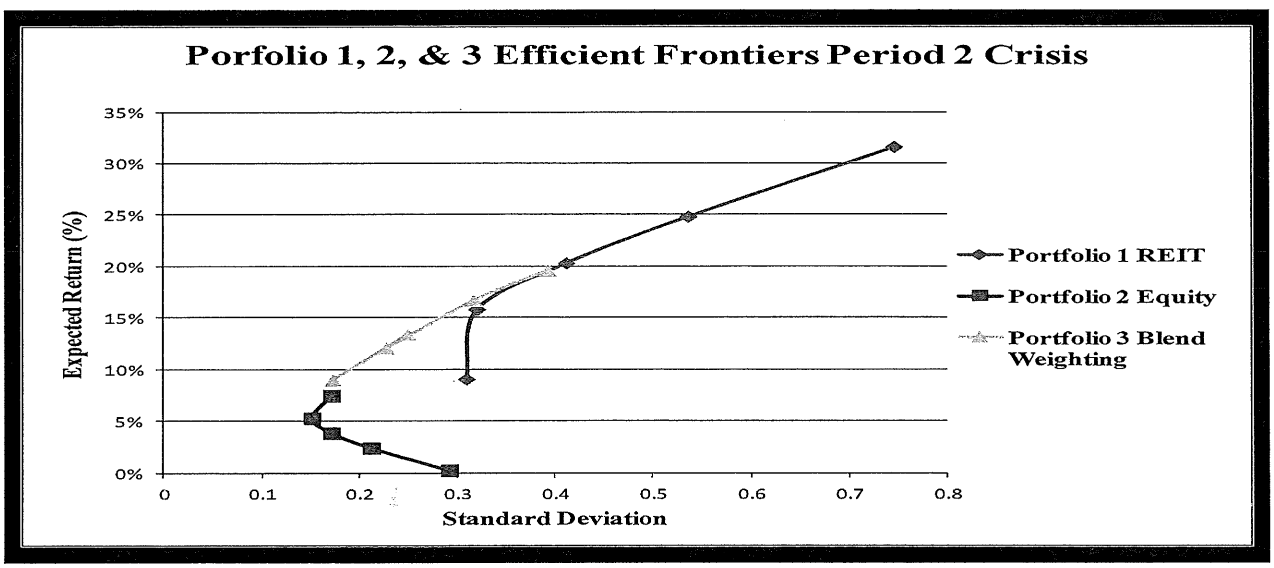


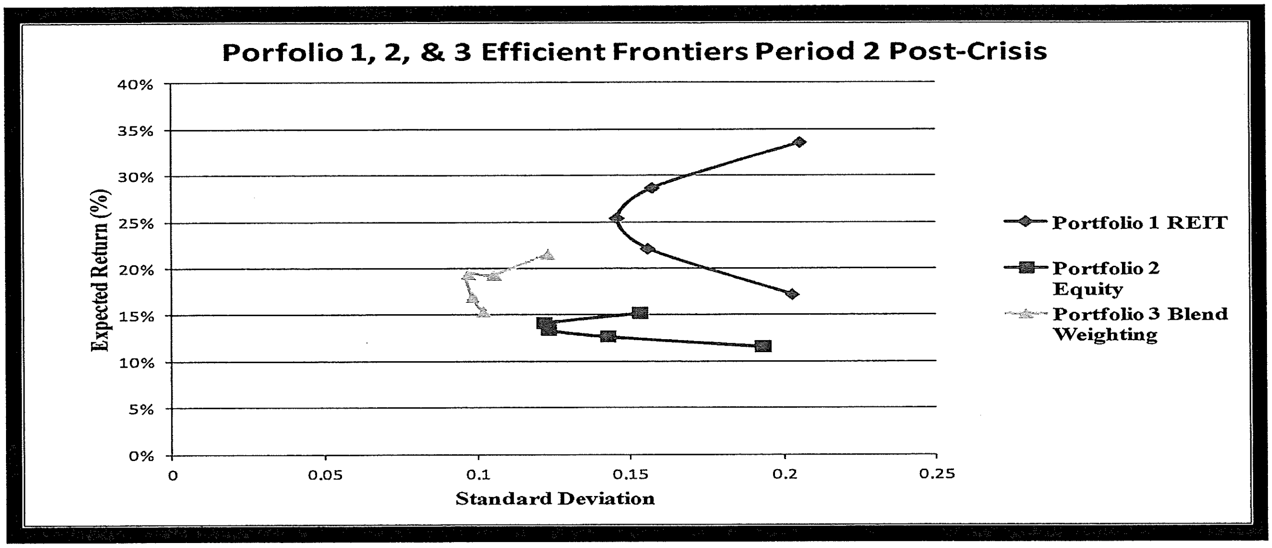
Portfolio Risk and Returns (Efficient Frontiers)

In order to compare the risk and return attributes of the three different portfolios across the Pre-Crisis, Crisis, and Post-Crisis periods, an analysis was conducted in order to find the ultimate weightings for risk and return portfolios by creating efficient frontiers for each portfolio corresponding to each particular period. This is seen in Exhibit 14. As you can see, in each of the periods, Portfolio 3 Blended had the least amount of risks with returns in-between the equity and REIT portfolios. Portfolio 1 REIT had high stable returns in the Pre-Crisis period as its risks and returns decreased, becoming more volatile in the Crisis period. We see the stability and returns began to increase as the curves shifts to a form in-between the first two periods. As for Portfolio 2, Equity had the same characteristics. The only difference was the lower risks during the crisis attributed to Wal-Mart's ability to maintain during a recession. Overall, during the crisis period, the efficient frontiers for each portfolio shifted down to the left because of less returns to risk.. They again shift up and to the left due to more returns to risk as the economy recovers; growing again, but with risk levels lower than that of the Pre-Crisis period as the market is often worrisome of possible downturns once again.

Exhibit 13







Individual Securities' and Portfolio Investment Performance (Sharpe Ratio)

For the final part of the security and portfolio analysis, the Sharpe ratio will be used as the performance measure for the individual securities of each of the three portfolios and on a risk-adjusted basis for the entire period and sub-periods. The Sharpe ratio is calculated by subtracting the risk-free rate from the expected rate of return of the security/portfolio, and dividing it by the standard deviation of the security/portfolio average returns [(ExR – rf)/ Op = Sharp ratio]. The Sharpe ratio will inform us whether a portfolio's returns are due to smart investment decision or excess risk. The investment is only a good investment if the higher returns do not come with too much additional risk. The greater the Sharp Ratio, the better the risk-adjusted performance has been. A negative Sharpe ratio would mean that a riskless asset would perform better than the security/portfolio. As seen in Exhibit 15, the appropriate risk-free rates that will be used will be averaged together, corresponding to the appropriate sub-period with appropriate treasury term lengths. The rates were taken from the federal reserve.gov website.

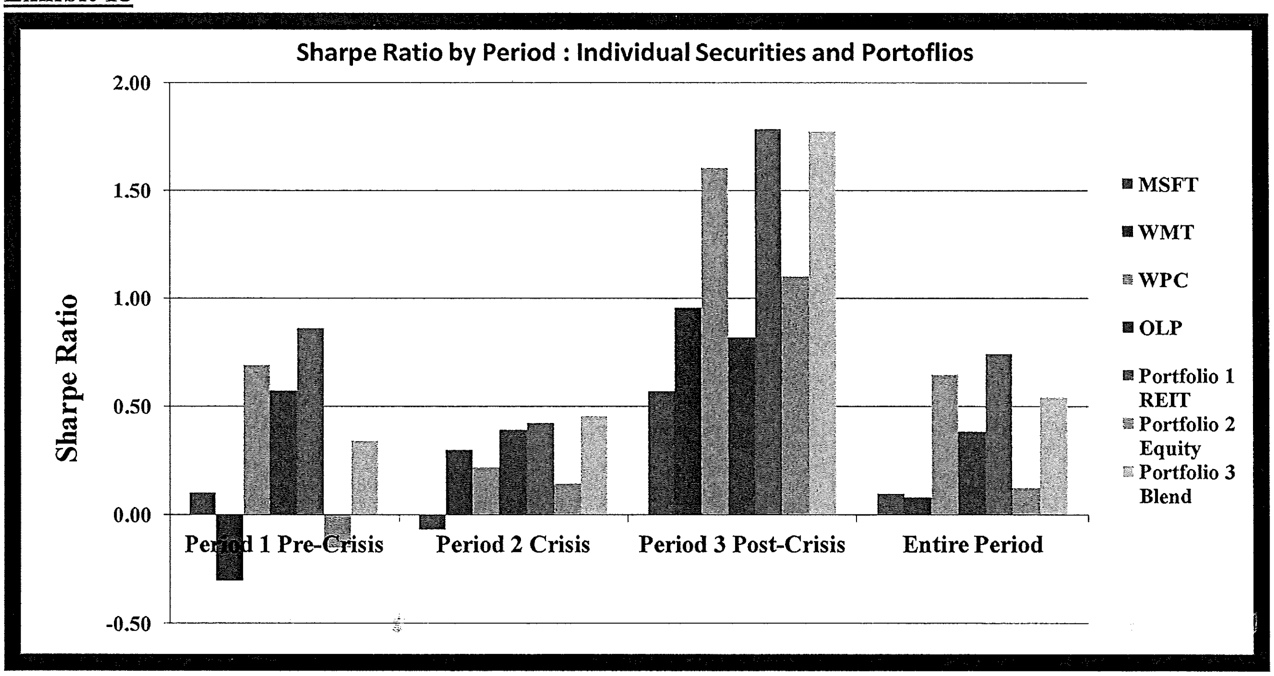
In Exhibit 16, we can see that Period 1 Pre-Crisis has Sharpe ratios between the Period 2 Crisis and Period 3 Post-Crisis, for the most part, with the exception of WMT and Portfolio 2 which contains Wal-Mart who had an average negative return for the first period. For the period 2 crisis, we see the overall sharp ratios at the lowest compared to Period 1 and Period 3. This means that because of the housing crisis and recession, the reward available was very low in the light of excessive risk taken. However, Portfolio 2's Sharpe ratio is higher than the Pre-Crisis period due to ~~the~~ Wal-Mart outperforming the other securities as the prime survivor in a recession due to its attractive, low discount savings business. Next, we see that Period 3Post-Crisis performed the best over the three sub-periods as its Sharpe ratios exhibit the highest rewards. Their portfolios and stocks had higher returns ~~for~~ in proportion to lower risk. We see the safer diversified Portfolio 3 Blend performed almost the same as the high surging REIT Portfolio. This shows how much diversification with strategy can increase the performance of an investment while taking on lower risk. Finally, we see that for the entire period assessment, the REIT portfolio performed the best, followed by security WPC, Portfolio 3 Blend, OLP, Portfolio 2 Equity, MSFT, and Wal-Mart, respectively from highest to lowest. With that said, as an investor, I would choose Portfolio 3 blended based on its performance accounting for less risk for a long term outlook.

Overall, from assessing the performance of the equity securities and RETIs, I have learned that the real estate industry can bring an investor a lot of wealth if research is done properly. Diversifying these different REITs with the equity markets can bring investors secure and higher returns over a long term basis. In the midst of economic crisis, this diversification can be valuable if appropriate securities are selected to protect against market risk like Wal-Mart, ~~as~~ which thrived in the Period 2 Crisis. With much time, research, and strenuous work, this project will enable me to become a better investor as my expertise continues to mature, thriving from performing analysis such as the risk and return analysis performed for this project.

Exhibit 14

Entire Period		Pre-Crisis 2002- Nov. 2007		Crisis Dec. 2007 - Dec. 2010		Post Crisis Jan. 2011 - Oct. 2013	
10 Year Bonds		5 Year Bonds		3 Year Bonds		3 Year Bonds	
2002	4.61%	2002	3.82%	2007	4.35%	2011	0.75%
2003	4.01%	2003	2.97%	2008	2.24%	2012	0.38%
2004	4.27%	2004	3.43%	2009	1.43%	2013	0.53%
2005	4.29%	2005	4.05%	2010	1.11%		
2006	4.80%	2006	4.75%				
2007	4.63%	2007	4.43%				
2008	3.66%						
2009	3.26%						
2010	3.22%						
2011	2.78%						
2012	1.80%						
2013	2.40%						
Average rf 10Y	3.64%	5Y Pre-Crisis	3.91%	Average rf 3Y Crisis	2.28%	3Y Post Crisis	0.55%

Exhibit 15



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