

Diversification Benefits for Entrepreneurs with Multiple-Stock Portfolios

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Abstract

Risk Diversification Benefits of Multiple Stock Portfolios: What does it buy the Entrepreneur in Jamaica? This is a valid question considering the size of the Jamaica Stock Exchange (JSE) and the similarities of the companies for which stocks are traded. Portfolios are randomly simulated with increasing number of stocks in order to evaluate the benefits of adding stocks to a non-diversified portfolio in terms of risk reduction. The results show that there are benefits to be gained from portfolio diversification on the JSE. However, in some instances these benefits appear questionable.

Key Words: Entrepreneurship, Diversification Benefits, Multi-Stock Portfolio,

Introduction

Several papers have highlighted the risk benefits of multiple stock portfolios, and have indicated that portfolio risk is inversely related to the number of stocks held in a portfolio. The main reason for this is the fact that some companies' stock returns may be inversely related and therefore when one is declining another may be increasing, which in turn results in a stable average return.

Much of this research has been done in developed countries with larger and far more developed stock markets. The Jamaican context is different, in that it is much smaller with far fewer stocks. Most stocks seem to be related and may move in the same direction (affected by same negative or positive shocks), hence decreasing the effectiveness of diversifying amongst companies.

The focus is on entrepreneurs as for many years investing in equity or debt has dominated establishing actual businesses due to high returns on both equity and debt. That is, entrepreneurs invest in equity to take advantage of the maturity of well established firms rather than enduring the teething pains which accompany a start up. Additionally, the generally high cost of doing business in terms of bureaucracy and the level of crime among other things has made investments in government debt –which generated returns in the region of 20 % in the decades of the 80's, 90's and 2000's – a very attractive alternative to traditional entrepreneurial pursuits.

The results are similar to that of previous research done in developed countries with more developed stock markets. 'Adding only a few stocks to a non-diversified portfolio produces significant risk reduction' (De Vassal 2001).

Literature Review

De Vassal (2001) evaluates the risk diversification benefits of adding stocks to a portfolio by analyzing stocks on the Russell 1000 within a bullish time period and shows that risk (dispersion of returns) is inversely related to number of stocks in a portfolio. He concluded that increasing the number of stocks significantly reduces the risk of underperforming inflation and the stock exchange.

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Newbould and Poon (1993), argues that 'it may be desirable to have substantially more than 20 stocks in a portfolio to eliminate diversifiable risk.' They also argue that the minimum number of stocks for an investor would depend on the universe of stocks being analyzed, the personal risk preferences and the desired confidence intervals. They used portfolios simulated from the Standard and Poor's 500 to demonstrate the variability of portfolio returns.

Statman (1987) shows that a well diversified portfolio of randomly chosen stocks must include at least 30 stocks for borrowing investors and 40 stocks for lending investors. He argues that diversification should be increased as long as the average marginal benefits (risk reduction) exceed the average marginal cost (transaction cost of buying more stocks).

The number of stocks traded on the JSE for the month of April 2008 was 43. This number is more than Statman's recommended amount, but not significantly greater considering that it is the total number of stocks traded. Also, many of the companies on the JSE are similar (e.g. financial institutions) and their stocks may be susceptible to the same kinds of shocks that cause volatility in returns.

Methodology

The methodology of De Vassal (2001) is adopted; however, there are slight modifications aimed at treating with the specific market conditions. To analyze the risk benefits of increasing the number of stocks in a portfolio, the return on stocks traded on the JSE from April 2006 through March 2008 is analyzed. Return performance is measured in terms of capital appreciation; no dividend payment adjustment is made.

Like De Vassal, a Monte Carlo simulation program was used to randomly select multiple combinations of individual stocks. A number was assigned to each stock traded on the JSE as of April 2006. Multiple combinations of integers representing each stock were then randomly selected, creating sets of integers, with numbers in sets ranging from 1 to 35. These combinations of integers were used to select the stocks that were used for each simulated portfolio. The historical return for each stock in a portfolio was averaged to create equal-weighted portfolio returns.

Stocks that did not last the entire period or new stocks that were added during the period were omitted from the stocks that were evaluated. Stocks omitted from initial group of stocks traded as of April 2006 represented 7.7 %, while stocks omitted from the stocks traded as of March 2008 represented 18.6 %.

Frequency distributions will be used to show the dispersion of returns of portfolios with different numbers of stocks and for most of the comparisons. The standard deviation of simulated portfolios with the same number of stocks will be calculated. This will show the relationship between risk and adding stocks to a non-diversified portfolio.

Data

Data on stock returns was collected from the Jamaica Stock Exchange for April 2006 to March 2008. The returns of stocks will be evaluated based on capital appreciation. Data on dividend payments are not as available, even though it is believed that dividend payments have a significant effect on the returns of stocks. De Vassal (2001) used both capital appreciation and dividend payments. Data on Inflation rates and average interest rates were collected from the Bank of Jamaica and the Statistical Institute of Jamaica.

Results

The results are very similar to the results of other research. Increasing the number of stocks in a non-diversified portfolio reduces the volatility of returns. This can be seen in Exhibits 1 – 7 below, as the returns on portfolios with increasing numbers of stocks are evaluated. Therefore, diversification benefits of holding multiple stock portfolios on the Jamaican stock exchange do exist. These benefits are however not as smooth as in previous research because in some instances portfolios with greater diversification of stocks has a larger standard deviation. Exhibit 7 shows the inverse relationship that exists between increasing the number of stocks in a portfolio and the standard deviation.

Exhibit 1

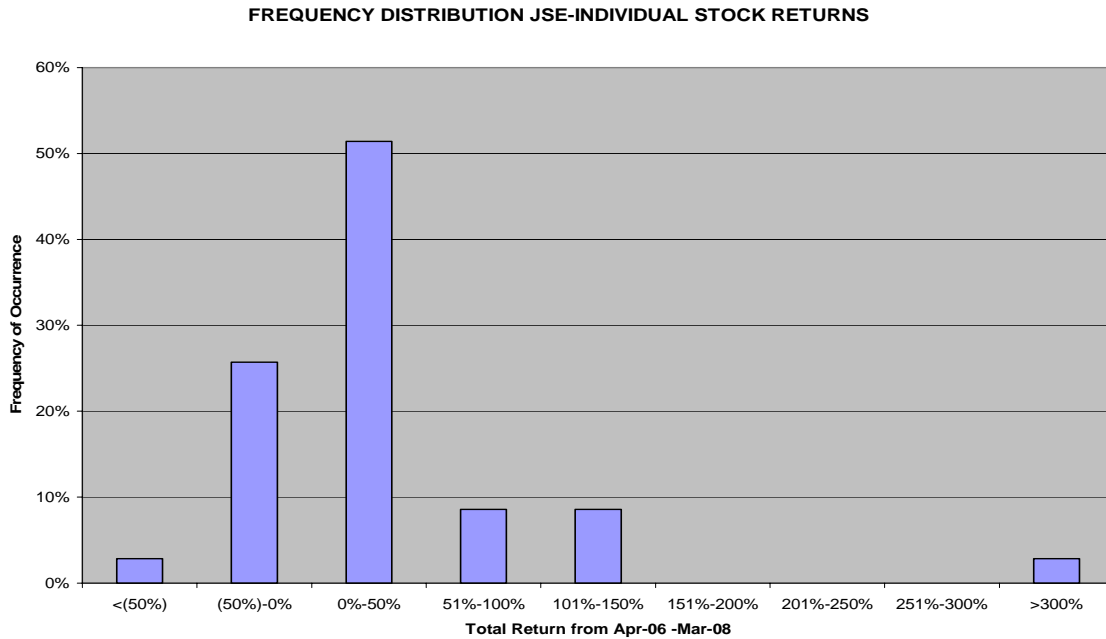


Exhibit 1 shows that over 50% of the returns over the period fell between zero and 50%. A significant amount of stocks evaluated showed negative returns. This indicates that if an entrepreneur chooses to invest in only one stock the probability of making a loss would be approximately 30%. This can be clearly seen in exhibit 2, which is the cumulative frequency distribution of the returns of the individual stocks evaluated. This gives an example of the risk of investing in one stock.

Exhibit 2

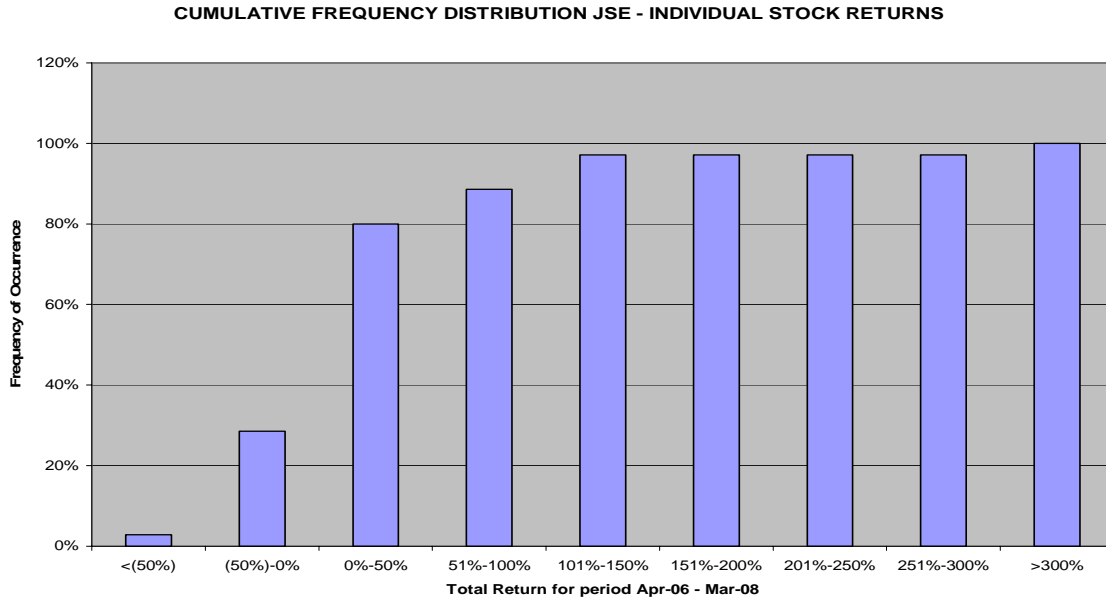


Exhibit 3

FREQUENCY DISTRIBUTION OF PORTFOLIO RETURNS

	(76%) -	(51%) -	(26%))-	0%- (25	0%- 25	26 50	51% -	101 %-	151 %-	201 %-	251 %-	301% -	351 %-
	(100 %)	(75%))	(50%)	(25 %)	25 %	50 %	100 %	150 %	200 %	250 %	300 %	350% %	401 %
1	0%	3%	11%	14%	37	14	9%	9%	0%	0%	0%	0%	3%
2	0%	0%	2%	26%	36	14	12%	2%	1%	7%	0%	0%	0%
3	0%	0%	0%	19%	36	23	10%	6%	5%	1%	0%	0%	0%
4	0%	0%	0%	17%	38	29	12%	4%	0%	0%	0%	0%	0%
5	0%	0%	1%	8%	38	28	17%	8%	0%	0%	0%	0%	0%
6	0%	0%	0%	10%	45	25	17%	1%	2%	0%	0%	0%	0%
7	0%	0%	0%	5%	43	29	20%	3%	0%	0%	0%	0%	0%
8	0%	0%	0%	9%	42	26	20%	2%	1%	0%	0%	0%	0%
9	0%	0%	0%	4%	45	30	20%	1%	0%	0%	0%	0%	0%
10	0%	0%	0%	3%	43	30	21%	3%	0%	0%	0%	0%	0%
12	0%	0%	0%	2%	52	25	21%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	1%	36	42	21%	0%	0%	0%	0%	0%	0%

					%	%	%	%	%	%	%	%	%
					35	90	100	100	100	100	100	100	100
20	0%	0%	0%	0%	%	%	%	%	%	%	%	%	%
					38	85	100	100	100	100	100	100	100
25	0%	0%	0%	0%	%	%	%	%	%	%	%	%	%

Exhibit 5

FREQUENCY OF LOSS FOR ALTERNATIVE STOCK HOLDINGS SIMULATED MULTIPLE - STOCK PORTFOLIO RETURNS

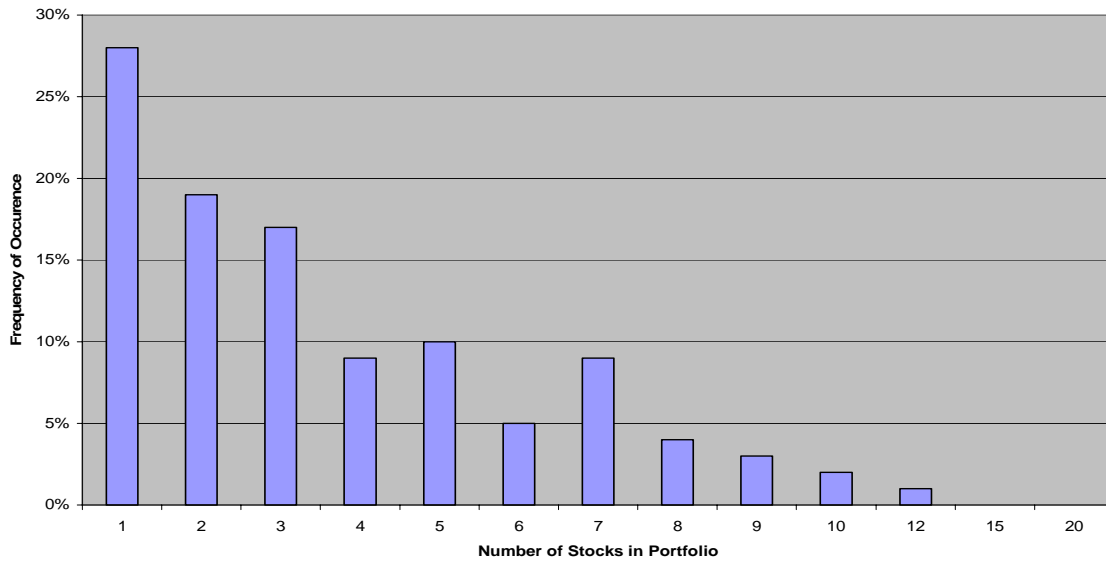
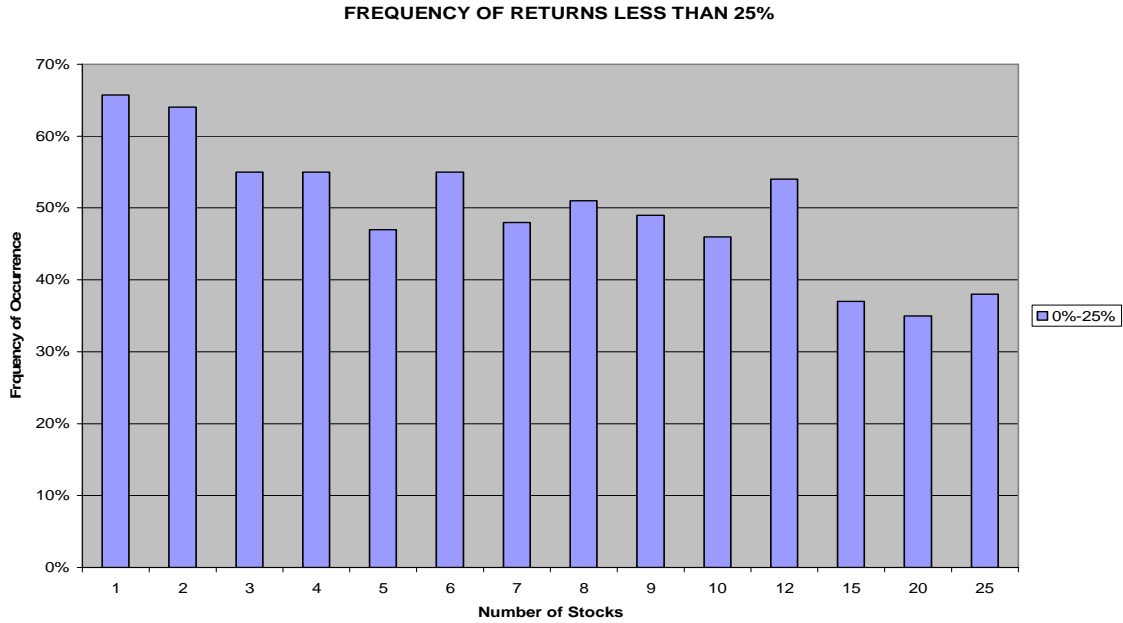


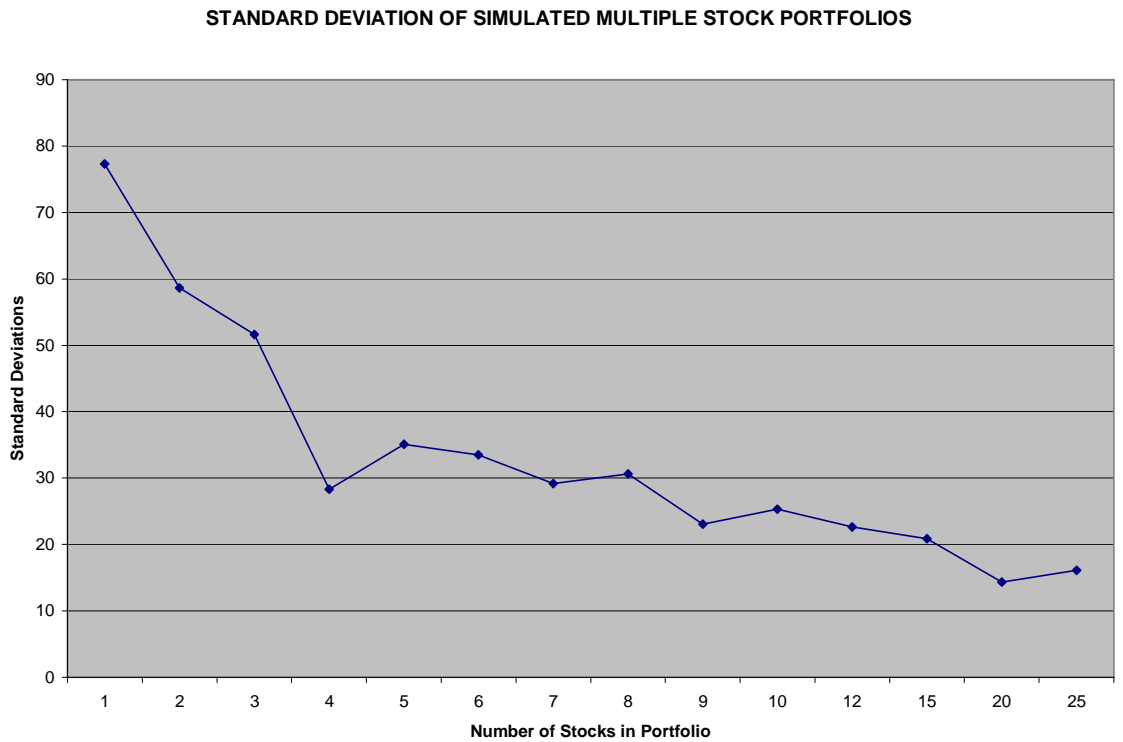
Exhibit 5 further highlights the amount of stocks that would be needed to avoid negative returns, and like other research, shows a clear decrease in the risk of a loss as stocks are added to a non-diversified portfolio.

Exhibit 6



Inflation for 2006 and 2007 was 5.6 % and 16.8 % respectively. This equals to approximately 23.3 % when compounded for the two years. Exhibit 6 shows the frequency of returns less than 25 %. The amount can be seen to be significant for all stock holdings, but decreases as portfolios are diversified. The table shows that there is a high probability of underperforming inflation no matter how much your portfolio is diversified. This result questions the feasibility of investing in the JSE.

Exhibit 7



Conclusion

It can be clearly seen that entrepreneurs holding multiple stock portfolios on the JSE can significantly reduce risk, as shown in other research in more developed countries. But this reduction in risk is not as smooth as in cases of other more developed countries, because it can be seen in few instances where increase diversification actually result in greater risk (larger standard deviations). This may be as a result of stock values on the JSE being affected by the same shocks and, as a result, reduces the benefit of diversification.

It has also been shown that the risk of obtaining negative returns or underperforming inflation is high when investing in the JSE. This result may be affected by the period chosen for evaluation.

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