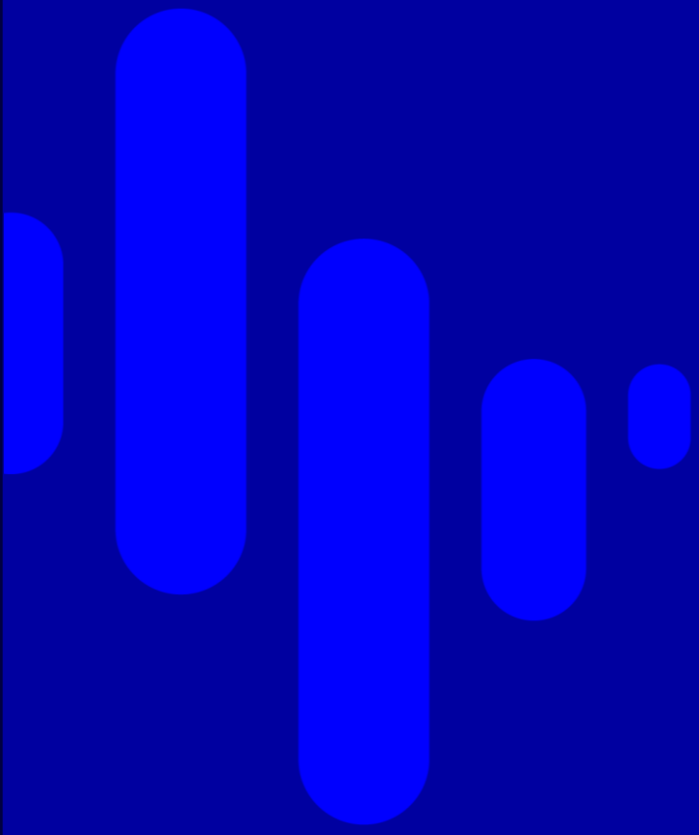
Nordea

Diversification

Many beats few



MARKETING MATERIAL

Introduction

Many individuals and families are currently not enjoying the potential benefits of long term investing. Historically, risk free deposit rates have been significantly more attractive than now, where people in some cases even are experiencing negative rates. One way to potentially achieve better returns is to take an appropriate level of risk and invest in the broad equity market.

We (the authors) do acknowledge that for non-professionals it can be highly complex to navigate in the financial markets, and it becomes even more difficult when trying to find answers through medias as well as social platforms, where answers can be many and often wrong. We see mainly 2 reasons for this;

1) The medias tend to focus on short term market development- and expectations. This is the nature of news, and while the entertainment value is high, it is our view that most retail investors would be better off with a more balanced information stream of short term news and long term research.
2) The internet is a place where anyone can share views, ideas and even recommendations. The information has an extreme degree of variation in quality, and while they are free of charge and often based on good intentions, they can be costly for the investors following them.

We have previously looked into myths covering the topic of timing. In the publication "Time Beats Timing" we looked into how time is your friend, if you should invest all at once or if you should split up your investments over time, and if waiting for the dip is a good strategy. In this publication we want to continue with myths that are relevant after the decision to invest has been taken.

In our experience, the topic of creating your own equity portfolio is popular. If you want to be your own portfolio manager there are some things that can be smart to consider, and which otherwise will be outsourced if you invest in funds. What we wanted to investigate further is how easy or hard it really is to beat the market? What has been the likelihood to beat the market historically by selecting equities? If you want to receive more return than the market, has it been enough to just add more risk? And when is a portfolio diversified? We hear different numbers here, but from around 20-30 equities, it is often said that you are well diversified.

No one knows what the future brings, but we strongly believe that we can learn from the past. The myths in this publication are:

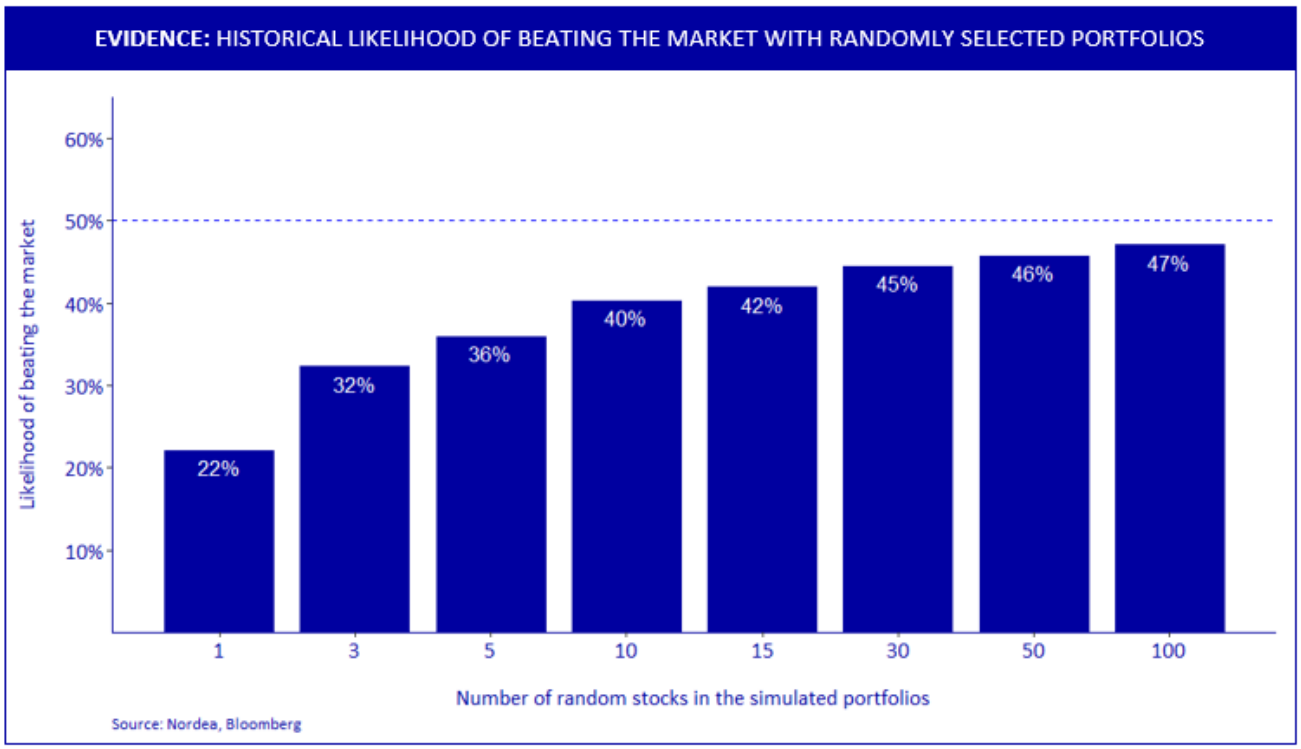
1) Anyone can easily beat the market
2) High risk leads to high reward
3) Select 30 stocks and you are well diversified

When testing these myths we have performed simulations based on historical data. Since some of the things we wanted to test are not directly observable we needed to simulate. Simulation in this case means selecting and tracking randomly selected equites. The reader should bear in mind that simulated past performance is not a reliable indicator of future performance. When we simulated we only selected from what was available at each point in time, and then tracked the results forward, so the results are representable of how outcomes could have been. When a process is repeated many times in the same way, we believe we can talk about likelihoods. For example, if you flip a coin a few times, the observed outcomes can differ a lot from 50% tails and 50% heads. If you continue to flip the coin again, and again, we will see that the observations will gradually move towards 50/50. After tens of thousands or millions of tries the observations will converge towards the probability of observing either heads or tails. We believe the same goes for the myths we tested in this publication.

Myth 1: Anyone can easily beat the market (BUSTED)

"Beating the market with single stocks is easy, and you do not need education, experience or unique abilities."

Conclusion: Based on simulations of portfolios containing randomly selected equities we found that the odds of beating the market are against you for all tested portfolio sizes between 1 and 100 equities. As an example, by constructing a portfolio of five randomly selected equities, the likelihood of beating the market has been 36% historically. By adding more equites the likelihood increased, but remained less than 50%, and consequently this myth is busted. One explanation is that the return of the market is not evenly distributed but dominated by few equities. Concentrated portfolios will most likely miss these winning companies. Also, if you happen to pick among the biggest losers in a concentrated portfolio it will be expensive and hard to recover. We do acknowledge that some highly skilled investors have unique abilities, but we conclude, that most portfolios will perform worse than the general market, especially for highly concentrated portfolios.



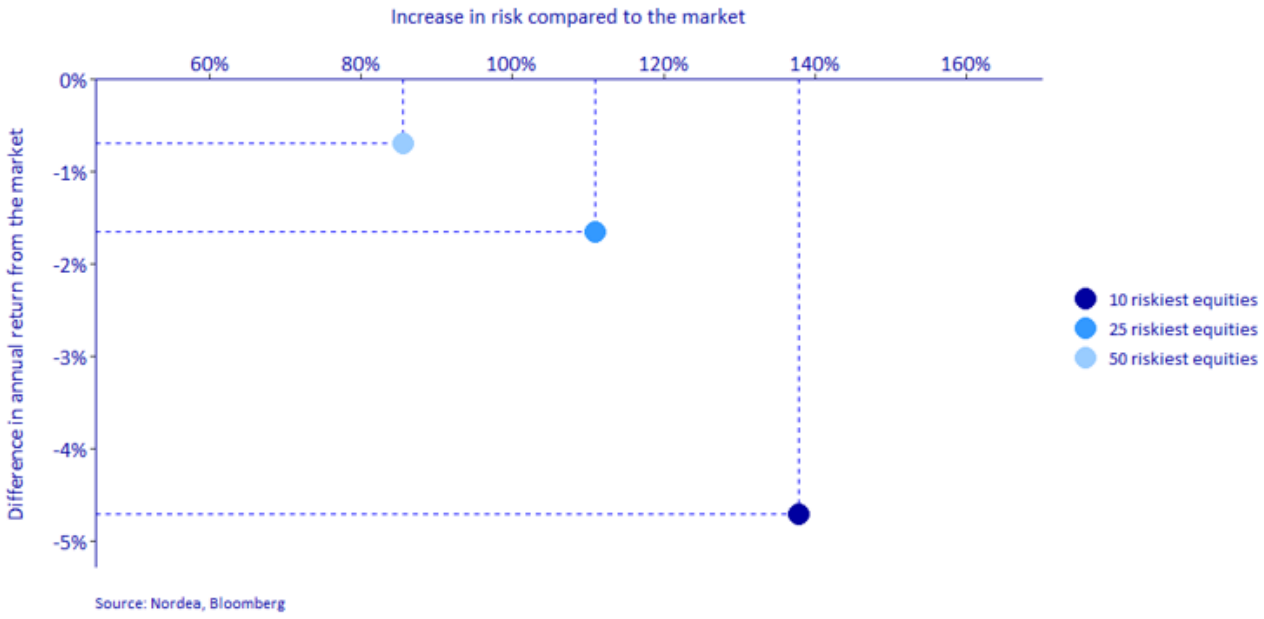
Methodology: We tested the myth by simulating returns on portfolios containing randomly selected equites based on historical data. We used the S&P 500 index, included data for all constituents in the index from end of 1990 to end of 2020, and created a large number of different randomly selected equally weighted portfolios. Since all portfolios were equally weighted we used the equally weighted portfolio of all available equites in S&P500 as the market. The simulations were performed as follows. At the start of the dataset we simulated equally weighted portfolios containing from one to 100 randomly selected equites. Every year until the end of the data set we rebalanced the portfolios by selecting new random equities. At each point in time we selected from the stocks that were included in the index at that point in time. We repeated this process 100.000 times for each portfolio. That means that we rebalanced the portfolios over 23 million times, and selected random equites more than 620 million times. Returns were calculated for each portfolio and compared with the return of the equally weighted portfolio of all equites in the index. Transaction costs and other effects that could influence the results were not included. Conclusions were made based on the findings.

Myth 2: High risk leads to high reward (BUSTED)

"The more risk you take in the equity market, the more return you will receive."

Conclusion: High risk can certainly lead to a high reward, that we know from general investment theory as well as various examples in the market. However, there are many different sources of risk, and not all are rewarded. When it comes to single stock specific risk, our conclusion is clear, high risk has not been rewarded historically, and this myth is therefore busted! Interestingly, the investigation reveals, that investing in portfolios containing the riskiest stocks has not only been unfavourable from a risk perspective, but also resulted in lower return than the market over time. Some of the reasons behind our findings might be, that not all risky equities recover after falling and some even seize to exist eventually, as well as bubbles and overpricing occur from time to time. It is important to note that we studied the risk in single stocks. Here both the company specific risk and the market risk are included. Historically, investors have been rewarded for the broad equity market risk, but often not for the company specific risk.

EVIDENCE: RETURN LOST AND INCREASE IN RISK FOR PORTFOLIOS CONTAINING THE RISKIEST EQUITIES

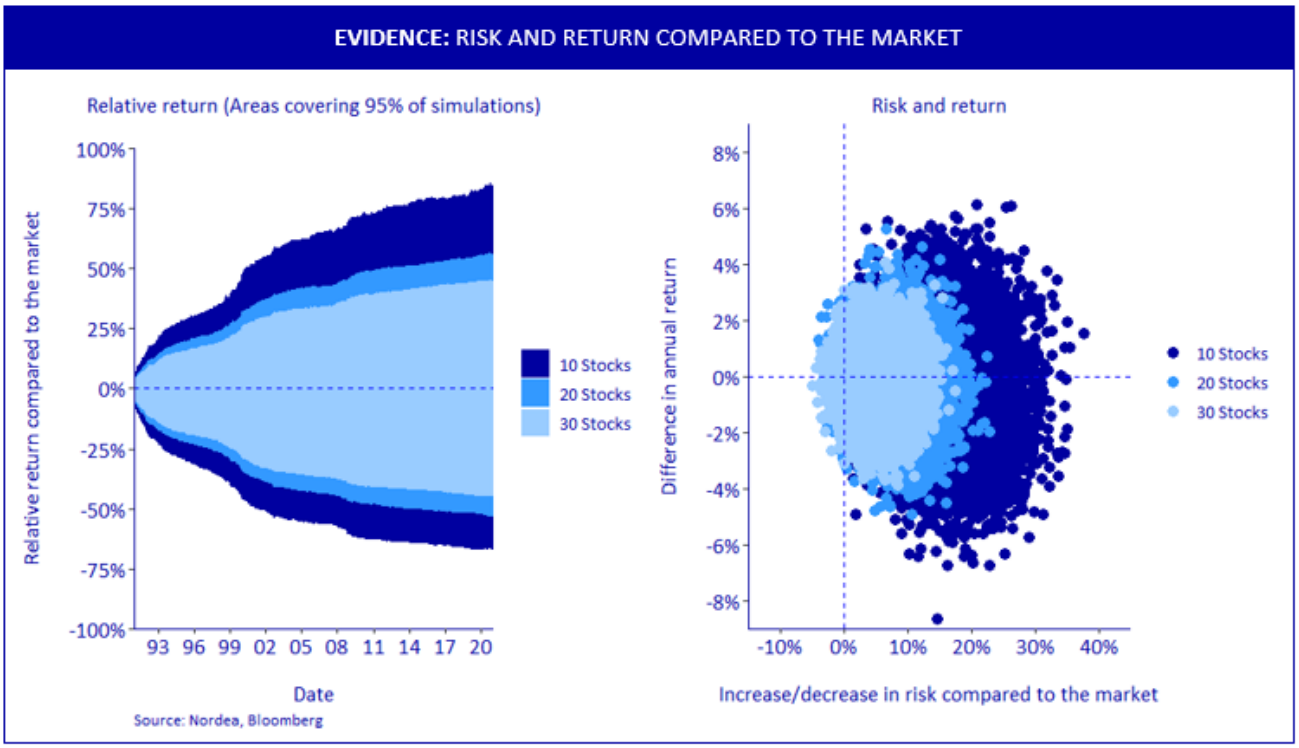


Methodology: We tested the myth by investigating the performance of portfolios holding an equally weighted portfolio of the most risky equites in the S&P 500 index compared to investing in all the 500 companies in the index, also equally weighted. We used historical data from the end of 1990 to the end of 2020. The back test was performed as follows. At the end of 1991 we calculated the risk of all the equities that were included in the index in that point in time. The risk was calculated as the standard deviation of the returns over the year before. The 10, 25, and 50 equites with the most risk were equally weighted in three different portfolios. Every year until the end of the data set we rebalanced the portfolios by calculating the risk for each equity again, and equally weighting the 10, 25, and 50 most risky assets in the same portfolios. At each point in time we selected from the stocks that were included in the index at that point in time. Return and risk were calculated for each portfolio and compared with the return and risk of equally weighting all equites. Transaction costs and other effects that could influence the results were not included. Conclusions were made based on the findings.

Myth 3: Select 30 stocks and you are well diversified (BUSTED)

"If you select 30 random stocks, your portfolio will be well diversified and almost have the same risk and return as the market."

Conclusion: Selecting 30 random stocks will not automatically make your portfolio well diversified. Following this strategy will most likely leave you with a higher risk and lower return than the market, which is not what is promised. What is true however is, that the *average* risk of portfolios of 20-30 stocks is relatively close to the market risk, and that the risk decreases less and less for every new stock added. This is where this myth is coming from. The *average* volatility, however, does not help the individual investors with one portfolio each, as most of these will be spread around the average with different levels of risk. Further, each risk level can result in many different level of returns. We conclude that most investors will be worse off by following this strategy instead of buying the broad equity market, and the myth is busted!



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IMPORTANT INFORMATION

Past performance is no guarantee of future return. Investments imply risk.

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