

Investor Letter

1st Quarter 2023

"The course of the market will determine when we will be right, but the accuracy of our analysis of the company will largely determine whether we will be right. We focus on what should happen rather than when it may occur."

Warren Buffet

The SFA EAC FIC FIA – BDR LEVEL I Fund closed the 1st quarter of 2023 with a return of -6.48%, while its benchmark, the Ibovespa, posted a negative return of -7.16%.

Período	SFA EAC FIC FIA – BDR Nível I	IBOVESPA	CDI
1T23	-6,48%	-7,16%	3,25%
YTD	-6,48%	-7,16%	3,25%
Últimos 3 anos	32,38%	39,53%	23,27%
Últimos 5 anos	50,07%	19,35%	38,22%
Desde o início	221,60%	90,41%	132,06%

2023 began full of challenges on the domestic front, bringing extreme volatility to local asset prices. We can draw an analogy with the movie "The Sum of All Fears," starring Ben Affleck and Morgan Freeman, based on the novel of the same name by Tom Clancy.

Let's examine these fears and how their sum drove local market assets, especially equities, to one of the largest margins of safety of the past decade.

The first fear is fiscal recklessness. Indeed, we do not have a comfortable fiscal situation, and it would be advisable to have a government that is responsible with spending. The fact is that the newly elected government is left-leaning, so it should not be a surprise that it will spend more. What ended up being surprising was a complete lack of sensitivity in the new president's communication, appearing largely unconcerned with the fiscal picture.

With that, investors panicked, and the scenario in which we would go through an 'Argentinization' process began to gain traction. In particular, we believe in the maxim that Brazil flirts with the abyss but does not jump. Congress has always played that role, and now more than ever, with a more right-leaning composition, that role will continue to be exercised.

Investors have also been unsettled by the government making statements about wanting to change rules of the game that had already been agreed upon, from revisiting the privatization of Eletrobrás to the tax reform issue, which is fundamental for the new fiscal framework to work. Incidentally, the new framework is far from ideal, but it may take some tail risk off the table.

We are reticent and have several doubts about how the tax reform will be passed and, therefore, whether the government will be able to collect what it expects in order to close the fiscal accounts. Furthermore, this is a topic that can have a profound impact on certain companies and thus requires a very deep, individualized understanding for each business analyzed.

We also had fear stemming from the credit market with the collapse of Americanas and, later, the judicial recovery (Chapter 11-style restructuring) of Light, which caused *spreads* credit spreads in the market to rise,

making access to capital for companies even more expensive in an environment of extremely high interest rates.

Indeed, high interest rates are the great fear that is both a consequence of the fears above and the cause of the largest wave of redemptions from equity, multi-strategy, and credit funds that we have ever seen in the Brazilian market — a movement that amplified the decline in stock prices.

This caused fantastic companies to trade at prices completely inconsistent with their present and future value creation, opening up a unique opportunity for long-term investors able to withstand short-term volatility. Just to put a number on it, our fund's IRR reached levels around 35%.

High interest rates are not just 'the sum of all fears' — they are also an amplifier of all the other fears. Cycles matter, and the peak of high interest rates in Brazil is already behind us. The futures interest rate curve is already pricing in the Selic rate falling back to around 10%.

It is remarkable, incidentally, how infrequently the rates market and the equities market talk to each other. This happens because most investors specialize in a particular asset class. There are few generalists. So, time and again, we are able to find discrepancies between the relative prices of different markets, each one telling a different story.

This happened in a meaningful way here this year. While interest rates had already fallen back to pre-election levels, domestic stock prices barely reacted — a thoroughly unusual state of affairs that does not last long.

In short, we believe the interest rate cycle has turned and, therefore, the risk premium required by equity investors will be lower. That said, we should not fool ourselves about the government's ability to create volatility; however, unlike in recent years, when that happens it will be a buying opportunity.

Turning to the international scenario, we remain concentrated in our *hedge* in short positions in *S&P* futures, given that we consider it unlikely that inflation will fall back to the Fed target without causing a recession. The *S&P* 500 is up on the year, practically driven by the large American technology companies, influenced by the artificial intelligence revolution and the understanding that these companies will be the biggest beneficiaries.

We have kept this *hedge* in the foreign market, since we are optimistic about the Brazilian market and believe that the pricing of the American market, combined with the fastest and steepest interest rate hiking cycle of the last 40 years, will have an impact at some point. Furthermore, inflation seems to us more deeply embedded in the economy than investors believe.

That said, managing *hedge* for us has to be dynamic, and therefore we constantly reassess the best *sizing*, asset and instrument to use at any given time.

It is also worth mentioning that we believe the artificial intelligence revolution is real, and we have been working hard to understand how to combine this with making good investments without falling into traps.

As always, we remain shareholders of excellent businesses, with an adequate margin of safety and capable of generating value over time, thereby increasing their intrinsic values.

A Perspective on Concentrated Investing in Companies.

“Do, or do not. There is no try”

Yoda, Star Wars: The Empire Strikes Back.

'Concentrated Value Investing' is a portfolio construction method known and used by globally recognized managers in the financial market. However, the idea of a concentrated portfolio can be controversial in academic circles, and it comes into vogue in rising markets, just as it falls out of favor in declining markets. In good times, portfolio concentration becomes popular because it places a magnifying glass over gains, but when markets are not doing well, it is set aside for magnifying portfolio volatility.

In the following pages, we will lay out the foundations of portfolio diversification theory, as well as the concept of risk that this theory aims to mitigate. We will then look for references in research explaining under what circumstances investing in concentrated portfolios is considered an efficient form of portfolio construction.

From a practical standpoint, we will present the application of this concept in several cases of managers who have been very successful using this investment philosophy, and we will address questions about the possibilities of applying 'Concentrated Value Investing'.

Foundations of Portfolio Diversification Theory

There are several theories on investment diversification and concentration, but one of the best known is Modern Portfolio Theory (MPT), developed by Harry Markowitz in 1952. This theory proposes that investors seek the optimal combination of assets that minimizes risk and maximizes the return of a portfolio, taking into account the correlation between assets.

According to Markowitz's theory, diversification is a way to reduce idiosyncratic, or non-systematic, risk — that is, risk specific to each asset, which can be affected by factors internal or external to the company or sector. Market risk, or systematic risk, on the other hand, which is influenced by macroeconomic or political factors that affect all assets, cannot be eliminated through diversification.

Below, we outline the construction of an efficient portfolio according to MPT. We will do this through an example, using two stocks — ABC and XYZ — with the data below:

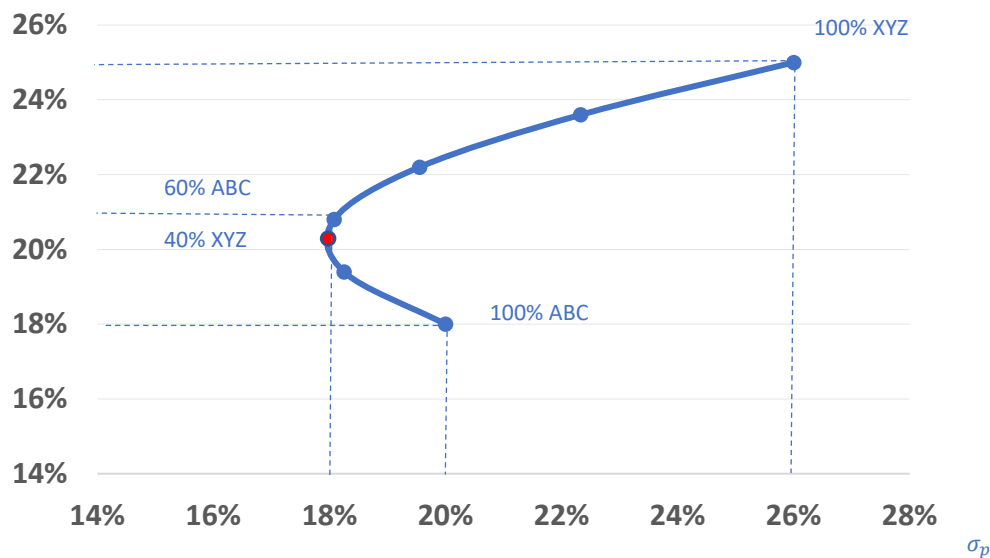
Ações do Portfólio	ABC	XYZ
Retorno Esperado	18%	25%
Desvio Padrão	20%	26%
Correlação	30%	

There is an infinite combination of allocation weights for ABC and XYZ in a portfolio, but for visualization purposes, we will choose 5 possible combinations:

W_{ABC}	100%	80%	60%	40%	20%	0%
W_{XYZ}	0%	20%	40%	60%	80%	100%
$\hat{R}_p$ (retorno portfólio)	18,00%	19,40%	20,80%	22,20%	23,60%	25,00%
σ_p (volatilidade portfólio)	20,00%	18,25%	18,08%	19,55%	22,33%	26,00%

Let's plot these combinations on a chart, with expected return on the y-axis and standard deviation on the x-axis. This chart is also known as the "risk/return space." And this curve will be the Curve of Possible Portfolios:

$$E(R_p)$$



Starting from a portfolio with 100% allocation to company ABC, we can see that as we increase the weight in company XYZ, the investment moves up the curve until the point where the portfolio's expected return reaches 20.8%, with a standard deviation of 18.08%. This portfolio has a mix of 60% ABC stock and 40% XYZ stock.

So, to find the minimum-variance portfolio, we simply look at the leftmost end of the curve, the point marked in red.

Now, according to MPT, let's analyze what happens to risk, measured via portfolio standard deviation, given the correlation between stocks and portfolio diversification.

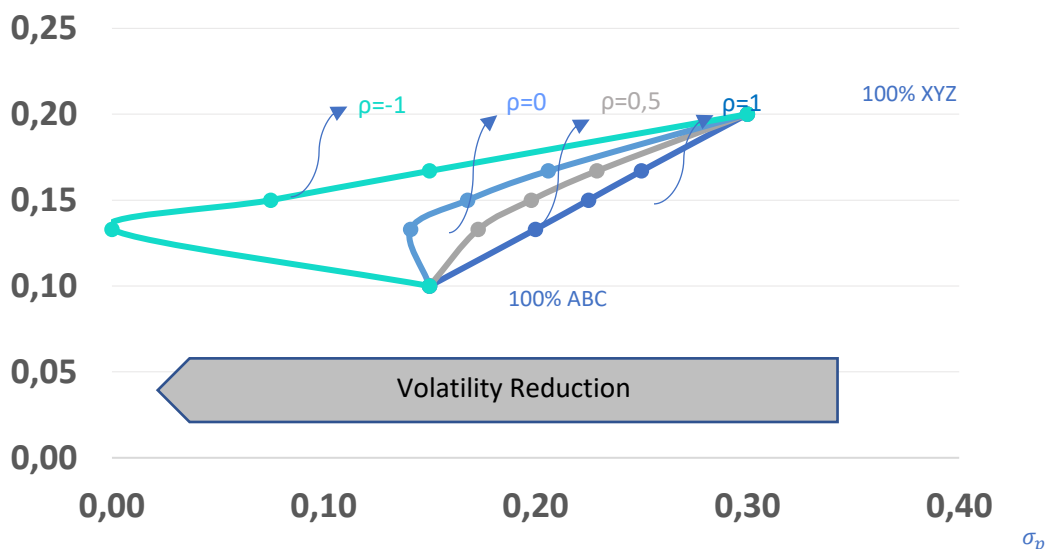
In the case of two perfectly correlated assets ($\rho=1$), the portfolio standard deviation is simply a weighted average of the standard deviations of the stocks in the portfolio.

No diversification benefit is obtained for the portfolio if the correlation between assets is +1. As the correlation between assets decreases, there is a lower tendency for the stocks to move together. These separate movements serve to reduce the volatility of the portfolio.

The greatest diversification is achieved when the two assets show a perfectly negative correlation ($\rho=-1$).

When the correlation between two assets is zero, the covariance term is eliminated from the equation. Thus, we can see in the chart below the effects of correlation on portfolio risk:

$$E(R_p)$$



Modern Portfolio Theory indicates that the lower the correlation between the returns of the assets in the portfolio, the greater the benefits of diversification.

An important concept in finance drawn from the MPT framework is that the more diversified the portfolio, the more idiosyncratic risk loses its relevance, leaving only systematic risk. This emphasizes diversification as a way to reduce risk in a portfolio. According to MPT, by investing in a mix of assets with different levels of risk and return, an investor can achieve a portfolio that maximizes returns for a given level of risk or minimizes risk for a certain level of return.

However, MPT has many critics. Nassim Nicholas Taleb is one of them. The Lebanese-American economist, essayist, and researcher, currently professor emeritus of risk engineering at NYU and advisor to Universa Investments, has written more than 70 papers on mathematical statistics, genetics, finance, philosophy, and economics, all centered on the notion of risk and probability.

Taleb argues that MPT is flawed because it assumes the future will resemble the past, which is an unrealistic assumption. He also believes the model focuses on reducing volatility seen as risk, which leads to a false sense of security and can result in catastrophic losses.

He further states that, by relying on a normal distribution of returns (that is, assuming returns are normally distributed around a mean), this assumption is flawed because financial returns generally exhibit a distribution with *skewness*, with large, unexpected events that can drastically affect returns. These events are not accounted for in MPT and can have a significant impact on portfolio returns.

In times of market stress, correlations between asset classes tend to increase, and diversification may not deliver the expected benefits. In extreme events, such as market crashes, all asset classes can suffer losses simultaneously, making diversification less effective at protecting portfolios against losses.

Economists linked to behavioral economics, *behaviorists*, have raised the point that investors are not rational and do not always act in their own best interests. Instead, they are often driven by emotions such as fear and greed, which can lead to irrational decision-making and further exacerbate the impact of events during moments of crisis.

At nearly 77 years old and with more than half a century in investing, the American Howard Marks is one of the most respected voices in the global investment market. An investor and writer, born in New York, he held important positions at major banks, such as Citibank, before founding Oaktree Capital Management in 1995, which became the largest risk and credit asset manager in the world.

Howard Marks raises an interesting question about the concept of risk. Regarding the meaning of risk, academic literature defines it from the perspective of volatility. Marks agrees with this premise but makes some caveats. According to him, although volatility is quantifiable, it does not represent the true meaning of risk. For Marks, most investors do not fear volatility. What truly generates apprehension is the loss of capital.

Research on Investing in Concentrated Portfolios

Investment concentration, on the other hand, is a strategy opposite to diversification, consisting of investing in few assets, generally with high return potential and a greater standard deviation of results. There is no definitive answer as to which is the better strategy between diversification and concentration.

And here two important questions arise: is there a relationship between concentrated equity funds and superior performance? Furthermore, which indicators would be sufficient to distinguish between the degree of active or passive management of a stock portfolio?

What would be the rationale behind concentration? In theory, a skilled manager would allocate more resources to their best ideas, so that the portfolio returns from the best ideas would not be diluted by less promising ideas. Accordingly, investors should seek out skilled managers for their equity funds — managers who build concentrated portfolios.

SFA Investimentos is an equity fund manager that can operate on a concentrated basis. We can concentrate the investment in a single company in cases of very high conviction. In this section we will address the topic of concentrated portfolio management, presenting research with conclusions on the existence of a relationship between concentration and equity fund performance.

Starting with the recent research by Martijn Cremers, Jon Fulkerson, and Timothy Riley (*Active Share and the Predictability of the Performance of Separate Accounts*, published in the first-quarter 2022 issue of the Financial Analysts Journal), the authors claim that the ranking of actively managed funds, when conditioned on the level of activity (*active share*) of management, past performance was able to identify funds that continued to deliver superior performance. The authors found this relationship especially pronounced for the *small-caps*.

The conclusions of Chris Tidmore, author of the study *Fund Concentration: A Magnifier of Manager Skill*, in 2022, examine the impact on performance given increased concentration. Using concentration data based on the sectors invested in by actively managed equity funds, he tested how concentration influenced the dispersion of relative returns, and whether there was any difference in how concentration impacted funds that outperformed their indices *versus* compared with those that underperformed.

Tidmore focused on two measures of manager concentration — companies and sectors — as well as the number of positions and the weight of the 10 largest positions in the portfolio. His database came from Morningstar Direct and covered U.S. domestic equity mutual funds over a 21-year period ending in December 2020. Among his findings, we highlight:

- as concentration increased, performance dispersion generally increased.
- when seeking to understand the relationship between concentration and relative performance, one must look not only at concentration measures in terms of companies, but also at the concentration of sector exposures.
- an increase in concentration had a positive impact on the performance of funds with superior results, although the opposite was true for funds with low returns.

His findings led Tidmore to conclude that increased concentration has a pronounced positive impact on the performance of equity funds at the top of the *ranking* performance ranking, and a pronounced negative impact

at the lower tails of the performance distributions. He emphasizes that sector concentration indicators also play an important role in understanding the relationship between excess returns and concentration.

The Fama-French study, published in 1992 by economists Eugene Fama and Kenneth French, draws comparisons between concentration and diversification strategies for equity funds. This study analyzed the performance of more than 2,000 equity funds in the United States between 1963 and 1990. Its conclusion is that most of the variation in fund returns can be explained by three factors: market-associated risk, company size (*small ou large caps*) and the type of *market value* drive (*value ou growth*).

According to the Fama-French Study, funds that invest in *small caps* stocks, with higher market risk and greater *market value* tend to have higher returns than funds that invest in *large caps*, with lower market risk and lower *market value*. They concluded that funds concentrated in a small number of stocks with these characteristics tend to perform better than diversified funds. However, the Fama-French Study also recognizes that these factors are neither static nor universal, and that they can vary over time and across markets.

In the research by Busse et al. (2007), the authors measure the impact of portfolio concentration on performance. Using Herfindahl-based indices (the Herfindahl-Hirschman Index is a widely used measure of market concentration), they measure the dispersion of portfolio weights relative to the overall average and find that concentrated portfolios outperform more broadly diversified ones. Based on this, they suggest that investors could improve their performance by diversifying across concentrated managers rather than by expanding the number of stocks in their portfolio.

Chen and Lai (2015) reach similar conclusions, this time regarding risk-adjusted performance and using an analogous concentration classification framework. Specifically, they find that concentration levels are highly related to fund returns during stable market periods; conversely, they are negatively related during periods of market turbulence.

According to the article published by Derwall, J. & Huij, J. in the Journal of Banking & Finance in January 2011, their conclusions indicate that funds with higher *tracking error* delivered better performance than their more broadly diversified peers. They show that the observed relationship between portfolio concentration and performance is mainly influenced by the types of strategies adopted by managers, and not just by managers' willingness to take larger positions.

Antti Petajisto (2013), a finance professor at NYU Stern School of Business, conducted research from 1990 to 2009, concluding that the type and degree of active management in equity funds considerably impact their performance. The author used two indices to classify the funds analyzed. The question he sought to answer was: should an investor in equity funds pay for active management? Other studies concluded that, on average, active equity management loses out to a low-cost indexed fund/ETF. However, there is an important distinction among active equity funds, since not all managers are alike, and there are deep differences in the type of active management they practice.

The analysis of active management (*active share*) can be broken down into two components:

- 1- the index component, or passive component;
- 2- a component measured by position deviations relative to the index.

These deviations are the active component and can be measured by the *Active Share Index*. If, for example, the fund carries a position in a stock larger than that stock's relative weight in the index, the fund effectively has an active position in that company. Intuitively, the *Active Share* index indicates the percentage of the fund's portfolio that differs from the index — that is, its percentage of asset selection.

In this sense, active management can only add value by deviating from its *benchmark* index in one of two ways:

- via stock selection; or
- via *timing* factor timing.

Stock selection involves analyzing and choosing companies individually, and *timing* factor timing, or tactical allocation, involves positions that vary over time according to broader portfolio factors, such as an arbitrage, exposure to a particular economic sector, or a decision to hold more cash.

The *Active Share* index is defined by:

$$Active\ Share = \frac{1}{2} \sum_{i=1}^N |w_{fund,i} - w_{index,i}|$$

Where:

$w_{fund,i}$ is the weight of stock i in the fund's portfolio;

$w_{index,i}$ is the weight of stock i in the *benchmark*.

For *long only* equity funds, without leverage or short positions, the *Active Share* ranges from 0% to 100%.

Taking into account performance measured between 2007 and 2011 for U.S. equity funds, we have the following information:

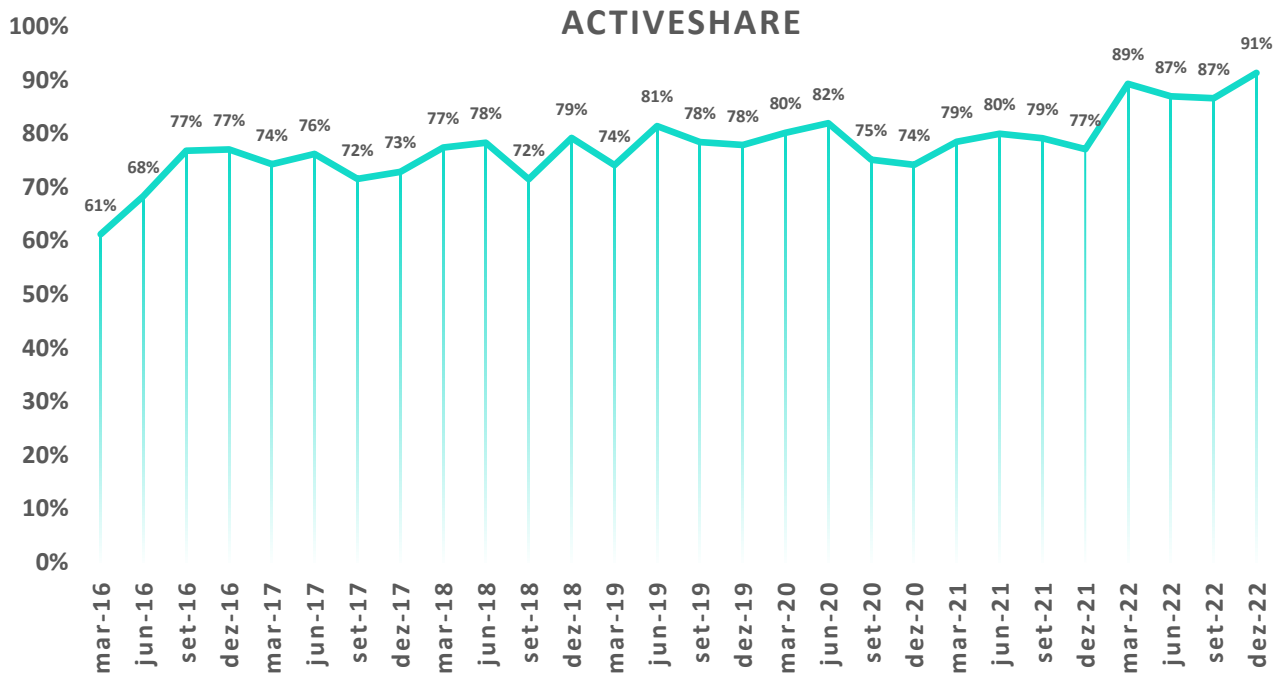
Active Share Quintil	Média Active Share (%)	Gross Excess Return (%)	Net Excess Return (%)
High	92,8	2,33	1,17
	86,2	1,69	0,44
	81,1	1,52	0,37
	75,1	1,26	0,17
Low	59,3	0,1	-0,95

Source: Lazard, "Taking a Closer Look at Active Share" by Khusainova and Mier, 2013

The table above shows that equity funds with the highest *Active Share* indices also delivered higher performance.

Based on SFA's portfolios over the past 5 years, we have the following values for the *Active Share*:

Active		Closet Indexers		Passive
100-80%	80%-60%	60%-40%	40%-20%	20%-0%



In these studies, another metric was also used together with the *Active Share Index*, o *Tracking Error*, which measures the standard deviation of the time series of the fund's returns *versus* the index's returns. Later on we will talk about *Tracking Error* as applied to another study.

Still on the research, the authors conclude that the funds most active in stock selection were able to add value for their investors, performing above the market or their *benchmark* indices by 2.61% before fees and expenses, which represents 1.26% after fees and expenses. This points to a non-trivial presence of management skill. Similarly, these results apply to the 2008-2009 financial crisis period, and this also holds when applied separately to *large caps* e *small caps*.

Funds classified as *closet indexers* consistently performed, after fees and expenses, below their *benchmarks*.

The economic meaning of these conclusions implies the existence of market inefficiencies that can be exploited by active management in company selection. Another relevant point is that the more diversified the management across many stocks, the more funds classified as *closet indexers* tend toward poor performance, due to the size of their positions and the fees charged for management. Even so, this type of equity fund represented approximately one-third of the U.S. equity fund market in 2009.

The managers most active in terms of *stock picking* outperformed seus *benchmarks* even after *fees*, enquanto gestores classificados como *closet indexers* underperformed seus *benchmarks* even before deducting *fees* management and performance fees.

Lawrence A. Cunningham is a professor and *corporate advisor*, recognized for his work in corporate finance. He is a scholar of the culture of Berkshire Hathaway and Warren Buffett. Lawrence studies the question of concentration from another angle — namely, which company attributes attract certain specific types of investors and how this affects them.

His original motivation arose from the growing power of institutional investors. Many debates question whether these institutional managers/investors have the right vision or conviction to faithfully honor the trust that so many Americans place in them. On vision, the debate is whether investors, especially activists, are too short-term oriented to allow companies and markets to maintain long-term objectives. On conviction, the

debates revolve around whether certain types of investors, particularly passive indexers, have sufficient incentives to actively monitor companies in order to promote performance and accountability.

These discussions raise fundamental questions about the balance of power between directors and shareholders, as well as among shareholders themselves. Time horizon and relative conviction are extremely important for classifying shareholders and, therefore, both are incorporated into the author's definition of Quality Shareholders (or *Quality Shareholders "QSs"*).

He divides his research ("*Lessons from Quality Shareholders*") into three parts: Part I reviews the literature on segmenting a shareholder base, examining whether the strategy embodied by quality investors is able to outperform passive indexing on a systematic basis. Part II covers the many different research methods that can be used to identify quality investors and the companies that attract them. Part III presents the relationships between a variety of corporate practices and the attraction of quality investors. This contributes a fresh perspective on many topics that are underappreciated today.

His research first defines types of shareholders based on investment horizon and investor conviction:

		Convicção	
		Baixa	Alta
Horizonte de investimentos	Curto	Transitórios	Ativistas
	Longo	Indexadores	Qualidade

Above, the following descriptive names are assigned: short-term transients/diversifiers; long-term indexers/diversifiers; activists for short-term concentrators; and quality for long-term concentrators, with investment conviction measured by the degree of concentration of an investor's portfolio, and investment horizon measured by the investor's average holding period across their investments.

The ongoing debate in the literature and in investment practice revolves around whether index investing or stock picking is the superior strategy. A key contribution to this debate is Mark Carhart's 1997 paper — then a finance professor at the University of Southern California — which found no evidence of successful active mutual fund equity managers. The research that followed contributed to what became conventional wisdom, namely:

- 1) the average returns of actively managed equity funds underperform their *benchmark*, after fees;
- 2) the performance of the best actively managed equity funds is not persistent;
- 3) although some managers are skilled at selecting companies, few deliver that value to clients after fees.

However, the debate continues, and several editions of *best-sellers* bestselling books continue to show dueling philosophies in academia: finance professor Jeremy Siegel of the University of Pennsylvania repeatedly shows that buy-and-hold works, while Princeton University finance professor Burton Malkiel continues to release new editions of the book that legitimized indexing as a strategy.

But changes in shareholder demographics over the past two decades, combined with increased competition and lower fees, have produced a new strand of research challenging these conventional views. There is evidence that the average actively managed equity fund outperforms its equivalent index; some track records of high-performing managers have persisted; and a considerable cohort of managers demonstrate skills that have led them to excess returns even after fees. And as University of Notre Dame finance professor Martijn Cremers suggests in his comprehensive review of contemporary research, these skills capable of generating

superior results do exist, and among their traits are conviction and patience. Indeed, these are the exact characteristics that define Qs (quality shareholders).

Cases of Concentrated Portfolio Managers

"There should be adequate though, not excessive diversification."

Benjamin Graham, Chapter 5: The Defensive Investor and Common Stocks, The Intelligent Investor

According to *Modern Portfolio Theory*, a portfolio is fully diversified only if it contains every stock listed in the market. At the other extreme, a portfolio can be considered concentrated if it contains just one stock. Investors must make choices in constructing their portfolios between maximizing returns through concentration and seeking to minimize risk through diversification. Where a portfolio falls between these two extremes depends on a number of considerations.

Over time, an equity investor's portfolio performance is represented by the skill the *value investor* has in identifying (and being able to hold) undervalued stocks — those that present, in Graham's definition, the greatest margins of safety. As the number of stocks in the portfolio increases, the degree of undervaluation, and consequently the margin of safety, decreases for each stock added to the portfolio. Contrary to MPT, taken in isolation, this seems to suggest that the optimal portfolio should hold just one stock — the most undervalued one. But this would expose the entire portfolio to that stock's idiosyncratic risk.

From this perspective, investors skilled at identifying companies with the largest gaps between price and intrinsic value — that is, with the greatest margins of safety — and who manage to build a portfolio containing only the most undervalued stocks, seek to maximize their long-term performance by maximizing the margin of safety of each stock in their portfolio. This means concentrating their holdings only in their best ideas.

Investors in *value investing* run the risk that an unforeseen event leads to an unrecoverable loss of intrinsic value in a single company, perhaps through *stress* financial distress or fraud. This unrecoverable loss in intrinsic value is called by Graham the '*permanent impairment of capital*' and it is basically the most important consideration for *value investors*. These investors devote resources and time to avoiding '*permanent impairment of capital*' in their stocks, but they accept that fluctuations in the market prices of companies relative to their intrinsic values are unpredictable and beyond anyone's control. For this reason, it is very important to understand the definition of risk to be considered under this investment lens. It is extremely important to distinguish between a partial or total decline in a company's value (which is effectively the risk to be considered) and a mere drop in the stock price, no matter how significant and painful that drop may be (which, incidentally, is an event to be ignored, or at times even exploited).

"Diversification too — like all Value Investing — is counter intuitive.

More diversification is normally assumed to be better, but it's not!"

Warren Buffett talk in 1984 at Columbia Business School

It is very interesting to learn the views of equity fund managers who have been successful over many years, people regarded as references in the financial market. Many of them are, and have been, an important influence on management at SFA Investimentos.

The ideas of John Maynard Keynes, the British economist, shaped Keynesian economic thought in the early 20th century. But beyond that, Keynes also managed assets — his own capital, the wealth of several friends, two insurance companies, and the *King's College* of the University of Cambridge, his alma mater. Initially, his management style was based on superior knowledge of economic cycles, which he believed would keep him ahead of his competitors in the market. In 1929, he was on the wrong side of his *trades de commodities* and speculative stocks. From the peak, Keynes lost approximately 80% of his capital. The only portion of his

portfolio that had not been wiped out was his holdings of *utilities* stocks, which still paid dividends. After making and losing two fortunes speculating in currencies and *commodities*, in 1932 he finally decided to make an important transition, adopting the philosophy of *value investing* for the rest of his life. He adopted a fundamentalist approach to investing, comparing a company's market value with its intrinsic value, estimated from its future cash flows.

Keynes defined, as did Benjamin Graham, what the terms "investment" and "speculation" meant. Investment would be based on superior long-term forecasts of the likely returns of an investment over its entire life, while speculation would be the attempt to predict changes in the conventional basis of *valuation* over the short term, ahead of investors in general. In Graham's terms, an investment operation is one in which thorough and complete analysis pursues safety of principal and a satisfactory return. Many investors have publicly acknowledged Keynes's influence on their investment processes, names such as David Swensen, George Soros, and Warren Buffett.

John Maynard Keynes wrote in his letter to Francis C. Scott in 1934 (from *John F. Wasik, Keynes's Way to Wealth: Timeless Investment Lessons from the Great Economist*):

"As time passes, I become more and more convinced that the correct method of investing is to put a fairly large sum into companies one believes one knows well and which are run by managers in whom one has strong confidence. It is a mistake to think that risk is limited by investing in a number of companies about which one knows little and has no particular reason for confidence... Everyone's knowledge and experience are definitely limited, and so there are rarely more than two or three investments at any given time in which I can place strong confidence."

Thus, Keynes set aside his leanings toward *market-timing* to embrace the process of *value investing*, becoming a resolute investor in concentrated value positions. The portfolio managed for the *King's College* from 1922 to 1940 achieved an average annual return of 15.97% (standard deviation of 19.08% and a *sharpe* of 0.73), while the UK equity index posted an average annual return of around 10.37% (standard deviation of 17.11% and a *sharpe* of 0.49). As manager of the insurance companies' portfolio, Keynes built concentrated positions in sectors such as metals mining, dedicating up to 1/3 of the portfolio to each sector.

Keynes described, in one of his letters to *King's College*, the core of his investment philosophy in three principles that he believed capable of generating sound investments:

"1 — A careful selection of a few investments (or a few types of investments), having regard to their cheapness relative to their probable actual and potential intrinsic value over a period of years ahead, and in relation to alternative investments at the time;

2 — A steadfast holding of these fairly large positions through thick and thin, perhaps for several years, until they have either fulfilled their promise or it becomes evident that they were acquired in error;

3 — A balanced investment position — that is to say, a variety of risks in spite of individual holdings being large, and if possible, opposing risks."

The economist avoided the idea of broad diversification that would develop years later as "*Modern Portfolio Theory*" and concentrated heavily in his *core*.

Keynes viewed the risk of his investments as follows:

"My theory of risk-taking is that it is better to build a substantial position in which I have strong conviction than to scatter my investments across areas where I lack that same confidence... The theory of diversifying investments across as many classes or assets as possible is perhaps the safest plan to follow when assuming a comprehensive lack of knowledge of companies and the market. That is very likely the safest assumption to make."

Following the line of thought of Graham and Keynes, we see that a risk distinct from the permanent loss of capital is the risk of price fluctuations. The absolute variance in this price movement, known as volatility, and the deviation of relative performance from market performance, is known as '*tracking error*'.

At SFA Investimentos, our portfolio exhibits a *tracking error* higher than the average of equity funds in the Brazilian market, and consequently greater volatility is expected in our results compared to the market index. This is the expression of our way of investing, combining our selection and *sizing* capabilities. As a result, the fund has generated an annualized return (*since inception*) of around 7.0% above the Ibovespa index.

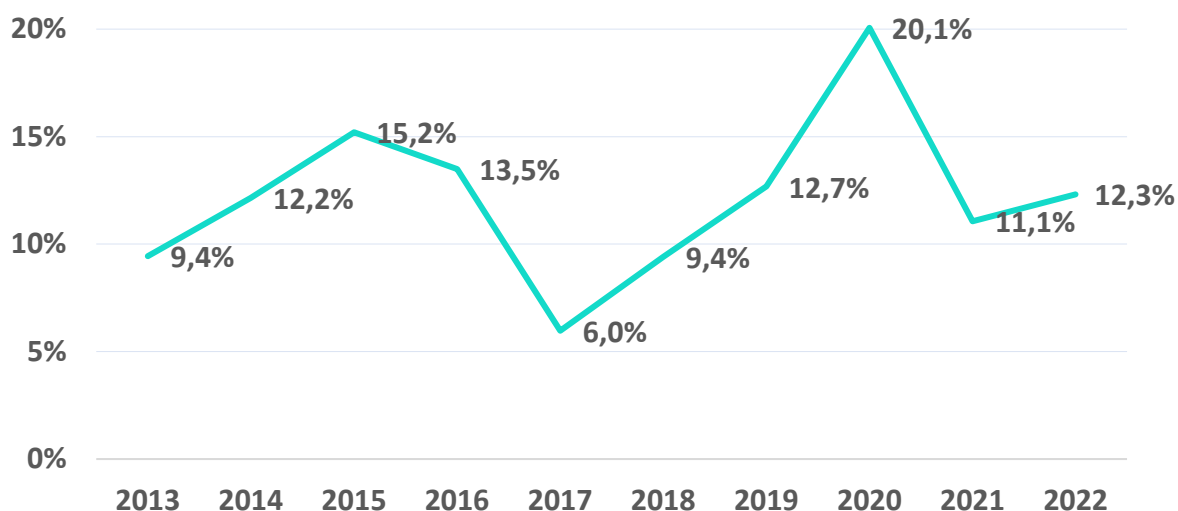
There is no typical value for *tracking error*, but there is indeed a wide spectrum of products available across all asset classes, ranging from purely passive to highly active.

For example, an *index fund* should have *tracking error* of zero or near-zero relative to its *benchmark*. *enhanced index funds* generally have *tracking error* in the 1% to 2% range. Most actively managed equity funds (*active share*) traditionally exhibit *tracking error* of around 4% to 7%. Active managers willing to operate in a concentrated way in high-conviction positions can exhibit *tracking error* in the 10% to 15% range.

To give an idea, the table and chart below show, respectively, the *tracking error* since the inception of our fund SFA EAC FIC FIA and its annual evolution:

Month Std	3,67%
Annualized tracking error	12,70%

Annualized tracking error - SFA EAC FIC FIA



Turning now to the view of Louis A. Simpson, who managed the funds of one of the largest insurers in the United States, GEICO. This same insurer had been invested in by W. Buffett. GEICO's equity portfolios from 1980 to 2004 delivered annual returns of 20.3%, generating, on average, an *alpha* of 6.8% over the S&P index's

average annual return of 13.5%. As a "value investor," Lou Simpson established GEICO's investment philosophy under the following principles:

- 1) *think independently;*
- 2) *invest in high-return businesses with a shareholder focus;*
- 3) *pay reasonable prices, even for an excellent company;*
- 4) *invest for the long term;*
- 5) *do not over-diversify.*

Regarding this last point, he further states the following:

"It is unlikely that an investor will achieve superior results by investing in a broad cross-section of the market — in other words, by investing in the many companies that make up the stock index. The greater the diversification, the more performance will tend toward the average, at best. We concentrate our portfolio in a small number of companies that meet our investment criteria. Our belief is that we have some chance of achieving superior results only if we take risks intelligently, when the risk-return relationship is in our favor. Good investment ideas — that is, companies that meet our criteria — are quite hard to find. When we think we have found one, we make commitments that reflect our strong conviction."

At this point, let's borrow the perspective of one of the most important investors in the global financial market, Warren Buffett, who continues to serve as chairman and principal shareholder of Berkshire Hathaway, an investment company founded in the 1960s. At the helm of Berkshire, Buffett has consistently outperformed the S&P 500 and Dow Jones indices for decades by applying the concepts of *value investing* and risk management to multiply his capital. His fund has delivered an average return of more than 20% per year over the last five decades. In 1993, Warren Buffett wrote in his annual letter to shareholders:

Portfolio concentration may well decrease risk if it raises, as it should, both the intensity with which an investor thinks about a business and the comfort-level he must feel with its economic characteristics before buying into it... If you are a know-something investor, able to understand business economics and to find five to ten sensibly priced companies that possess important long-term competitive advantages, conventional diversification makes no sense for you. It is apt simply to hurt your results and increase your risk."

The passage above once again brings up the dichotomy of the diversification principle *versus* concentration in equity investing, conditioning concentrated management on deep knowledge of the business.

"We believe that diversification, as practically practiced, makes very little sense for anyone who knows what they are doing. Diversification is a protection against ignorance... There is less risk in owning three easily identifiable wonderful businesses than in owning 50 well-known large companies..."

If you want to make sure that nothing bad happens to you relative to the market index, you can simply buy every stock in the index for your portfolio. There is nothing wrong with that. It's a perfectly sound approach for someone who doesn't feel comfortable or able to analyze businesses. If you know how to analyze businesses, it's crazy to own 50, 40, or 30 stocks in your portfolio, because there probably aren't that many wonderful businesses out there.

Putting money into your 30th or 35th favorite company, instead of putting more money into your number-one choice, strikes both Charlie and me as madness. And it is a conventional practice that, in seeking mediocre results, may even preserve your job, but it is, in our view, a confession that you really do not understand the business you own.

At Berkshire, I can name my top 3 businesses and I would be very happy if we had all our money in those 3 companies; if we find more than that, we will keep adding to them. But three wonderful businesses is more than you need in this life to generate a great deal of wealth.

If you look at how fortunes were built in the U.S., you will see that they were not built with portfolios of fifty companies, but rather by investors who identified a handful of these wonderful businesses. But there are not 50 truly wonderful businesses out there.

If you have a truly wonderful business in hand, you are very well protected against many of the vicissitudes of the economy over time and against competition — I mean, we are talking about businesses that withstand effective competition, and three of those will be better than a hundred average companies!"

Warren Buffet.

Concentration produces bigger results, but it is best employed by those with the skill and experience to do so. Diversification, on the other hand, 'can protect' the average investor from losses. The idea championed by W. Buffett is that it is not just more profitable — but also safer — to invest in a few extremely well-researched holdings rather than in many poorly researched ones. Therefore, the deciding factor here is whether the investor has the time and opportunity to do the research well.

This knowledge and these practices did not just occur in the past — they continue to be applied today. As we write this letter, Berkshire Hathaway Inc.'s most recent 13F filing showed a position in Apple (AAPL) equal to 46.44% of its portfolio, at the end of the first quarter of 2023. Berkshire's 5 largest positions represented 77.5% of the portfolio:

Stock		Sector	Shares Held or Principal Amt	Market Value	% of Portfolio	Previous % of Portfolio	Rank
AAPL		INFORMATION TECHNOLOGY	915,560,382	\$150,975,906,991	46.44	38.90	1
BAC		FINANCE	1,032,852,006	\$29,539,567,372	9.09	11.19	2
AXP		FINANCE	151,610,700	\$25,008,184,965	7.69	7.49	3
KO		CONSUMER STAPLES	400,000,000	\$24,812,000,000	7.63	8.51	4
CVX		ENERGY	132,407,595	\$21,603,623,200	6.65	9.78	5

Berkshire Hathaway Inc, current combined 13F/13D/G filings (Q1 2023)

Another view worth knowing is that of Nick Sleep. He is an English fund manager who led the Nomad Investment Partnership from 2001 to 2014. Over this period, the fund's returns accumulated 921.1%, or an impressive 20.8% per year. After closing the fund in 2014 and returning the capital to its investors, Nick and his partner made the Nomad investor letters available on their foundation's website.

In one of his letters, Nick tells us that they are always looking for companies with a corporate character that favors strategies designed to create sustainable value. But this is no easy task!

"...we work hard reading annual reports and numbers, and interviewing management, trying to answer the questions: what are the incremental returns on capital and the longevity of those returns, is management correctly incentivized to allocate capital properly, and what is being discounted by prices?"

Once these companies are found, they understand that they can be winners for years to come, as long as their capital allocation remains consistent with value creation.

Quite often, however, *management* strays and starts allocating capital poorly, usually through diversification or, in the words of Peter Lynch, through "*diworsification*". The result is that aggregate returns on capital decline and the stock price falls to discount the poor performance. In his view, knowing the quality of

managerial character (the kind that should avoid poor capital allocation) is extremely important when investing in companies.

Nick also addresses how the alignment of his investors, the quality of his liabilities, and the flows of capital in and out affect the fund's results:

"Job number one, two, and three for the manager is investment performance, not asset gathering. Few practice this approach. We work on the assumption that if performance is reasonable, the level of interest in what we are doing will increase, and, if appropriate, the partnership will grow over time. Common sense and simple mathematics dictate that it would be opportune if growth could be timed to coincide with depressed prices rather than market peaks. We have to aim for this standard, even though it runs contrary to common industry practice. Had we adopted the industry-standard open-door approach to fundraising, the partnership would be roughly three times its current size, but the results would be noticeably worse, and the quality of our investor base would be significantly impaired."

Regarding portfolio concentration and inactivity, the manager recommends that new companies always be measured against the existing portfolio. Only let them in if they are superior to what we already own. That way, the decision not to change the portfolio becomes an active decision. But, often, doing nothing turns out to be strangely difficult to achieve.

For him, the ideal portfolio would be made up of a list of "wonderful compounding machines" of *compounding* (which is nothing more than the process by which the gains from an asset, whether interest or capital gains, are reinvested to generate additional gains over time), with brilliantly executed management. Sleep calls this ideal portfolio the "terminal portfolio." Before closing his fund and retiring, the fund reached the terminal portfolio, made up mainly of three stocks: Amazon, Costco, and Berkshire Hathaway — all run by extremely high-quality thinkers.

In the Nomad Investment Partnership's letter to investors, on June 30, 2004, Nick Sleep makes the following remarks:

In theory, if we could find fifty ideas equally discounted to their values, with an equal probability or conviction of that value being realized, then all of them could carry equal weight in the fund. We could then hope for smooth, steady growth in the value of our shares, free of the swings a concentrated portfolio can create. But life is not like that. In reality, opportunities we are comfortable committing capital to are rare, and the highest-conviction ideas are rarer still among them. The question, then, is: how much to invest in each idea?

Bill Miller, who ran the Legg Mason Value Trust so brilliantly for many years, suggests using a system developed in 1956 by J.L. Kelly. A simplified version of the Kelly Criterion says that investors should invest a proportion of the portfolio equal to $2.1 \times p - 1.1$, where p is the probability of being right. The common-sense reading of this equation is that if you are absolutely certain you are right, you should invest the entire portfolio in that idea. Even if your conviction of being right is, say, 75%, the correct weight remains high, at 47.5% ($(2.1 \times 0.75) - 1.1$). But does anyone actually do this?

One of the few examples we know of were Warren Buffett's portfolios early in his career, which showed concentration levels close to these figures, and even then, in companies over which he held control. But isn't this the right way to think about it?

If you know you are right, why not set aside a large portion of the portfolio for that idea? A logical extension of this line of thinking is that the concentration of the Nomad portfolio was, at times, very low.

...and what to say about what is happening with large, complex mutual funds, with many hundreds of stocks in a single portfolio per country. Apply the Kelly Criterion and the average fund manager will almost always appear to have no idea about the probability of success of any company in their portfolio. In Nick Sleep's view,

the massive over-diversification that is commonplace in the industry has more to do with marketing — making clients feel comfortable and reducing the swings in results — than with investment excellence.

At Nomad we prefer more volatile year-to-year results, but maximized over rolling 5-year windows. If you don't share this view, think long and hard about your investments alongside Nomad.

...parents will understand when I say that when children are born, they seem to bring their own love with them. Shares, however, are not like children. The more shares you own, the less you care about each one individually. The attention paid to corporate governance, capital allocation, incentive compensation, accounting, and strategy must be diluted as the number of holdings increases. Alternatively, armies of analysts are recruited, risking a decline into committee-based decision-making. When over-diversification becomes the industry norm, investors in aggregate run the risk of failing to police corporate misbehavior. Would fund managers be as lenient with dysfunctional management if the holding were 20% of the portfolio instead of 0.2%? Of course not. Perhaps some of the scandals of recent years could have been avoided had fund managers been more like owners in their holdings.

However, there are some glimmers of hope! We tend to think of the largest shareholders of publicly traded companies as general partners. This works better with some fund management organizations than with others, but the influence that a properly aligned large outside shareholder can have on corporate behavior should not be underestimated — look at the examples below:

At Jardine Matheson, Brandes Investment Partners, the largest outside shareholder, proposed a reorganization of the company. Although this proposal was only partially implemented, results since then have been wonderful. At Kersaf, Allan Gray Limited and Marathon combined votes to propose a turnaround in the company's strategy, which proved excellent, and the share price nearly quadrupled in dollar terms. At Hollinger International, Tweedy, Browne Company selflessly pursued the recovery of company funds and the mark-to-market valuation of the company's properties, resulting in a doubling of Nomad's share value.

If you come across representatives of any of these investment-oriented fund management organizations, buy them a drink. They have added a great deal to your returns!

Questions on the Possibilities of Application

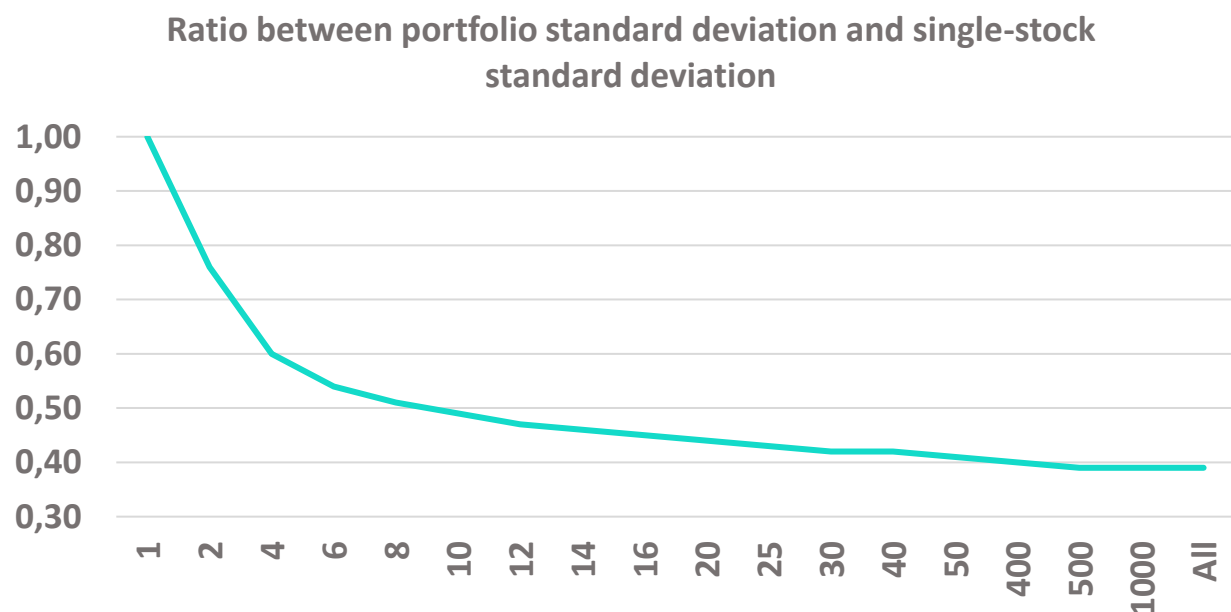
For many years, academics have studied the diversification problem. The central question they ask in portfolio construction is: what is the ideal number of stocks to reproduce market returns? There is a balance point between the smallest possible number of stocks, so as to reduce transaction costs, and a maximum number of positions for diversifying away idiosyncratic risk.

Elton and Gruber (1977) showed that most of the diversification gains are achieved in portfolios holding between 20 and 30 positions. They examined a universe of 3,290 stocks, building portfolios with various numbers of equally weighted stocks. They took market risk — that is, the risk of a portfolio containing the entire universe of 3,290 stocks — as the lowest achievable risk. Here, the concept of risk used is the variance of market returns. Variance relative to the market measures the dispersion of results of a stock or portfolio relative to market performance. Thus, a portfolio with all 3,290 stocks will perform exactly like the market, and its variance will be zero. But let's be clear here: the market portfolio still carries market variance, which finance academics call non-diversifiable risk. At the other end of the risk scale, a portfolio with just one stock would be the riskiest, since it would have the greatest variance relative to the market. The table below, taken from the *paper* by Elton and Gruber, shows the additional risk reduction (defined as the standard deviation of annual returns) for randomly selected, equally weighted portfolios.

Número de Ações no Portfólio	Desvio Padrão Esperado de Retornos Anuais do Portfólio	Razão entre o Desvio Padrão do Portfólio para o Desvio Padrão de uma Única Ação
1	49,24	1
2	37,36	0,76
4	29,69	0,6
6	26,64	0,54
8	24,98	0,51
10	23,93	0,49
12	23,2	0,47
14	22,26	0,46
16	21,94	0,45
20	21,68	0,44
25	21,2	0,43
30	20,87	0,42
40	20,46	0,42
50	20,2	0,41
400	19,29	0,4
500	19,27	0,39
1000	19,21	0,39
Todas	19,16	0,39

In a single-stock portfolio, the risk of its annual return deviating from the market's annual return has a standard deviation of 49.24%. When a second stock is added, this reduces the risk of the now two-stock portfolio to 76% of the risk of the single-stock portfolio. This represents a substantial risk reduction from the addition of a single stock. But even so, the standard deviation of this two-stock portfolio is nearly twice (37.36%) the standard deviation of the market's annual return (19.16%).

Adding a third stock reduces the risk to 60% of the risk of the single-stock portfolio. With each new stock added to the portfolio, the incremental reduction in standard deviation relative to the single-stock portfolio gets smaller. See in the chart below how the reduction in standard deviation is steep at first, but quickly flattens out and stabilizes:



We can see here that a 20-stock portfolio has already eliminated 92% of idiosyncratic risk. (calculation: $((21.68 - 19.16) / (49.24 - 19.16)) - 1$). Adding another 10 stocks to the portfolio eliminates 95% of idiosyncratic risk, an incremental reduction of just 3%.

Reductions beyond 30 stocks are minimal. And here, the costs of acquiring and monitoring larger numbers of stocks will quite likely outweigh the benefit of incremental reductions in idiosyncratic risk.

As Dorothy says: "Toto, I have a feeling we're not in Kansas anymore."

The efficient market hypothesis holds that it is impossible to *outperform* the market, and so the best alternative for an investor would be to acquire the market portfolio via a low-cost fund or a market-indexed ETF. But Buffett argues that the market is frequently efficient but not always efficient, and this represents a night-and-day difference. Below is an excerpt from page 18 of the letter written at the time to Berkshire shareholders:

"Efficient Market Theory

The preceding discussion about arbitrage makes a small discussion of "efficient market theory" (EMT) also seem relevant. This doctrine became highly fashionable indeed, almost holy scripture - in academic circles during the 1970s. Essentially, it said that analyzing stocks was useless because all public information about them was appropriately reflected in their prices. In other words, the market always knew everything. As a corollary, the professors who taught EMT said that someone throwing darts at the stock tables could select a stock portfolio having prospects just as good as one selected by the brightest, most hard-working security analyst. Amazingly, EMT was embraced not only by academics, but by many investment professionals and corporate managers as well. Observing correctly that the market was frequently efficient, they went on to conclude incorrectly that it was always efficient. The difference between these propositions is night and day.

In my opinion, the continuous 63-year arbitrage experience of Graham-Newman Corp. Buffett Partnership, and Berkshire illustrates just how foolish EMT is. (There's plenty of other evidence, also.) While at Graham-Newman, I made a study of its earnings from arbitrage during the entire 1926-1956 lifespan of the company. Unleveraged returns averaged 20% per year. Starting in 1956, I applied Ben Graham's arbitrage principles, first at Buffett Partnership and then Berkshire. Though I've not made an exact calculation, I have done enough work to know that the 1956-1988 returns averaged well over 20%. (Of course, I operated in an environment far more favorable than Ben's; he had 1929-1932 to contend with.)"

In other words, without invalidating the conclusion of EMT, Buffett attests that yes, it was possible to identify mispriced stocks, stocks for which the market was not efficient. And for these occasions, concentration would make more sense.

One other interesting detail in this letter is that Buffett already dismisses some counterarguments to his observations. He mentions 4 important conditions present in his empirical observations that validate and support his conclusions based on the performance of some portfolios:

"All of the conditions are present that are required for a fair test of portfolio performance: (1) the three organizations traded hundreds of different securities while building this 63-year record; (2) the results are not skewed by a few fortunate experiences; (3) we did not have to dig for obscure facts or develop keen insights about products or managements - we simply acted on highly-publicized events; and (4) our arbitrage positions were a clearly identified universe they have not been selected by hindsight.

Over the 63 years, the general market delivered just under a 10% annual return, including dividends. That means \$1,000 would have grown to \$405,000 if all income had been reinvested. A 20% rate of return, however, would have produced \$97 million. That strikes us as a statistically-significant differential that might, conceivably, arouse one's curiosity.

Yet proponents of the theory have never seemed interested in discordant evidence of this type.”

And the question that arises here is: 'Are there mispriced stocks, for which market efficiency does not hold?'

The consequence of the market being efficient most of the time, and so 'mispricing' occurring only in rare situations, is that portfolios seeking alpha end up holding fewer stocks than the market average, which reproduces beta. Thus, investors seeking long-term value tend to be more concentrated.

The broader the diversification of an equity portfolio, the higher the probability that its results will reproduce the market average. The greater the concentration of a portfolio, the higher the probability that it will deviate from the average, whether positively or negatively.

The problem with the academic view is that risk is treated as deviation from market performance. But what if our goal is precisely to deviate from market performance?

Let's flip our perception of risk and examine how difficult it is to deviate from this average. How hard is it to achieve these deviations?

The study conducted by Benello, Van Biema, and Carlisle addresses these questions using the S&P index and the North American equity market. The *total return* S&P 500 EW, or equal-weight S&P, is a market index containing 500 stocks that accounts for dividends in its historical returns. With how many stocks can we generate a result that approaches that of the S&P 500 EW Index? And what are the odds that, when we select these stocks randomly, they will *performar* in line, or *underperformar* the index?

Let's answer these questions statistically. In our example, the population is the entire 500-stock S&P EW portfolio, the characteristic we are interested in is the index's return, and the sample is our portfolio. What we want to know is: what is the probability that a given portfolio will equal or *underperforme* the returns of the S&P 500 EW.

We can test this empirically, using a Monte Carlo simulation to randomly construct selected portfolios of different sizes and then compare the performance of each portfolio with the *performance* of the index. To form the samples, the stocks in the portfolios will be selected from among the index's 500 stocks and will have equal weights. For each sample year, 8,000 portfolios will be generated with the following numbers of stocks:

1.000 ~~portfólios~~ contendo 250 ações
 1.000 ~~portfólios~~ contendo 100 ações
 1.000 ~~portfólios~~ contendo 50 ações
 1.000 ~~portfólios~~ contendo 30 ações
 1.000 ~~portfólios~~ contendo 25 ações
 1.000 ~~portfólios~~ contendo 20 ações
 1.000 ~~portfólios~~ contendo 15 ações
 1.000 ~~portfólios~~ contendo 10 ações

Since the base period runs from 1999 to 2014, 120,000 portfolios were generated and then compared to the *performance* performance of the S&P 500 EW over this same roughly 15-year period. Over this interval, the S&P 500 EW generated an average annual return of 12.16%. The 250-stock portfolio produced the same average for its annual returns, as did the 50-stock portfolio. The 10-stock portfolio showed a slightly lower average annual return, at 12.01%, but notably close to the S&P 500 EW index's average annual return. This is expected: as the number of samples (120,000) and the number of stocks in each portfolio (from 10 to 250) increase, the sample averages should converge toward the population average.

Resultados	10	15	20	25	30	50	100	250	Todas
em %	ações	ações	ações	ações	ações	ações	ações	ações	
Média	12,01	12,08	12,07	12,09	12,13	12,16	12,19	12,16	12,16
Mediana	12,05	12,08	12,07	12,09	12,13	12,16	12,19	12,16	12,16
Mínimo	3,71	5,4	5,32	5,9	7,51	8,13	10,12	10,69	12,16
Máximo	21,32	19,96	18,68	17,23	17,33	15,79	14,78	13,5	12,16
Desvio Padrão	2,69	2,21	1,93	1,73	1,53	1,18	0,8	0,4	0

Average Annual Returns of S&P 500 EW Equity Portfolios – Monte Carlo Simulation 1999 to 2014

The notable feature in this table is the widening distribution of returns as portfolios become more concentrated. The 250-stock portfolio does not deviate much from the S&P 500 EW average, with its worst portfolio showing an average annual return of 10.69% over the 15 years studied, and its best return at 13.5%. By contrast, 10-stock portfolios are much more prone to deviating from the average, showing a best average annual return of 21.32% and a worst average annual return of 3.71%.

The table below translates these results into the odds that *performance* of a given portfolio deviates from the *performance do underlying* underlying index, S&P 500 EW. The numbers indicate that as we concentrate the portfolio in a smaller number of stocks, the chance of *outperformar* increases. With 250 stocks, portfolios *outperformam* the index by 1% or more in only 0.2% of cases, and in no case were they able to *outperformar* by more than 2% at any time. By contrast, the 10-stock portfolio *outperforma* by 1% or more 35.2% of the time, indicating that in 1/3 of portfolios, the average return was more than 1% above the S&P 500 EW.

Resultados	10	15	20	25	30	50	100	250	Todas
em %	ações	ações	ações	ações	ações	ações	ações	ações	
1% ou mais	35,2	32,4	30,2	27,7	23,4	15,8	7,3	0,2	–
2% ou mais	22,1	17,5	14,7	10,4	8,2	2,5	–	–	–
3% ou mais	12,1	7,9	5,2	3	1,8	0,3	–	–	–
4% ou mais	5,9	2,2	1,3	0,6	0,1	–	–	–	–
5% ou mais	2,6	0,8	0,2	0,1	–	–	–	–	–

Chance of the Portfolio *Outperformar* the S&P 500 EW, Monte Carlo 1999 to 2014

In 22.10% of the 10-stock portfolios in the sample, we see returns 2% or more above the market's return. In 2.6% of cases — that is, 1 in every 40 — the 10-stock portfolio *outperformou* the S&P 500 EW index by 5% or more.

Note that the opposite is also true — that is, when we talk about results below the *benchmark*: portfolios with 250 stocks *underperformam* the index in only 0.2% of cases, and there is no observation of *underperformance* of 2% or more. In this sense, for 10-stock portfolios, only 5.9% of cases *underperformaram* the index by 4% or more, and 2.6% *underperformaram* the S&P 500 EW by 5% or more.

This exercise demonstrates that concentrating a portfolio increases the chance that its *performance* will deviate from the *performance do underlying* index, and not that this necessarily implies better *performance* than the index. The expected return of a randomly selected portfolio is still the average. But what if we took the concentration analysis further, to see how extremely concentrated portfolios *performam*?

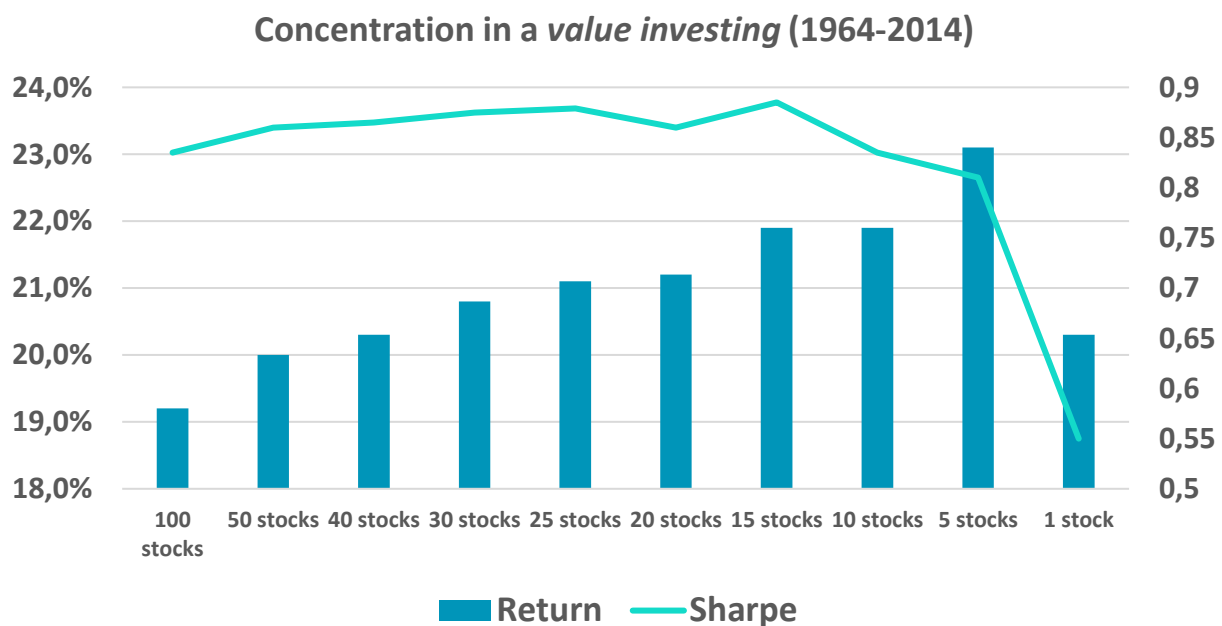
Patrick O'Shaughnessy examined this question in 2014 for the North American equity market. He assessed 51 years of market data, from 1964 to 2015, to build portfolios of undervalued stocks and ADRs traded in the United States market, with a *market cap* minimum of USD 200MM (inflation-adjusted to 2014 dollars). He then created portfolios of varying sizes, with the largest containing 100 stocks and the smallest just one stock. He then ranked each asset in his study based on the value of its fundamentals, defining equally weighted combinations of the following indicators:

- Price/Earnings;
- Price/Sales;
- EBITDA/Enterprise Value;
- FCF/Enterprise Value;
- Total Shareholder Yield (dividends, plus or minus new share issuances or buybacks).

Each portfolio was rebalanced annually, avoiding seasonality biases and giving the analysis greater robustness.

Número de ações	100	50	40	30	25	20	15	10	5	1
Retornos (%)	19,2	20	20,3	20,8	21,1	21,2	21,9	21,9	23,1	20,3
Sharpe Ratio	0,84	0,86	0,87	0,87	0,88	0,86	0,89	0,84	0,81	0,55

Statistics for the Concentration of *value* Portfolios, Rebalanced Annually (1963 to 2015)



The best returns came from a portfolio of just 5 stocks! The best *sharpe* ratio came from portfolios with 15 stocks. Above 25 stocks, as portfolios grow larger, returns and *sharpe* ratios decline, resulting in worse risk-adjusted return ratios. O'Shaughnessy's research findings appear to support Buffett's view on *value investing* concentrated portfolios. In one of his talks, Buffett said: "if I were running a portfolio of USD 50MM, USD 100MM, or USD 200MM, I would have 80% in the five largest positions, with 25% in the single largest position.

Benjamin Graham also advocated a limit to diversification. In *The Intelligent Investor* (1949), he advised a portfolio with a minimum size of 10 companies and a maximum of 30 positions. Klarman, Buffett, and Munger recommended a smaller number of positions: 5 for Buffett and Munger, 10 to 15 for Klarman.

We at SFA also do not believe in the risk-reduction effects and false sense of safety that over-diversification can bring. We believe in active management, in deep knowledge of the companies and industries we invest in, allocating with a high degree of conviction, and in the idea that the risks of this type of investment would be more efficiently diversified by the investor across different asset classes than by the manager indiscriminately adding names to the portfolio. There really are few managers who manage to generate *alpha* meaningful alpha over the long term (approximately 6% of *equities* managers will manage to generate 4% or more of *alpha* over the next 15 years in the US). To *outperformar* the market over the long term, beyond deep proprietary analysis, we dare to be different!

We appreciate your trust,

SFA Investimentos Team

Manager

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