

Managing Risk in Concentrated Global Equity Portfolios

– A Novel Approach

INTRODUCTION

Two major trends have been upending the asset management industry—the rise of index funds, otherwise known as cheap beta, and the inability of active portfolio managers to consistently outperform their benchmarks over time. Traditional active managers have had to reassess how they manage portfolios to compete with the rise of passive investing. At the same time, they have had to look for new ways to differentiate themselves from these cheaper index products and provide more attractive investment returns, or alpha, over the longer term.

Embracing a high active share is one strategy active managers are using to set themselves apart. In their seminal 2007 paper, [How Active is Your Fund Manager?](#)¹ Martijn Cremers and Antti Petajisto established that portfolios holding a large number of securities not represented in the underlying benchmark, or that have a high active share, tend to outperform their benchmark both before and after fees.

Figure 1: Different Types of Active Management

HIGH	Diversified Stock Picks	Concentrated Stock Picks
LOW	Closet Indexing	Factor Bets
	LOW	HIGH

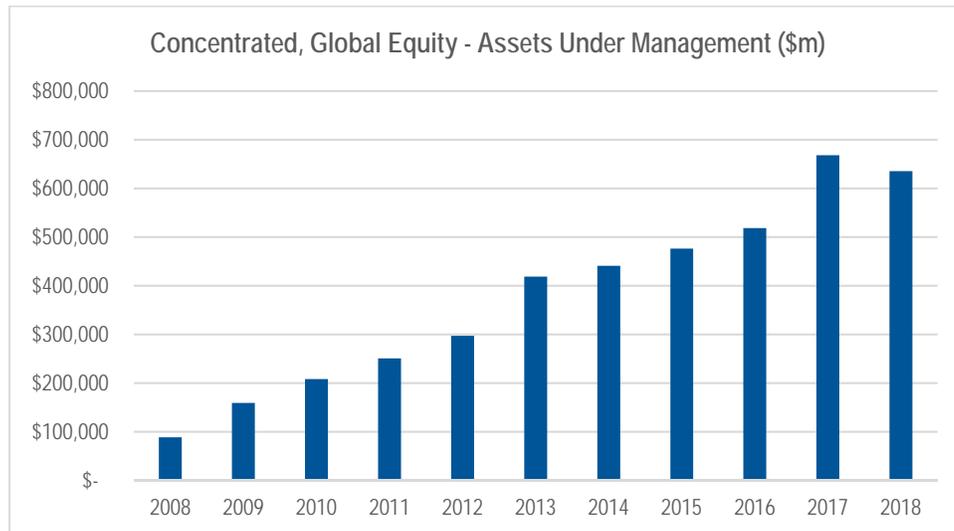
Source: Cremers and Petajisto (2009)

High active share alone is not enough, however. According to a later research paper², Cremers and Ankur Pareek demonstrated that active managers with high active share and who hold their stocks for long time periods are ultimately the most successful.

Over the decade since they published this research, there has been an acceleration in assets flowing into concentrated, global strategies compared to asset flows into more diversified active strategies. According to data from eVestment, concentrated strategy asset gains were only 29% of diversified strategy asset flows in 2008 but rose to 41% by the end of 2018. As the figure below shows, assets in concentrated strategies have increased significantly over the past decade.

¹ Cremers, Martin, and Petajisto, Antti, "How Active is Your Fund Manager?," 2007.

² Cremers, and Pareek, Ankur, "Patient Capital Outperformance: The Investment Skill of High Active Share Managers Who Trade Infrequently," 2013.

Figure 2: Global concentrated equity assets under management have increased over the past decade

Source: eVestment. Universe: All Global Equity (excluding REITs, Small Cap, Sector Funds).
 Concentrated managers have ≤ 50 holdings; Diversified managers have > 50 holdings

Holding fewer securities not contained in the underlying benchmarks for several years means the potential for higher risk. However, the tools for measuring and understanding risk have not kept up with the changes in active portfolio management.

HOW PORTFOLIO MANAGERS DEFINE RISK

Portfolio managers have tended to define risk in three major ways:

- Volatility, or standard deviation of returns
- Tracking error, or the deviation of excess returns
- Permanent loss of capital

Volatility

Volatility is basically how bumpy the ride has been or will be over the course of holding a set of securities. The basic portfolio model³ that Harry Markowitz derived in the 1950s was first to layout the idea of risk as the standard deviation of the expected rate of return for a portfolio. Markowitz showed that the expected rate of return for a portfolio is the weighted average of the expected return for the individual securities in the portfolio. The standard deviation, or volatility, of a portfolio is a function of the standard deviations (volatilities) of the returns of the individual investments and the covariance between the rates of return for all the pairs of assets in the portfolio. The covariance measures the directional relationship of two risky assets. Positive covariance means the assets move together; negative covariance means they move inversely. The correlation of the various portfolio components, then, shows the degree to which the various assets move together.

³ Markowitz, Harry, "Portfolio Selection," *The Journal of Finance*, March 1952.

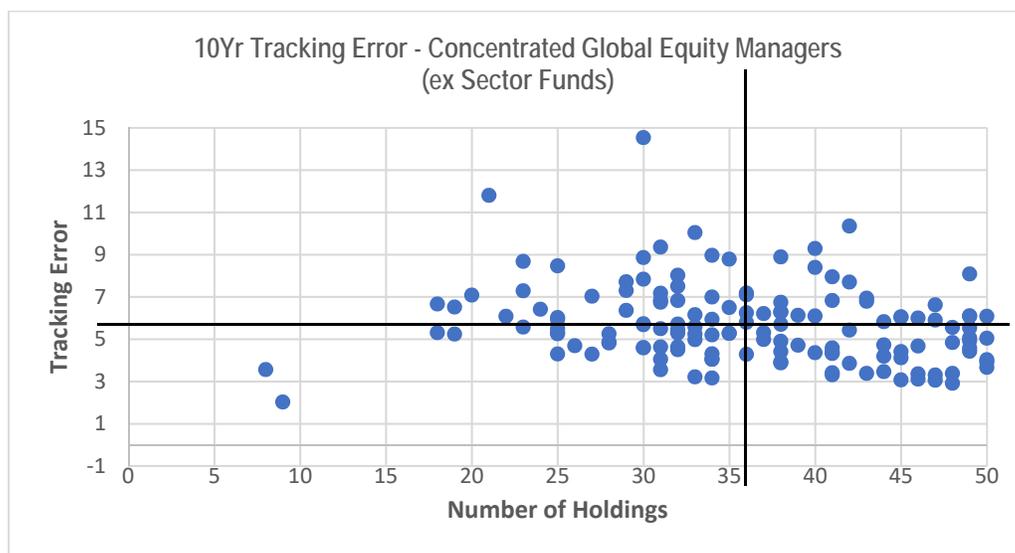
Portfolio managers try to construct portfolios that can deliver the highest expected returns, while reducing the variation in those returns by adding securities that have low or negative correlations to the portfolio. That is, they look for securities along the "efficient frontier," or the set of portfolios that delivers the highest possible returns for a defined level of risk. However, one potential disadvantage of using volatility as a measure of risk is that it tends to be backward looking and relies on historical returns to predict future risks. In dynamic markets made up of ever-changing companies, relying on historical data may fail to fully capture risk exposure in a portfolio.

Tracking Error

Standard deviation also can gauge the relative risk of a portfolio compared to its peers or an established benchmark. The question here is how much a portfolio might behave differently than a given benchmark. One measure of deviation from the benchmark is tracking error, which can be calculated by subtracting the benchmark return from the portfolio return for each monthly period and finding the population standard deviation of the resulting series. It is basically the volatility of the excess return.

Tracking errors in global, concentrated portfolios can vary widely depending on the investment approach and risk management process.

Figure 3: Tracking error in global concentrated portfolios has varied widely over the past decade (as of March 2019)



Source: eVestment. Universe: All Global Equity (excluding REITs, Small Cap, Sector Funds). Concentrated managers have ≤ 50 holdings; Diversified managers have > 50 holdings

Avoiding Permanent Capital Loss

The other major risk facing portfolio managers is permanent capital loss; the risk a security or set of securities drop precipitously due to underlying fundamental factors or some outside change such as new regulation or a new technology. Here, the solution to avoiding such an outcome is deep fundamental security analysis, understanding not only the individual company's business but also the broader industry, economic and regulatory environment in which it operates. Diversification is another way to ensure that should an individual asset become impaired; it will not have an outsized impact on the broader portfolio over the longer term.

ARE CURRENT RISK APPROACHES APPLICABLE TO CONCENTRATED GLOBAL PORTFOLIOS?

Portfolio managers often use several approaches to help manage risk in global equity portfolios; quantitative factor models such as Barra and Axioma have been the most common. These models provide a standard language of risk common across the asset management industry. The [Barra risk model](#), for instance, calculates the risk of an investment relative to the market using a multi-factor model. Barra identifies patterns over time which are then used to assess the volatility of returns of the individual security compared to the market. The model looks to understand the co-movement of securities, or covariance, to help understand portfolio risk.

While these models are quite sophisticated, they have limitations that may not make them robust enough for certain types of portfolios. The size and complexity of the global equity market greatly increases the number of potential risk characteristics or factors, making it increasingly complicated for a model to accurately predict portfolio risks, in our view. Politics, economics, markets, currency and regulation are all factors to be considered.

In general, global equity models have fewer factors when compared to single-market models as clear relationships are harder to isolate. Furthermore, the residual error term for each individual stock has typically been higher for global models, undermining the value of the information. Despite their shortcomings for concentrated portfolios, quantitative global risk models can be rather robust when reviewing portfolios with more than 100 holdings, particularly if many of those holdings are large- or mega-cap companies and have low active share, or, in other words, represent significant positions in the benchmark.

For concentrated, unconstrained global equity managers who tend to run portfolios of less than 50 stocks across the market capitalization spectrum and typically have higher active share, the risk “information” for these models is often of limited use. Finally, while not specific to concentrated portfolios, the added complexity of commercial risk models also does not alleviate their dependence on historical price data. When correlation matrices shift, the basis for a model’s calculations can become blurred.

Nonetheless, when concentrated portfolios make up a larger pool of assets, such as in a multi-manager fund, the results can be more robust than when examining the portfolios individually.

Another approach to managing risk in global portfolios has been the use of limitations on sector and/or country variances from the benchmark. While such limits may aid client comfort levels and prompt associations with strong risk management, this approach presumes that there is a high level of commonality and, therefore, correlation between securities in a country or a sector. While correlations may become more elevated when macro events drive markets, they tend to be volatile over time. The assumption of high levels of correlation become particularly problematic with concentrated portfolios, and is further challenged when holdings are not, for example, mega-cap companies that can act as “benchmark proxies” for capitalization-weighted indices. Individual companies exhibit idiosyncratic characteristics. In a more concentrated portfolio, with fewer holdings in any sector or country, those company-specific characteristics are less likely to be meaningfully “averaged away,” driving lower correlation between a smaller group of holdings and benchmark returns. A group of three holdings in Japan, for example, particularly if they are not large bellwethers, would be expected to have lower correlations with the Japanese market than a group of 20 Japanese holdings.

Sectors themselves are broad groupings of companies. Companies assigned to a specific sector may have little in common. Industrials, for instance, is home to data and analytics companies and capital goods firms. Sector assignments can also change. In recent years, real estate stocks were moved out of the financials sector into their own sector, and several major technology stocks like Alphabet and Facebook were moved into a reconfigured communication services sector, which contains internet firms, media companies and wireless telecommunications providers.

In terms of country exposures, we expect that globalization, with significant increases in cross-border earnings, drives lower correlations among companies with the same domicile. As with sectors, certainly there have been periods of higher correlation within countries—think, for example of Japanese companies in the six months following Japanese Prime Minister Shinzo Abe’s election in December 2012. But broadly absent such macro-driven periods, we believe country of domicile should not be a particularly meaningful driver of returns. And again, a single global company based in a particular country in a concentrated portfolio should be less correlated to its home market than a broader group of companies from the same country held in a less concentrated portfolio.

Table 1: Country weightings in the MSCI World Index do not fully capture where a company’s revenue comes from

	Listed Exposure	Revenue Exposure	Difference – Listed vs. Revenue
United States	62.67	45.82	16.85
Switzerland	3.15	0.78	2.37
United Kingdom	5.68	3.93	1.75
France	3.86	2.51	1.35
Japan	8.01	7.10	0.91
Australia	2.41	2.20	0.21
Canada	3.46	3.27	0.19
Russia		1.06	-1.06
India		1.32	-1.32
Brazil		1.38	-1.38
China		7.27	-7.27

Source: MSCI. Data as of June 2019.

*MSCI estimates countries and regions based on final markets as reported by the company.

These countries and regions are weighted by gross domestic product within the reported geographic segments.

Each of these approaches (quantitative, and sector/country limits) may be effective for certain global equity portfolio managers. However, they may not be particularly well suited to managing risk in concentrated global equity portfolios.

AN ALTERNATIVE RISK FRAMEWORK FOR CONCENTRATED GLOBAL EQUITY PORTFOLIOS

Fundamentals-Driven Risk Management

An alternate framework for managing risk in a concentrated global equity portfolio rooted in fundamental research and selecting companies that do not share common markets or earnings exposure can overcome these limitations. It also should generate the diversification needed to manage overall risk without significantly affecting a best-ideas portfolio management approach. Modern portfolio theory—the theoretical basis for controlling risk through diversification—suggests that successful diversification requires the ownership of assets with uncorrelated price movements. And over the long run, stock prices theoretically should follow earnings.

It is through diversification, specifically selecting companies whose earnings streams are not highly correlated, that one can effectively manage risk in a concentrated portfolio. In practice, this approach means managers build portfolios with companies that do not share revenue and expense sources and do not compete directly. Crucial to successfully implementing such an approach is instituting a research process built on conducting fundamental in-depth research to support concentrated, high-conviction portfolio management.

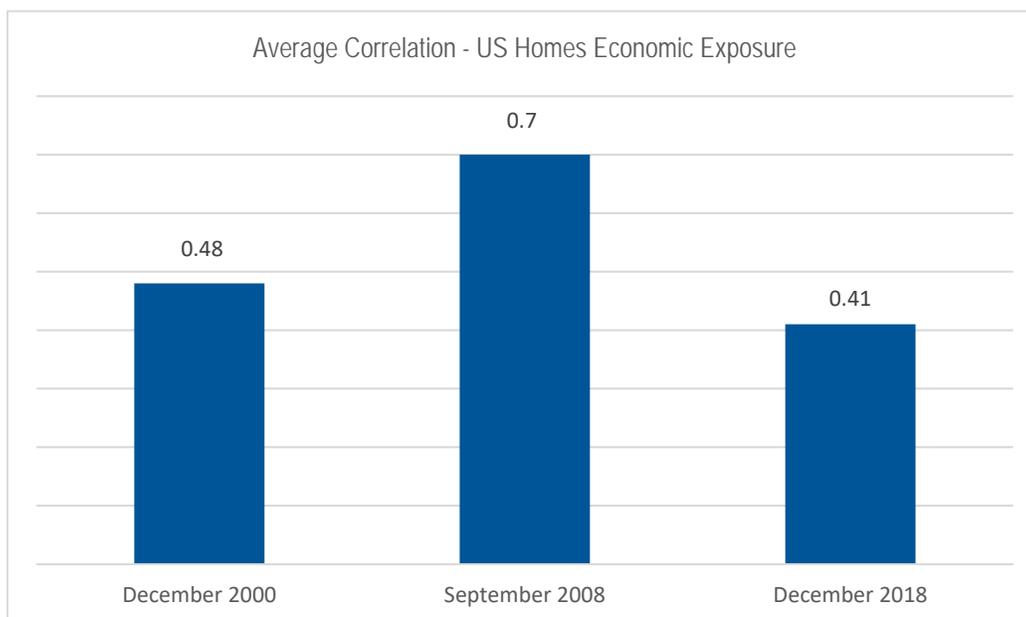
When discussing any potential investment opportunity, an investment team should look to identify a stock's fundamental drivers, or economic exposures, and whether that stock might have an economic overlap with any current holdings. This analysis must look beyond standard industry classifications or country listings to consider factors driving a company's earnings stream. Analysts and portfolio managers must then research a company's revenue drivers, customers, and competitors for similarities to those of other holdings. Expense drivers are subject to the same review. For example, if a potential industrials stock relies on petrochemicals as an input, the investment team would need to examine whether other holdings had the same exposure to underlying oil prices and to what degree.

Other factors included in the analysis are a company's competitive landscape and prospects for merger and acquisition activity. A detailed understanding of such factors is then crucial to ensuring that a resulting portfolio ultimately selects companies that do not compete head-to-head and do not share the same economic drivers. By ensuring that there are few overlaps, limiting the overlapping economic exposures, the resulting portfolio should be naturally diversified across industry groups, and its holdings should show lower correlation of returns over time.

Benefits of This Approach

By employing a risk management process based on company fundamentals and actively limiting exposure to an individual area of the market, or unique underlying revenue drivers, a portfolio manager can create a diversified portfolio in which stocks are selected to have a lower correlation than the broader market or an individual sector. This diversification and lower correlation can potentially limit the impact of broadly negative market, sector, or regional moves.

For instance, during the housing market boom in the early 2000s and the subsequent Global Financial Crisis, exposure to the US housing industry encompassed not only the companies that built homes, but the home improvement retailers, the banks that supplied mortgages and the various building materials suppliers. These companies are found across the market—in the consumer discretionary, financials, and materials sectors. Traditional risk models might not fully capture the exposure to the US housing industry presented in a diversified portfolio, given the range of sectors housing touches. As the housing market downturn rippled through the US economy in 2008, the stock prices of these companies moved tightly together. By understanding the way each of these various companies might have exposure to the housing market, and actively limiting the exposure the portfolio had to the industry through restricting the overlapping exposure, one could have insulated the portfolio from the impact of the housing market downturn.

Figure 4: Correlations between various housing-related stocks increased during the housing crisis

Source: FactSet, Franklin Templeton. Selected companies including Lennar, Home Depot, Whirlpool, and Wells Fargo.

As Figure 4 shows, housing-related stocks like Lennar, a homebuilder; Home Depot, a home improvement retailer; Whirlpool, an appliance maker; and Wells Fargo, a mortgage lender, were not highly correlated at the start of the housing boom. They only became more so when the crisis hit, and it was more obvious that the housing market was driving earnings at each of these companies—despite their disparate sectors and industries. The housing crisis also dismantled the notion that the US housing market comprised several uncorrelated regional markets—further underscoring how much of a role housing across the country was playing in each company's earnings stream. Correlations have since fallen back to levels of two decades ago, again highlighting the need to fully understand a company's end-markets to better understand where potential risks may lie.

This risk management framework also works when considering regional and country risk. As noted above, a company's domicile often has little bearing on where it derives its revenues or earnings. While traditional risk models will be based on where a company is listed to measure its country or regional risk exposure, a fundamental company-specific approach allows portfolio managers to understand where a company's revenue and earnings are derived. A company classified as a UK consumer name, may in fact sell little to UK consumers. Instead, it may be at greater risk from a slowdown in international markets than in its home market. In fact, most companies in the MSCI UK Index get less than half their revenues from the United Kingdom.

Looking at standard MSCI country index constituents, about a quarter of US companies derive less than half of their revenues in the US. About 40% of Australian companies derive less than half their revenue in Australia, and in the United Kingdom, almost 70% of companies derive less than half their revenues from the United Kingdom.

The Brexit referendum and the stock price moves around it in 2016 further highlight the point that domicile is not always a comprehensive way to understand regional risk exposure in a portfolio. In Table 3, MSCI UK Index companies are ranked by their exposure to the domestic market and broken into thirds. The Top Third are the companies have the most exposure (on average 89% of revenues come from the United Kingdom), while the Bottom Third are the companies with the least exposure (only 4% of revenue on average). Those with the most exposure to the United Kingdom fared worse both before and after the Brexit vote, the third of companies with the least exposure outperformed the other groups.

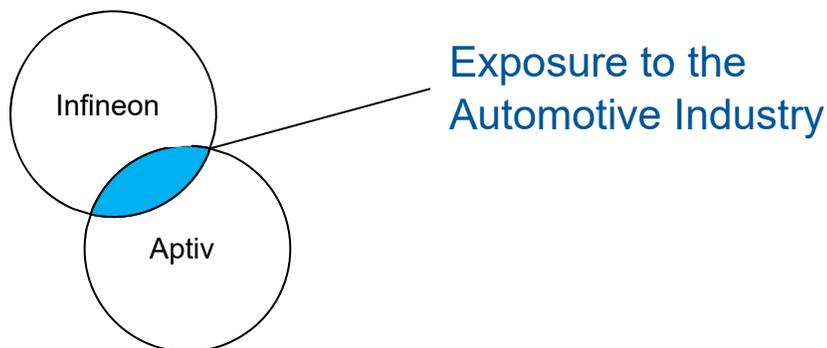
Table 2: MSCI UK Companies with the least exposure to the United Kingdom outperformed before and after the Brexit vote

	UK Revenue Exposure (Avg Wt.)	Pre-Brexit Return (December 31, 2015 - June 23, 2016)	Post-Brexit Return (June 24, 2016 - December 31, 2016)
Top Third	89%	-4%	-6%
Middle Third	28%	0%	18%
Bottom Third	4%	12%	20%

Source: FactSet

The framework outlined here compels analysts to truly understand how companies work and where the risks to their businesses may lie. In the end, a deep understanding of all facets of a company's business and industry can foster greater dialog between members of the analyst team as they grapple with how companies in disparate industries may have exposure to common markets.

Take, for instance, a semiconductor company like Infineon Technologies that derives about 40% of its revenues from the automotive industry, supplying the chips used in more advanced automotive systems, and an auto parts supplier like Aptiv making active safety features. These are companies in two different sectors—information technology and consumer discretionary—but with common end-markets. It is crucial, therefore, for both the technology analyst and the consumer goods analyst to fully understand the dynamics in the auto sector and how and where each of these companies fit within the sector. Below is a visualization of these companies' overlapping end-market exposure.



Importantly, in this approach, risk management becomes more forward-looking. Companies are dynamic and understanding how they are evolving helps to ensure that the analysts and portfolio managers recognize when a company that started off serving one industry begins to have greater exposure to an unrelated area that may overlap with an existing portfolio holding. Those changes should naturally spark discussion about where the future risks to the portfolio may lie as businesses change and develop.

Case Study: Umicore – from mining company to clean technology for the auto industry

Umicore helps illustrate how this process works as companies evolve. The Belgian company's roots go back almost 200 years. It started off mining zinc, copper, cobalt, and other metals, but in the 1990s sold its mining assets, and increased its investments in precious metals products and applications and advanced materials. Then in 2005, Umicore bought a business that makes materials for automotive catalytic converters. Umicore has continued to evolve over the past few years and now has three main business lines:

- Catalysis—primarily platinum substrate materials for automobiles and heavy-duty diesel trucks.
- Energy & Surface Technologies—primarily cobalt materials for rechargeable batteries. This business initially focused on batteries powering consumer electronics, but now focuses on hybrid and electric car batteries.
- Recycling—primarily refining mining and industrial output back into a variety of metals. Umicore also has built a large pilot plant to recycle hybrid and electric car batteries.

Although Umicore has a global business, with 60% of its revenues earned outside of Europe, the Barra risk model and assessment of geographic exposure based on domicile indicate its geographic exposure is Belgium. And while the company is in the materials sector, and a Barra model classifies it in the “Other Materials” industry, there clearly are several other drivers for the business, most notably the automotive industry.

UMICORE: Estimated portion of revenues from auto end-markets

2005	22%
2018	57%
2028	69%

Source: Franklin Templeton Estimates

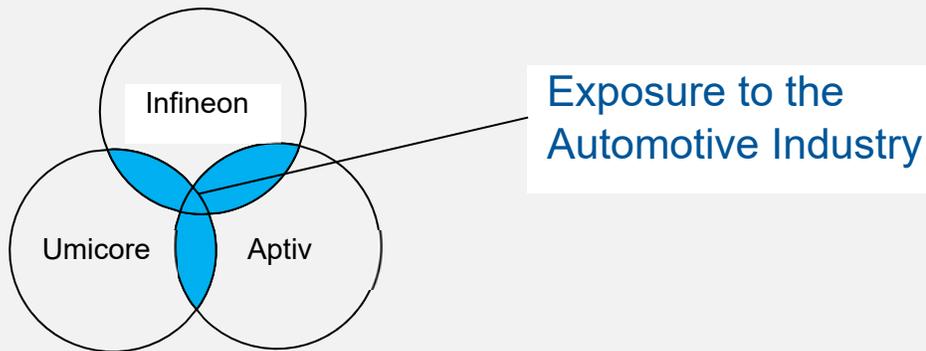
In the past, it may have been reasonable to consider Umicore a “materials” company, bringing exposure to precious metals prices to a portfolio. The chart below shows a fairly high correlation between Umicore’s share price and a basket of precious metals prices most relevant to its business at the time. But as the company’s exposure and expectations for future growth became more tied to its auto business, and less tied to swings in commodity prices, the correlation broke down.

Umicore's correlation with precious metals has broken down as it focuses more on automotive markets



Source: FactSet

Ultimately, if Umicore were to be added to a portfolio including the auto parts supplier Aptiv, and semiconductor company Infineon, mentioned above, one would need to consider overlapping exposure to the auto industry coming from Umicore as well.



LIMITATIONS OF THE FRAMEWORK

As with all frameworks and models, there are limitations that a portfolio manager must be cognizant of when putting the approach into practice. Stock specific risk is not mitigated. While in-depth analysis and a strong research culture can minimize the risk of unexpected company-specific surprises, they can and do occur on occasion. New regulations can affect businesses in unexpected ways; or management's expectations for a merger do not fully materialize as forecast. A sharp drop in an individual stock has the potential to undermine relative performance in the short term. The individual stock issue should be isolated within the larger portfolio, however, given the focus on limiting overlapping exposures. And over longer time periods, these issues should have only a temporary impact on portfolio performance.

Second, the approach also may restrict portfolio gains in strong markets, particularly if the concentrated portfolio actively limits exposure to market segments that look overly frothy, but that momentum continues to push higher.

Style shifts and macro-driven markets can also pose challenges—be it a shift from growth to value or vice versa, or a period where the political or economic environment holds greater sway. In these instances, individual stock fundamentals may become less important drivers of returns than much broader macro factors, at least for a short period. In these periods, the use of quantitative risk models may help to provide more meaningful insights.

Finally, because this risk management approach requires an assessment of overlapping exposures, it is more difficult to implement for portfolios made up of companies with many disparate business lines. This is particularly true if the various business lines have several different underlying exposures that may drive the share price at different times. In such cases, identifying the most meaningful overlapping exposures in the portfolio becomes muddled.

Instead, the approach should work most effectively in managing risk in portfolios constructed with companies that are either “pure play” businesses, or that operate in a small number of complementary businesses. A natural outgrowth of identifying these types of businesses may be owning some companies that are down the market cap spectrum.

Do smaller companies have more focused business models?

It stands to reason that smaller companies are more focused. At the extreme, an entrepreneurship is less likely to be a conglomerate. But certainly, there are large, focused companies, such as Visa or Coca-Cola. And corporate structure, or the number of divisions or reporting lines, is not necessarily indicative of how focused a company is in a single end-market.

For a more quantitative approach, we used FactSet's RBICS classification system, which breaks down each company's business into about 750 industries. Using this data, larger companies are shown to have products in more underlying industries relative to smaller companies.

MSCI World	
<i>Average Number of Industries per Company</i>	
MSCI World Large Cap	4.01
MSCI World Small Cap	2.81
MSCI World Largest 100 Companies	5.76
MSCI World Smallest 100 Companies	3.22

Source: FactSet RBICS Classification

For this exercise, to eliminate companies that may be more small-cap in nature, we excluded companies with market cap of less than US\$2 billion.

Perhaps because companies down the market-cap spectrum are more focused, and tend to be more idiosyncratic in nature, they also tend to have share prices that show lower correlation to each other.

As the table below highlights, the 100 stocks with the largest market capitalizations in the MSCI World Index have higher correlations on average than the smallest 100 stocks (again with a US\$2 billion market cap cutoff). That would suggest there is often more opportunity for diversification through stock selection among companies down the market-cap spectrum. A global concentrated portfolio using the above approach falls in the middle of the range as the process should lead the portfolio manager to mid-cap to large-cap stocks that can be more easily isolated from one another.

Table 3: The bigger stocks in a benchmark tend to be more correlated with each other; smaller constituents tend to be less correlated

	Average Correlation	% of Correlation Pairs in Range			
		<0.0	0.0 – 0.25	0.25 – 0.50	> 0.50
Concentrated Portfolio	0.27	3%	43%	48%	7%
MSCI World – Top 100	0.33	1%	29%	60%	10%
MSCI World – Bottom 100	0.20	12%	50%	29%	8%

Source: FactSet, Franklin Templeton

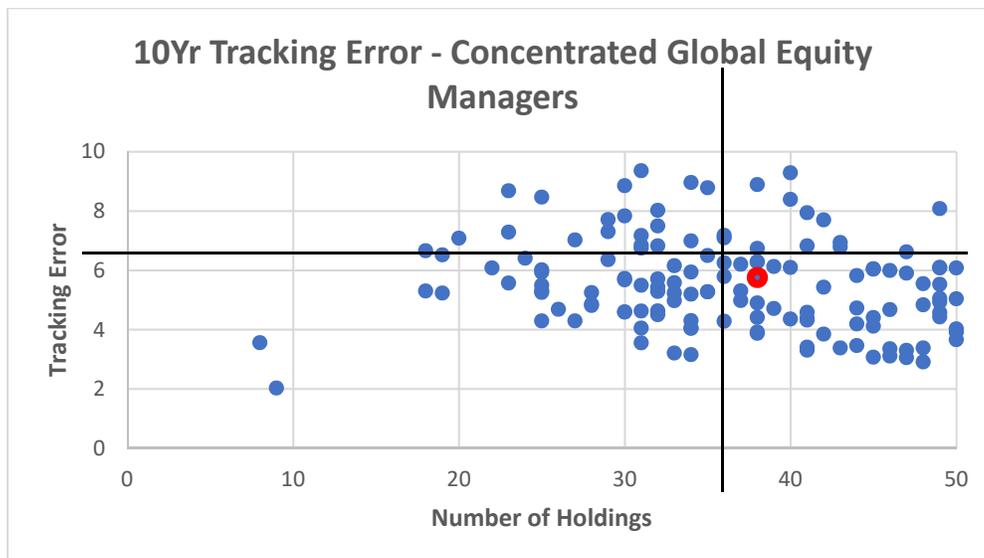
In general, these “purer play” companies tend to be idiosyncratic in nature, making it easier to actively minimize the overlapping exposure they have with other areas of the market. More diverse companies make this analysis more difficult and can introduce greater complexity into the process.

CONCLUSION

Concentrated portfolios typically have higher active share than those with a greater number of holdings and therefore may present added risks. With these greater risks, however, comes the opportunity to generate higher levels of alpha since there is a trade-off between diversification and potential excess return generation. To the extent that investment managers can balance the quest for alpha with a tolerable level of risk, they can be increasingly effective in helping investors and institutions meet their investment goals.

Going back to that earlier figure on tracking error, a concentrated global portfolio created using this risk management approach has an average tracking error over the past decade compared to its broader peer group. The portfolio has not traded significantly increased risk for higher alpha.

Figure 5: 10-Year tracking error for concentrated global equity managers, revisited (as of March 2019)



Source: eVestment. Universe: All Global Equity (excluding REITs, Small Cap, Sector Funds).
Concentrated managers have ≤ 50 holdings
Chart capped at 10% for scale

A risk management approach tailored to concentrated, global portfolios that makes use of the concepts that underly risk management—namely diversification and correlation—can overcome the limitations of standard risk models through a thorough analysis and comparison of the fundamental factors that should underpin all investment decisions.

By seeking to construct portfolios with companies that should exhibit a low degree of earnings correlation and that avoid direct competition, resulting in limited overlap of economic exposures among holdings, a concentrated portfolio of fewer than 50 stocks can be appropriately diversified while enhancing the portfolio's potential to deliver alpha over a full market cycle.

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