Brown ADVISORY
Thoughtful Investing.

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BEYOND BOTTOM-UP

Fundamental investing is a contest of advantage: informational, analytical and behavioral. If investors can gather information and develop insights about companies more effectively than others, they will have the advantage. If they can do it consistently, it may become a formula for long-term success.

Understandably, investment firms commit substantial resources to fundamental research. These efforts to achieve informational advantage are broadly referred to as "bottom-up investing" due to their focus on primary information gathering and ground-level analysis. Firms hire and develop talented analytical minds to pore over every quarterly earnings report, public SEC filings and comments from executives. These analysts crisscross the globe to meet with company management and visit factories and distribution centers. They survey customers to learn whether those customers are delighted, satisfied or ready to jump ship. They get up in the middle of the night for conference calls, just to hear from key suppliers of the companies in their cross hairs.

At Brown Advisory, we focus a great deal of energy and resources on fundamental research, with a singular goal of gaining an informational advantage about companies so we can make smart investment decisions and beat the market and our competitors.

Good investment firms learn quickly from each other and, over time, it becomes more difficult to squeeze informational advantage out of research techniques that are widely practiced by many firms. Therefore, we are constantly seeking to innovate and bring additional perspectives into our fundamental research—to go "beyond bottom-up" investing in our quest to generate outperformance for our clients.

BEYOND BOTTOM-UP

The following are ways we seek to identify additional risks and opportunities outside traditional analysis:

- Investigative research
- ESG analysis
- Quantitative risk analysis and reporting
- Behavioral analytics

TIM HATHAWAY, CFA
Director of Equity Research

INVESTIGATIVE RESEARCH

In his book *Snow Crash*, Neal Stephenson wrote about the immense value of being able to "condense fact from the vapor of nuance." We certainly find this to be true in our fundamental research efforts, and we often need to pull together qualitative information from secondary sources on highly specific topics—from field-level experts, customers and channel partners, and from our valued relationships with our board members, private equity and venture partners, external investors, and clients with knowledge in relevant fields. We need to synthesize all of this information into cohesive insights - to condense fact from the vapor of nuance.

To address this need, we created the role of investigative analyst on our research team to serve as both a conduit and lightning rod for the flow of potential qualitative information that can help us make better decisions about the companies we consider for our portfolios. An investment firm that we hold in high regard had shared with us the benefits of such a role on its own research team and, based on that firm's experience, we gained confidence that the idea could be effective for us as well.

This role is not focused on a specific sector, but rather seeks to use broadly applicable investigative skills to answer complex questions about specific companies and relevant industries. The analyst needs to gather and synthesize data from secondary sources as well as primary interviews, so the role requires strong networking abilities, a personable and charismatic demeanor, the ability to understand and interpret data, identifying commonalities and connections between trends, and active listening in pursuit of knowledge. In our search to fill this role, we were pleased to find Doug Falk—an internal candidate who had previously served the firm in other roles—who had all of the characteristics that we believed would allow him, as well as the team, to succeed.

We find that a disciplined approach is essential to pulling together disparate threads from multiple investigative sources.

In his time in the role, Doug has refined this approach to complete a wide range of assignments for the research team; early on, he worked primarily on "blue sky" projects to seek out explanations for unexpected near-term volatility, and over time, he has branched into more specific assignments, such as assessing the potential adoption rate of innovative medical devices, looking at the growth trajectory for train air-brake systems, and understanding regulatory impacts on the market for ethanol-based fuel commodities.

One particularly valuable project involved a company focused on devices aimed at heart valve therapy. The research team sought to understand the market's sentiments on this company's products, so Doug actively sought meetings with interventional cardiologists and cardiac surgeons in an attempt to hear firsthand about the device's efficacy from its primary users and to gather intelligence on patient outcomes from procedures using this device.

Before initiating any of his outreach, he began with a

Investigative Research Process:

1. **Receive assignment from a portfolio manager or sector analyst.**
2. **Perform baseline research to learn about the assignment, the industry, the key competitors, the key people, etc.**
3. **Develop an understanding of the problem or question we are looking to answer.**
4. **Prospect for subject matter expertise and interview authorities on both sides of an issue or a debate.**
5. **Set up meetings, discuss the issues and listen intently.**
6. **Report back, summarizing raw data and offering initial synthesis of findings.**

heavy dose of reading and research to get up to speed on the basic issues.

Doug then leveraged Brown Advisory colleagues to gain an introduction to a well-connected doctor, who in turn referred him to cardiac specialists who helped him build his knowledge about the history of heart valve therapy devices, their practical applications and the evolution of the market over time. Although new in the U.S., the company's products had been in wider use in Europe for a number of years, so Doug also made in-person contact with an expert in the U.K. and a connection with a Texas surgeon. To get a better understanding, one of these experts was an advocate for the device, and the other was a proponent of surgical treatment without it; these diverging views offered us valuable perspective. Finally, he traveled to a surgical conference in California and had additional meetings in Washington state to meet with U.S. practitioners—again, he actively sought users with negative predispositions about the device as well as advocates.

"I prepare carefully for conversations with industry experts – otherwise, I waste their time, and lose the opportunity to build long-term relationships." *- Doug Falk*

Overall, his investigation revealed that although there were a range of opinions about the device, there was a clear segment of the market that were strong proponents of its use and had found that the device allowed them to deliver better outcomes to their patients than they otherwise could.

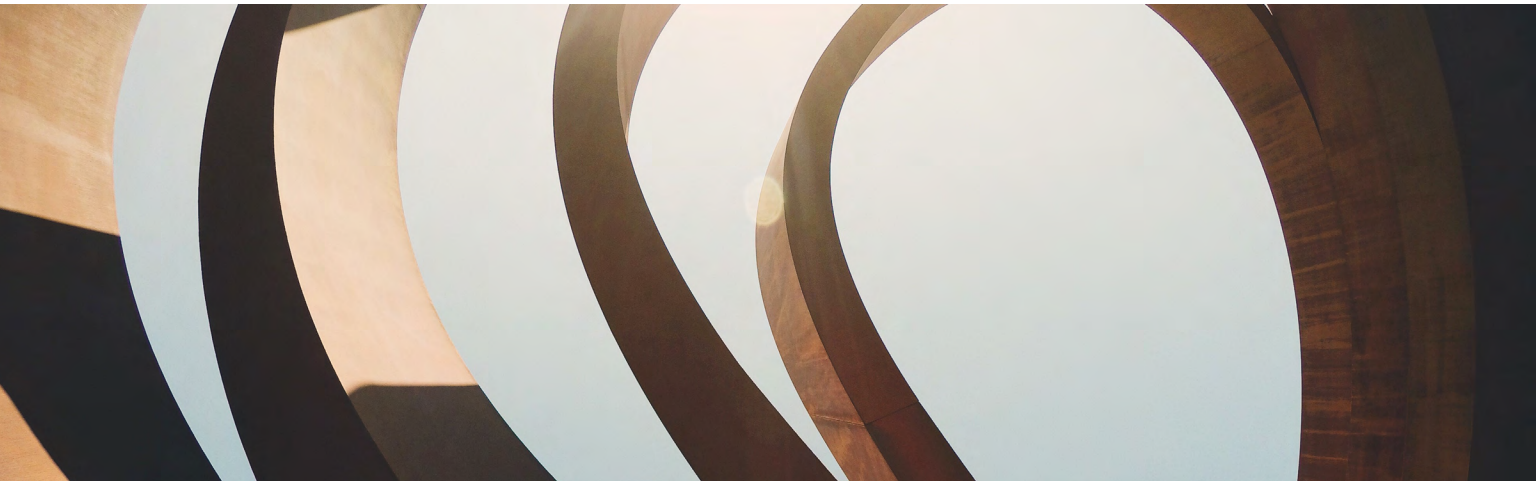
This example represents the role's intended purpose—partnering with the firm's vast network of professionals and leaders in their fields to generate qualitative information that can be used to supplement our deep in-house fundamental research. Informed in part by the intelligence Doug gleaned from power users of the product, Brown Advisory has meaningfully increased its stake in the company across several investment strategies. In the mosaic of fully understanding and properly valuing a company, the insights generated by this role help form a much more complete picture.

INTEGRATED ESG RESEARCH

We believe that sustainable investing is smart investing. ESG information is useful for more than aligning investment choices with a client's values; we have found that this information can be extremely helpful in identifying company-specific risks and in highlighting drivers of a company's future growth that may not be readily apparent through traditional research. We believe that using ESG research to supplement our fundamental due diligence on a company can help us make better investment decisions. And because our ESG research helps us look at companies from a different angle than most other investors, we believe our efforts can provide us with an informational advantage.

Our approach to ESG research is consistent with our approach to research in general: We seek to gather relevant data from secondary sources, combine it with our own primary research and interviews, and bring in a dedicated analyst to synthesize all of this information in a manner that is useful for investment decisions. Our process was developed and refined by the team that manages our Large-Cap Sustainable Growth Strategy—Portfolio Managers Karina Funk and David Powell, and ESG Research Analyst Emily Dwyer. Today, we use this process to manage several other equity and multi-asset strategies, and we use a similar approach to manage our sustainable fixed income strategies.

In her role on the Large-Cap Sustainable Growth team, Emily coordinates a multistep research process that includes a formal ESG Risk Assessment report on companies in our portfolios and companies that we are considering for purchase. This report mines multiple databases and seeks



to document the various sustainability risks associated with a potential investment, including corporate corruption, environmental liabilities and potential risks to reputation due to controversial activities. The report also seeks to provide some context regarding the materiality of each of these risks for the company over time.

Our use of the ESG Risk Assessment tool has expanded greatly in recent years. Today, we evaluate all of the companies we hold in our equity strategies, as well as companies in our pipeline of potential investments—well over 300 assessments in total each year.

We believe that interpretation of data is crucial in ESG research. We use data from third-party research providers but supplement this data with primary topical research, company-specific research and, in some cases, interviews with executives, customers and suppliers about issues that may be material to the firm in question.

"With our ESG research, we try to cut through the noise and dig deeper. We separate real business risks from issues unrelated to a pure investment decision." *- Emily Dwyer*

As an example, we hold a position in Taiwan Semiconductor (TSM) in the Brown Advisory Global Leaders Strategy. As part of their investment process, Portfolio Managers Mick Dillon and Bertie Thomson always seek to ensure that they understand how a company's ESG risk profile may impact its business model. In this case, Taiwan's regulatory environment posed a risk to the company; the country's strict water rationing policies exposed semiconductor makers like TSM to increased costs (making semiconductors is an extremely water-intensive process). We find, however, that managing ESG risks can be just as important as the presence of the risk itself, and TSM responded to this challenge by becoming a leader in water management. It continues to improve its industry-best water recycling rate through a variety of innovations and seeks a minimum recycling rate of 85% (and 90% at its newest facilities). The company turned this risk into an opportunity for leadership—giving the portfolio managers another reason to feel comfortable owning the stock.

Sustainable investing is one of our firm's strongest growth drivers. More and more of our new and existing clients—individuals, families and institutions—focus on this issue and look to us for solutions. This hands-on approach ensures that we are not simply relying on external ratings and data providers for making sustainable investment decisions. We have a true ESG research framework that lets us build portfolios with confidence. We believe that our research efforts have helped us gain a voice in the broader sustainable investing conversation occurring across our industry. Most importantly, we believe that these additional layers of ESG research give us a powerful foundation for steering capital toward stronger, more robust companies that are built to last.

QUANTITATIVE ANALYSIS AND INDEPENDENT RISK REPORTING

Technology is disrupting industries across most sectors and industries—the investment industry is no exception. Innovation has ushered in a new era of analytical investment tools and resources, and while the fundamental principles driving the stock market are still as true as ever—business models still drive earnings, and earnings still drive long-term valuations—we can now benefit from technology that gives us greater visibility into the various exogenous risks that affect our portfolios and portfolio holdings.

Our portfolio managers have full autonomy over the institutional strategies they manage, and they need and want every scrap of information they can get to help them manage the balance of risk and opportunity for our clients. On the risk side, our analysts' fundamental research helps them reduce the probability of a calamitous stock-specific event; likewise, our independent risk monitoring and reporting helps reduce the potential blowback from a calamitous market or economic event.

Risk monitoring is coordinated within the equity division with Research Analyst Erin Cawley working in tandem with senior team members. Together, this team uses a combination of objective multifactor analysis and subjective judgment to examine the composition of our portfolios and shed light on the various risk exposures present in those portfolios. Portfolios created with fundamental research may unintentionally develop a particular sensitivity to things like rising interest rates, volatility in a specific sector, market beta, or various other factors that have nothing to do with the bottom-up reasoning that drove our individual investment decisions. This monitoring process has been successful in helping us better understand the risk concentrations in our portfolios. If, for example, one of our strategies has a higher-than-expected concentration of growth exposure or currency exposure, awareness of this fact allows the portfolio manager to make decisions that may gradually reduce those

"This information shows our risks—both intended and unintended. Once we can see it objectively, it becomes easier to respond." *- Erin Cawley*

exposures. The manager's investment philosophy and process do not need to change, but he or she can nonetheless migrate the portfolio's exposures in a desired direction.

For example, the managers of one of our strategies have chosen to avoid owning one of the largest constituents of their strategy's underlying benchmark. Using this reporting, we are able to see the impact of that avoidance and how it redistributes risk to other areas of the portfolio, creating concentrations of risk that would not have been visible otherwise. Guided partly by the risk data, the portfolio managers reallocated capital. By simply shifting the size of a handful of positions, they meaningfully impacted risk exposures without the need for for wholesale changes to the portfolio's roster of companies.

Interestingly, by using this analysis to aid our decisions in existing strategies, we have realized how effective it can be in helping us create entirely new solutions for clients. Currently, Erin is helping develop a series of customized portfolios that seek to deliver our clients specific outcomes such as income, downside protection or low tracking error vs. a specific benchmark. Starting with the pool of companies in our equity portfolios, Erin helps the portfolio manager leverage our risk-monitoring approach to select and size names, ultimately leading to portfolios that are tailor-made for their intended purpose.

BEHAVIORAL ANALYTICS

What does tennis player Andy Murray have to do with investing? Ostensibly, nothing. To look deeper though, tennis and portfolio management both require skills that are seemingly difficult to coach. After years as a competitive player but a perennial runner-up, Murray's fortunes changed when he began working with former tennis great Ivan Lendl as a coach. Murray went from being a top-four competitor to winning various tournaments and two Olympic gold medals. He became the first British tennis player to win Wimbledon in over 75 years and the oldest first-time #1-ranked player in tennis history. Lendl's influence as a coach helped Murray identify weaknesses and behaviors that were limiting his performance and helped him unlock his elite potential.

We believe we can employ a coach in much the same way to help our portfolio managers identify persistent behaviors and actions that can detract from a strategy's performance or success. To address this risk, we have partnered with an external firm to objectively examine our behaviors and biases. This foray into behavioral finance has become another facet of how we think beyond fundamentals.

One of the most common pitfalls identified in behavioral finance is loss aversion. The fear of losing market gains or client capital often outstrips the desire for an equivalent gain. For example, studies repeatedly show that subjects being given two items and having one taken away are more greatly impacted psychologically than subjects who are simply given one item, despite no difference in the outcome for these subjects. There are other behavioral pitfalls as well, but the point is that investors—all investors—are human, and they can make human mistakes when selecting securities, sizing positions in a portfolio and making decisions after they have built an emotional connection to a company.

The firm with which we work combines its own relevant experience—its principals are former institutional asset managers and career financial technology professionals themselves—with innovative software to accomplish this task. With their help, we analyze the thoughts and behaviors of the participating portfolio managers. Some of our managers keep daily digests of their thoughts about stocks and send them to this firm, which then looks at both the actions and nonactions our managers take on those names. If the managers execute an idea, it typically triggers an after-action review to gauge the efficacy of the life cycle of the trade—from addition to the portfolio to sizing to exit timing. For the nonactions, the managers are given weekly digests of their thoughts for evaluation after the fact. For portfolios with multiple managers, this serves as a mechanism to potentially turn thoughts into actions. When the managers compare thoughts about a company and see that they both thought about it several times but did not escalate it, this may become an impetus to pursue action on that name. (In the table on the next page, we list some of the behavioral risks that this analysis seeks to address.)

Additionally, this firm has pored over years of historical trades for several of our strategies and regularly refreshes this analysis with our current portfolio activity. We now capture

Behavioral Risk	Considerations	Hypothetical Insight
Relative Hit Rate	What percentage of our investments are winners and what percentage are losers?	We picked the right stocks in the portfolio
Entry Timing	Are we effective in gauging an appropriate time in which to begin building a position? Did we buy the stock too early before it had fully reached an attractive buying level? Did we buy too late and miss potential upside?	Initiates position before price trough
Scaling Into a Position	Did the rate at which we bought the security hurt total performance? Should we have immediately bought the full position size we identified as our maximum? Or were we more effective buying in smaller lots to gradually build the portfolio?	Slow scaling into position caused underperformance compared to buying full position upfront
Sizing	Did the ultimate percentage of capital allocated to a security impact the degree to which it outperformed or underperformed? Did we own too much? Not enough? What size of position tends to perform best for the portfolio?	Did not own enough of top pick
Scaling Out of a Position	What impact does our sell discipline have on the portfolio? Did a decision to exit in one rapid divestment help performance more than gradually unwinding a position?	Eliminating position at one time preserved gains

and disseminate this information in frequent reports that help our managers see objectively how their biases show up in their decisions and in their results.

To be clear, this information does not dictate our process or tell us when to buy or sell a security. Rather, it is an objective third party that highlights things like positions and market movements for us to look at more closely. Over time, this can help us become better at our jobs as managers. This information can connect thoughts with actions, break portfolio inertia by highlighting behaviors and help us fine-tune our approach to portfolio management. For example, as a result of our behavior work, the aforementioned Global Leaders Strategy now holds to a "drawdown rule": Any stock that falls by more than 20% is subject to immediate review, and standing pat is not an option at that point. Either they will add to the position or sell it entirely—the binary choice forces them to reconfirm their belief in the stock.

In tennis, exceptional players have innate skill, but they can further refine their stroke through practice. Likewise, our portfolio managers have a wealth of experience and knowledge they bring to their work, but our behavioral work offers them the opportunity for incremental improvement.

CONCLUSION

All of the efforts highlighted in this paper help to reinforce why we believe in the power of active management as a long-term strategy for compounding investment capital. Many in our industry are seeking "holy grail" solutions—the perfect system or formula that can single-handedly propel an otherwise passive portfolio to long-term outperformance. While passive solutions are wonderful mechanisms for duplicating market performance at low cost, we believe that one can beat the market over time with a combination of objective data and subjective human insight. We hope that the processes we have highlighted in this article—investigative, ESG, quantitative and behavioral research—become further evidence of what will contribute to our effort to go "beyond bottom-up" with creative steps that ultimately lead to better results for clients.

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(800) 865-4045

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