FEG INSIGHT

JULY 2019

BOOM TO BUST TO RECOVERY

The Evolving U.S. Energy Landscape

CHRISTIAN BUSKEN
Senior Vice President
Director of Real Assets

F·E·G® investment advisors

We face an interesting paradox in the U.S. energy sector, which has become a victim of its own success. Over the past decade, the adoption of new technologies led to record-levels of oil and gas production, making the U.S. one of the largest producers of hydrocarbons in the world. But this rapid growth led to massive distress, dislocations, and bankruptcies that created turmoil throughout the U.S. energy markets.

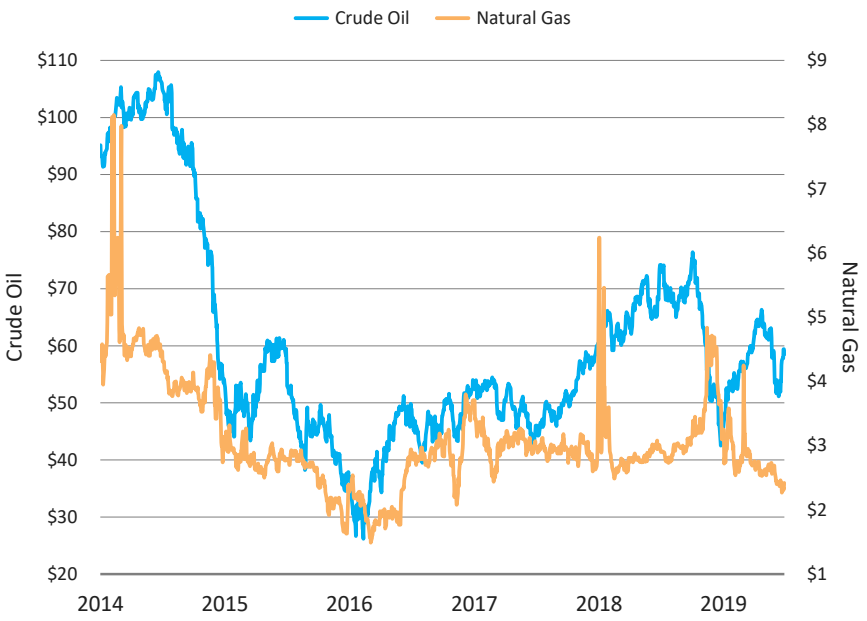
"Cycles of shortage and surplus characterize the entire history of oil."

—Daniel Yergin, The Prize: The Epic Quest for Oil, Money & Power

Nearly five years have passed since oil prices peaked at $107/barrel in June of 2014. However, many will recall the precipitous decline in the fourth quarter of 2014, following OPEC's announcement on Thanksgiving Day that it would not cut production, which sent shockwaves through the oil markets and prices into a tailspin. January 2015 meetings with private energy groups in Houston reflected a sense of denial—"This is a temporary decline and most definitely will not last" seemed to be the mantra. A year later, in early 2016, oil prices had fallen into the mid-$20/barrel range, over 75% lower than mid-2014 levels. While prices have recovered from the lows of 2016, volatility persists. Oil prices declined 38% in the fourth quarter of 2018 ($75/barrel to $45/barrel) and then rose 32% in the first quarter of 2019. As of this writing, prices were down 20% from earlier this year, trading in the high $50/barrel range.[1]

WHILE PRICES RECOVERED, VOLATILITY REMAINS

PRICE OF CRUDE OIL AND NATURAL GAS



Data source: Energy Information Agency, As of June 30, 2019

Over the past several years, the toxic combination of lower oil and natural gas prices and high levels of debt led to a wave of bankruptcies in the energy sector that continues today. Since 2015, 172 upstream producers have filed for bankruptcy with approximately $98 billion in aggregate debt, according to Haynes and Boone's Oil Patch Bankruptcy Monitor. Also during this period, 27 midstream companies and 178 oilfield services companies filed for bankruptcy.[2] Private equity was not immune to the downturn, with two high-profile private energy fund managers suffering significant losses.[3] While the number of bankruptcy filings has slowed in the past two years, debt levels remain high, with more bankruptcies likely this year, as the industry continues to struggle. Most recently, in late May 2019, White Star Petroleum (formerly American Energy Woodford, backed by Energy & Minerals Group), announced plans to file for Chapter 11 protection, citing low production volumes and higher-than-expected operational costs.[4] In the words of one private energy manager, "If energy companies do not have enough profitable drilling opportunities at $60 oil, don't have enough cash on hand, or have too much debt (or all three), getting on the path to ultimate profitability will be elusive."

BANKRUPTCIES AMONGST OIL SECTORS

	2015 - 2019 Number of Bankruptcies	Aggregate Debt ($ Billion)
Upstream Producers	172	98.5
Midstream	27	20.4
Oilfield Services	178	57.4

Data source: Boone's Oil Patch Bankruptcy Monitor, May 2019

"This [energy] revolution is transforming the United States. Fracking has unleashed more oil and natural gas than anyone thought possible. It is providing an abundance of domestic energy, helping to drive the rebirth of manufacturing and easing dependence on overseas energy peddlers."

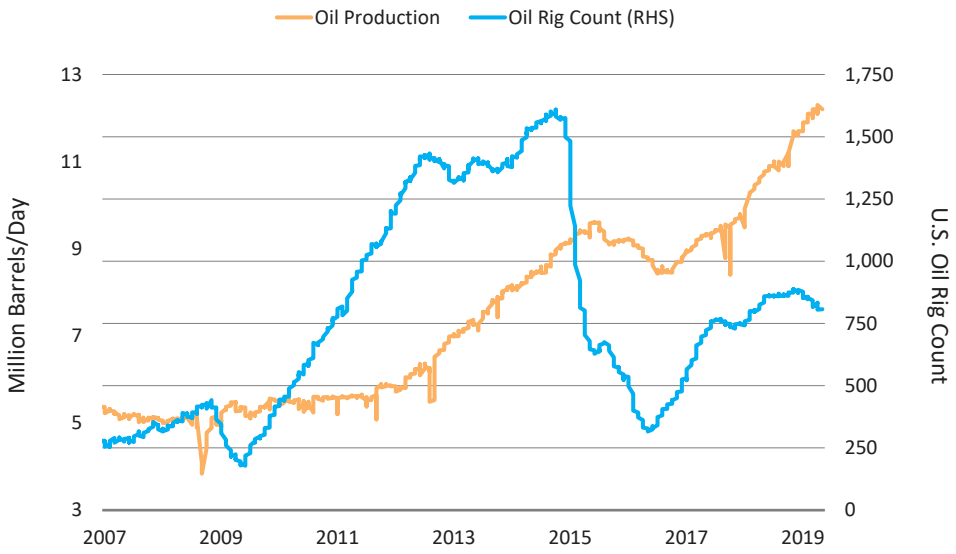
— Russell Gold, The Boom: How Fracking Ignited the American Energy Revolution and Changed the World

THE U.S. ENERGY REVOLUTION

Published in 2014, Russell Gold's book documented the key players and companies that drove what has become known as the U.S. Energy Revolution, which through hydraulic fracking and horizontal drilling led to U.S. emergence as the leading global producer of hydrocarbons. These technologies made previously inaccessible domestic oil and gas resources economically viable and altered the energy landscape. Perhaps not surprisingly, the book's release coincided with the peak in oil prices that same year. As a result of new technologies, since 2008, U.S. oil production has more than doubled and hit a record-high 12 million barrels/day in May 2019.[5] As shown in the U.S. Oil Rig Count & U.S. Oil Production chart, this record production is being accomplished with almost half the rigs in operation compared to five years ago, as wells have become more productive and companies more efficient. The U.S. now has abundant natural gas, oil, and natural gas liquids (NGLs) available for domestic consumption and export, something unthinkable a decade ago.

Somewhat paradoxically, the distress and dislocation in the energy sector over the past five years arose largely because of the U.S. Energy Revolution. With the widespread use of hydraulic fracking and horizontal drilling, energy companies utilized easily accessible financing (often as high-yield debt), to pursue aggressive drilling programs and were rewarded by Wall Street not for financial discipline but rather for growing reserves by "drilling at all costs." The massive growth in production led to a price collapse, and a wave of bankruptcies ensued.

U.S. OIL RIG COUNT & U.S. OIL PRODUCTION



Data source: U.S. DOE, EIA, As of May 3, 2019

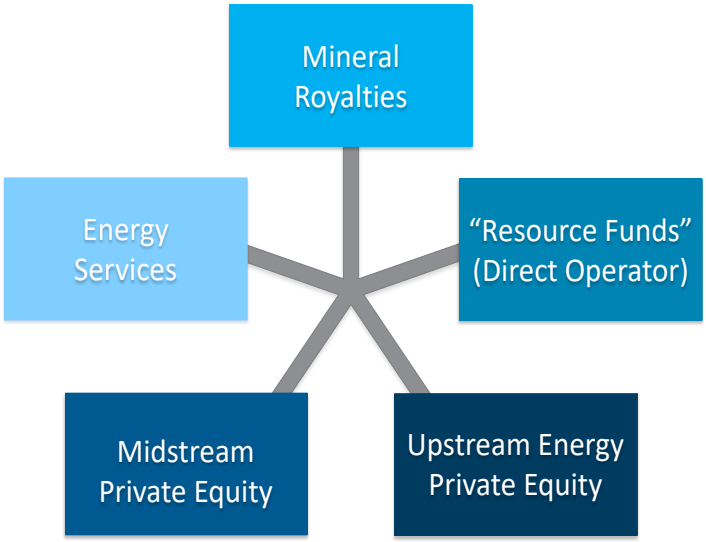
As FEG considers the energy sector in 2019, we see an industry characterized by unprecedented growth through technology application to drive record production and lower costs, while simultaneously recovering from the hangover of the most severe downturn in a generation.

Given this backdrop, how should investors approach investing in the energy sector?

PRIVATE EQUITY ENERGY—THE ROAD AHEAD

FEG recommends a broad range of investment strategies in private energy, all of which provide exposure to various parts of the energy supply chain and offer differing risk/return profiles. At one end of the spectrum, mineral royalties offer cash flow tied to production, without assuming exploration or operational risks, while energy services companies provide products used in hydrocarbon production and tend to be impacted by upstream production activity. The following chart outlines the five main strategies within private energy.

THE PRIVATE ENERGY OPPORTUNITY SET



Source: FEG

Due in large part to the commodity price downturn that began nearly five years ago, the private equity energy model continues to face pressures on multiple fronts, some of which were only recently recognized by investors. These issues are impacting all facets of the business, from capital raising to exits, and ultimately, potential returns for investors.

ISSUES IN PRIVATE ENERGY

PRICE VOLATILITY

As expected, year-end 2018 performance results for private energy funds showed markdowns in reserves and valuations, reflecting sharp declines in oil prices during the fourth quarter. With the strong rebound in oil prices year-to-date in 2019, we expect these declines should reverse to some degree when managers report their first quarter results. Nevertheless, investors in private energy are feeling the impact of volatile commodity prices.

SLOWING MERGERS AND ACQUISITIONS

With the precipitous decline in fourth quarter oil pricing, U.S. deal activity fell to just $1.6 billion during first quarter of 2019, a 10-year low. Many characterized the market as "frozen," an aversion to the energy sector and all things tied to oil and gas by institutional investors, limiting transaction activity. Public energy companies continued their efforts to preserve cash flow, resulting in minimal appetite for capital raises in the debt/equity markets. Total deal value decreased 93% from the same period last year.[5] Furthermore, the rally in oil prices did little to stimulate transaction activity in the sector. Subsequent to quarter-end, however, Chevron and Occidental Petroleum began bidding for Anadarko for $50 billion in total consideration, and many analysts expect that ultimate mega merger could be the impetus for more corporate consolidation.

INVESTOR PRESSURES

Many limited partners may be over-allocated to energy as a result of making large commitments to sponsors in late 2014 and 2015, yet receiving few distributions to date. Performance for energy funds that deployed capital during the downturn of 2015-2016 has been strong, but many deals remain unrealized. Given the generally poor performance of public energy companies since the commodity price downturn that began in late 2014, there is a sense that energy companies have been consumers of capital, with few returns to investors. Adding to these pressures, many of the limited partners in private energy funds historically included a high concentration of endowments and foundations. These organizations are facing pressure from student groups to reduce their hydrocarbon investments.

PRIVATE ENERGY MODEL

Traditionally, private energy managers pursued a model that involved creating small companies comprised of industry professionals (landmen, geologists, and CFOs) that acquire acreage positions, drill wells to establish production, and then sell (i.e. "flip") their acreage positions to publicly-traded companies after establishing "proof of concept." The natural buyers of private equity-backed energy companies, which included public Exploration and Production companies and upstream Master Limited Partnerships, are now either gone or not looking to acquire acreage positions. The decrease in oil prices combined with energy companies' movement toward greater capital discipline (preserving cash and paying down debt) resulted in diminished demand for assets held by private equity-backed firms. The outcome has been a precipitous drop in exits for private equity-backed companies, with 313 exits in 2017, 143 in 2018, and only 15 to date in 2019.[6]

Additionally, with the rise of "mega funds" in private energy, there is a glut of management teams and oversupply of assets for sale. By one estimate, there are over 400 private equity-backed portfolio companies (155 in the Permian Basin alone), with more than $100 billion of private equity (PE) dry powder currently.[7] The long-term sustainability of some of these PE-backed companies is questionable under the present model, which involves two-tiered fee structures (fees that carry to the management of the portfolio company on top of the 2% and 20% paid to the fund).

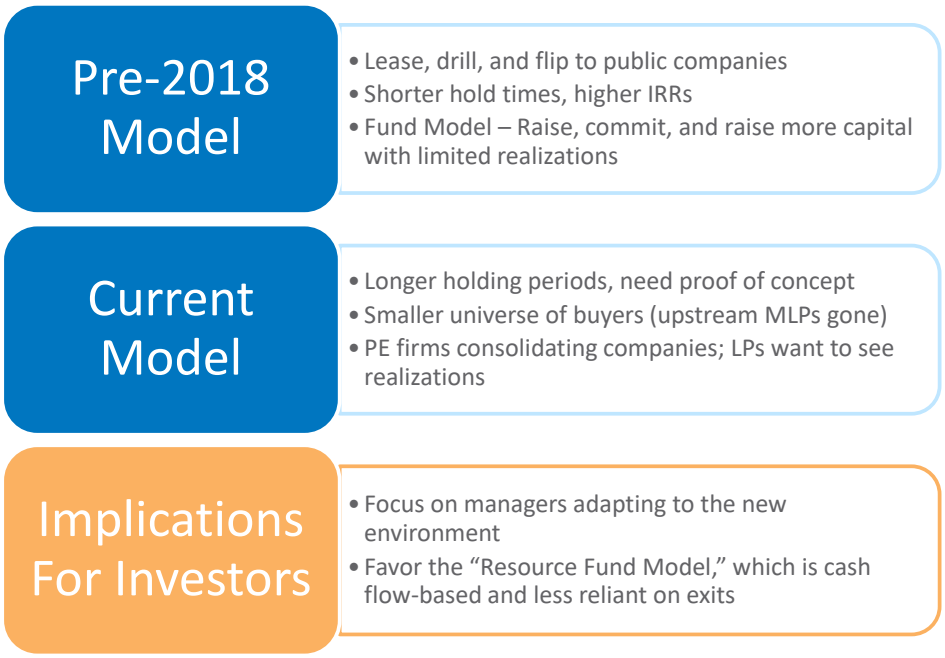
CONSTRUCTIVE FACTORS IN PRIVATE ENERGY

Despite these challenges, several aspects of the private energy model still provide attractive opportunities relative to public markets. For example, many (but not all) private energy portfolio companies have lower debt-to-capitalization ratios and a stable source of capital from their sponsors. Energy managers can invest in both oil and natural gas, as well as midstream infrastructure, providing a broad opportunity set and some diversification.

Additionally, private equity funds generally use hedging to mitigate commodity price downturns, which could offset some impact from volatile commodity prices. Also, due to their long-term structures, private energy managers are under no pressure to sell assets in a challenging market and will only selectively do so in situations that make sense.

Within private energy, the "operator fund" model, with its focus on acquisition and management of proven, developed, producing reserves is less reliant on asset sales and instead generates returns largely from production cash flow. This model has proven effective over multiple commodity price cycles, although these funds tend to be more directly impacted by commodity price movements, as was the case in fourth quarter 2018.

THE EVOLUTION OF PRIVATE ENERGY



Source: FEG

DOES THE RISE OF RENEWABLES SPELL THE END OF HYDROCARBONS?

While a full analysis of the renewable energy landscape is beyond the scope of this piece, the significant growth and widespread adoption of wind and solar is worth addressing. As the U.S. energy sector continues to evolve, FEG believes renewable energy may comprise an increasingly larger portion of the energy mix, but not necessarily at the expense of "traditional" energy sources. Rather, wind energy and utility-scale solar may likely replace retiring coal and nuclear power generation, with the future energy mix in the U.S. comprised primarily of a combination of natural gas and renewables. FEG sees the global economy continuing to transition to a lower-carbon energy usage, and as such, we continue to seek viable investment opportunities including renewable energy infrastructure, while cognizant that not all renewable strategies offer attractive, risk-adjusted returns.

"There's this narrative right now around the rise of renewables, and I think it's got a lot of legitimate points to it, but that doesn't always translate to an equal number of compelling investment opportunities."

—Christian Busken, "Garcia's Take: Can Energy Funds Regain Their Mojo", WSJ Pro: Private Energy, June 17, 2019

INCREASED USE OF RENEWABLE ENERGY

A decade ago, coal and nuclear were the leading U.S. electricity resources, generating 50% and 20%, respectively, of the nation's annual electricity. Over the past few years, however, natural gas, wind energy, and utility-scale solar PV have emerged as new leaders in the electric power sector. Natural gas electricity generation surpassed that of nuclear in 2006 and coal in 2016, supplying a third of U.S. electricity in 2017. Moreover, wind energy grew from under 1% of U.S. power generation in 2007 to over 6% in 2017. In every year since 2012, natural gas, wind energy, and utility-scale solar PV have together made up more than 80% of U.S. electric capacity additions.[8]

PROJECTIONS FOR ENERGY USE

The International Energy Agency's 2018 World Energy Outlook lays out different scenarios for world energy demand by fuel through 2040. These include the following scenarios:

1. No new regulations implemented related to carbon emissions globally
2. National targets associated with the Paris Accords are implemented
3. A more aggressive "sustainable development" scenario, in which the energy landscape is reconfigured to minimize total climate change.

In all three of these forecasts, natural gas consumption increases, and oil demand remains flat through 2025. The growing demand for natural gas reflects its abundance in the U.S. and its role as a relatively cleaner energy source, providing power in conjunction with renewable and other energy sources.[9]

RENEWABLE ENERGY POWERING UPSTREAM PRODUCTION?

Perhaps most noteworthy, Bloomberg reported in late 2018 that ExxonMobil signed an agreement with Danish renewable energy provider, Orsted A/S, in which ExxonMobil will buy 500 megawatts of wind and solar power for its operations in the Permian Basin, the fastest growing U.S. oil field. The deal was the largest ever renewable power contract signed by an oil company, according to the report. The wind and solar farms are being built in a region where electricity demand is soaring, as oil production grows. In an ironic twist, we now have renewable

energy projects supporting the power needs of a large, integrated oil and gas company. Given these types of dynamics in renewable energy and hydrocarbons, FEG views the futures energy mix not as an "either/or" proposition but rather a synergistic combination of both. [10]

IMPLICATIONS FOR INVESTORS IN 2019

As FEG considers the private energy opportunity set, we believe investors must be cognizant of the issues facing the "traditional" private equity energy model and seek out managers who are adapting to the current environment, based on the factors outlined above. The "old playbook" is unlikely to deliver the same return as in prior years. Volatile commodity prices are expected to continue based on supply/demand imbalances, geopolitical concerns, and actions undertaken by OPEC.

Following a multi-year downturn, the energy sector represents a contrarian play. Energy comprised approximately 5% of the S&P 500 as of early 2019, compared to 22% for information technology and 14% for healthcare. This 5% weighting compares to a 14% weighting in energy ten years ago. Energy is a cyclical business, and while we are likely beyond the lows and moving into the early stages of recovery from a generational downturn, valuations by most measures look compelling. In addition, energy companies are adopting greater financial discipline and less reliance on public markets for funding. Valuations reflect these challenges, creating potential for private energy managers to acquire companies at attractive valuations. As an example, one of FEG's recommended private energy managers focused on oilfield services has, over the past three years, purchased small companies in the sector for low single-

digit EBITDA multiples. Also, activist investors have become involved in energy over the past several months, with firms seeking to affect change at many public energy companies. Examples include QEP, Halcon, Pioneer, and Alta Mesa.

FEG sees several themes in energy that could present attractive opportunities. First, one implication of record growth in domestic hydrocarbon production is a need for infrastructure to process, store, transport, and export oil and natural gas to end users domestically and internationally. Midstream energy companies (Master Limited Partnerships and C-Corps) own and develop these assets, making them a particularly interesting place to consider for investment. Certain private equity funds focused on midstream could also be poised to benefit from this trend. Additionally, corporate consolidation will likely drive sales of non-core assets, which could be acquired by "operator funds." Finally, there is strong investor demand for royalty/minerals, making this area worth considering.

To summarize, the energy sector has gone from boom to bust, forging a path to recovery over the past five years, and FEG believes the current distress should create selective opportunities for investors who can navigate the changing environment.

Footnotes

[1]U.S. Energy Information Administration, last modified 2019, www.eia.gov.

[2]Haynes & Boone, LLP, May 16, 2019.

[3]Ryan Dezember, "From $2 Billion to Zero: A Private-Equity Fund Goes Bust in the Oil Patch," The Wall Street Journal, June 16, 2017, https://www.wsj.com/articles/from-2-billion-to-zero-a-private-equity-fund-goes-bust-in-the-oil-patch-1500210002.

[4]Becky Yerak, "White Star Petroleum Seeks Bankruptcy Protection," The Wall Street Journal, May 28, 2019, https://www.wsj.com/articles/white-star-petroleum-seeks-bankruptcy-protection-11559060599.

[5]U.S. Energy Information Administration, last modified 2019, www.eia.gov.

[6]Grey Rock Energy – First Quarter 2019 Letter.

[7]Grey Rock Energy – First Quarter 2019 Letter.

[8]U.S. Energy Information Administration, Short-Term Energy Outlook, May 7, 2019, https://www.eia.gov/outlooks/steo/.

[9]Lime Rock Partners, "On the Stranded Asset Hypothesis," May 2019.

[10]Chris Martin and Kevin Crowley, "Exxon Will Use Wind, Solar to Produce Crude Oil in Texas," Bloomberg, November 28, 2018, https://www.bloomberg.com/news/articles/2018-11-28/oil-giant-exxon-turns-to-wind-solar-for-home-state-operations.

201 East Fifth Street
Suite 1600
Cincinnati, Ohio 45202

513.977.4400
information@feg.com
www.feg.com

Cincinnati | Dallas | Indianapolis

Subscribe to FEG's communications at ***www.feg.com/subscribe.***

DISCLOSURES

This report was prepared by FEG (also known as Fund Evaluation Group, LLC), a federally registered investment adviser under the Investment Advisers Act of 1940, as amended, providing non-discretionary and discretionary investment advice to its clients on an individual basis. Registration as an investment adviser does not imply a certain level of skill or training. The oral and written communications of an adviser provide you with information about which you determine to hire or retain an adviser. Fund Evaluation Group, LLC, Form ADV Part 2A & 2B can be obtained by written request directly to: Fund Evaluation Group, LLC, 201 East Fifth Street, Suite 1600, Cincinnati, OH 45202, Attention: Compliance Department.

The information herein was obtained from various sources. FEG does not guarantee the accuracy or completeness of such information provided by third parties. The information in this report is given as of the date indicated and believed to be reliable. FEG assumes no obligation to update this information, or to advise on further developments relating to it. FEG, its affiliates, directors, officers, employees, employee benefit programs and client accounts may have a long position in any securities of issuers discussed in this report.

Neither the information nor any opinion expressed in this report constitutes an offer, or an invitation to make an offer, to buy or sell any securities.

Past performance is not indicative of future results.

This report is prepared for informational purposes only. It does not address specific investment objectives, or the financial situation and the particular needs of any person who may receive this report.

Private capital funds are speculative and involve a high degree of risk. An investor could lose all or a substantial amount of his or her investment. Private capital funds' fees and expenses may offset private capital funds' profits. Private capital funds are not required to provide periodic pricing or valuation information to investors except as defined in the fund documents. Funds of private capital funds may involve complex tax structures and delays in distributing important tax information. Private capital funds are not subject to the same regulatory requirements as mutual funds. Private capital funds are not liquid and require investors to commit to funding capital calls over a period of several years; any default on a capital call may result in substantial penalties and/or legal action. Private capital fund managers have total authority over the private capital funds. The use of a single advisor applying similar strategies could mean lack of diversification and, consequentially, higher risk.