May 9, 2018

Response of Bevis Longstreth

To RFI Regarding

Investment and Fiduciary Analysis of Prudent Strategies

For Divestment of Securities by Fossil Fuel Reserve Owners

A. General Information

1. Bevis Longstreth, 322 Central Park West, New York, N.Y. 10025
2. Website address: BevisLongstreth.com
3. For all communications, name and address as above. Email is blongstreth@mindspring.com Phone no. is 212 663-0576.
4. CV as follows:

April 3, 2018

CV of Bevis Longstreth

BEVIS LONGSTRETH retired as a Senior Partner in the New York-based firm of Debevoise & Plimpton in 1993. Mr. Longstreth joined the firm in 1961 and became a partner in 1970. In 1981, he was appointed Commissioner of the Securities and Exchange Commission and served until 1984, when he rejoined Debevoise & Plimpton. Mr. Longstreth has served in numerous capacities outside of his law firm over the years, including: member of the Board of Governors of the American Stock Exchange; Advisory Board to the Securities Regulation Institute, University of California, San Diego; Pension Finance Committee of The World Bank; Finance Committee, Rockefeller Family Fund, where for many years he chaired the Committee; the Administrative Conference of the United States; the Consultant Panel to the Comptroller General of the United States; trustee of Union Settlement Association, where for many years he chaired the board; trustee of The Nathan Cummings Foundation, where for a decade he chaired the Investment Committee; trustee of New School University, where he continues to serve on the Finance and Investment Committees; director of Symphony Space Inc. , where for many years he chaired the board; director of College Retirement Equities Fund; director of AMVESCAP, Ltd; director of Grantham, Mayo and Von Otterloo; Advisory Committee to Carbon Tracker Initiative, where he continues to serve.

Mr. Longstreth served as an adviser to the Project on Restatement of the Law Trusts -- Prudent Investor Rule and the Project on Principles of Corporate Governance at the American Law Institute. In addition, Mr. Longstreth is the author of numerous books and articles on corporate finance and investment, including Modern Investment Management and the Prudent Man Rule (Oxford University Press 1986), a book intended to shape fiduciary law in the management of capital. He is also the author of three historical novels (*Spindle and Bow, Return of the Shade, and Boats Against the Current* -- see website BevisLongstreth.com). Recently he has spoken and written on the subject of fiduciary conduct in regard to holding fossil fuel industry securities in portfolios. In March, 2018, he was named by Governor

Cuomo and Comptroller DiNapoli to the Decarbonization Panel, created to advise the Comptroller, as sole trustee of state pension funds, on holdings of fossil fuel company investments. He received a BSE from Princeton University in 1956 and received his J.D. from Harvard Law School in 1961. He served in the United States Marine Corps from 1956 to 1958. Mr. Longstreth resides in New York City.

Of relevance to this writer's response is the interview of him by David Sassoon, dated June 8, 2016, titled "Will This Retired Lawyer Open the Floodgates of Divestment from Fossil Fuels?", appearing in the on-line News publication *Inside Climate News*.

5. I would be able to provide legal analysis and conclusion regarding application of fiduciary duties to questions of divestment of securities of issuers engaged in activities directly or indirectly involving carbon emissions.

B. Information Requested Regarding RFP and Investment Analysis Services

1. **A big, and perhaps the biggest, challenge in selecting such an adviser is the avoidance of conflicts of interest that could impair or tilt the judgment of the adviser. The typical source of conflicts is found in the adviser's duties to other clients. However there could be other sources, including the firm's own investments, those of its partners or other leaders and simply a deep-seated bias toward oil and gas stemming from its having been for a century and more a very successful source of investment return. The importance to the state, the country and the world of a large, highly prominent and well regarded pension fund such as the one involved here will be recognized by potential advisers and give to conflicts an extra urgency. Look for a firm that makes it transparently, overwhelmingly, clear that it has disentralled itself from past investment thinking. (e.g. so impressed with the past successes of the whaling industry that it can not free itself from imagining its continuing growth and success.)**
2. **Ask each potential adviser whether they agree or disagree with the chart referred to as Exhibit 1 (which I will have to email to Scott Evans, since I can't seem to scan for this memo), prepared by the Investment Advisory Firm, GMO, and if not, why? GMO has extended this study far back in history beyond 1989 (the earliest date on the chart), with virtually identical results. The point here is that returns for a well diversified portfolio of US stocks will, at least for a long-term investor like a public pension fund, be the same with or without including in that portfolio the energy sector. This finding virtually eliminates serious concerns as to whether divestment of energy stocks is consistent with fiduciary duty.**

To essentially the same effect is the study and conclusion of the Norges Bank Investment Management for the Norway Government Pension Fund Global contained in a Letter to the Ministry of Finance, 16 November 2017. The key conclusions are two: 1. The total return on oil and gas stocks has not been significantly different to the total return of a broad equity index. Therefore, whether these stocks are in or out of the portfolio doesn't matter. 2. The major risk is a permanent drop in oil prices, and this risk can be reduced by not

investing in oil and gas stocks. Without them the risk is removed, and if the risk doesn't materialize, the portfolio will not be worse off, given the relationship between the long-term return on a broad equity index and oil and gas stocks.

3. **Nothing to say.**
4. **Demonstrable skill, education, philosophy and track record involving relevant investment management expertise.**
5. **Nothing to say.**
6. **There are many institutional investors who have worked hard on effecting a divestment of their portfolios. The experiences of those facing issues similar to the NYC pension funds would be the best source for help. The experience of South Africa divestment is too old and not sufficiently similar to be worth examining.**
7. **Nothing to say.**
8. **The pricing of climate change risk lags the reality of the risk, and always will until, one day, it won't, probably causing a mispricing on the low side. The old saw about how did you go bankrupt is apt here: Slowly at first; then all at once. Today, it is prudent to divest. It may still be prudent not to divest. See my proposal on UPMIFA (included below as Exhibit 2). However, at some point it is almost certainly going to become close to imprudent, per se, to be invested in fossil fuels. If you can imagine the point at which it would become imprudent to invest in the whaling industry, after kerosene began to replace whale oil for illumination, then by analogy you can perhaps get the idea. However, when everyone grasps the magnitude of the risk, it will be too late to avoid deep and widespread loss. Given the absence of material risk to a portfolio from divesting, the bet in continuing to hold and try to time one's exit is an asymmetrical bet that suggests facial imprudence.**
9. **Fossil fuel companies are terrified of a broad movement among institutions to divest. My personal experience with a major tobacco company when divestment from that industry was growing more prevalent among thoughtful institutions made me realize how fast the divestment decision gets to the CEO's office and how much he/she cares about it, and how fearful of a trend developing. In my case, it was simply the threat of Johns Hopkins, the great and ancient hospital, considering divestment of its tobacco holdings. The CEO and staff around him were prepared to go to amazing lengths to persuade JH not to divest. Divesting from fossil fuel companies will send a very strong message to the leadership of those companies – coming from NYC Pensions, it will be a strong ripple of fear, causing potential change in business plans. Divestment leaves these companies feeling like pariahs, they fear the stigmatization and its effects on hiring, employee morale and motivation, customer attitudes, and shareholder satisfaction, even if it doesn't immediately affect equity valuations.**

Further Comments

From my reading of the RFI, the Comptroller has already made the decision to divest, assuming it can be squared with fiduciary duty. Just in case I am wrong, or that decision needs bolstering, I attach as Exhibit 3 a paper I published in the Journal of Environmental Investing a couple of years ago.

Finally, in addition to the moral case and the financial case for divesting, I see both an Enterprise Purpose Case and a Practical Case, which I summarize briefly below.

For Governmental entities: The most fundamental purpose of any Government, whether national, state, county or city, is the protection of the people to be served by that Governmental unit. Protection involves many activities, but basic ones include health, policing, safety, fire prevention and education. Recognizing the growingly adverse effects of carbon emissions to most of these facets of Government's duty to protect its citizens, it becomes impermissible as a matter of fiduciary duty to those citizens to seek monetary profit from the exploration, sale and use of fossil fuels as a source of energy. The gross inconsistency of seeking such profit, in the face of accepted science that recognizes carbon emissions as an existential threat to the planet, including, importantly, the people the Government serves, cannot be condoned.

Consider the following paragraph as a summary of the basis on which a Governmental Pension Fund Trustee elects to divest:

Recognizing climate change as an existential threat to the planet, unique in human history, and both the compelling need to limit carbon emissions and the confidence we place in global leaders to achieve the necessary limits, the largest 200 fossil fuel companies, as well as other enterprises substantially dependent on carbon emission in the conduct of their businesses are overvalued in their trading markets and, therefore, continuing to hold investments in them exposes our trusteed assets to material and unnecessary loss.

Beyond these considerations, we recognize the gross inconsistency of seeking profit from an enterprise dependent on fossil fuel, which established science recognizes as an existential threat to the planet, including the people this Government exists to serve, given our Government's fundamental and most basic duty to protect the safety and security of those people.

2. <u>Practical Case.</u> The problem across the globe is captured brilliantly by Mark Carney, Governor of the Bank of England, in a 2015 speech. He called climate change "The Tragedy of the Horizon". The threat is thought by most people as being too far down the road to worry about now. Sapiens hard-wired for optimism beyond, say, a decade, even though we can know depression over shorter time periods. Unless something happens to wake people up, the threat will be recognized too late to reverse the conditions threatening the planet.

The role of leaders, therefore, is to wake people up. Highly publicized actions such as divestment of fossil fuel companies serves this role. It helps to reverse the mispricing of fossil fuel assets in the marketplace, a mispricing caused by knowingly false information furnished by the fossil fuel industry. Without this sort of leadership, Carney's Tragedy of the Horizon will be unstoppable.

Bevis Longstreth

May 9, 2018

Exhibit 1 was emailed to Scott Evans.

Exhibits 2 and 3 are set forth below, after brief answers to Attachment 1.

Answers to Attachment 1

a. I could provide a reasoned legal opinion in support of a program to divest.
b. I am a retired lawyer, adjunct law professor (Columbia Law School) and government servant. I published through Oxford University Press, in 1986, a book to reform the law of prudence in the management of investments by fiduciaries (Oxford University Press, see CV above), which led to reform by the American Law Institute of its Statement on Trusts. My legal practice involved representing trustees of private foundations and of pensions, often with respect to investments. It has long been an area of special expertise for me. In addition, as my CV discloses, I have served on three major investment management companies: Amvescap, TIAA/CREF and GMO.
c. I would be willing to serve as a fiduciary, but I could not undertake any part of the Investment Analysis Services other than the legal opinion referred to above.
d. My fee for an opinion would be based on an hourly rate that I would want to discuss with NYC Pensions, but it would use as a starting point what billing rate my firm, Debevoise & Plimpton, is currently using for its senior most partners.

Exhibit 2

Draft by Bevis Longstreth – 1/29/16

Outline of Possible Interpretative Release by States' Attorneys General Under

The Uniform Prudent Management of Institutional Funds Act

Introduction.

All fifty states have enacted some version of the Uniform Prudent Management of Institutional Funds Act ("UPMIFA"), which governs the management and investment of funds held by not-for-profit corporations and certain other institutions . When managing and investing the funds they are responsible for, fiduciaries subject to UPMIFA must satisfy a standard of prudence, the basic requirements for which are set forth in the Act. The variations in different state versions of the Act probably do not vary at all in respect of prudence and its discussion here. The Attorneys General of our states are charged with interpreting and enforcing the Act as enacted within their respective jurisdictions.

The approach that institutional investors should take towards investing in the fossil fuel industry and in industries affected by climate change is a question of pressing concern. Recent years have revealed a growing understanding and acceptance of the fact that anthropogenic greenhouse gas ("GHG") emissions are causing climate change, and of the urgent global need to phase out fossil fuels. The investment risks associated with climate change, and the bright future prospects for clean energy, are increasingly recognized by financial intermediaries, regulatory bodies, and others.[1]

There is a need for interpretative guidance for fiduciaries subject to the Act as to how the duty of prudence should be exercised with respect to the rapidly growing climate change risks to the coal, oil, gas and other fossil fuel industries as well as to industries significantly dependent on such sources of energy. An interpretative release by a state's Attorney General would, of course reflect only the views of that office. As with other statutes, the interpretation of the Act is ultimately a matter for the courts.

A. The Prudence Standard.

Section 3 of UPMIFA sets the standard of conduct for fiduciaries managing and investing funds subject to the Act. In subsection (b), the duty of prudence is stated as follows:

> "[E]ach person responsible for managing and investing an institutional fund shall manage and invest the fund in good faith and with the care an ordinarily prudent person in a like position would exercise under similar circumstances."

[1] *See, e.g.*, GOLDMAN SACHS, THE FUTURE OF CLEAN ENERGY, *The Low Carbon Economy*; *Key Takeaways from the Paris Agreement*; and *Financing the Future: Capital Innovation and the Clean Energy Industry* (2015), available at http://www.goldmansachs.com/our-thinking/new-energy-landscape/future-of-clean-energy/index.html; Dec. 29, 2015 Statement by chiefs of five major North American tiremakers, available at http://www.tirereview.com/five-tiremakers-urge-firm-action-on-climate-change-threat/.

The language in Section 3 of UPMIFA derives from the Revised Model Not-for-profit Corporation Act and from the prudent investor rule of the Uniform Prudent Investor Act. The Drafting Committee intended, by adopting language from both the RMNCA and the UPIA, to clarify that common standards of prudent investing apply to all charitable institutions, whether in corporate or trust form. Of high importance to understanding the Act is the fact that the phase "care, skill and caution," found in the UPIA (2(a)) as well as the Restatement (Third) of Trusts (337), the Uniform Trust Act (804) and the Restatement (Second) of Trusts (174) is said by the Drafting Committee to be "implicit in the term 'care' as used in the RMNCA", and therefore, equally implicit in that term as used in UPMIFA.

It is the need for fiduciaries subject to UPMIFA to exercise caution that distinguishes the meaning of prudence for such fiduciaries from directors subject to the business judgment standard of corporate law. In the Prefatory Note to UPMIFA, the Drafting Committee notes that "the preservation of the endowment fund" has been added as a prudence factor, making clear the requirement for caution in evaluating risky investments that could pose the threat of impairment.

B. Climate Change Risks to Investment in Fossil Fuel Companies.

1. Risk Disclosures by Public Companies.

The investment risks associated with climate change have previously been recognized by the Securities and Exchange Commission (SEC) in connection with its disclosure requirements. The SEC's Interpretative Release (Nos. 33-9106; 34-61469), titled *Commission Guidance Regarding Disclosure Related to Climate Change,* with an effective date of February 8, 2010, set forth the SEC's views on how its existing disclosure requirements apply to climate change matters. Since that date, the special concerns for issuers affecting and affected by climate change have grown dramatically, as evidenced by the recent Paris Agreement and the underlying findings upon which that Agreement was based.[2]

2. Summary of Principal Terms of Paris Agreement.

The Paris Agreement, signed by 195 countries on December 12, 2015, provides a long-term temperature goal of "holding the increase in global average temperature to well below 2 degrees C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees C." Article 2. Of all the parties to the Agreement, 188 accepted the requirement to prepare "Intended Nationally Determined Contributions," or pledges of "ambitious efforts" to cut emissions, which are to become progressively more ambitious over time. Article 4. While developed countries "should continue taking the lead by undertaking economy-wide emission reduction targets," Article 4 ¶ 4, the Agreement tasks both developed and developing countries

[2] Note that the Release requires companies to "consider, and disclose when material, the impact on their business of treaties or international accords relating to climate change." (Part IV, B) The Paris Agreement is clearly an "accord" within the meaning of the Release.

with reducing their dependence on fossil fuels, and investing in renewable energy and the development of clean energy technology.

The Agreement also provides that "in order to achieve the long-term temperature goal … Parties aim to reach global peaking of greenhouse gas emissions as soon as possible and to achieve rapid reductions thereafter in accordance with best available science so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) in the second half of this century." Article 4 ¶ 1.

The principal terms of the Paris Agreement, and the facts underlying them, evidence new and major risks to the future prospects and valuations of fossil fuel companies, as national, subnational, and international authorities take action against climate change. These risks include:

a) pricing carbon so as to account for the uncompensated damage emitting GHG does to the planet;
b) eliminating the billions of dollars provided annually as subsidies to the exploration, development and sale of fossil fuels;
c) providing increased subsidies for the development and use of renewables; and
d) restricting GHG emissions to an increasing degree until, within the second half of this century, a global balance of net zero GHG emissions is achieved.

3. Need for Guidance in regard to Investments by Fiduciaries.

In its 2010 Release, the SEC addressed the impact of climate change on disclosures required of public companies. In light of the Paris Agreement, it would not be surprising for the SEC to update and augment this release. But in any event, for fiduciaries responsible for other people's money who are subject to the Act, there is no authoritative interpretation of prudence and how it should be exercised in regard to climate change risks. It is to fill this void that the AG has prepared this Interpretative Release.

D. The Prudence Standard Applied to Fossil Fuel Investments.

1. General Comments.

To achieve the Paris Agreement's long-term temperature goal, fossil fuel usage must be phased out, and the phase out must be far swifter than previously imagined. A recent paper in Nature Climate Change suggests that carbon dioxide from electricity would have to be brought close to zero by 2050, and by then around 25% of energy required for transportation would also need to come from electricity.

It would not be the purpose of an interpretative release to substitute an Attorney General's judgment for that of every fiduciary subject to the Act in answering the question whether securities of fossil fuel companies may continue to be held. Rather, the purpose of such a release would be three-fold:

a) To prescribe, as a minimum, the elements of adequate inquiry that must be observed and recorded to demonstrate that the duty of care in Section 3 of UPMIFA has been exercised with respect to any decision to hold or invest in a fossil fuel security;
b) To discuss some of the special risks that are arising from the circumstances – unique in the history of mankind – created by climate change and the world's response to the threat it poses for the planet; and
c) To note the overriding command of the Act, in regard to managing and investing an institutional fund, to "consider the purposes of the institution and the purposes of the institutional fund."

2. <u>Minimum Elements of Inquiry.</u>

The 2010 SEC Release lists the following four topics as representing some of the ways climate change may trigger disclosure requirements. Similarly, these topics should be considered and assessed by fiduciaries subject to the Act in determining whether an investment meets the prudence requirement:

1) Impact of legislation and regulation
2) International Accords
3) Indirect consequences of regulation or business trends
4) Physical impacts of climate change

Carbon Tracker Initiative's *Engagement Principles for Investors* sets forth seven risk engagement principles for fossil fuel companies to consider. Fiduciaries should in turn inquire as to whether these principles are satisfied. Namely, they should ascertain:

1) Whether there is any divergence between the company's commodity market planning assumptions and demand levels implied by climate and energy policy targets
2) How the board oversees climate risk management
3) How management would incorporate climate policy targets into investment decisions
4) Whether forward-looking projections evaluate potential project portfolios; whether quantitative disclosure aligns with data used by the company for investment decision-making and risk management
5) The company's vulnerability to price risk, as explained through stress-tests or sensitivity analysis
6) The assumptions underpinning financial reporting and impairment analysis
7) If a company's management is unable to provide answers to any of the above, a credible explanation should be given.

Further, the fiduciary should make an explicit judgment that the decision to hold or invest meets the elements of skill, care and caution required by the Act, based upon a thorough

and satisfactory inquiry into the matters specified above , as well as a consideration of the special risks of climate change discussed below.

3. <u>Discussion of Special Risks of Climate Change</u>.

The prudence standard of the Act can easily support a decision not to continue to hold or invest in fossil fuel companies. The risks and rewards now offered by such securities are asymmetric, in the sense that the foreseeable rewards are not likely to be equal to the foreseeable risks. The risk that, at some unknown and unknowable, yet highly likely, point in the future, markets will begin to adjust the equity price of fossil fuel company securities downward to reflect the swiftly changing future prospects of those companies, is as serious as it is immense. Moreover, the possibility of that adjustment being a swift one is also a serious risk. A decision to linger in an investment with such an overhanging risk, and expect to time one's exit before the danger is recognized in the market, is a strategy hard to fit within the concept of prudence.

Whether the duties of care, skill and caution today compel a decision not to hold or invest in fossil fuel companies can ultimately only be answered by a court, which always looks back in time, and therefore can be subject to the force of hindsight.

At some point down the road towards the red light of 2 degrees C, however, it is entirely plausible, even predictable, that continuing to hold equities in fossil fuel companies will be ruled negligence. Here a powerful 2d Circuit decision by the famous jurist, Learned Hand, decided in 1932, becomes relevant. In that case, *The T.J. Hooper*, tug boat owners were found liable for loss of cargoes in a nor'easter because they hadn't issued to operators what were then newly developed short-wave receivers. At the time, this new-fangled device was a rarity on tugs. Had the operators possessed them, they surely would have picked up weather reports warning of a storm and sought refuge on the inland waterway.

Here's the crucial finding of this great judge:

> "Indeed in most cases reasonable prudence is in fact common prudence; but strictly it is never its measure; a whole calling may have unduly lagged in the adoption of new and available devices. It never may set its own tests, however persuasive be its usages. Courts must in the end say what is required; <u>there are precautions so imperative that even their universal disregard will not excuse their omission."</u> [Emphasis supplied.]

Many, if not most, fiduciaries subject to the Act serve charitable purposes enabling them to act as long term investors in the management of institutional funds. As such, they need not worry unduly about short-term results. Anticipatory divestment of fossil fuel company holdings could reasonably be viewed as having unknown short-term consequences for the portfolio, which could involve loss as well as gain. However, in the long run, those short-term results could reasonably be considered unimportant. The risks for fossil fuel companies

described above could reasonably support a fiduciary's judgment that fossil fuel companies will prove to be bad investments over the long term and, therefore, with foresight that anticipates this result, should be removed from long-term holdings before the strengthening likelihood of this result becomes commonplace in the market.

4. Duties Owed to Purposes of the Institution.

Section 3(a) of UPMIFA requires fiduciaries, in managing and investing an institutional fund subject to the Act, to "consider the charitable purposes of the institution" to which that fund is dedicated and "the purposes of the institutional fund." Section (e) (1) requires fiduciaries, in managing and investing an institutional fund, to consider, if relevant, "an asset's special relationship or special value, if any, to the charitable purposes of the institution." Paragraph (H).

The Drafting Committee, in its Comment on Section 3, states: "Further, the decision maker must consider the charitable purposes of the institution and the purposes of the institutional fund for which decisions are being made." This requirement is described by the Committee as "a fundamental duty." And, in further elaboration of this so-called "charitable purpose doctrine", the Committee said: "In making decisions about whether to acquire or retain an asset, the institution should consider the institution's mission, its current programs …in addition to factors related more directly to the asset's potential as an investment."

The Act itself, and the interpretation thereof by the Drafting Committee responsible for its language, make it entirely clear that fiduciaries must consider the purposes for which the funds they manage and invest are held. This duty is in addition to, and overrides, the duty of prudence as applied solely to financial considerations.

It would not be the purpose of an interpretative release to apply this standard to any institution subject to the Act or even generally to various categories of institutions subject to the Act. Nor, indeed, could it do so.

The purpose here is merely to call attention to this fundamental duty of fiduciaries subject to the Act, a duty that could surely affect the choice of investments to hold or avoid, based in whole or in part, on the purposes of the institution. Thus, for example, if, in the judgment of its fiduciaries, it would be inconsistent with the purposes of an educational institution to hold, and thereby necessarily seek to profit from, investments in fossil fuel companies, such investments could not be held.

Exhibit 3

The link below is to an article I published in May 2015 in the Journal of Environmental Investments (Vol 6, No 1). http://www.thejei.com/the-compelling-case-for-divestment/

Here is the article as submitted:

REVISED 2 -- April 12, 2015

The Compelling Case for Divestment

1. Preface

In 2010, at Cancun, nations of the world set 3.6 degrees F as the permissible increase in global temperature over the pre-industrial level. Beyond that was catastrophe. Since Cancun, the dangers of climate change have grown, become palpable in myriad ways and become commonplace in the daily press. And, yet, nations have made little progress. In fact, having put the car in reverse, they are accelerating in the wrong direction. Thus, the IEA reports our current trend-line will take the planet by 2050 to 7 degrees F, twice the level set in Cancun. Carbon emissions increased by 1.5% per year from 1980 to 2000. But,

then, that rate almost doubled to 2.5 % per year through 2012. And in 2013, emissions jumped 2.3% to record levels. The IEA recently reported that the cost to de-carbonize by 2050 was $44 trillion, up from $36 trillion just two years ago, and climbing. The cause? An increase in coal usage that exceeds the increase in renewables.

The planet has already warmed by 1.5 degrees F since the pre-industrial era. On our present trajectory, we will blow by the 3.6 degree F level, reaching as much as 10 degrees F above the pre-industrial era by 2100. By then, civilization and its current residence will have become unrecognizable.

So, the planet has a big problem. In helping to solve that problem, divestment from fossil fuel companies is an important strategy for fiduciaries of all types to pursue. Here's why.

2. <u>Purpose of Divestment</u>

The argument for divestment clusters around two ideas: financial and moral.

The Financial Reasons – Here the argument is reduction of risk to your portfolio. Today the risks are many and they are growing. Consider a few:

The very serious, yet hardly recognized, risk from "stranded assets", in particular "unburnable carbon". To hold to the global goal of 3.6 degrees F, there is a limit on how much carbon can be emitted to 2050. It's called the Carbon Budget and it's reckoned through science. The level is 886 Gigatons of CO2 from 2000-2050. Subtracting what's been emitted since 2000 to date (121 Gt) leaves 765 Gt left to emit to 2050. But just reserves proven on the books of public and private companies equal 2795 Gt of potential emissions, meaning that proven reserves are well over three times what nations can allow to be emitted to 2050, if we are to avoid planetary catastrophe. So the rest is at risk of being stranded -- unburnable – if nations have a Darwinian moment

and act. As they must. If this happens, of course, it means current market prices for fossil fuel companies are hugely overvalued.

And consider the risk to the $21 trillion of CAPEX by Big Oil that is planned for expenditure in the near term to develop unconventional oil projects. Last year the fossil fuel giants spent nearly $700 billion on developing new oil supplies, a record; yet, despite US fracking, they were able only to replace 4.5 months' worth of current production.

And, the risk that, given the plummeting prices for solar and wind energy, oil prices will not remain high enough to profit from the sale of newly discovered reserves from unconventional projects, which generally need about $90 per barrel or more to break even. Here the big point – and a fearsome one for fossil fuel giants – is that a dramatic shift in the paradigm of "peak oil" is occurring. As competition from renewables grows more intense, "peak oil" supply may well become "peak oil" demand. And looking back a decade from now, we may be

forced to conclude that demand for oil had already peaked when this paper was being written.

In summary, risk to fossil fuel investments is growing in lock-step with the growth in the cluster of problems facing the fossil fuels complex: faltering productivity, falling profits, poor economics, environmental disasters and increasing competition from power plants and automobiles running on free fuel.

Automobiles deserve attention, for there is an incipient revolution emerging with advances in battery design and vehicles powered by electricity or hydrogen. Under its base case scenario, the IEA projects growth in world primary energy demand of 33% to 2035. Of this, over 86% is projected to come from transport. And yet the IEA projects only minimal growth in clean automobiles to 2035. There is substantial risk that growth in electric and hydrogen powered vehicles could explode over the next two decades, stranding much of the oil developed to meet the projected needs of transport.

There are growing risks of stranding in the grid power sector. Barclays recently down-graded high-grade corp. bonds across the entire US utility sector, citing the energy threat of solar power and storage. Baseload power sources like coal and nuclear are being replaced by renewables, and in time the grid will become obsolete. In Europe, growth in renewables was the primary reason that the top 20 utilities lost $600 billion in market value over the past five years. And the reason E. ON, Germany's largest utility, announced recently the end to its use of fossil fuels.

As is now well known, the losses in market value experienced by the coal industry over the past three years, down 61% against the S&P 500, which was up 47%. By the way, coal is the canary in the oil well, to coin a phrase.

Conventional oil peaked in 2005. Oil and gas production by Chevron, Exxon-Mobil and Shell declined over the past 5 years, even as they spent $500 billion in CAPEX on new projects – that's shareholder

wealth that is likely to vanish down very expensive holes drilled in the earth.

Despite the recent surging flows of tight oil and shale gas in the US, the country is waking up to the fact of the huge decline rates of the sources for these products.

Renewable energy supplies at least 23% of global electricity generation today. Its capacity doubled from 2000-2012. Solar is now growing at a 30% rate/year. And is rapidly becoming cost competitive with fossil fuels.

Finally, consider that government subsidies for fossil fuels are some $600 billion per year, compared to just $90 billion for clean energy -- a public perfidy whose days are numbered -- a global outrage that soon will end. As it must.

There's an old saw: How did you go bankrupt? "Two ways: slowly at first; then all at once." In financial markets today, too few consider

climate change an investment risk at all. Too many of those who do imagine it to be merely a tail risk, remote and barely worth noting. But change in energy is coming at a gallop. It's happened before. Consider, not long ago, when we used whales for light; horses for power; coal for steam to drive locomotion; coal again for electricity; incandenscent bulbs for light. We need to disenthrall ourselves from old business models. And listen to the wise and well informed. Like Sheikh Yamani, Saudi Arabia's powerful Minister of Oil from 1962 to 1986. He famously said: "The Stone Age didn't end because we ran out of stones, and the age of oil won't end because we run out of oil." Or Johannes Mauritzen from the NHH Norwegian School of Economics, writing in the FT on January 10, 2015, of the threat to electric cars from falling oil prices: "When automobiles first emerged at the beginning of the last century, their eventual success had little to do with the price of hay. The success of electric cars is unlikely to be dependent on the price of oil."

Or listen to Lord Browne, former head of BP and one of the energy world's most influential voices, who, speaking at a London seminar on November 19, 2014, said that "energy and mining groups are ignoring an 'existential threat' that climate change poses to their industry and need to make big changes to the way they operate." *Financial Times*, November 20, 2014 at p. 13.

Or Amory B. Lovins, Co-founder and Chief Scientist of the Rocky Mountain Institute, who, at the Oslo Energy Forum in February 2015, put slides on the screen showing the Easter Parade on Fifth Avenue in 1900 and again in 1913. In the first, the Avenue is filled with horse-drawn carriages. In the second, the Avenue is filled with cars, and not a horse in sight.

One picture worth a thousand words. Sometimes a snapshot can capture something so obvious we can't see it. The old quip about not seeing the forest for the trees. So, consider Transocean, one of the world's largest drilling contractors. Falling oil prices are hurting its

deepwater drilling business, because offshore oil has some of the highest production costs of all oil deposits. Transocean's shares have lost 46% over the past 12 months. Here's the snapshot: Transocean says its future lies in what's called "ultra-deep water." Its new rigs are equipped to operate in 10,000 feet of water, and drill wells 40,000 feet below sea level. That's close to eight miles down. Contrast finding and lifting carbon-laiden oil from such a distance with capturing such free and clean energy sources as wind and sun. Aren't we insane? Which business would prudence and foresight lead a fiduciary to invest in?

The Moral Imperative –this argument is particularly pertinent to educational institutions and public pension funds, each so importantly affected with the public interest.

Given the Gargantuan existential risk of climate change to the planet, those in positions of leadership who fail to take reasonable steps to stop carbon emissions from rising become the moral equivalent of those seeking to deny the science and brush away the

problem. As Galileo did by recanting to save his life. Divestment is a reasonable step for pension trustees to take.

What does divestment accomplish? It avoids the ugly picture of trustees seeking to profit from emissions of carbon through the sale and burning of fossil fuel reserves and especially through the massive use of shareholder funds to search for more fossil fuels to sell and burn. Such behavior violates the most basic norms of a civilized society.

I've tried to imagine how Homer, the great story-teller, would have described Big Oil. You'll have your own answer. Here's mine: "The lung-choking, ocean-poisoning, species-sickening pitiless scourge of humanity".

Divestment by any group, but particularly by thought leaders such as those responsible for educational institutions and public pension funds, helps to stigmatize the oil, gas and coal giants as repugnant social pariahs and rogue political forces bent on profit at whatever cost to the planet and its people. That is, the pitiless scourges of humanity.

Don’t underestimate the power of being able to create pariahs. These companies fear stigmatization. It hurts in hiring, employee morale and motivation, customer attitudes, shareholder satisfaction and equity valuations. And it hurts when leaders of these companies go home to face their children and grandchildren.

Most energy and mining group leaders remain in denial about the existential risk to their business from climate change. But shining exceptions, increasingly, can be found. Consider this from David Crane, CEO of NRG, a leading electricity business using coal and other fossil fueled power plants: In announcing NRG’s goal of reducing carbon emissions 50% by 2030 and 90% by 2050, he said: “If divestment from fossil fuel companies becomes the issue that preoccupies college campuses around America for the next decade, I don’t relish the idea that year after year we’re going to be graduating a couple million kids from college, who are going to be American consumers for the next 60

or 70 years, that come out of college with a distaste or distain for companies like mine." *NYTimes*, November 21, 2014 at p. B3.

Does Big Oil deserve stigmatization? Consider, e.g., the Exxon-Mobil and Shell reports to shareholders on stranding. Despite each company's acceptance of the science, they smack their gauntlets across the collective face of humanity by asserting that no government restrictions will restrain them. Here, e.g., is E-M's statement:

> "We are confident that none of our hydrocarbon reserves are now or will become stranded. … Further, the company does not believe current investments in new reserves [which it intends to discover and develop in quantities at least equal to current proven reserves] are exposed to the risk of stranded assets, given the rising global need for energy…"

As the Carbon Tracker Initiative observes in its rebuttal to the Exxon-Mobil report, that company does not consider a low carbon scenario in its investment planning, which proceeds on a "business as

usual" basis. Its projections are, without doubt, incompatible with meeting the 3.6 degree F goal. Studies show that the company's projections correspond with the IPCC's RCP 8.5 scenario, putting the planet on a pathway to about a 7 degree F increase from the pre-industrial era by 2050.

In its annual Energy Outlook report, released in February 2015, BP models its "most likely" energy scenarios down to 2035. In predicting an increase in fossil fuel use of 33% over this 20 year period, BP generally follows the lead of reports by Exxon and Shell. These companies, now, acknowledge that climate change is occurring and is principally caused by the burning of fossil fuels. They further acknowledge, expressly or implicitly, that their "most likely" growth predictions for fossil fuel use put the planet on an IEA trajectory to multiples above the 3.6 degree F limit. And, yet, they mention not a word about the multiple catastrophes that will, according to the science they now accept, afflict the planet if their predictions come to pass. In

its Report, Exxon said: "We don't model global average temperature impacts." Nor do they offer solutions. Here one finds a dramatic example of cognitive dissonance, one that, beyond culture, can perhaps best be explained as the blind and single-minded pursuit of profit. By literally averting their eyes and minds from the scientifically established estimates of global damage to be caused by their published plans to continue "business as usual" long into the future, they appear to think they can avoid responsibility. It is the public's job not to let that happen.

Divestment by our country's leading pools of capital will help awaken citizens to the peril of inaction. Collectively, we are like the frog resting comfortably in a pot of cold water being heated to boiling. (This metaphor probably abuses frogs, who are too smart to stick around that long, but it works, so I claim poetic license.) You can be among the first in the nation to shake this frog from the deadly comfort zone in which it rests.

Despite the success of the Peoples Climate March in New York City, even the most basic scientific arguments have not been settled. Consider, for example, in the NY Times of September 23, 2014, the comment of Freeman Dyson, distinguished and greatly admired theoretical physicist at the Institute for Advanced Study:

"What worries me is that many people, including scientists and politicians, believe a whole lot of dogmatic nonsense about climate change. The nonsense says that climate change is a terrible danger and that it is something we can do something about if we wanted to. The whole point is to scare people, and this has been done very successfully."

Dyson is wrong. Alas, not enough people have been scared. Too many are still slumbering frogs. Governments won't act until enough people -- call it a critical mass – have been scared by the foreseeability of the dire consequences that science tells us will follow inaction to demand their Governments to act, thereby driving down demand for

fossil fuels and driving up demand for non-fossil fuel alternatives such as renewables, nuclear and efficiency. In fact, foreseeability is the key and every one of us holds that key in our hands. When a critical mass of people accept the foreseeability of dire consequences from inaction as being inescapably certain, nations will act to avert catastrophe. By educating ourselves and others as to this matter, each of us can help achieve the necessary level of certainty.

Consider the tragedy of the Titanic. It is a metaphor for the surpassing vanity of mankind and the indifferent brutality of nature. As such it can speak to us about the looming threat of climate change.

On that night in April, 1912, hundreds of human beings consciously, and with deliberation, chose to die as a matter of honor in order to save women and children. Men of privilege, such as Isidor Straus and Benjamin Guggenheim, refused places on the lifeboats, choosing to wait in deckchairs for death to come. Of course, the immediacy of death, the certain foreseeability of the ship sinking, is

what makes that case different from the perils of doing nothing about carbon.

Although the sinking of the Titanic is high drama, I don't believe it is any more fraught than the planetary threat we face today. It's just far more compressed. Two and a half hours to sink instead of 35 or so years to reach 7 degrees and even more to experience the full catastrophe. Humans are simply not well designed to contemplate, fear and act in anticipation of events – however terrifying – that are way down the road.

Somehow, despite the time-line, the resting frog -- our collective self – must be awakened.

3. Why Not Engagement?

Drew Faust, President of Harvard University, and other prominent leaders who have been pushed, pulled and prodded to cause the endowments they oversee to divest of fossil fuel companies directly

engaged in extractive activities, reject this idea in favor of "shareholder engagement." Engagement, say, with Exxon-Mobil is possible only if one is a shareholder of that enterprise. Therefore, engagement is a distinct alternative to divestment, because one cannot do both at the same time with regard to the same company.

There are some SEG issues (i.e. social, environmental and governance issues) where shareholder engagement has been tried and been successful. However, the closer one comes to trying to affect core business issues or issues involving the safety, security and compensation of officers and directors, the less successful engagement becomes. In fact it's a bust. Thus, for example, trying to convince Phillip Morris to give up making cigarettes or Johnny Walker to abandon its distilleries will most certainly be a fool's errand. Likewise, trying to convince GM or Microsoft to abandon stock options or to institute a nominating system that allows shareholders to nominate and elect

directors from a slate larger than the number to be elected will prove to be an equally useless effort.

It is for this reason that divestment became the tool of choice in addressing tobacco companies. And companies heavily engaged in profitable businesses in South Africa under apartheid.

In regard to fossil fuel companies directly engaged in extractive activities, it is unrealistic to imagine them being swayed by shareholder arguments to get out of their core business of exploring for, extracting and selling carbon-emitting fuel. The problem goes beyond just the high likelihood of spinning wheels and accomplishing nothing in addressing the urgent need for global action. Indeed, engagement is likely to assist Big Oil and Big Coal in postponing the day when governments limit the burning of fossil fuels.

The International Energy Agency reckons that, if governments act to compel adherence to the “carbon budget” necessary to have a chance

of holding the planet to only a 3.6 F rise in temperature from pre-industrial levels, it will cause Big Oil and Big Coal to lose about $1 trillion a year. Engagement with institutional investors like Harvard gives the fossil fuel giants the protective cover they need to stretch out the transition process to renewables for as long as they can. It legitimizes talk over action. In truth, if the engagement crowd didn't exist, the fossil fuel giants would by now have invented them. (And, in light of the parallels to tobacco and lead, who knows the extent to which they did.)

4. The Relevance of Norway

Early this year, Norway put its toe in the global movement to drop investments in fossil fuel companies. Its Sovereign Wealth Fund, at $850 billion the world's largest, divested 14 coal mining companies, five tar-sands oil producers and a few other companies heavily involved with fossil fuel.

Late last year, an Expert Group appointed by Norway's Finance Ministry released a 71 page report addressing whether the Fund, as a responsible investor sensitive to the global threat of climate change, should exclude fossil fuel companies from its portfolio or exercise its ownership and influence by engaging with those companies.

The Expert Group rejected an "either-or" approach, describing the many ways in which strategies of exclusion and active ownership can contribute to lessening the climate change danger. Indeed, it wisely emphasized the reinforcing value of using both exclusion and active ownership in combination, suggesting that together they "can be larger than the sum of their parts."

In exploring these strategies, the Group ignored concerns of fiduciary duty. This is important. There is nothing exceptional about the Fund's objectives that distinguishes it, in regard to investments, from the vast majority of institutional funds managed by fiduciaries

throughout the world, whether as pension funds, endowments of educational institutions, philanthropies or others. This approach to fiduciary duty is remarkably, and refreshingly, different from the defensive one adopted by many fiduciaries in the United States, who have wrapped themselves in the duty of care to avoid confronting the fossil fuel industry by either exclusion or engagement through active ownership.

In acting upon the Expert Group's report, Norway has a problem. Not only is the Fund's immense wealth derived from North Sea oil, the Norwegian Parliament controls Statoil, one of the largest oil companies in the world. These facts pose a dilemma. They also offer Norway a unique opportunity.

Norway could provide exactly the dramatic step needed to make active ownership through engagement with fossil fuel companies a promising enterprise. The Fund could try engagement with the fossil

fuel companies held in its portfolio, but only if first, the Government were to align the behavior of Statoil with the demands the Fund would then make on those portfolio companies. Parliament has the power, and Norway is recognized as a global leader in both thought and deed.

There are three fundamental requirements that a fossil fuel company should meet to avoid exclusion from portfolios managed by responsible fiduciaries seeking to acknowledge the global threat of climate change. They are:

1. Publicly accept the science of climate change, including recognition of the scientifically rooted predictions of damage to the planet and its people if we fail to halt carbon emissions.
2. Within a reasonable period, cease CAPEX (capital expenditures) in search of more fossil fuel.
3. Use the company's lobbying forces wherever active in the world publicly and constructively to lobby for (a) elimination of all fossil

fuel subsidies, which globally today total some $600 billion a year, (b) imposition of carbon taxes or other means to internalize the costs to the planet of burning fossil fuels, and (c) legislation to reduce carbon emissions to a level, globally, that will not harm the planet.

There may be other demands that investors want to make on fossil fuel companies, but these three are fundamental, fair and can be instituted immediately. Any company accepting them would change from being a global pariah that is increasingly viewed as such throughout the world to become a responsible corporate citizen whose securities need not be excluded from portfolios. Any company rejecting one or more of them would remain a pariah and be excluded.

By instituting these three policies, Statoil would establish itself (and vicariously the Government of Norway and its people) as first

among those global leaders seeking to address the most existential threat the world has ever faced. Statoil would become the measure against which all other fossil fuel companies would be tested for inclusion or exclusion from portfolios everywhere.

Universities and public pension funds would then have something serious to demand of the fossil fuel companies held in their portfolios. And, as likely to be the case when demand is made on the likes of Exxon, Shell or BP, a clear basis for divesting.

5. Fiduciary Duty

Fiduciaries are charged with the duty of care. Here's how the American Law Institute's Restatement of Trusts describes that duty (in section 227):

> "This standard requires the exercise of reasonable care, skill and caution, and is applied to investments not in isolation but in the context of the … portfolio and as a part of an overall investment strategy, which should incorporate risk and return objectives reasonably suitable to the [purposes for which the portfolio is held]."

Based on an informed view of all climate change factors, including those I've just outlined, it is easy to conclude on the basis of financial considerations alone that divestment of fossil fuel company holdings is a permissible option. And the moral dimension makes this conclusion even more powerful.

Whether, at this time, divestment is compelled by the duty of care is a more difficult question to answer. Anticipatory divestment in recognition that, at some unknown and unknowable point down the road, markets will suddenly adjust equity prices downward to reflect swiftly changing prospects for

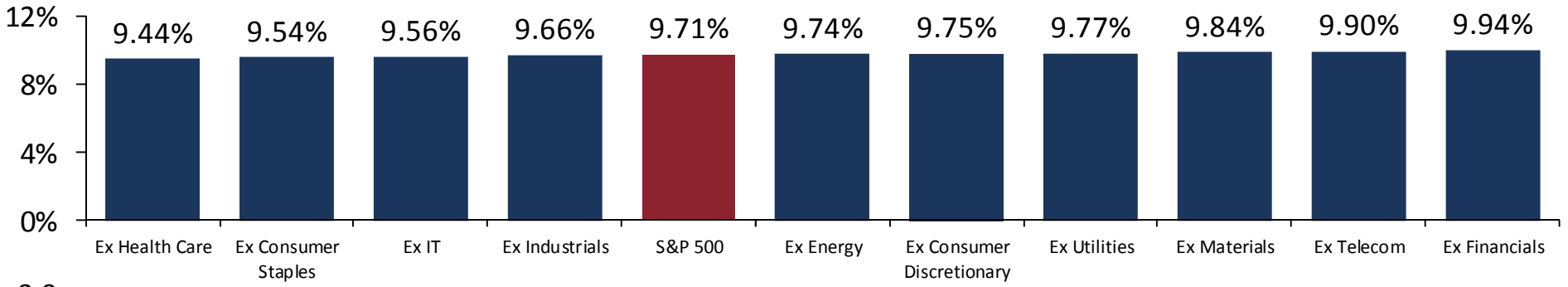
fossil fuel companies, however wise as a prudent option today, is probably not yet compelled in the exercise of due care.

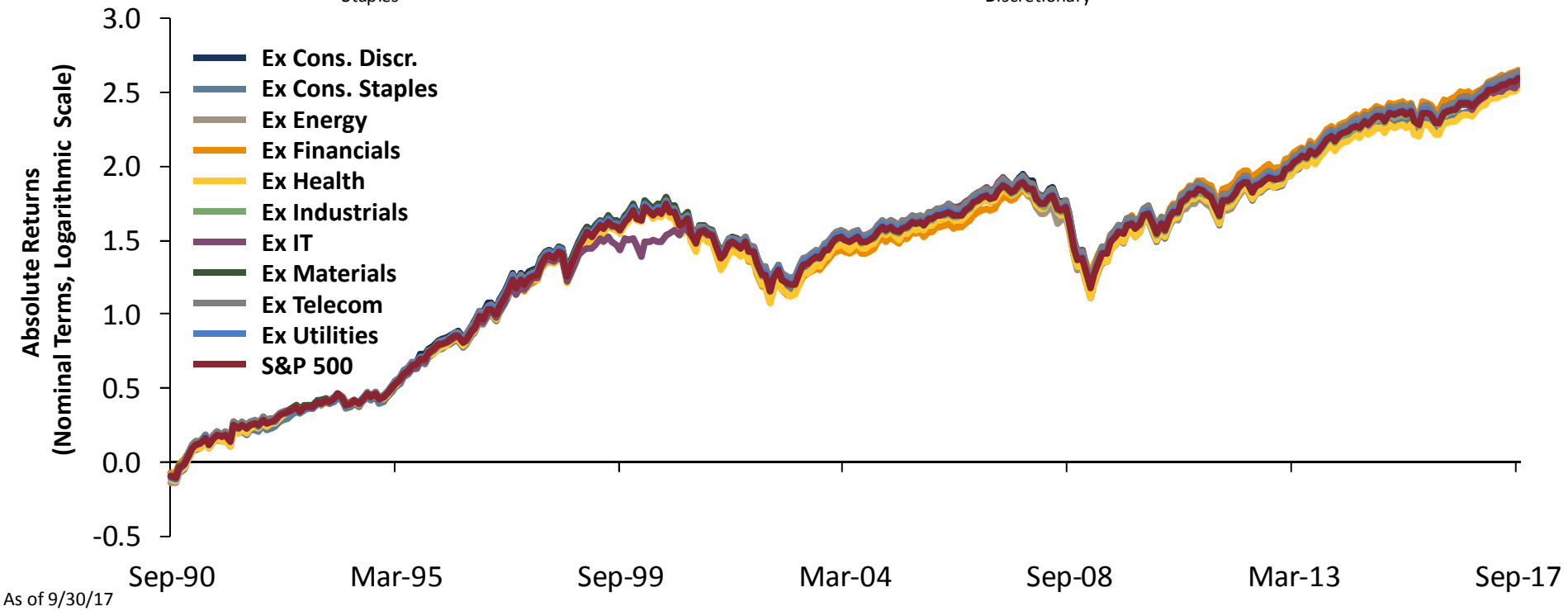
But here's the most important point: Whether your portfolio will under or outperform after divestment is unknowable. Looking back in time, results vary depending on the measuring period and assumptions about how proceeds are reinvested. But past is not prologue here. And, in any case, fiduciaries need not worry about short-term results. Anticipatory investment should be viewed as having unknown short-term consequences. In the long run, those results are unimportant. A decision to divest rests on the claim that fossil fuel companies will prove to be bad investments over the long term and, therefore, with foresight that anticipates this result, should be removed from the pension fund before the strengthening and foreseeable likelihood of this result becomes commonplace in the market. As it did with coal.

Yes, You Can Divest From Oil – or Anything Else – Without Much Consequence

GMO
North America | Europe | Asia-Pacific

Annualized Absolute Returns (Nominal Terms): 1989-2017 – Range: 50 bps





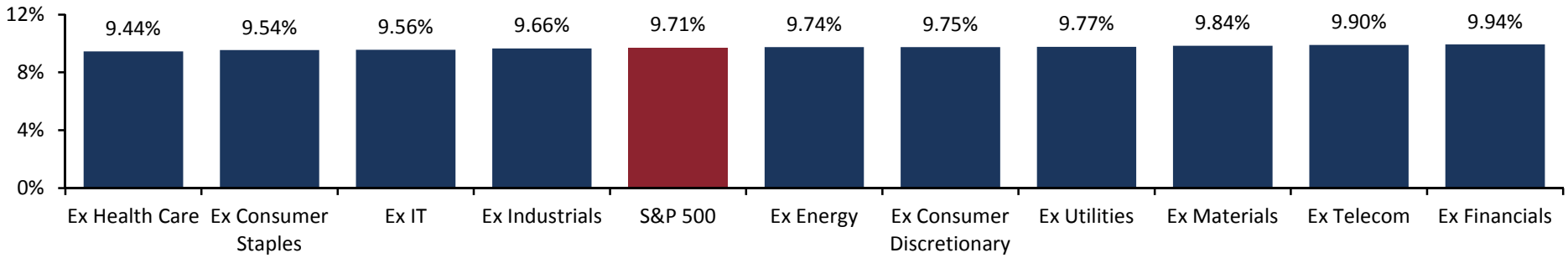
As of 9/30/17
Source: S&P, GMO

GMO_Template

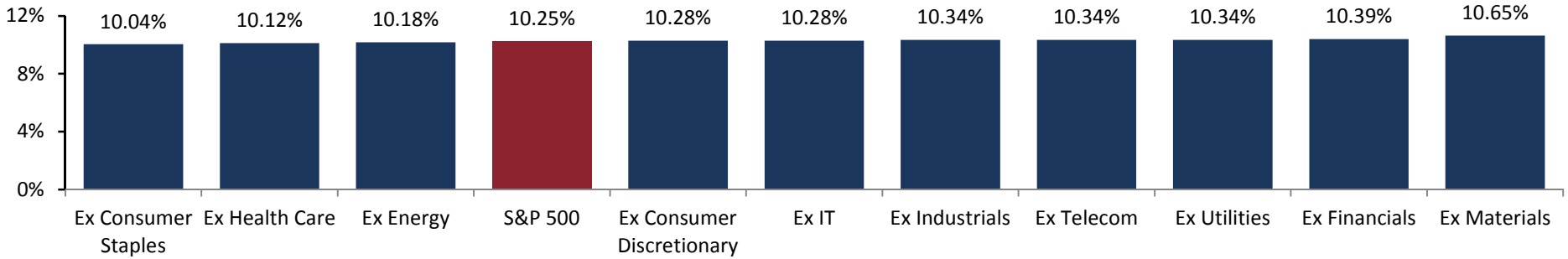
Yes, You Can Divest From Oil – Or Anything Else – Without Much Consequence

GMO
North America | Europe | Asia-Pacific

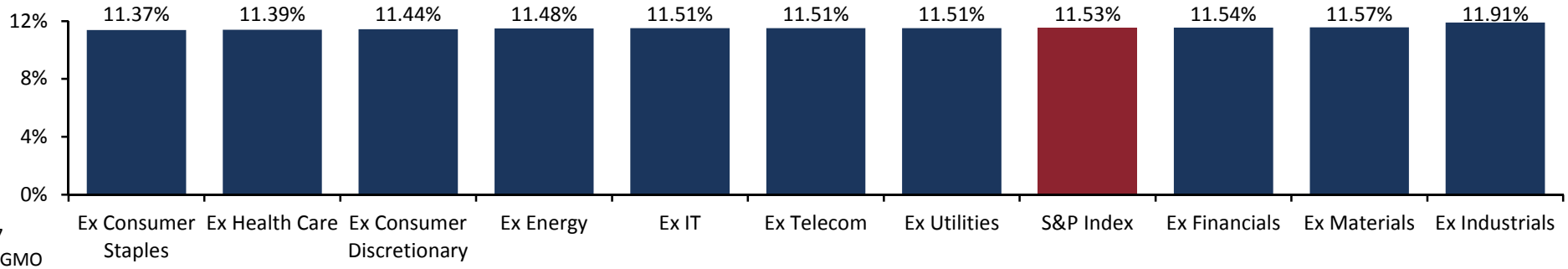
1989-2017 Range: 50bps



1957-2017 Range: 61bps



1925-2017 Range: 54bps



As of 9/30/17
Source: S&P, GMO
Note: Prior to March 1957 the S&P 500 is represented by the S&P 90 Index

Ministry of Finance
Postboks 8008 Dep.
0030 Oslo

Date: 14.11.2017
Your ref.:
Our ref.:

Investment strategy for the Government Pension Fund Global

The Bank has advised the ministry since the fund's inception on how the investment strategy should be designed in order to achieve the objective of maximising return with moderate risk. The Bank's advice has largely been based on how changes to the investment strategy can be expected to affect risk and return for the fund in isolation. The relationship between the fund and other government wealth has been addressed first and foremost in the discussion on how much of the fund should be invested in equities – see, for example, the Bank's letter of 1 December 2016.

The fund now accounts for a much larger share of government wealth than before, and is an integral part of fiscal policy via the fiscal rule. In its strategy for Norges Bank Investment Management for 2017-2019, the Executive Board states that in future it will adopt a broader wealth perspective when advising the ministry. One question that has been discussed before is whether the Norwegian economy's vulnerability to a permanent drop in oil prices can be reduced by adjusting the composition of the fund away from investments where returns move in line with oil prices. In its letter of 1 December 2016, the Bank wrote that it may return to this issue.

In this letter, we conclude that the vulnerability of government wealth to a permanent drop in oil and gas prices will be reduced if the fund is not invested in oil and gas stocks, and advise removing these stocks from the fund's benchmark index. This advice is based exclusively on financial arguments. It does not reflect any particular view of future movements in oil prices or the profitability or sustainability of the oil and gas sector.

Oil exposure in government wealth

The value of Norwegian government wealth is sensitive to changes in oil prices. This applies

POSTADRESSE
PB 1179 Sentrum,
0107 Oslo

BESØKSADRESSE
Bankplassen 2,
Oslo

Tel. 22 31 60 00
Faks 22 41 31 05
www.norges-bank.no
central.bank@norges-bank.no

Organisasjons-nummer
NO 937 884 117 MVA

primarily to future government oil and gas revenue, some of the fund's investments, and the government's holding in Statoil.

Based on estimates in the white paper *Long-term Perspectives on the Norwegian Economy 2017*, the present value of future government oil and gas revenue is around 4,000 billion kroner. The extent to which this expected revenue materialises will depend on developments in oil prices, production costs and production levels. All of these components are uncertain. According to the ministry's calculations, a permanent drop in oil prices of 100 kroner per barrel would more than halve the present value of future oil and gas revenue.[1] The net present value of future oil and gas revenue could also be affected by changes in one of the other components.

The value of the fund is currently around twice the present value of future government oil and gas revenue. Some of the fund's investments are exposed to movements in oil prices, most notably investments in oil and gas stocks. These investments currently make up around 4 percent of the fund. Exposure to oil and gas stocks is expected to rise as a result of the decision to increase the allocation to equities to 70 percent. Exposure to these companies will also be affected by changes to the benchmark index for equities.[2]

The market value of the government's holding in Statoil is currently around the same as the market value of the fund's investments in oil and gas companies. When the fund's investments and the holding in Statoil are taken together, we find that exposure to oil and gas stocks in the government's overall equity portfolio is around twice what it would have been had this portfolio been invested in line with a broad global stock index.[3] If this perspective is extended to include the value of future oil and gas revenue, the government's exposure to the oil and gas sector multiplies.

Oil exposure in the fund

In this section, we look at whether the government can reduce oil price risk in its wealth by making changes to the investment strategy for the fund. Our analysis confirms the findings of previous studies that the return on oil and gas stocks largely mirrors general movements in the stock market.[4] Prices for shares in oil companies have normally gone up when the broad equity market rises, and down when it falls. There have, however, also been periods when prices for oil and gas stocks have moved contrary to the broad market. As shown in the enclosure, the total return on oil and gas stocks has not been significantly different to the total return on a broad equity index.

The interesting question for the fund is to what extent investments in oil and gas stocks provide exposure to factors other than the broad equity market. We show in the enclosure that oil and gas stocks are much more sensitive to movements in oil prices than shares in

[1] See https://www.regjeringen.no/no/tema/okonomi-og-budsjett/norsk_okonomi/beregning-av-norges-nasjonalformue-til-perspektivmeldingen-2017/id2548710/ for further details.
[2] One example of such changes is when new countries are included in the benchmark index. It is expected that Saudi Arabia will be added to the benchmark index during the course of 2018. If the IPO at Saudi Aramco, the world's largest oil company, goes ahead, oil exposure in the benchmark index will therefore increase.
[3] There are also oil and gas-related investments in the Government Pension Fund Norway.
[4] See, for example, Report to the Storting No. 19 (2013-2014).

other sectors are.[5] Oil and gas stocks' exposure to oil price movements is considerable, and consistent with the market perceiving oil price shocks as persistent.

In the enclosure we also show how the accumulated relative return between oil and gas stocks and the broad equity market has varied with oil prices.[6] In periods with stable oil prices, the return on oil and gas stocks has largely moved in line with the broad equity market. However, oil and gas stocks have outperformed the broad market in periods with rising oil prices, and underperformed in periods with falling oil prices. The charts indicate that large and persistent oil price shocks have resulted in substantial and persistent accumulated return differences between oil and gas stocks and the broad market.[7]

The vulnerability of government wealth to a permanent drop in oil prices can therefore be reduced by not investing the fund in oil and gas stocks.[8] If the relationship between the long-term return on a broad equity index and oil and gas stocks persists, neither the expected return nor the market risk in the fund will be affected appreciably by whether or not the fund is invested in oil and gas stocks.

Oil prices also impact on returns in other equity sectors. The effect of oil price movements is much smaller than in the oil and gas sector, however, and so there is little reason to depart from the current index weights for these sectors if the aim is to reduce oil price risk. The value of some of the fund's bond investments will also be affected by changes in oil prices. This applies both to corporate bonds issued by oil and gas companies, and to bonds issued by governments with substantial oil and gas revenues.[9] In the markets where the fund has substantial investments in such bonds, prices are less affected by oil price movements. A decision not to invest the fund in such bonds would therefore have a lesser effect on oil price risk in government wealth.

The risk to government wealth from oil prices will be reduced if the fund is not invested in oil and gas stocks. The Bank proposes that this is achieved by removing companies classified as oil and gas companies by the index supplier FTSE from the benchmark index for equities.

The Bank recommends that oil and gas stocks are removed from the benchmark index. This will help reduce oil price risk in government wealth.

Yours faithfully

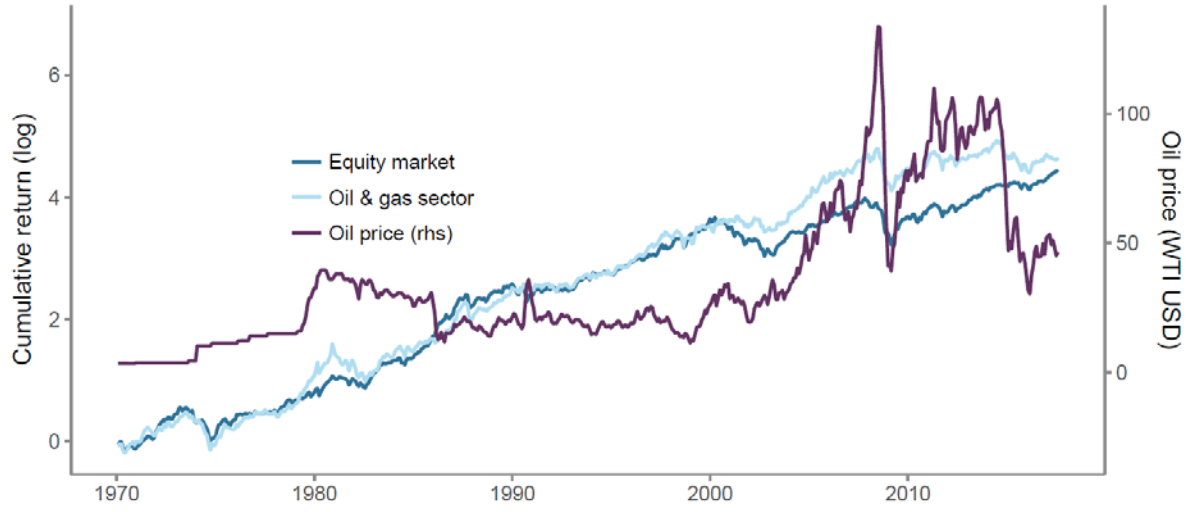
Øystein Olsen Yngve Slyngstad

[5] The regression analyses in the enclosure are based on 12-month forward contracts. The length of the forward contracts used is not defining, and we obtain similar results using shorter contracts.
[6] For the charts in the enclosure, we have used oil spot prices in order to obtain the longest possible period of data.
[7] For a more detailed account of price formation in the oil market, see, for example, Alquist, Kilian and Vigfusson (2013), "Forecasting the Price of Oil", in *Handbook of Economic Forecasting*, vol. 2A.
[8] Besides oil prices, the value of both future government oil and gas revenue and the fund's oil and gas stocks will be affected by costs in the oil and gas sector. These may move differently to oil prices, which means that our analysis may underestimate the risk-mitigating effect of our recommendation on total oil risk in government wealth.
[9] In its letter of 1 September 2017, the Bank recommended removing corporate bonds from the fund's benchmark index.

Enclosure

Figure 1: Cumulative total return

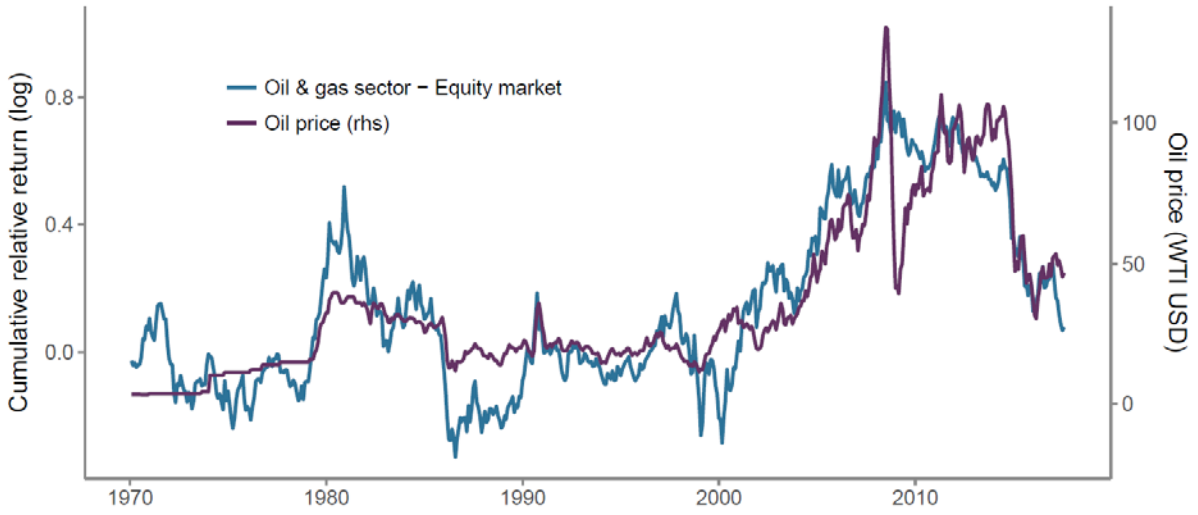
"Equity market" refers to the MSCI World index (mid- and large-cap companies in developed markets), "Oil & gas sector" refers to energy companies in the MSCI World index and "Oil price" refers to the spot WTI oil price. Monthly observations from January 1970 to July 2017, with all series measured in USD. All time-series in nominal terms. Results are unchanged if measured in real terms.



Source: MSCI, St. Louis FRED, Factset and NBIM

Figure 2: Cumulative relative return

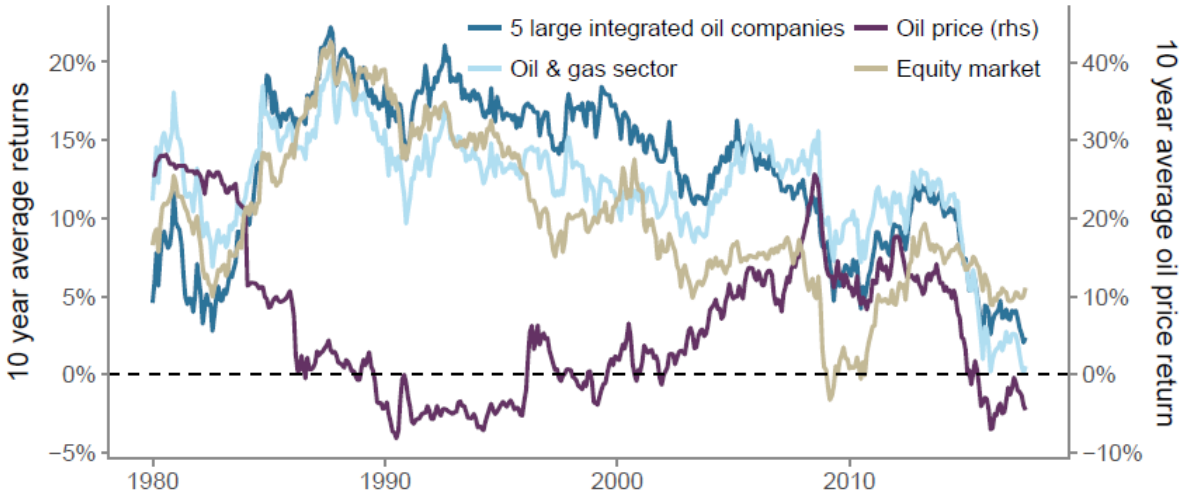
"Equity market" refers to the MSCI World index (mid- and large-cap companies in developed markets), "Oil & gas sector" refers to energy companies in the MSCI World index and "Oil price" refers to the spot WTI oil price. Relative return is calculated as the sector return in excess of the equity market return. Monthly observations from January 1970 to July 2017, with all series measured in USD. All time-series in nominal terms. Results are unchanged if measured in real terms.



Source: MSCI, St. Louis FRED, Factset and NBIM

Figure 3: Rolling 10 year total returns

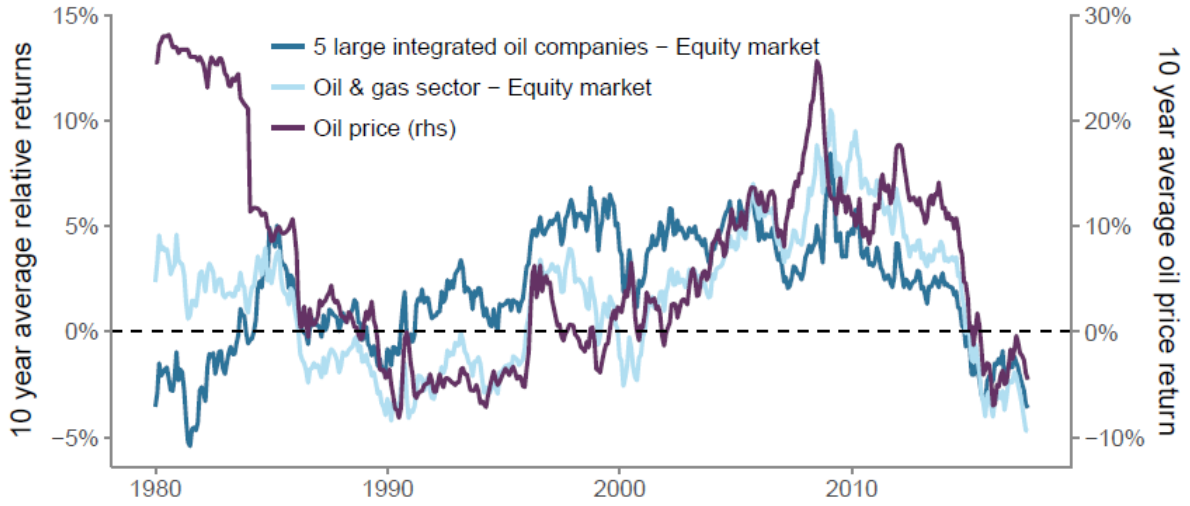
"5 large integrated oil companies" refers to a value-weighted portfolio of Exxon Mobil, BP, Royal Dutch Shell, Chevron and ConocoPhillips. "Equity market" refers to the MSCI World index (mid- and large-cap companies in developed markets), "Oil & gas sector" refers to energy companies in the MSCI World index and "Oil price" refers to the spot WTI oil price. Monthly observations from January 1970 to July 2017, with all series measured in USD. All time-series in nominal terms. Results are unchanged if measured in real terms.



Source: Bloomberg, St. Louis FRED, MSCI, Factset and NBIM

Figure 4: Rolling 10 year relative returns

"5 large integrated oil companies" refers to a value-weighted portfolio of Exxon Mobil, BP, Royal Dutch Shell, Chevron and ConocoPhillips. "Equity market" refers to the MSCI World index (mid- and large-cap companies in developed markets), "Oil & gas sector" refers to energy companies in the MSCI World index and "Oil price" refers to the spot WTI oil price. Relative return is calculated as the sector return in excess of the equity market return. Monthly observations from January 1970 to July 2017, with all series measured in USD. All time-series in nominal terms. Results are unchanged if measured in real terms.



Source: Bloomberg, St. Louis FRED, MSCI, Factset and NBIM

Table 1: Descriptive statistics

"5 large integrated oil companies" refers to a value-weighted portfolio of Exxon Mobil, BP, Royal Dutch Shell, Chevron and ConocoPhillips. "Equity market" refers to the MSCI World index (mid- and large-cap companies in developed markets), "Oil & gas sector" refers to energy companies in the MSCI World index and "Oil price" refers to the spot WTI oil price. Relative return is calculated as the sector return in excess of the equity market return. "t-stat" is the test statistic from the test $H_0: \mu = 0$ versus $H_1: \mu \neq 0$, where μ is the average return. "ρ-oil" is the average correlation between the respective return series and the change in oil price. Monthly observations from January 1970 to July 2017, with all series measured in USD.

	Return	Volatility	Max DD	t-stat	ρ-oil
Panel A: Total return					
5 large integrated oil companies	11.6%	19.0%	-61.1%	4.24	18.9%
Oil & gas sector	11.5%	18.6%	-50.1%	4.27	22.0%
Equity market	10.5%	14.8%	-53.6%	4.89	3.7%
Oil price	10.0%	32.5%	-77.4%	2.11	100.0%
Panel B: Relative return					
5 large integrated oil companies – Equity market	1.2%	15.0%	-61.7%	0.54	20.4%
Oil & gas sector – Equity market	1.1%	13.4%	-57.2%	0.54	26.6%

Source: Bloomberg, St. Louis FRED, MSCI, Factset and NBIM

Table 2: Factor regressions – oil & gas sector

Monthly relative returns for the global oil & gas sector from FTSE (sector returns in excess of equity market returns). "MKT" is the equity market as given by FTSE (FTSE World index until September 2003, FTSE Global All Cap thereafter), while "SMB", "HML", "RMW" and "CMA" are sourced from Ken French's data library. "ΔOil" is the monthly percentage change in price for WTI futures contracts with 12 months to expiration. Robust standard errors in parentheses calculated using the Newey-West (1987) methodology (with 3-month lag length). Model 1 evaluates whether the relative return of the oil & gas sector is exposed to the overall market, whereas Models 2 to 4 adjust for additional exposures. "Intercept" is annualised and expressed in percentage points. Monthly observations from January 1994 to July 2017, with all series measured in USD.

	Model 1	Model 2	Model 3	Model 4
Intercept	1.84	-3.42	0.30	-4.13*
	(2.62)	(2.55)	(1.97)	(2.10)
MKT	-0.08	0.04	-0.29*	-0.15*
	(0.06)	(0.06)	(0.05)	(0.06)
SMB		0.34*		0.07
		(0.10)		(0.09)
HML		0.47*		0.22
		(0.18)		(0.14)
RMW		0.57*		0.49*
		(0.21)		(0.16)
CMA		-0.07		0.21
		(0.22)		(0.17)
ΔOil			0.41*	0.40*
			(0.04)	(0.04)
N	283	283	283	283
R2	0.01	0.14	0.37	0.45

* indicates significance at the 5 percent level

Source: Bloomberg, FTSE, Ken French and NBIM

Table 3: Factor regressions – relative returns

Monthly relative returns for FTSE sectors (sector returns in excess of equity market returns). "MKT" is the equity market as given by FTSE (FTSE World index until September 2003, FTSE Global All Cap thereafter), while "SMB", "HML", "RMW" and "CMA" are sourced from Ken French's data library. "ΔOil" is the monthly percentage change in price for WTI futures contracts with 12 months to expiration. Robust standard in parentheses calculated using the Newey-West (1987) methodology (with 3-month lag length). Monthly observations from January 1994 to July 2017, with all series measured in USD.

	Oil & Gas	Basic Materials	Industrials	Consumer Goods	Health Care	Consumer Services	Telecom	Utilities	Financials	Tech
MKT	−0.15*	0.22*	0.13*	−0.07*	−0.28*	−0.02	−0.14*	−0.29*	0.16*	0.06
	(0.06)	(0.06)	(0.02)	(0.03)	(0.05)	(0.02)	(0.05)	(0.05)	(0.03)	(0.06)
SMB	0.07	0.46*	0.25*	0.14*	−0.23*	0.10*	−0.46*	0.16	−0.16*	−0.19
	(0.09)	(0.10)	(0.05)	(0.05)	(0.09)	(0.04)	(0.15)	(0.09)	(0.05)	(0.13)
HML	0.22	0.43*	0.14*	0.11	−0.30*	−0.09	−0.63*	0.02	0.72*	−0.69*
	(0.14)	(0.12)	(0.06)	(0.08)	(0.11)	(0.05)	(0.13)	(0.13)	(0.09)	(0.14)
RMW	0.49*	0.45*	0.02	0.62*	0.33*	0.11	−0.09	0.57*	−0.33*	−0.71*
	(0.16)	(0.16)	(0.06)	(0.08)	(0.13)	(0.07)	(0.17)	(0.16)	(0.07)	(0.20)
CMA	0.21	−0.07	0.05	0.22*	0.62*	0.12	0.19	0.49*	−0.19	−0.61*
	(0.17)	(0.15)	(0.08)	(0.09)	(0.18)	(0.08)	(0.19)	(0.18)	(0.12)	(0.23)
ΔOil	0.40*	0.14*	−0.01	−0.06*	−0.04	−0.10*	−0.03	0.04	−0.08*	−0.06
	(0.04)	(0.04)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.02)	(0.03)
N	283	283	283	283	283	283	283	283	283	283
*R*2	0.45	0.32	0.25	0.57	0.42	0.24	0.28	0.48	0.56	0.53

* indicates significance at the 5 percent level

Source: Bloomberg, FTSE, Ken French, Factset and NBIM

Table 4: Oil exposure – selected financial assets

"RUB", "AUD", "CAD", "MXN", "MYR", "IDR" is the return to treasury bonds in respective currencies, "Corporate bonds – Energy sector" is the excess return (duration adjusted) relative to a broad index of corporate bonds (Bloomberg Barclays Global Aggregate Corporate Bonds). "Statoil" and "Oil & gas sector" refer to the return to the stock and FTSE's global oil & gas sector respectively. "EQ" is the equity market return from FTSE (FTSE World before September 2003, and FTSE Global All Cap thereafter), "FI" is the return from the Bloomberg Barclays Global Aggregate Index and "Oil" is the monthly percentage change in price for WTI futures contracts with 12 months to expiration. Our model estimates the exposure of assets to innovations in oil prices and is given by $y_{i,t} = \alpha_i + \beta_{EQ} EQ_t + \beta_{FI} FI_t + \beta_{Oil} Oil_t + \epsilon_{i,t}$ for fixed income and $y_{i,t} = \alpha_i + \beta_{EQ} EQ_t + \beta_{Oil} Oil_t + \epsilon_{i,t}$ for equities. Monthly USD excess returns (relative to 3-month U.S. T-bills) for all series except "Corporate bonds – Energy sector" and WTI futures contracts. Robust standard errors in parentheses calculated using the Newey-West (1987) methodology (with 3-month lag length). Monthly observations until July 2017, with all series measured in USD.

	Entire history				Data from July 2008			
	β_{EQ}	β_{FI}	β_{Oil}	# obs	β_{EQ}	β_{FI}	β_{Oil}	# obs
Panel A: Fixed income								
RUB	0.20	0.36	0.49*	109	0.20	0.36	0.49*	109
	(0.17)	(0.20)	(0.14)		(0.17)	(0.20)	(0.14)	
AUD	0.34*	0.94*	0.09*	283	0.36*	1.09*	0.05	109
	(0.03)	(0.08)	(0.02)		(0.05)	(0.09)	(0.04)	
CAD	0.23*	0.58*	0.08*	283	0.26*	0.61*	0.05*	109
	(0.02)	(0.06)	(0.02)		(0.04)	(0.08)	(0.03)	
MXN	0.49*	0.55*	0.03	151	0.51*	0.64*	0.04	109
	(0.07)	(0.15)	(0.04)		(0.09)	(0.18)	(0.06)	
MYR	0.24*	0.60*	-0.03	139	0.21*	0.69*	-0.02	109
	(0.07)	(0.11)	(0.03)		(0.08)	(0.13)	(0.05)	
IDR	0.64*	0.94*	-0.11	109	0.64*	0.94*	-0.11	109
	(0.14)	(0.22)	(0.06)		(0.14)	(0.22)	(0.06)	
Corporate bonds – Energy sector	0.00	-0.02	0.04*	283	-0.01	-0.06	0.08*	109
	(0.01)	(0.03)	(0.01)		(0.03)	(0.06)	(0.02)	
Panel B: Equities								
Statoil	0.66*		0.61*	194	0.52*		0.65*	109
	(0.12)		(0.08)		(0.16)		(0.11)	
Oil & gas sector	0.71*		0.41*	283	0.69*		0.40*	109
	(0.05)		(0.04)		(0.07)		(0.05)	

* indicates significance at the 5 percent level

Source: Bloomberg, FTSE, Ken French, Factset and NBIM