Brigham Exploration

JUNE 17, 2022

VIA EMAIL

Vanessa A. Countryman
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549-1090

rule-comments@sec.gov

Dear Ms. Countryman:

Re: Comments on proposed rule "The Enhancement and Standardization of Climate-Related Disclosures for Investors," File No. S7-10-22.

Brigham Exploration Company offers this comment letter in response to "The Enhancement and Standardization of Climate-Related Disclosures for Investors," proposed by the U.S. Securities and Exchange Commission on March 21, 2022.[1]

Brigham Exploration is a privately held company that acquires and manages non-operating oil and gas interests across the Permian Basin in Texas and New Mexico

Privately held companies in the oil and gas sector like Brigham Exploration are essential to extract the oil and natural gas needed to reduce the world's reliance on higher emitting sources of energy and to provide the economic stability and security from an abundant source of domestic energy. Oil and natural gas will continue to be essential to power the United States and the world for the foreseeable future. The shift to natural gas from coal has reduced global emissions more than the increased use of renewable sources of energy.[2] And recent world events have highlighted the need for the United States to foster a robust oil and gas sector to power our economy and export that resource around the globe.

[1] 87 Fed. Reg. 21,334 (April 11, 2022).

[2] https://www.eia.gov/todayinenergy/detail.php?id=48296

However, the SEC's proposed rule would be devastating to the country's oil and gas sector at a time when the domestic supply is as important as ever. The proposed rule would be tremendously burdensome and inherently unworkable for the publicly traded companies directly subject to its reporting requirements, as no doubt will be addressed by comments from those companies.

Brigham Exploration provides this comment to highlight how the proposed rule would severely impact private companies (such as the three commenters) as well—those not directly subject to the SEC's reporting requirements. As detailed in the attached report from Dr. Bradley Ewing, which is incorporated here by reference, the proposed rule would indirectly place many of the same burdensome and unworkable reporting requirements on private companies. The proposed rule would cause a misallocation of capital away from traditional energy companies—artificially increasing the cost of financing, hampering future operations, and harming every consumer of energy by unnecessarily raising prices. And the proposed rule would impose all of those costs without achieving corresponding benefits, particularly in light of the inherent uncertainty in the science of climate change. Thus, the effect of the proposed rule on privately held companies is yet another example of how it exceeds the SEC's statutory authority and is counter to its mission of protecting investors, maintaining efficient markets, and facilitating capital formation.

I. The proposed rule would place burdensome, unworkable, and counterproductive requirements on privately held companies.

As will surely be detailed by the publicly traded companies subject to the reporting requirements, the proposed rule would impose additional onerous reporting requirements, often down to the line-item level of financial statements. In order to comply with those new reporting requirements, the publicly traded companies will undoubtedly demand additional information from the companies that they work with, including privately traded companies not otherwise subject to the SEC's jurisdiction. As Dr. Ewing puts it, "there is an incentive for [publicly traded] companies to 'pass through' these compliance costs to the energy companies with which they engage in their value stream." And that "type of 'pass through' may be even more detrimental for privately held energy companies as these, often smaller businesses, may not have the compliance departments and/or processes in place that many larger, public companies have."

Take, for example, the newly proposed requirement that companies report their Scope 3 emissions when deemed "material." Requiring public companies to report Scope 3 emissions means they need to report the emissions from every other company up and down their value chain. That would include every privately held

company that public companies do business with. The reporting companies would likely be required to get that information from every privately held company they do business with, even if the private company has no existing process in place to track and report such information. Not only would that be extremely burdensome, it would also mean that multiple companies would be reporting on the emissions of the same privately held companies, causing a huge over-count in emission-related reporting.

Another example is the increased reporting requirements related to projections on how future climate-related events will affect the value chain of publicly traded companies. Trying to predict such multi-variable information down to the impact on any specific company or operation is impossible. In addition, requiring this type of reporting would mean that the publicly traded companies would have to get that inherently uncertain information from privately held companies in their value chains. For example, a public oil and gas operating company would need to predict how a future climate-related event might affect the price of sand that it uses for its fracking activities. To know that the public company will have to ask its private suppliers of frac sand how such future climate-related events might affect the private company's operation. That would require the private sand company to go through the same impossible prediction and incur the same burden in trying to quantify something so uncertain, even though it is not subject to the SEC's reporting requirements.

II. The proposed rule would cause a misallocation of capital.

Not only would the proposed rule place huge direct costs on privately held companies who would have to collect and report information to their publicly traded partners, it would cause indirect costs by misallocating capital away from privately held companies in the energy sector. The additional reporting requirements would increase operating expenses, cutting into the profit margins of the privately held companies. Additionally, a publicly traded investor may have to report the emissions of the privately held companies in its portfolio as part of its Scope 3 reporting requirements if deemed material. That would increase the cost of compliance for the investor itself, which could cause it to divert its resources into other industries. According to Dr. Ewing, "[t]he result is, of course, that energy companies will be viewed by investors as now hiving higher costs, greater risk, and quite possibly for some, a reduction in the demand for their products and services. At the end of the day, energy companies will see a reduction in their access to capital and, to the extent that capital is available, the cost of that capital will be higher."

In fact, as Dr. Ewing correctly points out, diverting funds away from energy companies "is, of course, one of the purported benefits cited in the SEC proposed rule."

But "that comes at the expense of the energy industry and disproportionately so by the private energy companies." And "the adverse effect on the energy sector will be multiplied through the economy, at national and regional levels, with negative economic impacts on jobs, output, etc." Yet the SEC has thus far failed to address these "very dire effects," instead spending just three paragraphs of the 500-page proposed rule on "indirect costs."

Furthermore, there are some instances in which the proposed rule will require publicly held companies to impose large burdens on privately held partners who are not subject to the SEC's jurisdiction. For example, it is quite common for companies within the oil and gas sector to enter joint ventures to share the financial risks of capital-intensive operations. These include joint ventures between private and public companies in which a private company serves as the primary operator. The proposed rule would require public companies who have entered joint ventures with private companies to provide minute detail regarding the costs and expenses of maintenance and losses surrounding weather events and Scope 1 and Scope 2 emissions from such joint operations. This would wind up pushing those burdens onto the private operators, who manage day-to-day operations and expenses, but do not have the same accounting or SEC filing obligations. In many cases it will require renegotiation of contracts and joint venture agreements, at great expense. And it may make public companies less likely to engage with their privately held peers, and vice versa. This will disincentivize joint ventures between private and public companies, make risk sharing less efficient, and jeopardize the SEC's mission to among other things, promote capital formation.

III. The proposed rule would have little corresponding benefit given the uncertainty of the science of climate change.

What's worse, the proposed rule would impose all of those burdens on both public and private companies without any meaningful corresponding benefit. In an effort to justify the enormous costs of collecting and reporting such granular and uncertain data, the proposed rule makes a number of misplaced assertions about the present-day impacts of climate change on the weather and related costs. The proposed rule primarily relies on summary reports on the work of the Intergovernmental Panel on Climate Change (IPCC) and National Oceanic and Atmospheric Administration (NOAA). However, it misconstrues the actual findings of those bodies. For instance, the proposed rule states that "the impact of climate-related risks on both individual businesses and the financial system as a whole are well documented," citing data on

recent extreme weather events.[3] It asserts that drought, heatwaves, hurricanes, and heavy precipitation caused by climate change have already impacted businesses.[4] And it claims that wildfires have become more frequent because of climate change.[5] In reality, the IPCC and NOAA have drawn no such conclusions.

More accurately, the IPCC has said the following about these issues:

- **Drought:** The data do not support a conclusion that there has been a trend in drought conditions within meaningful levels of confidence. Rather, "[f]ew [studied] regions show observed increases in meteorological drought" (none of which are in North America), while "a few others show a decrease."[6] The data may suggest a trend in increased soil moister deficits, but only within a medium level of confidence. In contrast, the IPCC describes data and conclusions it is confident in by noting report authors have "high" or "very high" confidence in the data or assessment.[7]

- **Hurricanes/Tropical Cyclones:** One cannot conclude from the data that there has been an increase in tropical cyclones or hurricanes.[8] And "[t]here is low confidence in most reported long-term . . . trends in [tropical hurricane] frequency- or intensity-based metrics . . . ."[9]

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[3] 87 Fed. Reg. at 21,336.

[4] *Id.* at 21,350.

[5] *Id.* at 21,352.

[6]Seneviratne, S.I., X. Zhang, M. Adnan, W. Badi, C. Dereczynski, A. Di Luca, S. Ghosh, I. Iskandar, J. Kossin, S. Lewis, F. Otto, I. Pinto, M. Satoh, S.M. Vicente-Serrano, M. Wehner, and B. Zhou, 2021: Weather and Climate Extreme Events in a Changing Climate. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1513–1766, doi:10.1017/9781009157896.013 ("IPCC Physical Science Basis") at 1575

[7] *Id.*

[8] *Id.* at 1585.

[9] *Id.*

- **Heavy Precipitation:** The IPCC concluded there likely has been an increase in heavy precipitation over the studied regions, but notes this does not equate to flooding.[10]

- **Flooding:** Based on the IPCC's review of the data it would be inappropriate to draw a conclusion that there has been an observed change in the frequency or magnitude of floods because "there is low confidence about peak flow trends over past decades on the global scale."[11]

- **Fire Weather:** There is no more than medium confidence that "weather conditions that promote wildfires have become more probable [in certain regions] over the last century."[12]

Similarly, NOAA's reporting acknowledges that the increasing costs of weather-related events are due to a number of factors, including "increased exposure (*i.e.*, more assets at risk), vulnerability, (*i.e.*, how much damage a hazard of given intensity—wind speed, or flood depth, for example—causes at a location)," and climate change.[13] In other words, a major contributing factor to the costs of these events is increased development (*i.e.*, more buildings, homes, businesses, and infrastructure) in areas prone to major weather events. Moreover, NOAA acknowledges that it is "difficult to detect trends and develop future projections" regarding climate change's impact on these events.[14]

None of this is to suggest that future potential impacts of climate change are not worth considering, but it is unreasonable to present the information and conclusions summarized by the IPCC and NOAA as if there has been a firm, verifiable, conclusion that climate change already has and is causing significant harm to businesses. It is even more unreasonable for the SEC to justify enormous costs on

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[10] *Id.* at 1563.

[11] *Id.* at 1568.

[12] *Id.* at 1600.

[13] Adam B. Smith, 20221 U.S. Billion-Dollar Weather and Climate Disasters in Historical Context (Jan. 24, 2022) available at *https://www.climate.gov/news-features/blogs/beyond-data/2021-us-billion-dollar-weather-and-climate-disasters-historical*.

[14] NOAA, Fourth National Climate Assessment, Chapter 2: Our Changing Climate available at *https://nca2018.globalchange.gov/chapter/2/*.

the both the public and private sector by overstating or misrepresenting the conclusions of the scientific community. Any final rule would be arbitrary and

capricious and contrary to law if the SEC fails to accurately describe the data on which it justifies the proposed rule and provide stakeholders meaningful opportunity to comment on a revised proposed rule's justifications.

* * *

The Commission has an obligation to consider all costs and benefits of its proposed rules. As noted above, however, it has failed to consider many of the indirect costs and economic repercussions of the proposal, particularly on privately held companies in the energy sector. To avoid rendering any final rule arbitrary and capricious and contrary to law, the Commission must revise its cost benefit analysis to evaluate the indirect costs, including those noted in this comment letter and the attached report, and give stakeholders a meaningful opportunity to comment on the Commission's revised analysis.

We would be pleased to discuss these matters further at your convenience.

Sincerely,

Keith Lilie
President & CEO

To: Vanessa A. Countryman, Secretary
Securities and Exchange Commission

From: Bradley T. Ewing, Ph.D
C.T. McLaughlin Endowed Chair in Free Enterprise
and Professor of Energy Commerce
Rawls College of Business
Texas Tech University

Date: 6/14/22

Title: Comment on SEC's Proposed Rule

Dear Ms. Countryman,

I have read with interest the Securities and Exchange Commission's Proposed Rule that would require information disclosure about a registrant's climate-related risks. In this comment, I address the need for a thorough and properly executed Cost Benefit Analysis (CBA) that would address the following two main points which, thus far, has not yet been done by the SEC:

1) The potential impacts on the energy sector of the economy, including private energy company's access to capital;

and

2) The indirect regulatory (economic) costs and adverse impacts on the energy sector of the economy and, including privately held energy companies, that will arise from compliance attempts by publicly held companies.

In addition, my comment will address other issues related to CBA in the context of the proposed rule. As a professionally trained economist and professor of Energy Commerce who teaches and conducts research in the area of energy finance and energy economics, as well as, a frequent consultant to the energy industry, I have a keen interest and expertise in the subject matter and the proposed SEC rule.

As for my background, I am founding partner of the Ph.D. Resource Group, L.L.C., a firm that regularly consults with both publicly traded and privately held and operated energy companies on a variety of issues. I am a Professor of Energy Commerce in the Rawls College of Business at Texas Tech University where I also hold the C.T. McLaughlin Endowed Chair in Free Enterprise. I received my Ph.D. in economics from Purdue University. I am the author of over 170 peer-reviewed, refereed articles, many of which appear in leading energy journals. My research has been funded by a variety of sources including the National Science Foundation (NSF), the U.S. Department of Energy (DOE), the National Institute of Standards and Technology (NIST), the U.S. Economic Development Administration (EDA), the Federal Deposit Insurance Corporation

(FDIC), various trade organizations (e.g., Permian Basin Petroleum Association, Texas Pipeline Association, Texas Rural Water Association), and the Railroad Commission of Texas. I currently serve as the Economics Lead for the Texas Produced Water Consortium (established by Texas Senate Bill 601). Additionally, in my work at Texas Tech University I am affiliated with the National Wind Institute (a leader in both wind energy and power generation research) and the Center for Energy Commerce, where I maintain economic input-output models for the Permian Basin region and the state of Texas. I am a member of several professional associations including the United States Association for Energy Economics, Society for Benefit Cost Analysis, National Association of Forensic Economics and the Southern Regional Science Association.

In what follows, I provide the economic rationale for my main concerns regarding the diminution in access to capital that the energy sector and, in particular, privately-held energy companies will face under this proposed rule and the indirect regulatory (economic) costs that the energy sector will incur. Moreover, there is a high probability that privately-held energy companies would be disproportionately impacted by these indirect regulatory costs.

However, from the outset, I want to state that it is not my intention to address or critique the investor or societal benefits that may arise from this rule. My intention is to draw attention to the real economic costs and consequences, indirect and otherwise, that energy companies face and which need to be quantified and studied in the context or framework of a comprehensive CBA. The economic costs that I submit are relevant, foreseeable, and generally measurable from available and/or existing data or, if not, the data are easily attainable. It is my hope that the Securities and Exchange Commission will take the points made in this comment seriously and utilize them to develop and conduct a comprehensive CBA in order to insure the best interests of the all stakeholders, including investors, are adequately met. Please feel free to contact me if you have any questions or wish to discuss.

Introduction and General Problem

The energy industry plays a unique and important role in not only the national economy but in many state and local economies (Brown and Yucel, 2002; Ewing and Watson, 2015; Ewing, 2020). Briefly stated, this is because the energy sector (1) directly supplies needed inputs to the manufacturers, producers, and transporters of goods and services, thus attributing to the productive capacity of the economy and (2) provides needed goods and services directly to households and consumers that purchase fuels and electricity to meet the demands of their daily lives. In this way, energy companies form an important component or link with the value streams of registrant companies. Take for example, the oil and natural gas sector of the energy industry. The firms that make up this sector are engaged in the extraction and production of hydrocarbons, many firms also specialize in a range of oil field services, the transportation and storage of oil and gas are maintained by midstream companies, while the downstream portion of this sector is concerned with a variety of refined and related products as well as distribution to end users (industrial, commercial, consumer). Taken as a whole, the oil and gas sector incurs not only substantial operating costs, of which efficiency is crucial for companies to remain

viable and competitive, but requires large amounts of capital expenditures. In fact, Munoz (2009, p. 225) describes financing in the oil and gas sector as being characterized by "large amounts of capital ... along with the long time gap between investment of capital and seeing returns from such investments." While in a related study, I highlight the important role that interest rates play in the capital-intensive discovery of proved reserves (Ewing, 2017). Accordingly, access to capital markets is critical for this industry and, not surprisingly, even small changes in the cost of capital and/or reductions in capital access can lead to large reductions in company value and the forgoing of potentially entrepreneurial activity and, in some cases, even lead to otherwise productive companies exiting the industry altogether. This is no small matter as economic growth, particularly at the regional level, is known to depend on the entrepreneurial activity and continued improvement in technology of the oil and gas sector (Ewing, et. al, 2015). Generally speaking, the evidence suggests that the energy sector plays an important role in overall economic growth and sustainability.

The Net Present Value (NPV) and Discounted Cash Flow (DCF) models constitute a common framework for determining the economic value of a company and can be used to illustrate the need for access to capital. As I teach my students in the energy finance course, this framework can be boiled down into three parts: Revenues, Costs, and Risks. A simplified version is as follows, where the numerator (π) denotes revenues minus costs in any period, and by virtue of the time value of money, risk is captured in the corresponding denominator through the interest rate (i) or what may be thought of as the cost of capital.

$$value = \pi_0 + \frac{\pi_1}{(1+i)^1} + \frac{\pi_2}{(1+i)^2} + \ldots + \frac{\pi_n}{(1+i)^n}$$

Given that commodity prices are known to be highly volatile and thus difficult to forecast, energy companies must rely on managing financial and operational risks, and they often do that quite well. Nevertheless, any impediment to the free flow of capital will have adverse consequences on the energy sector. As noted in the SEC proposed rule change document, the existence of asymmetric and/or imperfect information is one often cited impediment to investors' willingness to supply funds (often referred to as "loanable funds" in economics textbooks). Moreover, it stands to reason that while reducing certain information asymmetries may be beneficial for some but not necessarily all stakeholders, it is really the net benefits (inclusive of all economic costs) that should be considered when it is a regulation that is altering the information landscape.

For the case of publicly-held or traded companies (particularly in the non-energy sector), the regulatory costs and compliance burden has foreseeable actions. That is, there is an incentive for these companies to "pass-through" these compliance costs to the energy companies with which they engage with in their value stream. From an economics standpoint, this is only natural and there is nothing particularly wrong or immoral about these types of actions (Ritz, 2015). However, economists generally view these actions as creating externalities. In this case the registrant may, for example, require energy companies to compile and report additional data as a requirement of doing business with them. The registrant is not necessarily incurring the full cost of their economic activity (production, manufacturing, transportation, etc.) but is

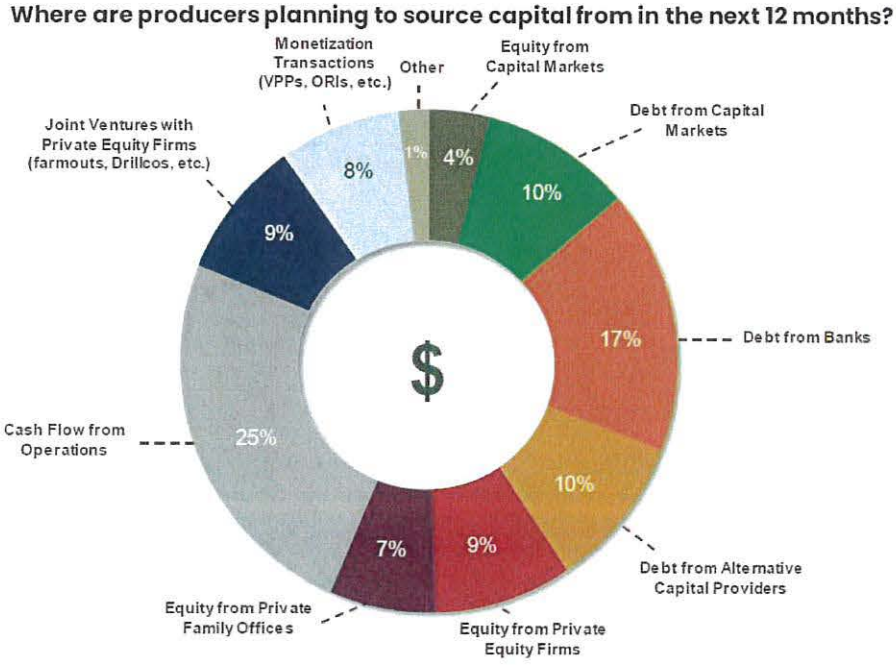
pushing it onto another. This type of "pass-through" may be even more detrimental for privately-held energy companies as these, often smaller businesses, may not have the compliance departments and/or processes in place that many larger, public companies have. The result is, of course, that energy companies will be viewed by investors as now having higher costs, greater risk, and quite possibly for some, a reduction in the demand for their products and services. At the end of the day, energy companies will see a reduction in their access to capital and, to the extent that capital is available, the cost of that capital will be higher. These impacts are quantifiable and the SEC needs to address them accordingly in their cost benefit analysis.

An Economic Model of Capital Access

Economists may examine the effects of policy-induced changes in the access to capital and the cost of capital using what is referred to as the Market for Loanable Funds (Barron, Ewing and Lynch, 2006). A simplified version of this framework provides insight into what will happen with the SEC proposed rule in terms of energy companies access to capital (loanable funds) and the cost of capital (represented by the interest rate for borrowing, though it may be easily extended to represent the return that investors require for providing funds in any number of financial arrangements). Basically, there is a supply of loanable funds (SF) that consists of the total quantity of capital or loans that investors are willing and able to supply at various interest rates. The demand for loanable funds (DF) is comprised of the companies that constitute the "borrowers" and represents the quantity of funds that would be demanded at various interest rates. For any given amount of SF, we can consider the shares of loanable funds that are borrowed, in this case, by three groups: non-energy registrants (certainly the largest group), public energy companies, and private energy companies. For the reasons specified above, the incentive associated with compliance burdens (i.e., the SEC proposed rule) will lead to higher costs for energy companies and greater risk, thus, investors will shy away from them by either restricting access to capital and/or raising the interest rate for loanable funds. This would be illustrated as a leftward and upward shift in the supply curve. Also, for reasons noted above, private energy companies will likely be disproportionately impacted and face even more access restriction and/or even higher interest rates. Thus, the model predicts a type of crowding out of energy company investment or capital formation and the effect would be even more adverse for private and often smaller energy companies. Note that this analysis leads to a greater share of funds flowing into non-energy companies and that is, of course, one of the purported benefits cited in the SEC proposed rule change report. However, this comes at the expense of the energy industry and disproportionately so by the private energy companies. As noted above, the adverse effects on the energy sector will be multiplied through the economy, at national and regional levels, with negative economic impacts on jobs, output, etc. For regions and states that depend heavily on the energy sector for the performance of their economy, this may have very dire effects. Of course, the magnitude and extent of those effects is an empirical issue and should be addressed and quantified in a comprehensive cost-benefit analysis of the SEC's proposed rule, which has not yet been completed by the SEC.

More on Energy Companies and the SEC Proposed Rule

Modern financial economic theory indicates the importance of capital structure in releasing firm value and this is particularly the case for the highly capital-intensive energy industry. For this reason a number of financing structures exist (McNeil, Perna and Roti, 2010). Traditional oil and gas financing structures often include bank financing, lines of credit (e.g., Reserve-Based Lending), and alternative financing, each of which have their distinct advantages that allow energy companies to operate, grow, and provide benefits to the economy. While a discussion of the determinants of the cost of capital and the capital asset pricing model (CAPM) is beyond the scope of my comment, it is worth mentioning that a regulatory cost such as that imposed by the SEC proposed rule and which will, for all intents and purposes, be "passed through" to the energy sector, can be viewed as a tax or even penalty on energy companies and thus raise the cost of capital for these companies. That said, it will impose a change to the capital structures of energy companies and thus alter the relative cost of financing options. Such a regulatory cost or tax, if you will, distorts the investors internal rate of return (IRR) vs return on investment (ROI) trade-off that currently exists. The sources of capital for energy companies will be fundamentally changed with costs rising and access shrinking. A recent Haynes and Boone (2021) survey shows the distribution of source capital for oil and gas producers in the absence of the SEC proposed rule. It is unclear how and to what extent this distribution will be altered or even distorted with the SEC proposed rule. This is, of course, something that needs to be considered and quantified in an SEC cost benefit analysis.



As it stands, the SEC's proposed rule will result in foreseeable and measurable:

1) Reductions in the relative access to capital for the energy sector of the economy and, quite possibly, an even greater (absolute) barrier and disproportionate impact to capital formation for private energy companies;

2) Higher indirect regulatory (economic) costs and adverse impacts in the energy sector and on privately held energy companies to be manifested in the form of higher costs of doing business (i.e., OPEX, CAPEX), reduced sales, higher consumer prices for energy (i.e., heating and cooling, fuel, etc.), and diminution of the industry's competitiveness;

3) Other potential economic impacts typically measured in terms of job loss, household income loss, lower Gross Domestic Product and reductions in economic output. The ramifications of these impacts may lead or contribute to existing inflationary pressures through higher transportation costs and supply chain issues.

A Call for a Comprehensive Cost Benefit Study

The SEC's proposed rule change report discusses the importance of comparing the benefits and costs of the proposed rule. However, the analysis does not go far enough particularly in terms of what might be called the indirect economic costs of the proposed rule. For instance, only three paragraphs are devoted to the discussion of indirect costs as they might pertain to companies such as those which I am concerned with in this comment (p. 402). It is my contention, based on the above discussion regarding a reduction in access to capital and other regulatory costs that will be passed through to the energy sector including those which may disproportionately impact privately-held energy companies, that these issues have not been adequately measured, estimated, nor addressed in the current version of the CBA.

In fact, discrepancies or omissions of relevant, and often indirect, cost data in CBA creates confusion, delays decision-making and may actually lead to suboptimal investment. Existing CBA tools often fail to properly include many spillover effects or externalities (Dolan and Laffan, 2016). These externalities are not just limited to societal or human health impacts but may include financial and capital market effects on businesses. In the same way, current CBA tools fail to capture societal functioning and measures of socio-economic well-being, e.g., indirect and induced jobs, value added, recreational activities, equity, etc. (Cui, Liang, and Ewing, 2020).

The SEC proposed rule requires a comprehensive CBA which must adequately capture inherent tradeoffs and associated risks and uncertainties among scarce resources (financial capital, assets, water, land, etc.) and outcomes (Dudley, et al. 2019; Cui, Ewing and Liang, 2016). Given that many activities make up a value chain (i.e., for any number of registrants) and differ in scale, scope, riskiness, and duration, particular attention should be paid to the growth and discount rates applied in the CBA tools being used, specifically to make sure they reflect reality

and are consistent over time and spatial dimensions (Lepeye and Quinet, 2017). In summary, the SEC's current CBA approach may not be consistent, possibly even disadvantage climate-based solutions of energy companies, and distort socially optimal outcomes and equity. The comprehensive CBA must allow for multiple variables (factors), higher dimensionality, and consistency (Cui, Liang, Ewing and Nejat, 2016). The long-term efficacy, cost-effectiveness, and co-costs and benefits of financial, societal and climate-based environmental solutions should be studied and included in a fully executed CBA.

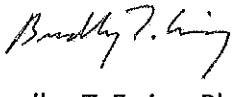
The comprehensive CBA might utilize or build on current practices using the approaches of Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratios, and project scalability indexes (such as NPV/investment) to incorporate multi-variate and dynamic factors related to financial, societal, business and climate-based environmental costs and benefits. A myriad of econometric, quantitative, and statistical methods may be used to analyze the data including Machine Learning (e.g., LASSO and automatic factor determination), dynamic factor models, probabilistic modeling, and integrative time series analysis which allow for parsimonious groupings of important factors to evolve or change over time. Results from the comprehensive CBA would identify compliance actions and their associated outcomes.

As I noted at the beginning of my comment, I am not debating the investor or societal benefits that may arise from this rule. However, from this economist's point of view, there is a clear and present need to assess the benefits that may be attributed to the SEC's proposed rule with the very real economic costs and consequences, indirect and otherwise, that the companies that comprise the energy sector face and which need to be quantified and studied in the context or framework of a comprehensive CBA.

Finally, one last comment regarding capital markets (in the context of the market for loanable funds model), the comprehensive CBA should include some measure of the elasticity of Loanable Funds with respect to changes in the compliance rules. Accordingly, this would be a metric that shows the percentage reduction in Loanable Funds to the energy sector and privately-held energy companies to a percentage increase in the compliance costs of registrants. This metric would inform the SEC as to the size and magnitude of the impact that increased compliance has on loss of access to capital. Such an elasticity measure can also be used to determine the extent of disproportionate and adverse impacts on privately-held energy companies. Overall, based on the SEC's limited cost benefit analysis, one cannot determine that the benefits of the proposed rule outweigh the costs.

Thank you for allowing me the opportunity to provide input and comments on the SEC proposed rule.

Sincerely,



Bradley T. Ewing, Ph.D.

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