The Economics of Sustainability: Causes and Consequences of Energy Market Transformation

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The collapse in oil prices that started in 2014 and subsequent 2020 plunge have put diversification at the forefront of the policy debate in many nations that have been dependent on fossil fuel production. Many oil rich countries have indeed either announced or already put in place policies to help transform their economies and move away from the dependence on oil. Diversification strategies have been pursued in the past and historically those managed by the state have not worked. That is because top-down management almost inevitably obstructs the economic diversification process because it does not empower managers of the companies (and their teams) who are best able to guide the process and adapt to new circumstances. In other words, countries should not concentrate on the end goal—namely diversification—and focus instead on what is required to get there, no matter how disruptive that transformation process might be to traditional production.

The present paper deals with the economics of sustainability associated with the transformation of energy markets. It emphasizes the interrelations between technical changes and energy markets and how in turn the resulting transformations alter the sustainability of economic systems that are dependent on these markets. It also explores how innovation (or the lack thereof) is intimately linked to the ability of energy rich economies to adapt and transform.

The agenda is especially relevant for oil rich countries that have announced or already put in place policies to help transform their economies and move away from dependence on oil. The agenda is also relevant for the global community, as it relates to the economic consequences of the needed transformation of energy markets to support the goal of limiting global warming by reducing greenhouse gas emissions.

Indeed, energy markets are subject to changes in technologies that affect producers and consumers alike. These changes—such as certain innovations in oil drilling techniques or in battery technology for automobiles—can be risky for oil companies and national economies that depend on fossil fuel production. But technological change can also offer new opportunities for growth.

The biggest risk for oil producers and oil-dependent economies comes from changes that cause oil price collapses followed by a protracted period of low prices, as is occurring now. What is more is that low prices could strand oil reserves—which will be left in the ground because they are no longer economical to extract—a sharp blow to economies whose national wealth is heavily bound up with fossil fuel reserves.

The opportunities associated with technological change include potential improvements in extraction efficiency that permit profitable production of oil at lower prices. Other changes not directly associated with oil, such as the development of technologies around renewable energies, can allow economies that have say a high potential for solar irradiation to limit the risks of trying to develop non-fossil fuel industries and better align with the goals set by the 2015 Paris Climate Accord. The accord, if adhered to, will reduce the burning of oil, natural gas and coal and further depress their prices (if global production does not decline).

Policies geared toward "behavioral change," such as changes in attitude toward innovation and risk-taking by managers and employees—especially as they relate to how firms govern themselves, can complement policies that have so far focused almost exclusively on improving the business environment outside the firm. Specifically, to induce behavioral change, policies should aim at turning state owned enterprises (SOEs) in the oil sector into publicly listed corporations. That would enhance their trans-

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parency and efficiency and make them more accountable to investors. The result should be that instead of timidly approaching diversification, SOEs would be sitting at the technological frontier in the energy sector and exert positive spillovers to the rest of the economy that would drive overall development. That is, of course, a tall order but a goal worth pursuing for its long-term socioeconomic gains.

The focus on transformation—rather than on the objective of diversification—also has important policy implications for the energy (-producing and -using) industry and the ever-growing number of countries that are dependent on the exploitation of energy resources. This new focus has also broader relevance for the global community as it relates to the economic consequences of the needed transformation of energy markets to support the goal of limiting global warming by reducing greenhouse gas emissions.

The paper mobilizes relevant strand of literature from economics and finance, as well as data to address the following elements. First, it explores the role of technological change in shaping energy markets. Second, it lays out the nature of the risks and opportunities associated with the changes occurring in energy markets. Third, argues for the need for economic transformation of oil dependent economies and SOEs. Fourth, it concludes on the modalities for the shifting landscape for "big state oil."