

Fracking: A creature of government?

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Abstract

Like most other things, fracking has its good and bad points. In the former regard, it is a technological breakthrough that can increase the supplies of energy of the entire economy. In the latter, it has been linked with an increased incidence of earthquakes and water pollution, surely negatives. As well, there is some evidence fracking would not exist, at least not to the present extent, were it not for government subsidies, which, we argue, misallocate resources.

Keywords

Fracking, energy, government subsidies, property rights violations

Introduction

The hydraulic fracturing (fracking) industry is a burgeoning one which has the potential to give the United States energy independence.^a It has been lauded by many for singlehandedly^b avoiding a world energy crisis due to a lack of fossil fuels. However, it has also faced criticism for creating a myriad of problems. Allegedly, the chemical used in fracking is toxic and poisons drinking water, and the process itself causes earthquakes. For opponents of the free market, fracking has served the *coup de grace* to laissez faire capitalism and fossil fuels. In this paper, we report on the findings of the dominant scientific literature and attempt to determine whether the fracking industry is a creature of the free market or the government.

In the following section, we address the possible role of hydraulic fracturing in causing earthquakes and in a subsequent section we do so for water pollution. Later section is devoted to our addressing the question of what should be done? Next, we ask if fracking is government induced? Final section concludes the article.

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Fracking's role in earthquakes

Hydraulic fracturing is a two-part drilling process in which a well is horizontally dug deep into the Earth's crust, and a mixture of water, sand, and chemical agents are injected into shale rock formations. The highly pressurized injection of fluids causes the shale to crack, releasing the natural gas confined in the rocks.¹

In some parts of the country, which are heavily fracked, there has been an increase in earthquakes. Oklahoma, most famously, has seen a drastic uptick in such upheavals. In just one week alone in 2015, Oklahoma suffered from 35 earthquakes with a magnitude greater than 3.0; before 2009, the state experienced as few as two per year.² This correlates positively with the expansion of fracking in the state. Superficially, it seems plausible that the creation of fissures is the cause of the increase in earthquakes, but recent studies have suggested that this was not the case. A study conducted by Stanford scientists revealed that the cause of the earthquakes is not fracking, but the disposal of wastewater from the drilling process.^{3c} As oil is released from the underground shale, it mixes with brackish water. The water is separated from the gas, and then injected back into the ground. In Oklahoma, the location of many of these wells is in or around a rock formation called the Arbuckle Group. The wastewater causes the faults in this formation to slip, causing earthquakes.

Is there another side to this story? There is, there is. There are claims, some of them seemingly substantiated,⁴⁻⁷ that fracking creates earthquakes, and other such maladies. If these difficulties could be confined to the property of those who engage in this practice, that would be one thing. Then, we would be in a position to support fracking even if these fears were justified. However, in the event, the negatives cannot at all be limited to the property of those who undertake the hydraulic fracturing practice.^d Thus, we are no longer in an unequivocal position to support this initiative. We are economists, not rock scientists, not earthquake specialists, not geologists. Qua dismal scientists, we must confine ourselves in this context to "if, then" statements. If fracking is associated with trespass, e.g. with violations of property rights of third parties, then the perpetrators should be dealt with to the full extent of the law. If not, then not.

Suppose then, posit, that fracking violates the property rights of third parties, *arguendo*. How shall these trespasses be dealt with? By governmental regulatory bureaus? That of course is one way to handle the problem. In contrast, the method favored by libertarians would be damages and injunctions.⁸

Water pollution

"Water, water, all around, and not a drop to drink" might well be the motto of those who oppose fracking on the ground that it creates water pollution. For, as we have seen, an integral part of this process is the injection of H₂O, along with chemicals not suitable for human consumption, into the ground at high pressure. What goes in must come out, somewhere; it would appear plausible that pollution would be the inevitable result.

This, at least, is the viewpoint of *Pantsios*⁹ who entitled her essay: "Long-Awaited EPA Study Says Fracking Pollutes Drinking Water." On the other hand, *Banerjee*¹⁰ reports: "Still, the EPA determined that the number of contamination cases 'was small compared to the number of hydraulically fractured wells.'" And, further, that "'We did not find evidence that these mechanisms [of possible contamination] have led to widespread, systemic impacts on drinking water resources in the United States,' the study said". On the other

hand, in the opinion of Nikiforuk,¹¹ “Despite being limited by data gaps, the United States Environmental Protection Agency has concluded that hydraulic fracturing technology has polluted ground and surface water in cases ranging from Alberta to Pennsylvania”. In contrast, Myers would appear to be sitting somewhere near the top of the fence. He writes: “Hydraulic fracturing of deep shale beds to develop natural gas has caused concern regarding the potential for various forms of water pollution. Two potential pathways—advective transport through bulk media and preferential flow through fractures—could allow the transport of contaminants from the fractured shale to aquifers. There is substantial geologic evidence that natural vertical flow drives contaminants, mostly brine, to near the surface from deep evaporite sources.” Having “caused concern” and “could allow the transport” are hardly ringing endorsements of the claim that fracking is a direct and unambiguous cause of water pollution. Colborn et al.¹² would appear to join Myers on the fence since they aver: “More than 75% of the chemicals *could* affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems. Approximately, 40–50% *could* affect the brain/nervous system, immune and cardiovascular systems, and the kidneys; 37% *could* affect the endocrine system; and 25% *could* cause cancer and mutations. These results indicate that many chemicals used during the fracturing and drilling stages *may* have long-term health effects that are *not* immediately expressed”.^e

What should be done?

To reiterate, we are economists, not physical or archeological or meteorological scientists. What sense of the above can be made of the above made from that perspective? We predicate our contribution on the basis of the can-opener joke.^f That is to say, let us assume, *arguendo*, and in turn, that each empirical conclusion is correct. First, assume no earthquakes^g and no water pollution.^h Then, there is no problem, and fracking may be used far and wide, with no regulations, restrictions, etc. Simple. Second, assume that the critics are correct, and that hydraulic fracturing is causally connected to both threats. Does it then follow we must adopt the very opposite stance, and ban this practice entirely? It does not. It all depends upon whether or not the external harms can be internalized. For example, if someone owns a large territory, say, half as big as Alaska, or, in any case, large enough to confine any earthquake damage to his own property,ⁱ then, there is no “trespass” on to the property of other people.^j And, the same goes for water pollution.¹³ If it can be confined to one’s own water supply, then there is internalization. With no “externality”, there is no problem. If not, those victimized by the trespass may properly sue for damages. This prospect ought to limit fracking to those who are either very rich, or very sure there are no negative spill-over effects.

Lastly, we address the issue which seems to be more realistic, based on the evidence offered above: we are not sure which of these two scenarios, or some third intermediate one, is more correct. Then, plaintiffs may sue defendant frackers, and ask courts for an injunction. If the judiciary finds a clear and present danger, then, presumably, they will grant one.^k

Is fracking is government induced?

If it is, then, for those of us who favor free enterprise, the issue of harm is moot. If fracking would not exist except for crony capitalist subsidies and benefits, then, from this philosophical viewpoint, it should be ended. But, if so, then the issue of external damage and trespass would not arise in the first place.

According to Carson,¹⁴ fracking is the poster child of the corporate welfare state. “At every step of the way, the state steps in to subsidize the operating costs of the fossil fuel industry, steal land for it to build pipelines on, and indemnify it against liability through regulatory preemption of tort law or even flat out statutory caps on liability for damage”. The state has subsidized so much of the fracking industry that it is not a creature of the free market. Thus, the increase in earthquakes is caused by a distortion in the market economy.

In addition to the direct involvement of the state in the fracking industry, economists have argued that the fracking industry is a bubble created by government policy. This argument was most succinctly presented by Abdelnour,¹⁵ when he wrote, “If not for the six years of Zero Interest Rate Policy (ZIRP) and several rounds of Quantitative Easing (QE) from the Federal Reserve, many of these upstart wildcatting firms would not be able to sustain the cost of exploration and extraction”.¹ Upwards of 500 billion dollars of government leveraged capital has entered in the energy sector of the United States, and much of it has^m gone to fracking.¹⁶ Since finding oil shales is highly speculative, the industry relies on risky investments. The government has invested heavily in the industry, most of which would not have been made in a free market. Without government malinvestment, fracking would not be as profitable as it currently is. The fracking industry is larger than sustainable, meaning that the number of earthquakes is artificially high. Says Khan¹⁷ in this regard: “. . . the fracking industry is most certainly not a free-market industry and can be heavily dependent on government subsidies”.

The increase in earthquakes since 2009 is because of more wastewater being injected into the ground, but that does not explain why there is more wastewater. According to Walsh and Zoback,³ this increase is because of cost-saving techniques: “What happened was, in the days before oil was \$100 a barrel, when drillers found this underground water reserves along with the oil, they simply just shut down the well. But when oil became expensive enough, it made sense to figure out how to separate the oil from the water”.

As the price of oil increased, entrepreneurs figured out how to preserve oil. Still, the cost of this commodity was so high because of the government.ⁿ Between wars in the Middle East—for example, the invasion and occupation of Iraq—causing the risk of doing business in the region to increase, compliance of a never ending stream of regulations from the Environmental Protection Agency, to gasoline taxes, the need to save oil is government induced. One cannot forget this when asking what is causing an increase in wastewater.^o

Conclusion

While it is far from clear that fracking is the direct cause of the increase in earthquakes, the disposal of a byproduct from the process is. It does not take a doomsayer to be unhappy with the earthquakes. So far, most of the possibly implicated earthquakes have been minor, and it cannot be denied that they can escalate in future. Structural damage to buildings as well as the breakage of other forms of property could amount to vast sums of money for which the frackers would be liable. With the government stepping in to subsidize the fracking process at every stage, it becomes rational for entrepreneurs to assume these unnaturally high risks. If it were not for state intervention in the oil industry, there would not likely be as much fracking, if any, and what fracking continued to be undertaken would be done with less risk. If the country wants to change the trend of increasing earthquakes, it would be advised need to stop scapegoating the free market, and instead advocate it.

A good summary of our position is offered by McMaken:¹⁸ “The hydraulic fracturing (fracking) industry is fighting regulations or outright bans against fracking in a variety of states and localities. There are many reasons to oppose government restrictions on fracking, of course. If a fracking operation can arrange to frack on private land and pay market rates (not subsidized rates) for water, then there is no reason why a private company should not be free to do so. If fracking results in polluting a neighbor’s land or water, the fracking organization in question should be liable in the fashion outlined by Rothbard (1982) for dealing with polluters”.

The utilitarian, central planner would look at the matter from a cost benefit perspective. There are positives and negatives. Which outweighs which? As we have seen, some studies adopt this modality, and find that the negatives are stronger than the positives, others conclude the very opposite; any many are firmly wedged right on top of the proverbial fence. We, in contrast, adopt a different prism, one of principles, or deontology. If fracking can be confined to those who undertake this technology, then it is up to them, it is no one else’s business, whether this policy should be pursued or not. If it cannot be so limited, then it must be prohibited on grounds of trespass. One way of confining fracking is technological; does it or does it not create earthquakes, a violation of private property rights if ever there was one, or poison the wells. Another is financial; is it possible to engage in this practice without government support (compelling other’s to financially support it; a trespass on their money as it were)? If so, then it may proceed. Or if not, then not.

One last point. Suppose the Chinese, or any other foreign group for that matter, wanted to buy all the rights for fracking in the United States; how should we respond to such a challenge? This sounds like a science fiction query, but it is not. After all, the Japanese purchased Rockefeller Center.¹⁹ The answer emanating from this particular libertarian corner would be, Let them buy whatever they want, as long as there are American owners willing to sell it to them. Only in this case, instead of purchasing some real estate, they would be acquiring certain rights, rights to frack. This, of course, assumes that these are legitimate rights in the first place. And, they would be, if fracking either caused no physical harm to the property of others, because it could be confined, or these rights were purchased from these others, and then sold to the Chinese.

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Notes

- a. This *sounds* like a good idea. Indeed, an excellent one. Who, really, it might be thought, can really oppose independence? However, it is incompatible with some of the basic premises of economic science; specialization, the division of labor, and comparative advantage. If we were all entirely independent of one another, that is, if somehow we could not trade with each other, virtually all of us would literally perish. Most of us owe our very lives to the fact that we are *not* independent of

each other, but, rather, can rely on one another, trade with our fellows, etc. And this applies to energy as it does to everything else under the sun.

- b. For more information on the fallacy behind economic nationalism in regards to fracking, see McMaken.¹⁸
- c. The wastewater disposal isn't unique to fracking. The amount of wastewater does not depend on the drilling process, but on the proximity of the shale to water underground.
- d. Nor is it feasible for the "frackers" to purchase the rights to create earthquakes on the property of others; however, if it were, and were the bad effects able to be limited to such persons, then fracking, again, would be justified, despite any and all negative effects.
- e. Emphasis added by the present authors so as to underscore the ambivalence of this report. Another "fence-sitter" is Howarth et al.²⁰ who avers: "Extracting gas from shale increases the availability of this resource, but the health and environmental risks may be too high." Also see in this regard Holzman²¹ and Manuel.²²
- f. There were three people stuck on a deserted island, with cans of food but no can-opener. The physicist recommended, "Drop the cans from a certain height on a rock of a specific hardness, and we will be able to eat". The chemist opined, "No, no, no, let us heat up the cans at a certain temperature and pressure, and then we will be able to eat hot food". Whereupon both turned to the economist for his opinion, which was, "Assume a can-opener".
- g. Or very few and slight ones, undetectable by any but the most sensitive instruments.
- h. Ditto.
- i. See Block and Block²³ for this type of reasoning, in a very different context. Perhaps, on second thought, not so different.
- j. Note, we do not resort to the traditional "market failure" analysis of negative externalities, or external diseconomies. Rather, we speak in terms of property rights violations and trespass. See on this fallacy: Barnett and Block,^{24,25} Block,²⁶⁻²⁸ Cowen,²⁹ De Jasay,³⁰ Holcombe,³¹ Hoppe,³² Hummel,³³ Osterfeld,³⁴ Pasour,³⁵ Rothbard,^{36,36} Schmidtz,³⁷ Sechrest,³⁸⁻⁴¹ Tinsley.⁴²
- k. Strictly speaking, although the analysis in this section is dependent upon the dismal science, more is required to sustain it. For, economics is a positive science^{36,43-45} and we are offering normative conclusions. From whence do they spring? They do so from a libertarian analysis of pollution cases.⁸
- l. This might seem like a bit of a stretch, since a near-zero interest rate policy impacts all long-term investments, heavy industry, including hydraulic fracturing. But it does impact that industry too, so the statement in the text is correct.
- m. US\$200 billion dollars of this is from junk bonds, and 300 billion dollars from leveraged loans.
- n. The question arises, do libertarians distinguish between state and local governments on the one hand, and national governments on the other? Yes and no. Yes, in the sense that it is harder to evade the latter's depredations than those of the former. That is, if state A is a high tax, high regulation, high maintenance entity, it is relatively easy to move, lock, stock and barrel, to neighboring state B. Thus, its devastation is comparatively easy to avoid. In sharp contrast, it is far more difficult to transport from one country to another. Therefore, the case for being suspicious of the latter is stronger. On the other hand, no, in the sense that both entities violate the libertarian principle of nonaggression. Both, equally, compel, prohibit, regulate, innocent people against their will. See on this Rothbard.⁴⁶ For the drawbacks of local vis a vis national government, see Bolick.⁴⁷
- o. Toward the end of 2015, and in early 2016, the price of oil plummeted, playing havoc with oil exploration in general, and most germane to the present paper, with it, fracking. It reached US\$33.16 per barrel in the U.S. Source: <http://www.cnbc.com/2016/01/07/us-crude-edges-up-but-remains-near-12-year-lows-on-china-worries.html>

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