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# VOLATILE CRUDE AND RAILROAD REGULATION

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## ABSTRACT

Newly discovered domestic crude oil has caused large increases in rail traffic and an associated increase in derailments. In principle, derailments expose railroads to liabilities that can be very large, but railroads are protected as long as they comply with federal guidelines. Despite this, the railroads took it upon themselves to design a safer rail car. The railroads have also lobbied federal agencies to make the new standards part of regulation. This paper addresses two puzzles. First, why would the railroads expend resources on self-regulation when protected from tort? Second, why would the railroads push to have these stricter standards enshrined in federal regulation? We conclude that the answer lies in regulatory and legal uncertainty coupled with using regulators to overcome a collective action problem.

## INTRODUCTION

Shale oil is far more volatile than other sources of hydrocarbons. In fact, some in the industry refer to oil rail tank cars as “rolling bombs” (Gurney, 2015). What’s more, given the way that railways were constructed and the way that many cities sprang up around rail lines, these bombs roll past a large percentage of America’s population every day.

Train derailments and the resulting oil spills have made the news in recent years. This should not be surprising given the dramatic increase in American oil production from shale and the numerous political and regulatory obstacles to the construction of oil pipelines to transport this output. More oil transported by rail will naturally lead to an increase in oil spills from rail accidents. These accidents have resulted in court cases and calls for increased regulation of the industry.

The issue this paper addresses is not the danger that crude by rail (CBR) poses to the American population. The issue addressed is, instead, the industry’s reaction to this danger and to the threat of regulation. Instead of fighting regulation the industry has been requesting increased regulation for years. Moreover, they have voluntarily imposed safety standards that are well in excess of what their regulators require.

Lest this appear to be simply a case of optimal self-regulation, the story becomes even more interesting. While Congress has refused to pass liability caps on damages from rail accidents, they did pass legislation that protects railways against tort suits as long as railroads comply with existing federal safety standards.

Thus, the issue: railways are protected from tort as long as they comply with existing standards, and yet the railroads lobby for increasingly stringent standards. What can explain this?

The paper is structured as follows. First, we present a brief history of rail carriage and derailments. Next, we examine the regulatory and legal environment. Third, we discuss the efforts that the Association of American Railroads (AAR) have made in an attempt to improve the safety of CBR. Fourth, we assess the possible explanations for AAR behavior and determine that the association is being driven by the goal of self-regulation, but is seeking to use regulatory bodies as a means to overcome a collective action problem.

## Derailments and Fatalities

Since July 2013, there have been over fourteen derailments of crude oil trains resulting in 3.3 million gallons of spilled crude oil and 48 fatalities (Associ-

ated Press, 2016). The worst derailment occurred in July 2013 when an oil train derailed in Lac-Mégantic, Quebec killing 47 and causing over \$1 billion in damages.

The most recent derailment occurred in June 2016 when 12 tank cars derailed spilling 42,000 gallons of crude oil, some of which made its way into the Columbia river. A fire broke out and local residents were asked to boil their water for several days.

Political and regulatory headwinds make construction of new pipelines a long-term endeavor. The next best alternative is transporting crude oil by rail (CBR). With the advent of horizontal drilling and the new success of recovering oil from tight shale formations with hydraulic fracturing (“fracking”) technology, CBR averaged more than 1 million barrels per day (bb/d) in 2014. This compares to 55,000 bb/d in 2010 (U.S. Energy Information administration, 2014). Although several billion dollars have been spent by railroads for maintenance and repair over many decades, much of the infrastructure was completed in the early 1900’s, and many of the tank cars carrying crude oil are based on designs that are forty to fifty years old. The vast majority of tank cars are owned by large leasing companies. All U.S. railroads combined own no more than 440 tank cars (Kahn, 2014).

This latest surge of crude oil has a tendency to be more flammable, and in fact has shown to be explosive.

## **THE RAILROAD REGULATORY ENVIRONMENT**

Over the last 150 years a host of laws, acts and regulations covering the railroad industry have been instituted by the federal government with varying intentions and consequences. These laws are particularly important given the tendency of the courts to hold that federal railroad tort regulation pre-empts state law.

Today the primary regulating body is the Federal Railroad Administration (FRA) under the U.S. Department of Transportation (USDOT). Second-

ary regulating bodies include the Surface Transportation Board (STB), the Pipeline and Hazardous Material Safety Administration (PHMSA) and the National Transportation Safety Board (NTSB). The STB regulates topics from shipper complaints (i.e. collusion, price fixing, etc.) to monitoring shipping rates to approving new rail lines. PHMSA works with the industry to develop regulations and specifications for the transport of hazardous material such as ethanol and crude oil. Proposed new regulations for the railroad industry are passed upward from lower level regulating bodies (PHMSA) to the FRA to the USDOT. The NTSB is the primary investigative body in incidents involving derailments and provides safety recommendations based upon investigative outcomes.

The railroads have developed their own body that works with federal regulators. The Association of American Railroads (AAR) represents the railroad industry on issues involving legislation, lobbying and safety. AAR has a wholly-owned subsidiary, the Transportation Technology Center, Inc. (TTCI) located in Colorado. The relationship of the FRA and AAR is such that according to their website, “TTCI manages the Federal Railroad Administration’s (FRA) Transportation Technology Center (TTC). TTC is operated under a care, custody and control contract with the FRA” (Association of American Railroads, n.d.).

### **Rail Transport Law**

According to U.S. Code6, “A rail carrier providing transportation or service subject to the jurisdiction of the Board under this part shall provide the transportation or service on reasonable request.” The important phrase here is “...shall provide....” Additionally, Interstate Commerce Act common law doctrine for railroads states, it is “... the duty of common carriers to transport all goods offered for transportation” (Abel, 2011). Therefore, railroads as common carriers must accept crude oil for transportation regardless of how volatile it may be, and regardless of any additional costs that the carrier will incur in effecting safe transportation.

The other important component of this discussion is carrier liability. Continuing under the Interstate

Commerce Act. "...the originating carrier and delivering carrier on a movement on a thru bill of lading are liable to the lawful holder of the bill of lading or delivery receipt or any party entitled to recover thereon, for the full actual loss, damage or injury to the property being transported caused by it or any common carrier, railroad or transportation company on which line the property moved. The statute specifically provides that no contract, receipt, rule, regulation or other limitation of any character shall exempt the carriers from such liability" (Hardman and Winter, 1975). In case of derailment or accident, the railroad is responsible to compensate the shipper for the full value of damaged product. This liability widens considerably when materials such as crude oil are released into the environment and/or cause fire.

Railroads have a working relationship with the federal government bridged by the Federal Railroad Administration. From a rail safety perspective, the guiding doctrine is the Federal Railroad Safety Act (FRSA) which was passed by Congress in 1970. The Act contains the laws and regulations that the railroads must adhere to across the U.S. Some states have passed additional laws or regulations pertaining to the railroads, however, the vast majority of court cases have ruled the FRSA supersedes state law (Rodgers, 1993).

The only blanket exception from liability falls under the Price-Anderson Act (U.S. Department of Transportation, 2008). Under this act, contractors to the Nuclear Regulatory Commission and the U.S. Department of Energy enter into agreements of indemnification that cover personal injury and property damage to those harmed by a nuclear or radiological incident.

The railroads completely understand their legal obligation to transport freight, even when that freight is a hazardous material. They also understand that their liability for accidents involving hazardous material could total millions of dollars per incident. The railroads have called on Congress to pass liability caps to help protect them. Congress has refused such requests. Congress however did pass legislation that protect against tort suits targeting

railroads as long as Federal safety and security standards are met (Shaffer and Smith, 2014).

### **CBR Transport Vessels**

The DOT 111A tank car was designed in the 1960's and is the workhorse for liquid transport by the railroad industry. It can transport a wide variety of materials, both flammable and nonflammable. It became the target of more focused scrutiny in the early 2000's when ethanol began to transverse the country in large quantities. Approximately 65,000 DOT-111 tanker cars are currently in service carrying crude oil, ethanol and other flammable liquids. Each car can carry up to 30,000 gallons of material. Cost estimates to upgrade the DOT-111 fleet run as high as \$5 billion.

In August 2011, the AAR Tank Car Committee in collaboration with railroads and shippers developed a new standard for tank car design. Beginning in the fall of 2011 all new tank car orders are mandated to be constructed to the new design standard called the CPC (Casualty Prevention Circular)-1232. This design and its associated upgrades were entirely industry driven. Approximately 14,000 CPC-1232 cars are in service today.

### **EXPLANATIONS FOR INDUSTRY BEHAVIOR: PLEASE REGULATE US**

The story of the railroads seeking increased regulation by the federal government is an example of neither a pure rent seeking activity nor purely self-regulation. Rather, uncertainty surrounding whether legal rules will be enforced has the railroads looking for cover in the realm of political relations.

### **Rent-Seeking & Legal Enforcement**

On paper, it appears that the railroads are well protected in the event of accidents. As long as the railroads comply with federal safety protocols, they are largely protected from tort suits. Of course, if this was a certainty, there would either be incentive to lobby for decreased safety standards or, if such lobbying was stymied or unsuccessful, there would be little subsequent incentive for the rail companies to lobby further.

What is likely, however, is that there should be no incentive for lobbying to increase safety standards.

### **Self-Regulation**

In a world of optimal legal regulation, where the least cost avoider is liable for any damages, or even one that was suboptimal but where the rules were clear and stable, it would be entirely understandable and expected for investment to be made into safety standards and tanker improvements. Of course, it would be expected that an optimal level of less than perfect safety would be reached.

This story certainly matches the experience in the rail carriage industry...but only up to a point. With shale oil came a dramatic increase in the volatility of the crude being carried. This increase in volatility, in a world of clear and stable legal doctrine, should have brought about a subsequent increase in the safety measures taken. In addition, the fairly constant increase in population of major metropolises, the increased value of assets subject to damage, and the increased perception of the risk of terrorism would also have caused an increase in the optimal amount of safety precautions as time progressed.

The increase in safety precautions advocated by the AAR are, then, entirely in line with what we would expect. In this instance, however, there would be no reason for the organization to lobby for the government agencies to increase their standards.

### **Public Relations**

It is, of course, entirely possible (and even probable) that the rail companies were not looking to achieve optimal self-regulation. It is also possible that their main goal was not to lobby in order to have safety standards in their favor. Rather, it may be that they believe that the true battleground is neither in the courts nor in Congress. It may be that their primary purpose is to shift the debate in the public sphere—in effect a marketing or PR campaign.

The idea here would be that the rail companies fear that regardless of their legal liability, exploding train cars are so salient an issue for the public that one of two things will happen: either the courts will fail to

follow legal doctrine or government officials will feel compelled to revoke the protections currently in place.

If this is the case there still remains a serious question. Lower government standards than those in use by the railroads would, if anything, strengthen the companies' PR position. Holding constant the number of accidents as well as the safety standards in actual use, the railroads being able to point to their standards and issue press releases highlighting how much they'd spent in excess of what was required, how much more stringent their standards were than the requirements would surely be a stronger defense in the public relations arena than stating that they meet the standards mandated by the government agencies.

The upshot is that, while rail companies and the AAR are certainly aware of the public relation dimension to CBR carriage and any accidents or explosions, this is not sufficient to explain their push for the increase in government safety standards.

### **Barriers to Entry**

A common explanation for industry members' pushing for increased safety regulation within the economics literature is that it can serve as a barrier to entry and thereby decrease competition ((Stigler, 1971). This should mean an increase in profitability within an industry compared to what it would be with lower barriers to entry.

In order for increased safety regulation to benefit incumbents, however, one of the following must be true: either incumbents must be grandfathered in and not be subject to the regulations, the cost of regulatory compliance must be lower for incumbents, or both.

Obviously, if incumbents are not subject to the regulations then the increased safety standards will increase the operating costs for new entrants but not for the incumbents. This will decrease entry into the industry and make life easier for the incumbents.

If it is lower cost to comply with the regulations for incumbents than it is for entrants then the more

stringent regulations will serve the same role. Less obviously, if there are economies of scale to compliance and the incumbents are larger than the typical challenger then increased safety requirements would be attractive to incumbents.

To what extent, then, does this explanation apply to CBR and the rail companies?

It seems obvious that there are large economies of scale in safety compliance. We need only look to the amount spent by the AAR to see that. To some extent, then, this could be the main driver. The question now is the extent to which the incumbent carriers are better able to exploit the gains from trade compared to new entrants.

The railroad industry faced tough economic conditions in the 1970's with nearly a third of the industry facing bankruptcy. That condition began to change with the passage of the Staggers Act in 1980 which allowed railroads to discontinue unprofitable routes, downsize personnel numbers, set rates, enter into long-term contracts and merge with competitors that had healthier balance sheets. By 2016, four major railroads (Norfolk Southern, CSX, Union Pacific and Burlington Northern Santa Fe) controlled over 90% of the railroad freight revenue generated in the U.S. These four regional monopolies are largely regulated at the federal level (Kimes, 2011).

Given the massive fixed cost of establishing new rail networks it seems unlikely that additional regulation was sought to deter aspiring rail barons. Existing firms have already incurred those fixed costs and they have, by now, become sunk costs. New entrants, however, would be obliged to incur all of these costs themselves and would, in fact, incur higher fixed costs than the incumbents.

The reasons that the setup costs for new entrants would be higher are threefold. First of all, much of the land that any new networks would run through is more valuable now due to population growth and urbanization over the last two centuries. Secondly, greater population density in urban areas means that acquiring the necessary permits would be costlier, perhaps prohibitively so. Finally, at least west of the

Mississippi, incumbents were granted sections of land in order to encourage expansion. It is very unlikely that this generosity would be repeated with any aspiring rail company today.

Before we discard this explanation, however, we should consider competition more broadly. It is possible that the competitors at issue were trucking companies. Clearly trucking companies are much smaller than rail companies and, if they were subject to the more rigorous safety standards this could make it much harder for them to compete.

The reality, of course, is that carrying CBR over any distance is far less costly than on the roads. The only financially viable competitors for CBR would be pipelines and shipping and increasing the safety standards for CBR will have no direct impact upon the cost of operating a pipeline or on the shipping technology required. It may create a regulatory environment that would be stricter when evaluating pipeline projects but this is a distant enough prospect to be extremely unlikely. Moreover, pipeline projects already face significant and often insurmountable obstacles.

The upshot is that, while the erection of barriers is common elsewhere and perhaps even in other areas in which the rail companies operate, it cannot explain the companies' behavior in this regard.

### **Collective Action**

The willingness of companies to contribute to the legal defense of others following the Lac-Mégantic accident points us towards the difficulties of some creating problems for the rest of the group. In other words, there is some spillover from oil spills.

It is difficult to assess exactly what this spillover is but there is definitely concern about possible congressional reaction to accidents (Gurney, 2015). In other words, the concern would be not that the legal rules would not be applied in a specific instance (although this is also probably a concern). Rather, it would be that one railroad's lack of diligence (or simply bad luck) could have a deleterious impact upon the regulatory and legal environment for all. Headline grabbing accidents that either result in a

legal precedent for greater liability for railroads or in the removal of congressional protection would be problematic for all members of the industry not just the miscreant.

## CONCLUSION

In the end, it is a combination of points that yields a meaningful explanation. Railroads' safety measures (or lack thereof) have significant spillovers upon other railroads through possible greater regulation and/or legal liability. Individual railroads can adopt more rigorous standards than those required of them, and they will both be less likely to experience accidents or adverse legal judgements. Other railroad's safety precautions could severely and negatively impact the "safe" railroad through higher legal costs, compliance costs, or even closure of routes through population centers. While the AAR offers a venue for collective action to address the spillover problem to a certain extent, the enforcement of self-regulation will simply be more effective with the cudgel of the state behind it.

The regulated are requesting more regulation. If the railroads can prove that they have adopted a proactive posture in regard to transportation of hazardous materials and are adhering to the rules and laws as mandated by the federal government, then they feel like they have some level of political and financial cover in case of catastrophe. And they're probably right.

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## BIOGRAPHIES

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