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Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign

Blender and Producer Sharing of Retroactively Reinstated Biodiesel Tax Credits: Time for a Change?

Scott Irwin

Department of Agricultural and Consumer Economics
University of Illinois

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A *farmdoc daily* article last week (March 29, 2017) investigated the impact on biodiesel production profits of little known "sharing" provisions in marketing agreements between biodiesel producers and blenders. Many agreements include provisions for sharing the $1 per gallon biodiesel tax credit if it is reinstated retroactively. The impact of 50/50 sharing of retroactive tax credit revenue (the industry norm) on biodiesel production profits is striking—the average return to equity holders over 2007-2016 increases from 10.5 to 36.1 percent. Given the potentially large impact of sharing provisions on profits, it is important to understand the rationale for these agreements. In particular, the sharing provisions appear to have evolved when the main policy instrument used to support the biodiesel industry was the tax credit. Since 2009, the RFS biomass-based diesel mandate has also become an important policy instrument. The purpose of today's article is to analyze whether retroactive sharing agreements have outlived their original purpose when both tax credits and a mandate are in place. This article updates the analysis found in an earlier *farmdoc daily* article (July 22, 2015)

Background

The biodiesel tax credit was first implemented in 2005 and allows blenders of biodiesel (and renewable diesel) to claim a credit of $1 per gallon against their U.S. federal tax liability. The tax credit is viewed by biodiesel producers as crucial to the profitability and growth of their industry. For example, the National Biodiesel Board makes this statement on one of its websites:

> *"Since being implemented in 2005, the biodiesel tax incentive has played a key role in stimulating growth in the U.S. biodiesel industry, helping it become the first EPA-designated Advanced Biofuel to reach commercial-scale production nationwide...There is a clear correlation between the tax incentive and increased biodiesel production, which has grown from about 100 million gallons in 2005, when the tax incentive was first implemented, to almost 1.8 billion gallons in 2013."*

The American Soybean Association has also been a strong supporter of the tax credit, releasing this statement in December 2010:

The biodiesel tax credit has been expired for 349 days, resulting in job losses and undermining the United States' ability to increase production of domestic renewable biodiesel. Biodiesel production in 2010 decreased over 35 percent from the previous year. The biodiesel tax credit has a direct impact on jobs and is critical to supporting the biodiesel industry, a major market for U.S. soybean oil and a key factor in supporting domestic soybean prices in recent years.

The U.S. Congress allowed the biodiesel tax credit to expire at the end of 2009, 2011, 2013, and 2016, which meant that the credit was not initially in place for 2010, 2012, 2014, and 2015. However, in each of these four years the tax credit was eventually reinstated retroactively through various pieces of legislation near the end of December in each year or in early January of the following year. The biodiesel tax credit has not been reinstated for 2017, but, as usual, there is a high likelihood that Congress will eventually do so.

In response to the retroactive reinstatement of the blenders tax credit, sharing clauses are included in many marketing contracts between biodiesel producers and blenders. These clauses specify how the tax credit will be shared between the biodiesel producer and blender if the credit is not in place at the time a transaction is made but is reinstated retroactively at some later date. There is no public data on the exact nature of the sharing provisions or the frequency that such provisions are put in place. Anecdotal evidence suggests sharing provisions are widespread and that the typical split is 50/50. Filings with the U.S. Securities and Exchange Commission (SEC) provide some indication of the magnitude of this source of revenue for biodiesel producers. After the tax credit was reinstated for 2014 in mid-December 2014, the Renewable Energy Group (REG), a U.S. biofuels producer, reported in an SEC filing that it expected to receive a net benefit of approximately $85 million to $90 million as a result of the $1 per gallon biodiesel tax credit being retroactively reinstated. Likewise, Neste Oil, a Finnish producer of biofuels, reported in its SEC filing that it had an operating profit of 141 million euros for the fourth quarter of 2014, including a contribution of 89 million euros from the reinstatement of the biodiesel tax credit.

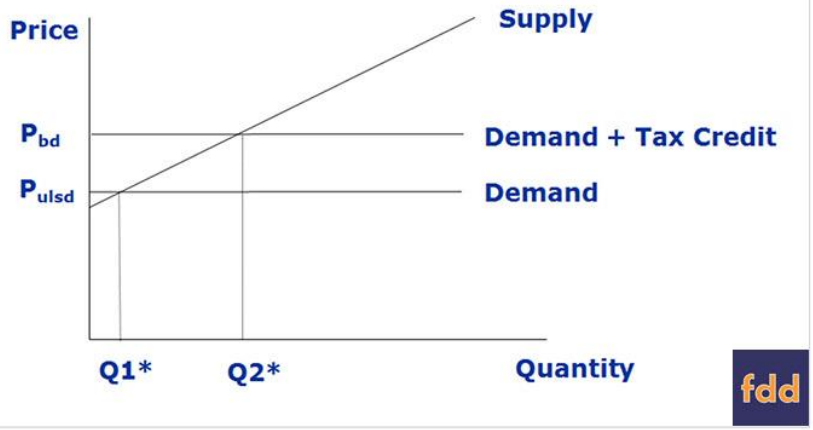
In terms of mandates, the statute for the Renewable Fuels Standards (RFS) requires the U.S. Environmental Protection Agency (EPA) to establish volume requirements for four categories of biofuels for each year from 2008 through 2022: cellulosic biofuel, biomass-based diesel, total advanced biofuel (which includes biomass-based diesel), and conventional biofuel (ethanol). The RFS statute specified the biodiesel mandate between 500 and 800 million gallons over 2009-2011 and then at a minimum of one billion gallons per year from 2012 through 2022, with larger amounts subject to EPA approval. The actual biodiesel mandate in recent years has been near 2 billion gallons (see the *farmdoc daily* article on November 30, 2016 for further details).

Analysis

We examine a conceptual model of the biodiesel market under different policy scenarios. The first scenario, presented in Figure 1, is the simplest and includes the blenders tax credit but no volume mandate. The conceptual model of the biodiesel market that we employ has been used in a number of previous *farmdoc daily* articles (e.g., October 10, 2014) to analyze implementation of the RFS and pricing of RINs. The model represents the supply of biodiesel producers and demand from diesel blenders at the wholesale level in a competitive market. Retail demand at the consumer level is implicitly represented by a simple percentage markup of the wholesale demand shown in Figure 1. This implies full pass through of wholesale price changes to the retail level. The model also assumes that biodiesel demand is perfectly elastic (horizontal) for biodiesel prices equal to ultra low sulfur diesel prices. This reflects an assumption that biodiesel and diesel are perfect substitutes and that biodiesel is a small enough part of the diesel market that changes in the biodiesel price do not impact the overall demand for diesel fuel. We also do not explicitly consider imports and exports of biodiesel in the model. While imports have been very large lately, this does not affect the general conclusions drawn from the model.

As represented in Figure 1, only a small amount of biodiesel would be produced in the U.S. with no tax credit (Q1*) and biodiesel producers receive the same price as diesel producers (P_{ulsd}). The model accounts for the tax credit by shifting the biodiesel demand curve up by the amount of the credit, which is $1 per gallon. In other words, at any given quantity of biodiesel, the effective selling price for biodiesel producers is increased by the amount of the credit. The upward shift in the demand curve results in a much larger amount of biodiesel being produced (Q2*) as producers respond to the higher effective selling price (P_{bd}). In the new equilibrium, the total wholesale cost of biodiesel is the area given by P_{bd} X Q2*, which is split between blenders [P_{ulsd} X Q2*] and taxpayers [(P_{bd} - P_{ulsd}) X Q2*]. The cost to consumers at the pump is the blender cost plus a percentage wholesale-retail markup.

Figure 1. The Biodiesel Market with a Blenders Tax Credit and No Volume Mandate



The higher selling price and production with the tax credit in Figure 1 is consistent with the position of the biodiesel industry that the credit is important for stimulating production. The model also shows that it makes economic sense for biodiesel producers and blenders to negotiate sharing agreements as a contingency if the tax credit expires and then is later reinstated retroactively. If the tax credit was not in place at the time of the transaction, the biodiesel producer would have been paid the same price as diesel producers. However, if the tax credit had been in place, the biodiesel selling price would be increased by $1 per gallon, the amount of the tax credit. One can think of a retroactively reinstated tax credit (with no volume mandate) as a $1 per gallon windfall to blenders that would have gone to biodiesel producers in the form of a higher selling price if it had been in place at the time of the transaction. This is presumably the reason why the sharing agreements were originally negotiated and written into biodiesel marketing contracts.

The second policy scenario, shown in Figure 2, is a volume mandate only. The mandated quantity ($Q2^M$) is assumed to substantially exceed the small amount of biodiesel that would be produced in the U.S. absent the mandate (Q1*), so the mandate is said to be "binding." In order to incentivize the higher production, biodiesel producers must be paid a price that is higher (P_{bd}) than the wholesale diesel price (P_{ulsd}). In the new equilibrium, the total wholesale cost of biodiesel paid by blenders is given by the area P_{bd} X Q2*. It appears that blenders take a large loss on the mandated purchase of biodiesel [(P_{bd} - P_{ulsd}) X Q2*] because the purchase price of biodiesel (P_{bd}) is substantially higher than the selling price (P_{ulsd}). However, this ignores the intricacies of the pass through part of the model, where the additional cost of biodiesel is passed on to consumers at the pump in the form of higher diesel prices (see the recent study by Knittel, Meiselman, and Stock, 2015 for detailed analysis of pass through in terms of the RFS). After appropriate weighting for the proportion of biodiesel in the blend (e.g., B2, B5), this is shown in Figure 3 as the increase in diesel prices from P_{ulsd} to P'_{ulsd}. Notice in Figure 3 that the producer price and quantity of biodiesel is unaffected by the increase in diesel prices. The only difference between Figures 2 and 3 is who pays for the additional cost of biodiesel above the price of diesel.

We now proceed to analyze a policy scenario with both a tax credit and a volume mandate. Figure 4 shows a scenario with a tax credit and a binding volume mandate. Notice that the diesel price in this scenario is assumed to be adjusted upward to reflect pass through costs. The mandate is binding because it requires a higher level of production than under a tax credit alone ($Q2^M$>Q2*). The effect of the tax credit under this scenario is purely distributive because the producer biodiesel price and production are unaffected by the credit. Hence, the total wholesale cost of biodiesel (and revenue of biodiesel producers) is given by P_{bd} X Q2*, the same as in Figures 2 and 3. The cost of biodiesel above diesel is split between taxpayers [($P'_{ulsd+tc}$ - P'_{ulsd}) X Q2*] and blenders [(P_{bd} - $P'_{ulsd+tc}$) X Q2*]. Of course, the additional blender cost is assumed to be offset in this model by pass through in the form of an appropriately weighted increase in the price of diesel. So, consumers ultimately bear the additional cost of biodiesel above diesel not borne by taxpayers. Note also that the size of the tax credit only affects the split in the costs between taxpayers and consumers. A high tax credit offsets most of the costs borne by consumers and *vice versa*.

Figure 2. The Biodiesel Market with a Binding Volume Mandate and No Blenders Tax Credit

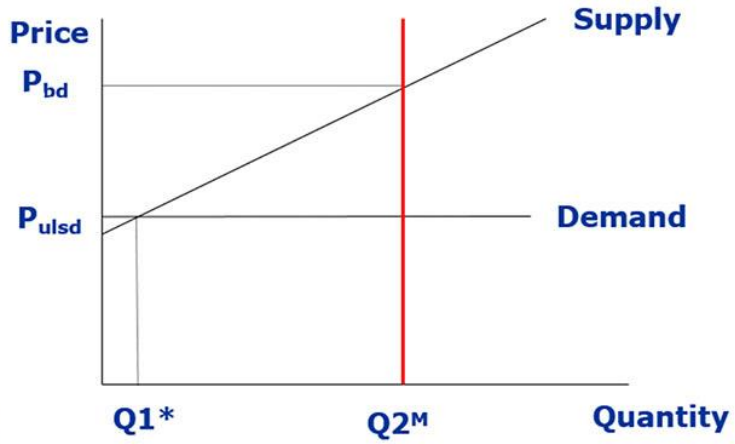


Figure 3. The Biodiesel Market with a Binding Volume Mandate, No Blenders Tax Credit, and Pass Through

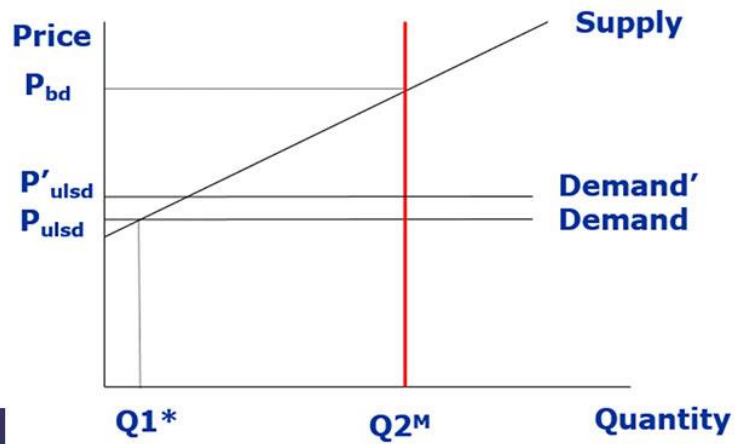
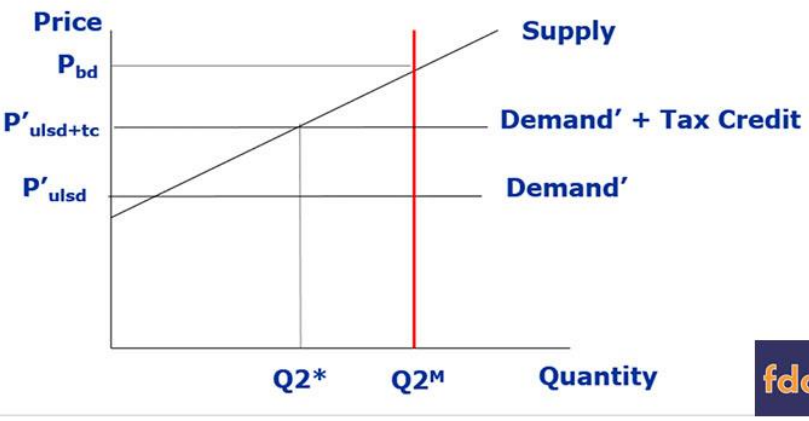


Figure 4. The Biodiesel Market with a Blenders Tax Credit and Binding Volume Mandate



With this background, we can analyze the retroactive reinstatement of the biodiesel tax credit and sharing agreements. In the current policy environment, when the tax credit expires this does not mean that all policy incentives for the production of biodiesel disappear. In other words, the situation is not the one shown in Figure 1, where the expiration of the tax credit substantially reduces biodiesel prices and production. Instead, when the tax credit expires the policy scenario is that presented in Figure 3 with a binding volume mandate. It is crucial to understand that the biodiesel price and production increases under a volume mandate still occur when there is no tax credit. This is not consistent with the position of the biodiesel industry that the tax credit is important to stimulating prices and production. A simple test of the model prediction in this regard is to examine biodiesel prices at the end of December in years when the tax credit was in place and then at the beginning of January after the tax credit had expired. The price impact from the expiration of the tax credit, if any, should be evident in prices immediately before and after expiration of the credit. The weekly price for biodiesel at Iowa plants is collected for five pairs of years that meet this criterion: 2009/2010, 2011/2012, 2013/2014, 2014/2015, and 2016/2017. The average price in the last week of December in the first year of each pair was $3.73 per gallon and the average price in the first week of January was $3.72. While this is far from a complete analysis, a drop of only $0.01 is consistent with the prediction of the conceptual model discussed above.

So, what happens when a tax credit, after expiring, is later reinstated retroactively? The answer is that the retroactive tax credit given to blenders should be passed entirely back to diesel consumers in the form of lower prices. As noted above with respect to Figure 3, without the tax credit in place and a binding volume mandate, all of the higher cost of biodiesel above the price of diesel is borne by consumers (through pass through). When the tax credit is in place under a binding volume mandate, as in Figure 4, then part of cost previously borne by consumers is borne by taxpayers. Hence, if the tax credit had been in place during the period in question consumer cost would be have been reduced by the amount of the tax credit. Producer prices, production, and revenue are the same in either scenario. This is why agreements between producers and blenders for sharing retroactive tax credits are difficult to justify from an economic standpoint. In essence, blenders are providing a profit windfall to biodiesel producers that theory indicates should be accruing to consumers. Of course, there is also the issue of whether the blenders are passing on to consumers the part of the retroactive tax credits not shared with producers.

We can make a rough estimate of the profit windfall to biodiesel producers that historically would have been passed on to consumers. First, as in the recent *farmdoc daily* article (March 29, 2017), assume 50/50 sharing agreements are the industry norm. Second, we can then simply multiply domestic biodiesel production in each year (2010, 2012, 2014, and 2015) with a retroactive tax credit by $0.50 per gallon. The total windfall to biodiesel producers based on these assumptions is $1.9 billion. While this is not a large number in the context of the total size of the U.S. diesel market, roughly 55 billion gallons annually, it is not small either. The calculation also ignores the possibility that exporters of biodiesel to the U.S. also having negotiated sharing agreements with blenders. This would further increase the losses to U.S. diesel consumers.

Implications

The on- and off-again nature of the $1 per gallon biodiesel blenders tax credit has prompted the inclusion of “sharing” provisions in marketing agreements between biodiesel blenders and producers to cover the retroactive reinstatement of the credit. The revenue gained through these sharing agreements has been an important source of profits to biodiesel producers in recent years. We use a simple conceptual model of the biodiesel market to show that when both a tax credit and volume mandate are in place that current sharing agreements are difficult to justify from an economic standpoint. Instead of sharing retroactive credits with producers, the entire credit should be passed back to diesel consumers in the form of lower prices. In essence, blenders are providing a profit windfall to biodiesel producers that theory indicates should be accruing to consumers. A rough estimate of size of the total windfall provided to biodiesel producers is $1.9 billion. In sum, sharing agreements appear to have outlived their original purpose and there is a need to rationalize the way retroactive biodiesel tax credits are shared in the fuel supply chain.

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