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Why Do Blenders Share Retroactively Reinstated Tax Credits with Biodiesel Producers?

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The biodiesel tax credit allows blenders of biodiesel (and renewable diesel) to claim a credit of $1 per gallon against their U.S. federal tax liability. The credit has had several near-death experiences in the last few years. It was allowed to expire at the end of 2009, 2011, 2013, and 2014, which meant that the credit was not initially in place for 2010, 2012, and 2014. However, in each of these three years the tax credit was eventually reinstated retroactively through various pieces of legislation. The biodiesel tax credit has not been reinstated for 2015, but the Senate Finance Committee announced last week that it will consider legislation that reinstates the credit for 2015 and extends it through 2016.

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 connection between the tax credit and increased biodiesel production is apparently the basis for sharing clauses that are part of many marketing contracts between biodiesel producers and blenders. These clauses specify how the biodiesel tax credit will be shared between the biodiesel producer and blender if the tax credit is not in place at the time a transaction is made but is reinstated retroactively at some later date. There is no comprehensive data on the exact nature of the sharing provisions or how frequently such provisions are in place; however, filings with the U.S. Securities and Exchange Commission (SEC) suggest their use is fairly common. For example 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

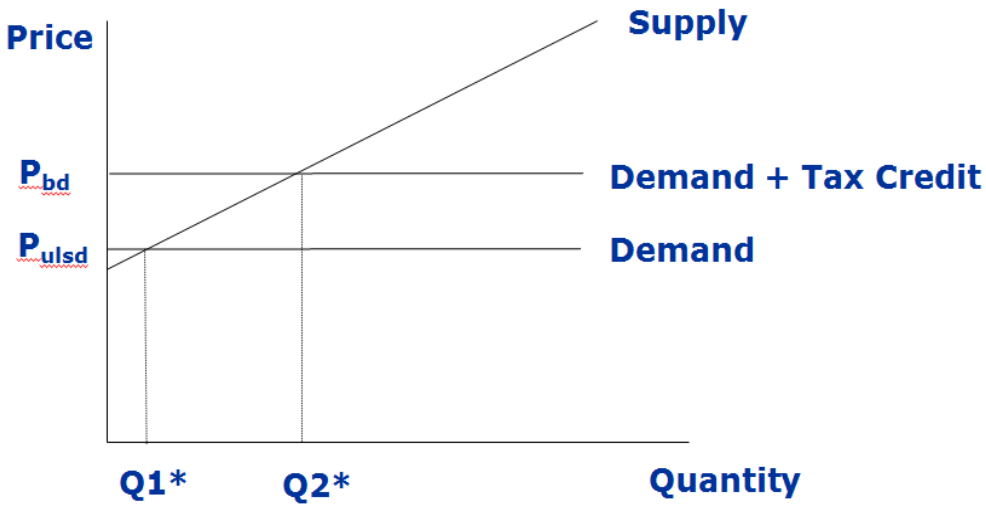
2014, including a contribution of 89 million euros from the reinstatement of the biodiesel tax credit. Clearly, the sums involved are non-trivial.

While the tax credit sharing provisions of biodiesel marketing contracts are a well-entrenched feature of the today's marketplace, it is not obvious that the provisions make economic sense in the current policy environment. More specifically, 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 been an important policy instrument. The purpose of today's article is to analyze the economic incentives for blenders to share reinstated tax credits with biodiesel producers when a mandate is also in effect.

Analysis

We begin with a conceptual analysis of the biodiesel market under different policy scenarios. The first scenario, presented in Figure 1, is the simplest and only includes the blenders tax credit. The conceptual model of the biodiesel market that we employ has been used in several previous *farmdoc daily* articles (e.g., October 10, 2014; October 15, 2014; May 28, 2015) 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. Retail demand at the consumer level is implicitly represented by a simple percentage markup of the wholesale demand shown in Figure 1. 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. One could go further and adjust biodiesel prices to reflect the lower energy content of biodiesel (about 12% lower) compared to petroleum diesel. However, given the low biodiesel blends typically used in the marketplace today (e.g., B2 or B5), it is doubtful that this lower energy content is priced at the retail level. Furthermore, a growing portion of "biodiesel" consumption in the U.S. is in the form of renewable diesel that has the same energy content as petroleum diesel (*farmdoc daily*, December 13, 2013). So, we assume no adjustment is necessary for energy content. We also do not explicitly consider imports and exports of biodiesel in the model.

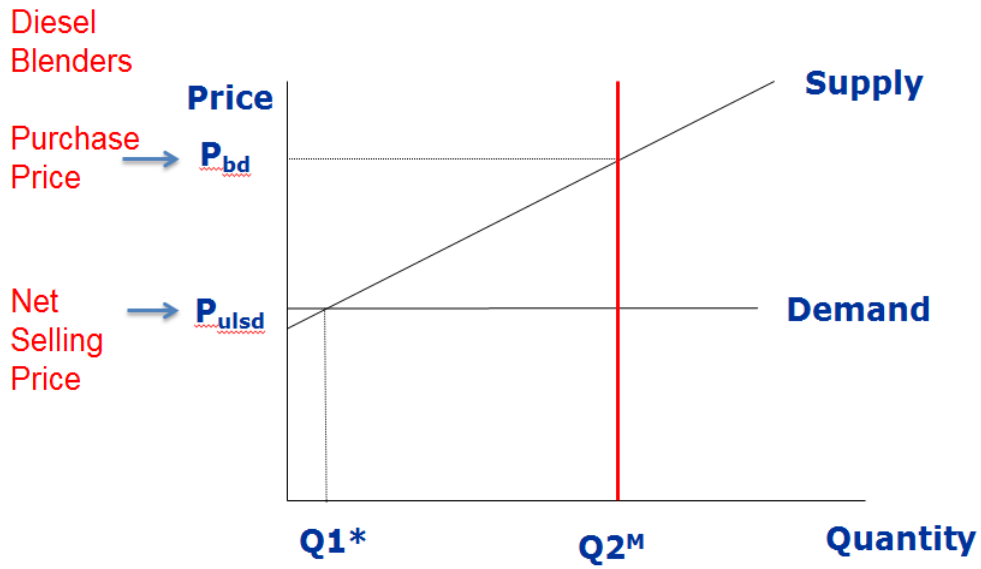
Figure 1. The Biodiesel Market with a Blenders Tax Credit



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}). This is consistent with the position of the biodiesel industry that the tax credit is important to stimulating production. It also makes economic sense for the biodiesel producer and blender to negotiate a sharing agreement for a tax credit that is reinstated after the fact. 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 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}). From the perspective of a diesel blender, there is a wedge between the price paid to biodiesel producers and the price charged to retailers (consumers) for the biodiesel in diesel blends. This wedge, or loss, is the wholesale diesel price minus the biodiesel price at the mandated quantity. Under these assumptions, sharing provisions in marketing contracts are irrelevant because a binding volume mandate cannot be imposed retroactively.

Figure 2. The Biodiesel Market with a Volume Mandate



We now proceed to analyze policy scenarios with both a tax credit and a volume mandate. Figure 3 shows a scenario with a tax credit and a non-binding volume mandate. The mandate has no effect because the tax credit has a more stimulating impact on biodiesel production ($Q2^* > Q2^M$). The tax credit effectively "un-binds" the volume mandate in this case. Nonetheless, the implications for sharing provisions are not exactly the same as in the scenario where there is only a tax credit. The reason is that the price received by

a biodiesel producer if the tax credit lapses will not fall all the way to the wholesale diesel price. Without the tax credit, the volume mandate will become binding and the selling price for the biodiesel producer will be given by the intersection of the volume mandate ($Q2^M$) and the supply curve, which is well above the wholesale diesel price. This smaller difference should provide an upper bound on the amount of a retroactively reinstated tax credit that is shared by blenders with producers. Note also that the closer the volume mandate is to the equilibrium quantity under the tax credit the lower is the upper bound on sharing.

Figure 3. The Biodiesel Market with a Blenders Tax Credit and Non-Binding Volume Mandate

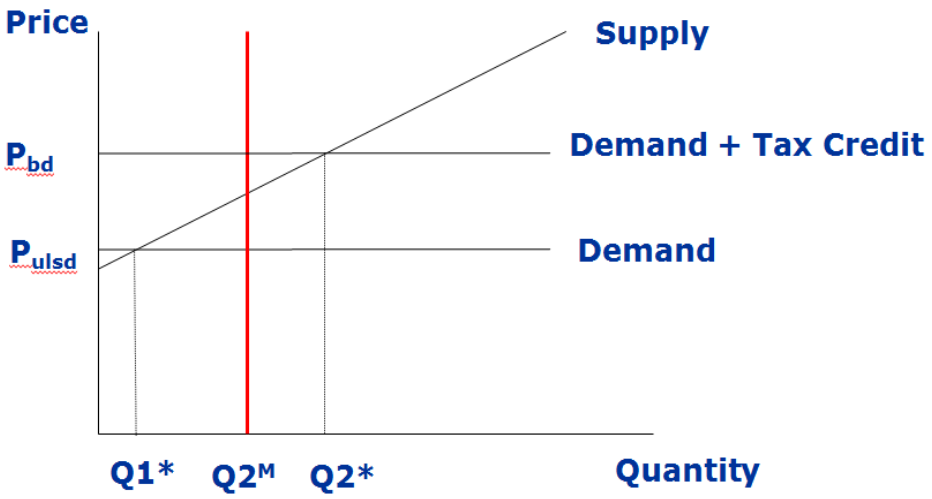
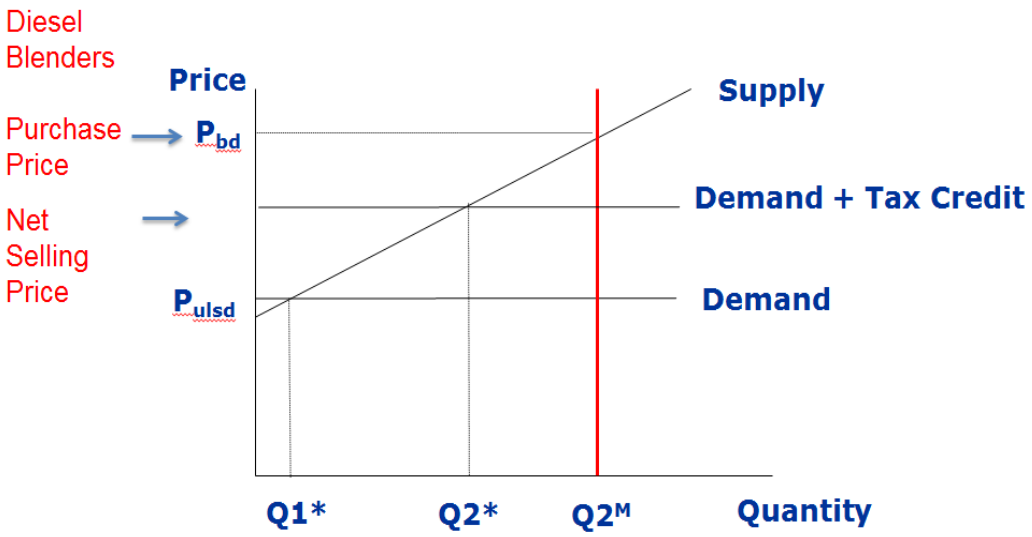


Figure 4 shows the reverse scenario of a binding volume mandate and a tax credit. The mandate is binding because it requires a higher level of production than under a tax credit alone ($Q2^M$>Q2*). The same conclusions follow as before when analyzing a scenario with only a volume mandate (Figure 2). That is, sharing provisions in marketing contracts are irrelevant because a binding volume mandate cannot be imposed retroactively. The effect of the tax credit under this scenario is purely redistributive because produce selling prices and production are unaffected by the credit. This is not consistent with the position of the biodiesel industry that the tax credit is important to stimulating production. Further, when there is only a binding volume mandate as shown in Figure 2, the cost of requiring a level of production and consumption above the market equilibrium (Q1*) is initially borne by diesel blenders in the form of producer biodiesel prices that exceed wholesale diesel prices. In the conceptual model used here, this cost is then fully passed on to diesel consumers in the form of higher retail prices for diesel (weighted appropriately for the proportion of the blend that is biodiesel). So, diesel consumers ultimately bear the cost of the binding volume mandate. When there is also a tax credit in place, as in Figure 4, the credit partially offsets the cost borne by diesel consumers. In other words, the cost passed on to consumers is lowered by the amount of the tax credit and the cost is shared between taxpayers and diesel consumers.

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

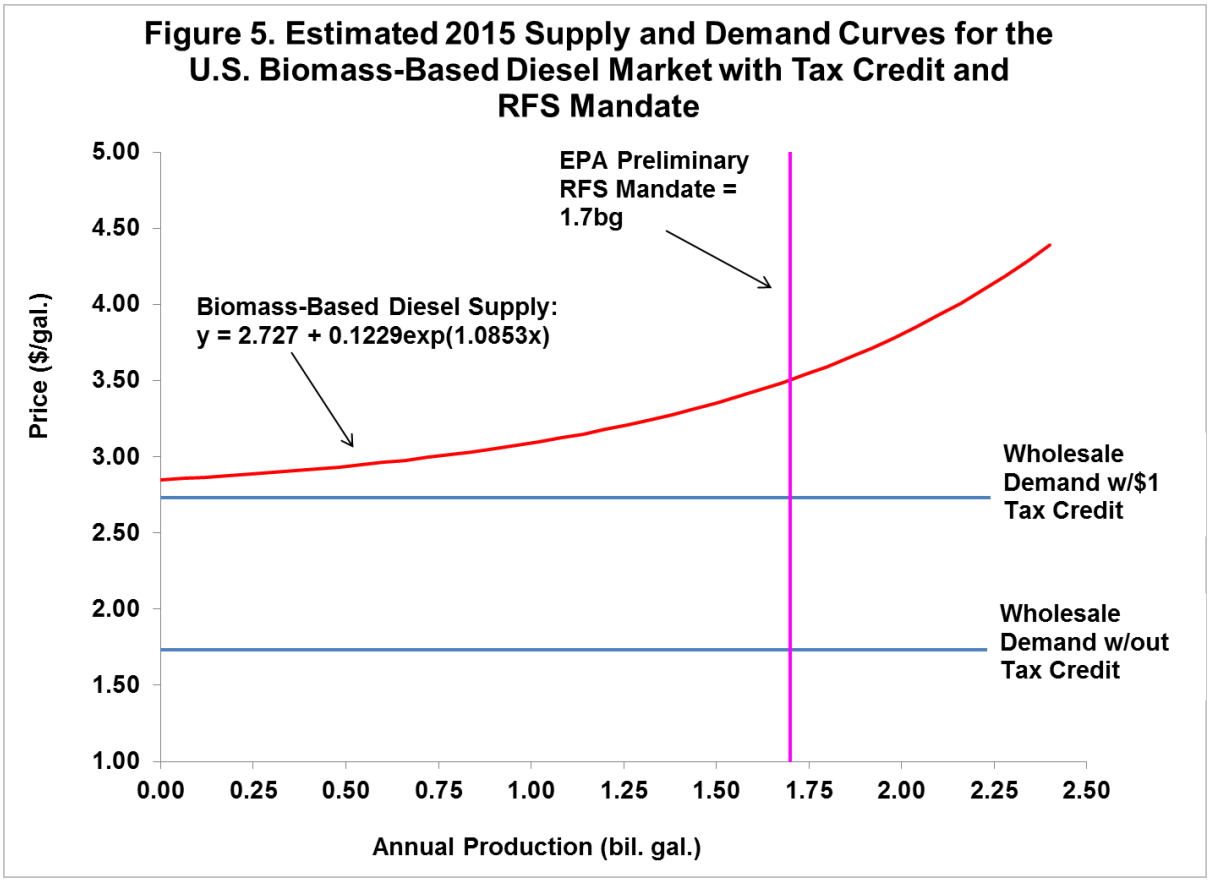


Up to this point the analysis has been purely conceptual. We have shown that the economic incentives for sharing provisions in biodiesel marketing contracts depend crucially on the relevant policy scenario. If there is only a tax credit in place, then traditional sharing provisions make economic sense. If only a binding volume mandate is in place sharing provisions are irrelevant. If both a tax credit and a volume mandate are in place, the key question is whether the volume mandate or blenders credit is more dominant in terms of stimulating biodiesel producer prices and production. This question is important at the present time because there is a (preliminary) RFS mandate for 2015 of 1.7 billion gallons, and if history is any guide, there is a strong possibility that the biodiesel tax credit, which lapsed at the end of 2014, will be reinstated retroactively at some point for 2015. As noted earlier, the U.S. Senate Finance Committee announced last week that it will consider legislation that reinstates the credit for 2015 and extends it through 2016.

Identifying whether the RFS mandate or a reinstated tax credit is more dominant for 2015 requires quantitative estimates of supply and demand curves. A previous *farmdoc daily* article (December 13, 2013) estimated a supply curve for biomass-based diesel in the U.S. and an updated version will be employed here. Average weekly values to date in 2015 are used to project variables for the entire year. Specifically, the assumed values are $0.32 cents per pound for soybean oil, $2.77 per million BTU for natural gas, $1.08 per gallon for methanol, and $0.09 per pound for glycerin. The 2015 supply curve, shown in Figure 5, represents the responsiveness of biomass-based based diesel to the biodiesel price, assuming all the other variables are held constant. Note also that the supply curve represents the combined domestic and import responsiveness of conventional biodiesel as well as renewable diesel (see the December 13, 2013 article for details). The demand curve is simply the horizontal curve given by the level of the wholesale diesel price, assumed to be $1.73 per gallon. Given the simplicity of the model and estimation methods, the derived supply and demand curves should be viewed as useful approximations rather than highly reliable estimates.

The estimated supply and demand curves indicate the market equilibrium quantity of biodiesel (both conventional and renewable) in Figure 5 is zero because the demand curve without the tax credit does not intersect with the supply curve for any positive quantities. It is rather remarkable that the equilibrium quantity of biodiesel is still zero after assuming the blender tax credit is reinstated. This is largely due to the substantial decline in diesel prices over the last year. Given this situation, it is obvious that the (preliminary) 2015 RFS volume mandate of 1.7 billion gallons dominates the biodiesel tax credit in terms of stimulating

producer prices and production. In fact, the RFS mandate will dominate at any positive volume under the assumed conditions for 2015. This also implies that reinstatement of the tax credit for 2015 should not have any impact on biodiesel production, producer selling prices, or profitability, which is obviously inconsistent with industry arguments about the effect of the tax credit. This has the further implication that there is no economic rationale for blenders to share the credit with biodiesel producers if it is reinstated retroactively for 2015. Any portion shared with producers according to this model should actually be passed on to consumers in the form of lower retail diesel prices.



The previous conclusions, of course, depend on the assumed values for key variables. In particular, there is a point where higher wholesale diesel or lower soybean oil prices will make the tax credit dominant in terms of stimulating producer prices and production. To reach the point where the tax credit is equal to the RFS mandate in quantity terms the wholesale diesel price would have to rise from $1.73 to $2.50 per gallon or the soybean oil price would have to fall from $0.32 to $0.22 cents per gallon. Price movements of these magnitudes seem highly unlikely, and even if they did occur, it still would not make sense for blenders to share a retroactively reinstated tax credit with producers because biodiesel prices and production would be the same under either policy. Finally, these conclusions may not fully apply to earlier years because of variation in these same prices.

Implications

The $1 per gallon biodiesel tax credit has had anything but a steady history in recent years. It has expired four times since 2009 and then subsequently reinstated retroactively three times. The fate of the credit for 2015 is still up in the air. This checkered history has led to provisions in many biodiesel marketing contracts that specify how the tax credit will be shared between the biodiesel producer and blender if the tax credit is reinstated retroactively. A simple supply and demand model of the biodiesel market is used here to demonstrate the conditions where these sharing provisions do and do not make economic sense. If both a tax credit and a volume mandate are in place, the key question is whether the volume mandate or tax credit

is more dominant in terms of stimulating biodiesel producer prices and production. Estimated supply and demand curves for 2015 indicate the (preliminary) 2015 RFS volume mandate for biodiesel of 1.7 billion gallons completely dominates the biodiesel tax credit in terms of stimulating producer prices and production. This implies that reinstatement of the tax credit for 2015 should not have any impact on biodiesel production, producer selling prices, or profitability, which is inconsistent with industry arguments about the effect of the tax credit. Importantly, it also implies there is no economic rationale for blenders to share the credit with biodiesel producers if it is reinstated retroactively for 2015. It is interesting to contemplate how these sharing provisions might change if the biodiesel tax credit is converted from a blender to a producer credit. The U.S. Senate Finance Committee yesterday approved doing exactly that starting in 2016. The implications of this possible conversion will be taken up in a future *farmdoc daily* article.

References

Energy content of biofuel. In *Wikipedia*. Last modified on June 12, 2015, at 11:34, and retrieved July 22, 2015, from https://en.wikipedia.org/wiki/Energy_content_of_biofuel

Environmental Protection Agency. "Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass Based Diesel Volume for 2017; Proposed Rule." *Federal Register* 80(111), June 10, 2015. http://www.gpo.gov/fdsys/pkg/FR-2015-06-10/pdf/2015-13956.pdf

Irwin, S. "Clues from the RINs Market about the EPA's RVO Proposals for 2014, 2015, and 2016." *farmdoc daily* (5):98, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 28, 2015.

Irwin, S. "Pricing of 2014 Biodiesel RINs under Alternative Policy Scenarios." *farmdoc daily* (4):199, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, October 15, 2014.

Irwin, S. "Understanding the Behavior of Biodiesel RINs Prices." *farmdoc daily* (4):196, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, October 10, 2014.

Irwin, S. "Estimating the Biomass-Based Diesel Supply Curve." *farmdoc daily* (3):237, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, December 13, 2013.

Joint Committee on Taxation, “Description of the Chairman’s Mark of a Bill to Extend Certain Expired Tax Provisions.” (JCX-101-15), July 17, 2015. This document can also be found on the Joint Committee on Taxation website at www.jct.gov
http://www.finance.senate.gov/imo/media/doc/JCX-101-15%20Extenders%20Markup.pdf

National Biodiesel Board. “Tax Incentive Action Page.” Accessed July 22, 2015.
http://biodiesel.org/policy/fueling-action-center/tax-incentive-action-page

U.S. Senate Finance Committee, “Results of Executive Session on Extend Certain Expiring Tax Provisions.” July 21, 2015.
http://www.finance.senate.gov/imo/media/doc/Results%20of%20Executive%20Session.07.21.2015.pdf