

NOTE

MITIGATING THE UNINTENDED CONSEQUENCES OF BIOFUEL TAX CREDITS

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I. INTRODUCTION

Tax policy analysts have long focused on the fact that the behavioral responses of market actors—consumers, workers, shareholders, and others—can shift the benefit or burden of a tax provision to someone other than persons legally subject to the tax. However, a further complication can be easily overlooked. In addition to market actors, regulators in other administrative agencies may react to changes in tax policy. It is important for both tax policy analysts and regulators to understand how regulatory reactions to changes in the tax law can either undermine or support a provision’s intended consequences. This basic principle can be illustrated by considering tax credits for biofuel production or use.

In the past decade, Congress has shown increasing interest in supporting biofuels as an alternative to fossil fuel-based gasoline for motor vehicle fuel. Supporting biofuels is seen as having many benefits. Biofuels, if produced properly, can reduce lifecycle greenhouse gas emissions and thus reduce the impact of motor vehicle use on the global climate.¹ Biofuels are also a replenishable resource because source crops can be replanted.² Use of these alternative fuels decreases dependence on fossil fuels produced abroad and hence can provide national security benefits.³ Lastly, biofuels can be a source of income and jobs for farmers and can promote rural development.⁴

For these reasons, Congress has adopted several laws intended to support and incentivize biofuel production and use. Federal support for biofuels includes a complicated array of at least twenty-two programs administered by the Environmental Protection Agency (“EPA”), the Department of Agriculture, the Department of Energy, the Internal Revenue Service (“IRS”), and Customs and Border Protection.⁵ On their own, programs such as man-

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¹ Deepak Rajagopal & David Zilberman, *Review of Environmental, Economic and Policy Aspects of Biofuels* 7–8 (The World Bank, Policy Research Working Paper No. 4341, 2007).

² *Id.*

³ *Id.*

⁴ *Id.*

⁵ BRENT D. YACOBUCCI, CONG. RESEARCH SERV., R40110, BIOFUELS INCENTIVES: A SUMMARY OF FEDERAL PROGRAMS 12–15 (2010).

dated biofuel consumption and biofuel tax credits, for instance, encourage biofuel production and benefit biofuel producers.

The interaction of these various programs, however, is not always obvious. For example, economists have argued that biofuel tax credits, rather than acting as a subsidy for biofuel and biofuel producers, act instead as a subsidy for motor vehicle fuel in general—which is predominately made up of petroleum-based gasoline.⁶ This unintended consequence occurs because of the interaction between the biofuel tax credits and biofuel consumption mandates. The purpose of this Note is to describe these unintended consequences and show how they may be mitigated by regulatory action.

A tax credit on the sale of a product can have two effects on the market for that product. First, tax credits can lower the price of the product. Second, tax credits can increase the quantity of the product sold. The mix of decrease in price and increase in quantity sold, and hence how the economic benefit of a tax credit is split between buyers and sellers, in a particular case depends on the relative responsiveness of buyers and sellers to changes in price. These standard results of public finance are discussed in more detail in Part II.

One implication of these public finance results is that biofuel tax credits operating in an ordinary market should lead to increased biofuel consumption. The ordinary operation of various biofuel tax credits is discussed in Part III.

However, biofuel tax credits are not operating in an ordinary market. Under current law, the level of consumption of various kinds of biofuels by gasoline producers who mix the fuels and sell them as motor vehicle fuel is determined by administrative mandate. Part IV describes the various biofuel consumption mandates and their intended consequences.

When the quantity of goods sold in a particular market is determined by a fixed administrative mandate, rather than by the ordinary market forces of supply and demand, the immediate economic benefit of any tax credit will go entirely to purchasers. Because the quantity of biofuels purchased is administratively set above the amount that would be sold based on supply and demand, buyers will not respond to the tax credits by demanding more biofuels, so the entire effect of the tax credits must be to decrease price. Therefore, gasoline companies bear the immediate economic benefit of tax credits granted on the sale of these biofuels when these tax credits operate under a fixed consumption mandate. Because the ordinary market mechanism—where lower prices cause increased demand—does not operate, all of the benefit of the tax credits flow through to the biofuel purchasers. When these purchasers mix the biofuels with gasoline and sell them to consumers of

⁶ See generally Harry de Gorter & David R. Just, *The Law of Unintended Consequences: How the U.S. Biofuel Tax Credit with a Mandate Subsidizes Oil Consumption and Has No Impact on Ethanol Consumption* (Dep't of Applied Econ. & Mgmt., Working Paper 2007-20, 2008).

motor vehicle fuel, the value of the tax credits acts as a subsidy on the fuel that they sell. This subsidy will act in essentially the same way as lowering the gas tax: it will increase gasoline consumption and lower gasoline prices. But this is not the intended effect of biofuel tax credits. These unintended consequences of biofuel tax credits operating under a consumption mandate are discussed in Part V.

These unintended consequences can be mitigated if some non-market mechanism leads the tax credits to cause an increase in biofuel consumption. Because consumption is determined by the administrative mandate, this mechanism must be a regulatory one. Regulators do in fact have some discretion in determining the level of mandated consumption. Under their statutory authority, the EPA can waive consumption mandates. If the creation of biofuel tax credits cause the EPA to rely less on these waivers, and thus to increase the quantity of biofuels consumed, the tax credits would have their intended effect at least to a certain extent. The possibility for decreased reliance on waivers to mitigate the unintended consequences of biofuel tax credits operating under a consumption mandate is discussed in Part VI.

Can the creation of biofuel tax credits cause the EPA to rely less on waivers? The waiver authority under each mandate is different, and the legal constraints they place on the EPA are not entirely clear. However, because the waivers are motivated at least in part by a desire to avoid economic harm from increased fuel prices, the biofuel tax credits likely allow the EPA to rely less on waivers in at least some circumstances. The EPA's legal authority to take the existence of biofuel tax credits into account in determining whether to waive a mandate and how much of the mandate to waive is discussed in Part VII.

II. THE INCIDENCE OF A TAX

Tax policymakers commonly distinguish between a tax's *nominal incidence* and its *economic incidence*.⁷ The nominal incidence of a tax describes the person or entity that bears the legal responsibility for paying the tax to the IRS. The economic incidence, on the other hand, describes the person who bears the actual economic burden—in terms of reduced wealth or consumption—imposed by the tax. In the context of tax credits, the nominal incidence describes the person who is legally entitled to a reduction in taxes paid, while the economic incidence describes the person who derives actual economic benefit from the creation of the credit.

Economic incidence and nominal incidence are not necessarily the same. To illustrate this principle, and to understand what determines the economic incidence of a tax, it is useful to consider the economic incidence of a

⁷ See generally, e.g., HARVEY S. ROSEN, PUBLIC FINANCE 273–301 (7th ed. 2005).

simple excise tax under a variety of market conditions.⁸ Imagine a product with many buyers and sellers in a competitive marketplace. Economists often use a schematic diagram—called a supply and demand graph—to help analyze how such a market works and reacts to various changes.⁹ A typical supply and demand graph is shown in Figure 1.

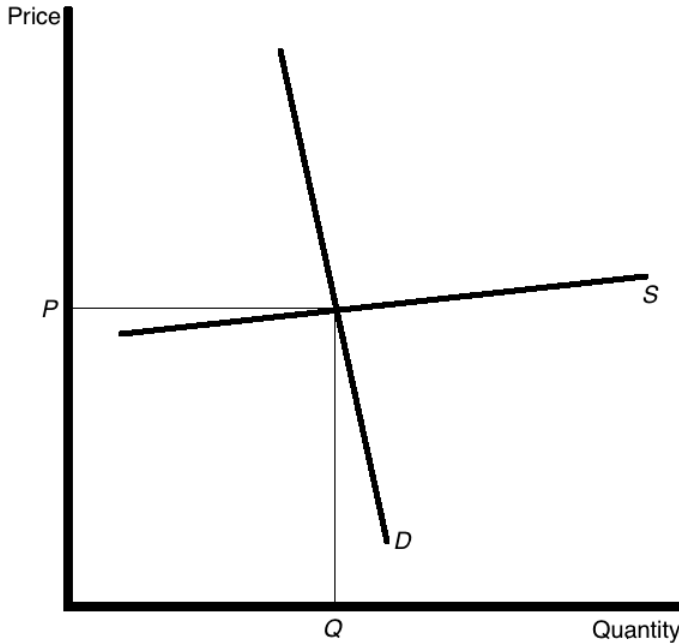


FIGURE 1. A TYPICAL SUPPLY AND DEMAND GRAPH.

The supply curve, labeled *S*, shows the willingness of sellers to sell their product at any given price. Any given point on the curve, corresponding to coordinates (x, y) , sellers in the aggregate are willing to sell x units of their product if the market price is $\$y$. The supply curve typically slopes upwards because sellers in the aggregate are willing to produce more of their product if they can receive a higher price for it. The demand curve, labeled *D*, shows the quantity of a product consumers are willing to buy at any given price. Any given point on the curve, corresponding to coordinates (x, y) , means that consumers in the aggregate are willing to buy x units of the product if the market price is $\$y$. The demand curve typically slopes downwards because buyers in the aggregate are willing to purchase more of a product if they can get it for cheaper.

⁸ Cf. *id.* at 278–83. This kind of “partial equilibrium” analysis is useful for determining the impact of a tax on a single market in isolation. *Id.* at 278.

⁹ For a more detailed introduction to supply and demand analysis, see generally, e.g., DAVID A. BESANKO & RONALD R. BRAEUTIGAM, MICROECONOMICS: AN INTEGRATED APPROACH 25–73 (2002).

Market prices and quantities tend towards the *equilibrium point* (P, Q) where the supply and demand curves intersect. This is because if the market price is less than the equilibrium price, P , then producers will make less of the product than consumers wish to buy and there will be a shortage, which tends to drive the price upwards.¹⁰ If, on the other hand, the market price is more than the equilibrium price, then producers will make more of the product than consumers wish to buy and there will be surplus going unused, which tends to drive the price downwards.¹¹

Now imagine that the government imposes an excise tax on the sale of the product. In other words, the government requires that sellers of the product collect $\$T$ for every unit they sell. The nominal incidence of this tax is on the seller because they are the party legally required to pay the funds over to the IRS.

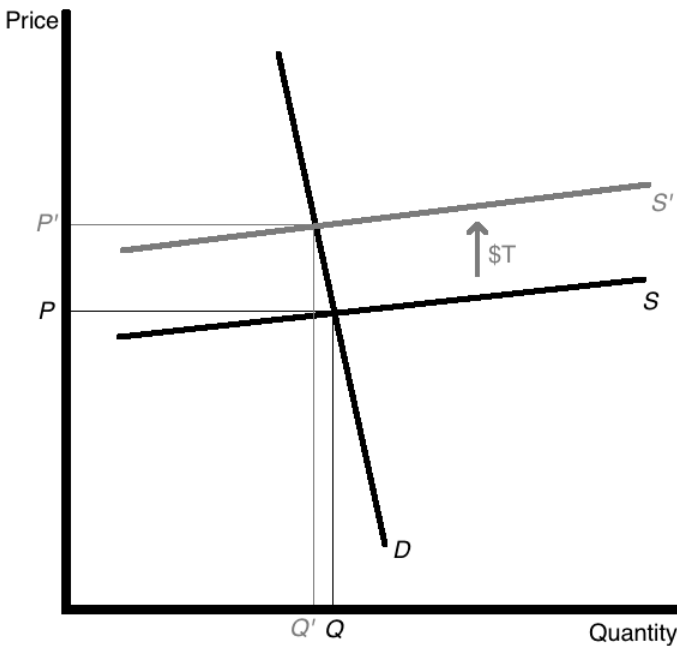


FIGURE 2. THE IMPACT OF A $\$T$ per unit excise tax.

However, the sellers likely will not bear the entire economic burden of the tax. The effect of the tax on this market is illustrated in Figure 2. Because the sellers are required to pay $\$T$ to the IRS for each unit sold, the supply curve shifts upwards by T .¹² For a given quantity sold, a seller must pay $\$T$ dollars per unit to the government, thus it requires a price $\$T$ higher to be

¹⁰ *Id.* at 33.

¹¹ *Id.*

¹² See ROSEN, *supra* note 7, at 281–2.

willing to produce the same quantity. This causes the equilibrium point to shift. In principle, this should both increase the market price and decrease the market quantity sold. In Figure 2, the price has increased greatly while the quantity sold has only decreased slightly. Because the quantity sold has decreased only a small amount, and because the price increase makes up for almost all of the tax imposed, sellers in this market are only slightly worse off than they were before. Buyers, on the other hand, face a significantly higher price than they would have otherwise, and also consume slightly less. They are therefore, significantly worse off. Thus, the economic incidence of this tax is predominantly on the buyers rather than the sellers.¹³

However, if market conditions were different, as illustrated in Figure 3, the economic incidence could have been predominantly on the sellers. In this graph, the price has increased only slightly while the quantity sold has decreased greatly. Thus, in these market conditions it is sellers who bear the bulk of the burden of the tax.

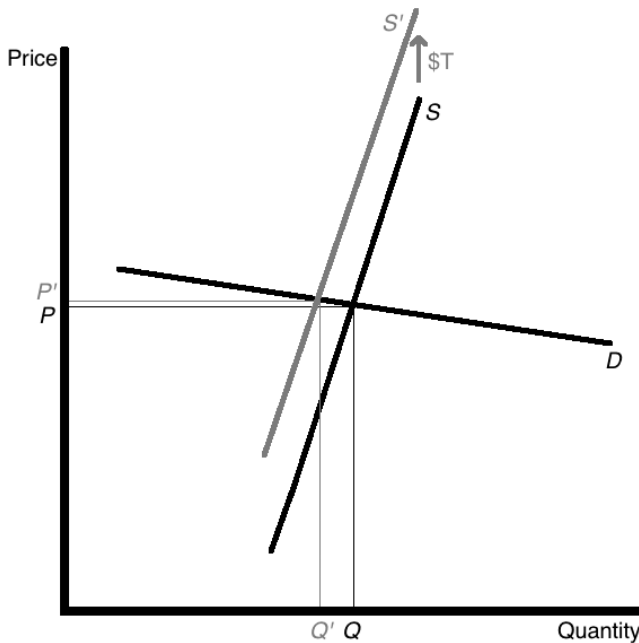


FIGURE 3. THE IMPACT OF A $\$T$ excise tax on a different market.

The difference between Figure 2 and Figure 3 lies in the *price elasticities* of the supply and demand curves. The price elasticity of supply or demand is the sensitivity of buyers and sellers to changes in market prices.¹⁴ When the supply or demand curve is steeply vertical, the supply or demand

¹³ See *id.*

¹⁴ See BESANKO & BRAEUTIGAM, *supra* note 9, at 46, 60.

is said to be inelastic.¹⁵ The quantity of the good supplied or demanded does not change significantly in response to changes in prices. When the supply or demand curve is mostly horizontal, the supply or demand is said to be elastic.¹⁶ The quantity of the good supplied or demanded changes greatly in response to changes in prices.

Figures 2 and 3 illustrate the general relationship between elasticity and the economic incidence of a tax.¹⁷ When demand is relatively inelastic and supply is relatively elastic, the economic incidence of a tax falls largely on consumers. When demand is relatively elastic and supply is relatively inelastic, the economic incidence of a tax falls largely on producers. The analysis is much the same for tax credits—the shift in the supply curve is simply in the other direction—and for taxes whose legal incidence is on consumers¹⁸—the demand curve shifts instead of the supply curve, but the result is the same.

III. BIOFUEL TAX CREDITS

Congress has created several tax credits to encourage biofuel production.¹⁹ Many of these credits were reauthorized and extended as a part of the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010.²⁰ Under current law, there are tax credits available for many producers and consumers of biofuels: alcohol-gasoline blenders (\$.60 per gallon),²¹ sellers of unmixed alcohol as fuel (\$.60 per gallon),²² ethanol producers with a productive capacity under sixty million gallons per year (\$.10 per gallon),²³ producers of cellulosic biofuel (up to \$1.01 in total tax credits per gallon),²⁴ biodiesel-diesel blenders (\$1 per gallon),²⁵ sellers of unmixed biodiesel as fuel (\$1 per gallon),²⁶ and agri-biodiesel producers with a productive capacity under sixty million gallons per year (\$.10 per gallon).²⁷

Biofuel tax credits are seen as having a number of potential benefits. Biofuel tax credits operating in a relatively free-functioning market should

¹⁵ See *id.* at 47.

¹⁶ See *id.*

¹⁷ See ROSEN, *supra* note 7, at 282.

¹⁸ See *id.* at 281.

¹⁹ See generally INTERNAL REVENUE SERV., FUEL TAX CREDITS AND REFUNDS (2009), available at http://www.irs.gov/publications/p510/ch02.html#en_US_publink1000118042; YACOBUCCI, *supra* note 5, at 2–5 (listing biofuel tax credits).

²⁰ Pub. L. No. 111-312, §§ 701-11, 124 Stat. 3296, 3310–15 (2010) (codified as amended in scattered sections of 26 U.S.C. (Supp. IV 2010)).

²¹ I.R.C. § 40(b)(1) (Supp. IV 2010).

²² *Id.* § 40(b)(2).

²³ *Id.* § 40(b)(4).

²⁴ *Id.* § 40(b)(6).

²⁵ *Id.* § 40A(b)(1).

²⁶ *Id.* § 40A(b)(2).

²⁷ *Id.* § 40A(b)(4).

decrease fossil fuel consumption. There should be a relatively small impact on consumer fuel prices and total fuel use because biofuel use is likely to be small compared to gasoline use.²⁸ Consumption patterns will shift so that biofuels replace previously consumed gasoline.²⁹

Moreover, when biofuel tax credits operate in a relatively free-functioning market, biofuel producers capture most of the economic benefits because their supply elasticity is likely higher (i.e., more elastic) than the demand elasticity of purchasers. While there may be some limitations to biofuel use in the short-term imposed by the need for infrastructure improvements (i.e., car engines that can run on biofuels and gas pumps that can deliver them), in the long term consumers and motor vehicle fuel suppliers are likely to be relatively indifferent between relying on gasoline and biofuels.³⁰ Therefore, the long-term demand for biofuels is likely quite elastic, at least in ranges where it is priced competitively with gasoline. As discussed in Part II, under these circumstances, the economic incidence of the biofuel tax credits would be largely on biofuel producers: this situation is more comparable to the graph in Figure 3 than to the graph in Figure 2.

Congress likely intended the economic incidence of its tax credits to be largely on biofuel producers. In addition to reducing greenhouse gases and fossil fuel dependence, Congress wanted to encourage investment in improved biofuel technology, increase farm incomes, and promote rural development.³¹ The actual effectiveness of biofuel tax credits operating in a free-market is not the focus of this paper. However, placing the economic incidence of tax breaks on biofuel producers is a necessary condition of furthering these goals because it puts money in the pocket of those who are directly responsible for making investment and hiring decisions.

IV. BIOFUEL CONSUMPTION MANDATES

There would be little demand for biofuels, in a relatively free-functioning market, however, because biofuels are typically significantly more expensive than petroleum based gasoline or diesel.³² For this reason, Congress first created a consumption mandate for biofuel use as part of a renewable fuel standard (“RFS”) for motor vehicle fuel in the Energy Policy Act of 2005.³³ The mandate required that, starting in 2006, the Administrator of the EPA promulgate regulations to ensure gasoline sold in the United States contained, in the aggregate, specific amounts of “renewable fuels” over the

²⁸ See de Gorter & Just, *supra* note 6, at 9–10.

²⁹ *Id.* at 10.

³⁰ See *id.* at 9–10.

³¹ See Rajagopal & Zilberman, *supra* note 1, at 7–8.

³² See, e.g., Anthony Radich, *Biodiesel Performance, Costs, and Use*, ENERGY INFO. ADMIN., <http://www.eia.doe.gov/oiaf/analysispaper/biodiesel/> (last modified June 8, 2004).

³³ Pub. L. No. 109-58, § 1501, 119 Stat. 1067, 1067–76 (2005) (codified as amended at 42 U.S.C. § 7545 (Supp. IV 2010)).

course of each year.³⁴ Renewable fuels are defined to be motor vehicle fuels produced from biomass or biogas resources that are used to replace fossil fuels.³⁵ The statute required four billion gallons of renewable fuel consumption in 2006 up to seven and a half billion gallons in 2012, with amounts in subsequent years to be determined administratively.³⁶

Congress preferred cellulosic biomass ethanol in this initial consumption mandate. Between 2006 and 2012, one gallon of cellulosic biomass ethanol counted as two and a half gallons of renewable fuel.³⁷ Beginning in 2010, a certain portion of mandated renewable fuel would have to have been cellulosic biomass ethanol.³⁸ These preferences were likely created because cellulosic biomass ethanol may lead to a significantly greater reduction in greenhouse gas emissions relative to gasoline consumption than conventional biomass ethanol produced from corn.³⁹

The consumption mandate was amended and expanded to its current form by the Energy Independence and Security Act of 2007 (“2007 Act”).⁴⁰ In addition to simply increasing the amount of renewable fuel mandated, magnifying the effects discussed above, the modified mandate was designed to target the effects of the mandate at more desirable fuel sources that would significantly lower overall greenhouse gas emissions. The updated standard requires that renewable fuels produced at newly constructed plants achieve a twenty percent reduction in lifecycle greenhouse gas emissions relative to the lifecycle greenhouse gas emissions of gasoline or diesel in order for the fuels to qualify for inclusion in the mandated consumption amount.⁴¹ Further, the 2007 Act increased the consumption requirements to nine billion gallons in 2008 and up to thirty-six billion gallons by 2022.⁴²

The Act also created additional preferences for certain kinds of renewable fuels. It mandated that one hundred million gallons of renewable fuel (0.8% of the total biofuel consumption mandate) come from cellulosic biofuel starting in 2010, up to sixteen billion gallons (44.4%) by 2022.⁴³ The definition of cellulosic biofuel was amended to include only fuels that

³⁴ *Id.* (amending 42 U.S.C. § 7545(o)(2)(A)).

³⁵ *Id.* (amending § 7545(o)(1)(C)(i)).

³⁶ *Id.* (amending §§ 7545(o)(2)(B)(i)–(ii)).

³⁷ *Id.* (amending § 7545(o)(4)).

³⁸ *Id.* (amending § 7545(o)(2)(B)(iii)).

³⁹ See *The Truth About Ethanol*, UNION OF CONCERNED SCIENTISTS (Dec. 7, 2007), http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/the-truth-about-ethanol.html (explaining that “[c]ellulosic ethanol can reduce lifecycle global warming emissions by as much as 80 to 90 percent compared with gasoline” while “[m]ost analyses conducted before 2008 indicate that corn ethanol delivers a 10 to 20 percent reduction in global warming emissions over its lifecycle compared with gasoline, but these analyses did not include land use changes.”); cf. 42 U.S.C. § 7545(o)(1)(E) (Supp. IV 2010) (requiring cellulosic biofuels to reduce life cycle greenhouse gas emissions by sixty percent relative to gasoline).

⁴⁰ Pub. L. No. 110-140, § 202, 121 Stat. 1521, 1521–28 (2007) (codified as amended at 42 U.S.C. § 7545 (Supp. IV 2010)).

⁴¹ 42 U.S.C. § 7545(o)(2)(A)(i) (Supp. IV 2010).

⁴² *Id.* § 7545(o)(2)(B)(i)(I).

⁴³ *Id.* § 7545(o)(2)(B)(i)(III).

achieved a sixty percent lifecycle reduction in greenhouse gas emissions relative to the lifecycle greenhouse gas emissions of gasoline.⁴⁴ Similarly, the law created a new mandate for biodiesel consumption and amended the definition of biodiesel to require a fifty percent lifecycle reduction in greenhouse gas emissions.⁴⁵ The Act also created a new category of renewable fuel called “advanced biofuels,” defined as any renewable fuel, other than conventional corn-based ethanol, that produces at least a fifty percent lifecycle reduction in greenhouse gas emissions.⁴⁶ Cellulosic biofuel and biodiesel are specifically and expressly included in the definition of advanced biofuels.⁴⁷ The Act required that six hundred million gallons of renewable fuel (5.4%) come from advanced biofuels in 2009 up to twenty-one billion gallons (58.3%) in 2022.⁴⁸

The consumption mandate supports the production of renewable fuels. Rather than directly funding specific renewable fuel programs, the Energy Policy Act of 2005 attempted to harness decentralized decisionmaking and market forces in order to create new and better biofuel technologies that could reduce both American dependence on oil and greenhouse gas emissions while furthering rural development. By requiring consumption of some amount of biofuels, however, the government creates demand by fiat. Mandating biofuel consumption has two primary impacts. First, the mandate leads to the creation of sufficient biofuels to meet the demand created.⁴⁹ By creating a guaranteed market, potential biofuel producers know that they will get a return on their investments, and thus are significantly more likely to invest in new biofuel production technology and infrastructure. Second, by requiring relatively expensive biofuels to be used as a partial replacement for relatively cheap gasoline, the mandate raises overall motor vehicle fuel prices. This in turn leads to somewhat reduced fuel consumption by end users and, hence, reduced dependence on oil and reduced greenhouse gas emissions.⁵⁰

⁴⁴ *Id.* § 7545(o)(1)(E).

⁴⁵ *Id.* §§ 7545(o)(1)(D), (o)(2)(B)(i)(IV).

⁴⁶ *Id.* § 7545(o)(1)(B).

⁴⁷ *Id.* § 7545(o)(1)(B)(ii).

⁴⁸ *Id.* § 7545(o)(2)(B)(i)(II).

⁴⁹ In practice, this is enforced through the use of so called Renewable Identification Numbers (“RINs”). The EPA requires all gasoline producers and importers to obtain a certain number of RINs each year based on the size of their production and imports relative to the United States gasoline market. Gasoline producers and importers can obtain RINs either directly, by purchasing a gallon of biofuels, or indirectly on the RIN market where they can purchase RINs from others who obtained them by purchasing biofuels themselves. This is a sort of mirror image of the so-called “cap and trade” systems used to limit emissions of sulfur dioxide and proposed for limiting carbon dioxide emissions. See BRUCE A. BABCOCK, CTR. FOR AGRIC. AND RURAL DEV., CARD POLICY BRIEF 10-PB 1, MANDATES, TAX CREDITS, AND TARIFFS: DOES THE U.S. BIOFUELS INDUSTRY NEED THEM ALL? 3–5 (2010), available at http://www.card.iastate.edu/policy_briefs/display.aspx?id=1125.

⁵⁰ These benefits from reduced consumption may not accrue if the long-term elasticity of demand for fuel is very low. See *infra* note 65.

V. UNINTENDED CONSEQUENCES OF TAX CREDITS UNDER A CONSUMPTION MANDATE

Tax credits can have the opposite effect when a consumption mandate is in place. Rather than boosting clean biofuel production and providing a financial incentive to biofuel producers, tax credits combined with a consumption mandate can act as a subsidy for gasoline consumption.⁵¹ This can lead to increased greenhouse gas emissions, increased dependence on fossil fuels, and larger profits for oil companies that are not in need of public assistance.

The unintended consequences of biofuel tax credits operating under a consumption mandate can best be illustrated by considering a simple model of the supply and demand of motor vehicle fuel.⁵² In this model, the motor vehicle fuel market can be seen as two separate markets operating in sequence. In the first market, biofuel suppliers sell biofuels to general motor vehicle fuel suppliers and blenders. This market is illustrated in Figure 4. In the second market, these motor vehicle fuel suppliers sell a combination of biofuels and fossil-fuel based gasoline or diesel to consumers. This market is illustrated in Figure 5.

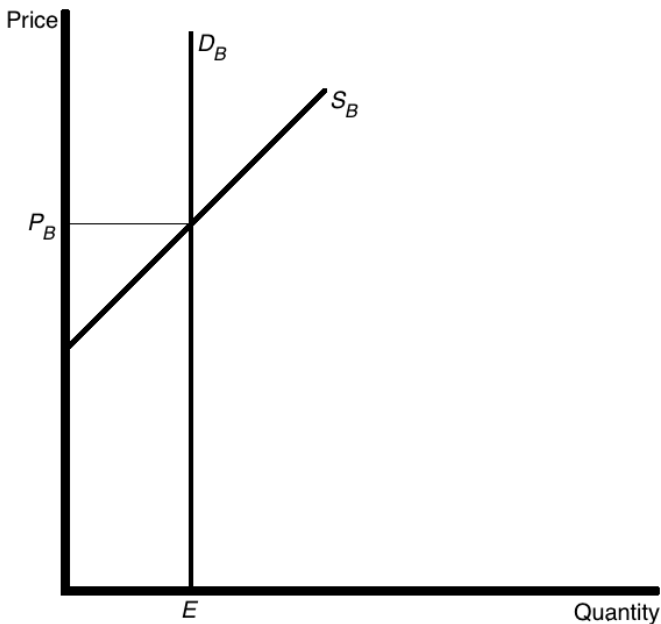


FIGURE 4. THE BIOFUEL MARKET WITH E GALLONS OF MANDATED CONSUMPTION.

⁵¹ De Gorter & Just, *supra* note 6, at 1.

⁵² See generally *id.* Although there are many different tax credits and consumption mandates, this model considers only a single credit and mandate for simplicity.

The most remarkable feature in Figure 4 is the perfectly vertical demand curve. When a binding biofuel consumption mandate is in effect, i.e. when the amount of consumption mandated is higher than it would have been in a free market, demand for biofuels is perfectly inelastic.⁵³ This is because motor vehicle fuel producers are required by law to purchase a fixed amount of biofuels in the aggregate. Therefore, they must purchase this amount irrespective of price.

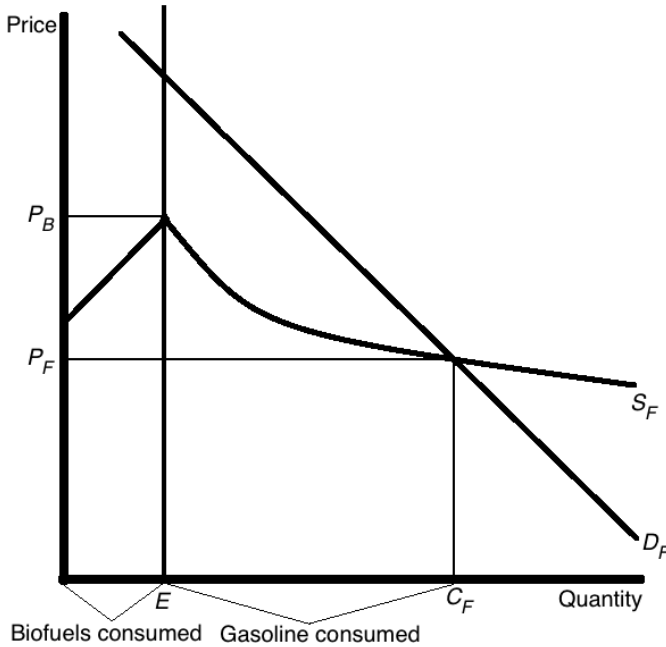


FIGURE 5. MOTOR VEHICLE FUEL MARKET
UNDER CONSUMPTION MANDATE.⁵⁴

In the motor vehicle fuel market, illustrated in Figure 5, the demand curve slopes downwards, as is typical of most products, because consumers generally will be more willing to buy gas if the prices are lower. The supply curve, unusually, also slopes downwards (in relevant ranges) because of the effect of the biofuel consumption mandate.⁵⁵ Biofuels are typically more expensive than gasoline; that is why Congress is attempting to support the biofuel industry in the first place. As the quantity of fuel they sell increases, suppliers can use relatively more of the cheaper fossil fuels in each and every gallon of fuel they sell, lowering the marginal cost to them of a gallon

⁵³ See *id.* at 16.

⁵⁴ See *id.* at 25. E is the mandated level of biofuel consumption. C_F is the total fuel consumption in equilibrium. P_F is the price of fuel at equilibrium. P_E is the price at which biofuel producers are willing to produce E gallons of biofuels. D_F is the fuel demand curve.

⁵⁵ See *id.* at 11, 25.

of fuel. This explains the unusual shape of the supply curve where the price at which motor vehicle fuel producers are willing to sell their product decreases as the quantity they sell increases.⁵⁶

Now consider what happens when biofuel tax credits are added. As mentioned earlier, the fact that the demand in the biofuel market is perfectly inelastic means that the incidence of the biofuel tax credits is entirely on the buyers of biofuels.⁵⁷ Biofuel producers will receive no long-term economic benefits from the tax credits.⁵⁸ Instead, these credits decrease the cost for motor vehicle fuel sellers to obtain the biofuels they need to meet the mandate.⁵⁹ This has the effect of shifting the supply curve in the motor vehicle fuel market downwards as motor vehicle fuel suppliers now find it easier to get the biofuels they need and hence are willing to sell gas at cheaper prices.⁶⁰ This downward shift is illustrated in Figure 6.

⁵⁶ In mathematical terms, the supply curve is given by

$$S_F = (P_E \cdot E + P_G \cdot (C_F - E)) / C_F,$$

where S_F is the price of fuel suppliers are willing to sell at, C_F is the quantity of motor vehicle fuel consumed, E is the amount of biofuel consumption that is mandated by law, P_E is the price at which biofuel producers are willing to produce E gallons of biofuel, and P_G is the world market price of petroleum based gasoline. *See id.* at 10.

⁵⁷ *See supra* text accompanying Figure 4.

⁵⁸ *See id.*; *see also* de Gorter & Just, *supra* note 6, at 9–10.

⁵⁹ In practice, this occurs by decreasing the market price of RINs. *See supra* note 49.

⁶⁰ In mathematical terms, the new supply curve, S'_F , is given by

$$S'_F = ((P_E - T) \cdot E + P_G \cdot (C'_F - E)) / C'_F,$$

where T is the unit tax placed on biofuels and C'_F is the new amount of fuel consumed. *See* de Gorter & Just, *supra* note 6, at 14.

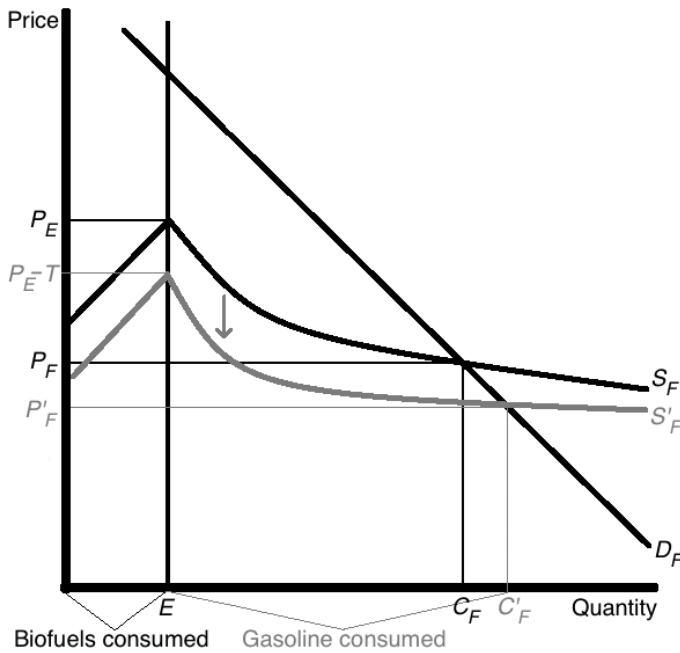


FIGURE 6. MOTOR VEHICLE FUEL MARKET WITH A CONSUMPTION MANDATE AND TAX CREDITS.⁶¹

The effect of this downward shift, however, is perverse. Instead of increasing the amount of biofuels consumed, or increasing the profits of biofuel producers, we can see that it has increased the amount of gasoline consumed. Because fuel prices are reduced, consumption of fuel is necessarily higher as consumers can get more fuel for their dollar.⁶² Total fuel consumption will thus increase (to C'_F). However, and this is the crucial point, consumption of ethanol will not increase beyond the mandated level E because it is not cost justified. It is cheaper to satiate the increased demand for motor vehicle fuel with ordinary gasoline than with expensive biofuels. Therefore, the entirety of the increase in fuel consumption will come from increased consumption of gasoline.⁶³

The essential problem with a biofuel tax credit operating under a consumption mandate is that the level of biofuels produced is determined legislatively, rather than by market forces, so it does not respond to any decreased price of fuel created by tax incentives. The mandate ensures that demand for biofuels is perfectly inelastic, which in turn ensures that as be-

⁶¹ See *id.* at 25. C'_F is the new total fuel consumption at equilibrium. P'_F is the new price of fuel at equilibrium. T is the value of the tax credit per gallon. S'_F is the new supply curve for fuel. As can be seen, the market price of fuel declines, the consumption of fuel increases, and all of this increase comes from increased gasoline consumption.

⁶² *Id.* at 15.

⁶³ *Id.*

tween buyers and sellers in the biofuel market, the sellers will derive all of the immediate economic benefit, although some of the benefits may eventually be passed on to consumers of fuel. Without increased biofuel production to meet higher consumer demand, gasoline must fill in the gap. But this defeats and even reverses the intended purpose of the tax credits. The amount of biofuels produced does not increase, and the biofuel producers are not able to derive any economic benefit. Hence the benefits in increased innovation and rural development are not achieved. Instead the economic benefit is shared by gasoline producers and consumers.⁶⁴ Because gasoline consumption is increased, greenhouse gas emissions are increased, as is reliance on fossil fuels.⁶⁵ In sum, when there is a binding consumption mandate for biofuels, biofuel tax credits act as a subsidy of gasoline consumption rather than a subsidy of biofuel consumption.

VI. MANDATE WAIVER AND A WAIVER OFFSET

Congress has authorized the Administrator of the EPA to waive all or part of the consumption mandate for biofuels.⁶⁶ The Administrator, acting in consultation with the Secretaries of Agriculture and Energy, “may” reduce the mandated level of renewable fuel consumption if “implementation of the requirement would severely harm the economy or environment of a State, a region, or the United States” or “there is an inadequate domestic supply” of renewable fuels.⁶⁷

The Administrator “shall” reduce the separate mandate for *cellulosic* biofuel if “the projected volume of cellulosic biofuel production is less than the” amount mandated by statute.⁶⁸ Additionally, the Administrator “shall” waive the separate mandate for biodiesel if “there is a significant renewable feedstock disruption or other market circumstances that would make the price of biomass-based diesel fuel increase significantly.”⁶⁹ These waivers, designed to respond to shocks in the biodiesel market, only last for sixty

⁶⁴ *Id.*

⁶⁵ *Id.* To the extent that one believes fuel consumption is highly inelastic even in the long-term, and hence will not respond to consumption, for example, by affecting decisions about where to live, what kind of transportation to use and demand, and what level of business activity to engage in, the impact of biofuel tax credits operating under a binding mandate may not seem so perverse. In these circumstances, they would simply give an economic benefit to consumers in proportion to their fuel consumption. However, even in these circumstances, it seems bizarre to accomplish this subsidy through such a baroque mechanism—with all of its attendant costs of compliance and administration—rather than by simply reducing gasoline taxes.

⁶⁶ See generally BRENT D. YACOBUCCI, CONG. RESEARCH SERV., RS22870, WAIVER AUTHORITY UNDER THE RENEWABLE FUEL STANDARD (2010).

⁶⁷ 42 U.S.C. § 7545(o)(7)(A) (Supp. IV 2010).

⁶⁸ *Id.* § 7545(o)(7)(D).

⁶⁹ *Id.* § 7545(o)(7)(E).

days and cannot exceed fifteen percent of the statutorily mandated level of biodiesel consumption.⁷⁰

States and persons subject to the statutory mandate may petition for a waiver, or the Administrator may create a waiver by her own motion.⁷¹ Waivers last for one year, but may be renewed by the Administrator.⁷² If more than twenty percent of the mandate is waived in two consecutive years or more than fifty percent is waived in a single year, then the level of mandated consumption will be reduced proportionately in each of the following years.⁷³

The Administrator could adopt a waiver policy that would, in certain circumstances, mitigate the unintended consequences of tax credits operating under a consumption mandate. If the Administrator's policy is such that a lesser amount of the mandate would be waived when biofuel tax credits are available than when they are not available, then part of the economic incidence of the tax credits is restored to biofuel producers. In particular, the policy can be such that the market price of motor vehicle fuel would be the same after application of the tax credits as it would have been without the tax credits. This in turn would cause the equilibrium level of motor vehicle fuel consumption to remain unchanged. Instead of subsidizing gasoline consumption, the tax credits, combined with the waiver offset, would increase biofuel consumption, decrease gasoline consumption, and allow the economic benefit of the credits to fall on biofuel producers as intended by Congress.

The effect of a waiver offset can be seen in the model described in Part V.⁷⁴ Assume that if there had been no tax credits, the Administrator would have issued a partial waiver of the consumption mandate setting consumption at E gallons of renewable fuels. If the addition of tax credits would not alter the level of mandated consumption, then the situation would be as in Figure 6: the tax credits would cause equilibrium fuel prices to fall from P_F to P'_F and consumption would rise from C_F to C'_F .

However, if the Administrator were able to decrease the amount of the waiver because of the availability of biofuel tax credits, then the consequences would be different. In particular, there is a specific amount of waiver offset under which equilibrium fuel prices and quantities would be the same as if there had been no tax credits.⁷⁵ Because equilibrium price and

⁷⁰ *Id.*

⁷¹ *Id.* § 7545(o)(7)(A).

⁷² *Id.* § 7545(o)(7)(C).

⁷³ *Id.* § 7545(o)(7)(F).

⁷⁴ See generally *supra* Part V.

⁷⁵ In particular, in the model discussed in Part V, if instead of a partial waiver mandating E gallons of biofuel consumption, the Administrator were able to mandate a higher level of consumption of E' gallons given by the equation

$$E' = E + E \cdot (P_E - P'_E + T) / (P'_E - T - P_G),$$

where P'_E is the price at which biofuel producers are willing to produce E' gallons of renewable fuels, and the other variables are as in Part V, then the ultimate price and consumption of

consumer demand would be unchanged, equilibrium consumption would be unchanged as well. This result is illustrated in Figure 7.

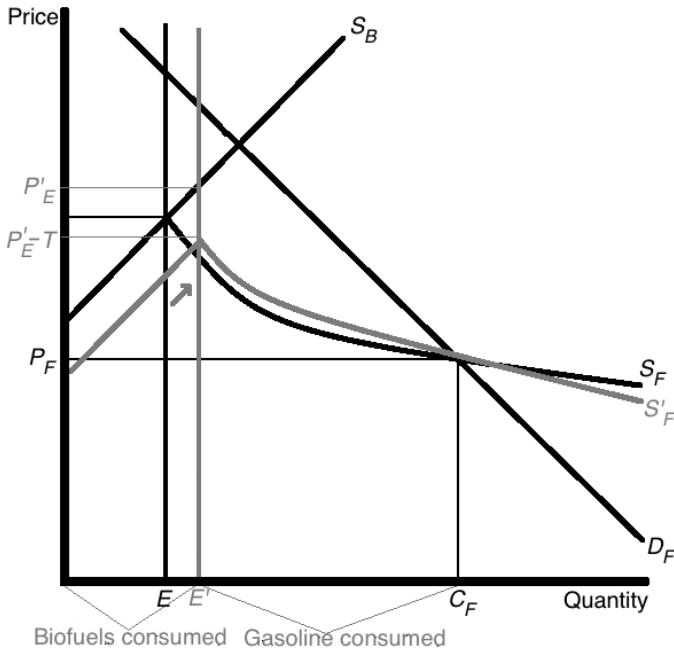


FIGURE 7. FUEL MARKET WITH CONSUMPTION MANDATE, TAX CREDITS, AND MODIFIED WAIVER.⁷⁶

The use of a waiver offset to mitigate the unintended consequences of biofuel tax credits operating under a biofuel consumption mandate can also be understood intuitively. As discussed above, the essential problem of the interaction between a mandate and tax credits is that the amount of biofuels produced is determined by fiat rather than by market forces.⁷⁷ Because the mandate is not flexible, gasoline must come to fill in the extra demand for fuel created by the tax credits. However, the Administrator sometimes has the power to add in the necessary flexibility through its waiver authority. By following a policy that accounts for the effects biofuel tax credits have on the motor vehicle fuel market in determining the degree with which to waive the biofuel consumption mandate, the Administrator can cause increased demand for fuel to be satisfied by biofuels rather than by gasoline. Equilibrium

motor vehicle fuel would be unaffected by the existence of the tax credits. See *supra* text accompanying note 29. This can be seen by substituting E' into the equation for P_F . See *supra* note 54 and accompanying text (calculation on file with author).

⁷⁶ E' is the modified level of mandated biofuel consumption. P'_E is the price at which biofuel producers are willing to produce E' gallons of biofuels. S'_F is the new supply curve for fuel. As can be seen, the market price and consumption of fuel remains unchanged and more biofuels are consumed in place of gasoline.

⁷⁷ See *supra* text accompanying Figure 6.

fuel prices and consumption would be left unchanged by the tax credits, and a greater proportion of fuel consumed would come from biofuels.⁷⁸

Using a waiver offset in this way is not an ideal policy. First, if the underlying economic conditions do not justify the use of a partial waiver in the first instance, then the Administrator will lack the ability to effectively increase the mandated level of biofuel consumption because adjusting the application of the waiver is the only mechanism available to accomplish this goal. Second, if reversing the unintended consequences of biofuel tax credits would require raising the mandated level of biofuel consumption above the statutory level, then the Administrator will likewise lack the statutory authority to do so. Third, determining the correct amount by which to increase the effective level of mandated biofuel consumption requires the Administrator to make assumptions about the gasoline and biofuel markets, and, about the willingness of biofuel producers to produce different amounts of biofuels in return for different prices.⁷⁹ Rather than being able to rely directly on market forces, a primary advantage of using tax credits to incentivize behavior, the Administrator must accomplish these goals top-down by bureaucratic fiat without the benefit of the collective knowledge and preferences of all market participants. This will inevitably lead to some errors, which can in turn produce their own unintended consequences of under- or over-adjusting the mandate level.

For these reasons it would be better for Congress to directly address these issues by not using both biofuel tax credits and a consumption mandate in conjunction. However, as Congress has continued to combine these policies despite fairly widespread knowledge of the economic disadvantages,⁸⁰ it behooves the EPA to consider what it can do to mitigate the disadvantages under current law.

VII. LEGAL AUTHORITY TO APPLY WAIVER OFFSETS

Up to this point, the argument has assumed that the Administrator would be free to adopt a policy that would account for the effects of biofuel tax credits on the market for motor vehicle fuel in determining the degree with which to waive a biofuel consumption mandate. However, the Administrator is not given unlimited discretion in determining whether, and to what extent, to waive biofuel consumption requirements. Therefore, it is important to ask whether using the waiver authority in the manner discussed in Part VI is consistent with the Administrator's statutory powers.

To begin, it is important to state the precise legal question. For the purpose of determining the economic incidence of biofuel tax credits, two hypothetical situations must be compared. In the first situation, there are no

⁷⁸ See *supra* notes 27–30 and accompanying text.

⁷⁹ Note the dependence of E' on P'_E in the equation accompanying *supra* note 75.

⁸⁰ See, e.g., BABCOCK, *supra* note 49.

biofuel tax credits. In the second, biofuel tax credits are available, but other determinants of motor vehicle fuel market conditions are otherwise the same. Ideally, the Administrator would waive a lesser amount of any relevant mandates in the second situation than in the first.⁸¹ Would it be legally permissible for the Administrator to adopt a waiver policy that would treat these two hypothetical situations differently in this way?

The Administrator is entitled to deference in her interpretation of the statutory provisions authorizing a mandate waiver. Under *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, a court will affirm the Administrator's interpretation so long as the statute is ambiguous with respect to the particular question at issue and the Administrator's interpretation is reasonable.⁸² In addition to being consistent with the statutory authorization, the Administrator's decisions to waive a mandate, and how much to waive, must not be arbitrary and capricious.⁸³

The EPA has not constrained its authority through promulgated regulations. In a final rule adopted in May 2007, the EPA stated

While EPA realizes that the criteria provided by the statute are quite general, the rationales of severe environmental or economic harm or inadequate domestic supply are sufficient for a basic framework upon which a petition can be built and evaluated. Each situation in which a waiver may be requested will be unique, and promulgating a list of more specific criteria in the abstract may be counter-productive.⁸⁴

I will now discuss in turn whether taking into account the availability of tax credits is consistent with the Administrator's waiver authority for each of the three authorized mandates: the overall biofuel mandate, the cellulosic biofuel mandate, and the biodiesel mandate.

A. Overall Biofuel Mandate

The Administrator "may" waive the overall biofuel mandate when "implementation of the requirement would severely harm the economy or environment of a State, a region, or the United States" or when "there is an inadequate domestic supply."⁸⁵ The statutory text is silent about whether the availability of tax credits should be taken into account in making this deter-

⁸¹ In particular, ideally the amount of waiver would be decreased in accordance with the equation given *supra* in note 75.

⁸² 467 U.S. 837, 842–44 (1984); *see also* *Bluewater Network v. EPA*, 372 F.3d 404, 410 (D.C. Cir. 2004) ("We give particular deference to the EPA when it acts under 'unwieldy and science-driven' statutory schemes like the Clean Air Act").

⁸³ *See* 5 U.S.C. § 706(a)(2) (2006).

⁸⁴ *Regulation of Fuels and Fuel Additives: Renewable Fuel Standard Program*, 72 Fed. Reg. 23,928 (May 1, 2007).

⁸⁵ 42 U.S.C. § 7545(o)(7)(A) (Supp. IV 2010).

mination. There is similarly no mention in the legislative history of the potential impact of tax credits on the biofuel market. Congress likely did not consider the interaction of these two means of supporting biofuel production.

The Administrator faces two potential legal constraints in adopting a policy that takes the impact of biofuel tax credits into account. First, it is unclear whether the statute authorizes partial waivers or only complete waivers. If the Administrator were faced with a binary choice between mandating the statutory level of consumption and mandating no consumption at all, then the tax credits could only have a minimal impact on waiver decisions. The tax credits could only allow the Administrator to rely less on the waiver authority in circumstances where the credits caused the Administrator to not exercise the authority to waive at all. Because the tax credits blunt the impact of mandated consumption on the motor vehicle fuel market, this could occur, but it would likely be fairly rare. Total waiver provides a crude tool that is likely to do more harm than good if applied to mitigating the unintended consequences of the tax credits because the swings in mandated consumption are so large.

Although there is some legal uncertainty, given the deference due to the Administrator's interpretations of the statute, the use of the permissive "may," and the structure of a mandate coupled to a waiver acting as a safety-valve, the Administrator likely has the authority to issue partial waivers of the overall consumption mandate. The text does not explicitly speak to the question of partial as opposed to complete waivers, but the use of the permissive "may" suggests that Congress intended the Administrator to have a degree of policy discretion beyond a simple fact-finding role in mechanically translating a finding of severe harm into a binary decision to waive the entire mandate. Interpreting the statute to authorize partial waivers would allow the Administrator to better fulfill that policy-making role by allowing her to tailor the waiver to the specific conditions giving rise to the need to waive the mandate. Moreover, it makes little sense to require a complete waiver in circumstances where a partial waiver would accomplish the goal of preventing severe harm. This would frustrate the purpose of a mandate, which is designed to encourage increased production of biofuels, coupled with a waiver, which is designed as a safety-valve to prevent severe consequences, by requiring the Administrator to overreact to the potential harms of mandating excessive biofuel consumption. Finally, several Members of Congress suggested that the Administrator has the authority to partially waive the overall mandate in a letter incorporated into the congressional record.⁸⁶

The second legal question is whether the Administrator could permissibly take into account the cushioning effect of biofuel tax credits on the motor vehicle fuel market in determining the extent to which to waive the

⁸⁶ See, e.g., 154 CONG. REC. S4246 (daily ed. May 15, 2008) (letter submitted to the Record by Sen. Charles Grassley (R-Iowa)).

consumption mandate. The Administrator's waiver decisions must not be "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with the law."⁸⁷

The Administrator can argue, first, that in analyzing waiver decisions "no judicially manageable standards are available for judging how and when an agency should exercise its discretion,"⁸⁸ and hence the waiver decision is unreviewable as "committed to agency discretion by law."⁸⁹ However, this argument is unlikely to succeed, except possibly in the situation where the Administrator has decided to entirely forego issuing a waiver rather than deciding to waive a lesser amount of the mandate. There is a "strong presumption of reviewability" under the Administrative Procedure Act.⁹⁰ This presumption suggests that decisions about how much of a mandate to waive are reviewable because the waiver provision provides sufficient "law to apply" in analyzing the Administrator's decision.⁹¹ When the Administrator exercises her discretion by foregoing a waiver entirely, however, there is a better argument that the decision is unreviewable. The decision to entirely forego a waiver might be analogized to the decision to refrain from bringing an enforcement action or from settling a case, two of the rare exceptions that have been found to the general presumption of reviewability.⁹² As discussed above, an ideal offset policy would only rarely make the availability of tax credits the difference between deciding to waive part of the mandate and deciding to completely forego waiver. So this argument is of limited utility for the Administrator.

Assuming that the Administrator's decision is reviewable, the critical legal question becomes whether the Administrator "has relied on factors which Congress has not intended [her] to consider."⁹³ In situations where the threat of severe economic harm comes from higher prices in the motor vehicle fuel market,⁹⁴ applying the waiver offset policy discussed in Part VI would be one reasonable way to faithfully apply the statutory text while

⁸⁷ See 5 U.S.C. § 706(a)(2).

⁸⁸ *Heckler v. Chaney*, 470 U.S. 821, 830 (1985).

⁸⁹ 5 U.S.C. § 701(a)(2) (2006).

⁹⁰ *Baltimore Gas & Electric Co. v. Fed. Energy Regulatory Comm'n*, 252 F.3d 456, 458 (2001) (citing *Abbot Labs v. Gardener*, 387 U.S. 136, 140 (1967)).

⁹¹ See *Heckler*, 470 U.S. at 834.

⁹² See *Baltimore Gas*, 252 F.3d at 459.

⁹³ *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (listing circumstances in which agency action will be found arbitrary and capricious).

⁹⁴ Members of Congress were highly concerned with the impact a mandate could have on gasoline prices when it was first instated in the Energy Policy Act of 2005. See, e.g., 151 CONG. REC. S6601-02 (daily ed. June 15, 2005) (statement of Sen. Charles Schumer (D-N.Y.)); 151 CONG. REC. S6609-10 (daily ed. June 15, 2005) (statement of Sen. Dianne Feinstein (D-Cal.)). However, Members also were concerned with the potential impact on food prices, especially by the time the mandate was broadened in 2007. See, e.g., 154 CONG. REC. S3469-70 (daily ed. Apr. 29, 2008) (statement of Sen. James Inhofe (R-Okla.)). Other Members thought concerns about food prices were misplaced. See, e.g., 154 CONG. REC. S4243-46 (daily ed. May 15, 2008) (statement of Sen. Charles Grassley).

taking into account all the relevant circumstances. In taking the impact of the credits on the market into account, the Administrator can waive a smaller portion of the mandate without the threat of incurring severe economic harm from high fuel prices. As described above, applying a waiver offset will cause the market price and consumption of fuel to match what it would have been in the absence of the tax credits and an offset.⁹⁵ Indeed, complete failure to even consider the impact of tax credits on market conditions might run afoul of hard look review, a judicial doctrine that requires agencies to carefully consider all relevant factors in exercising its discretion,⁹⁶ although a court is unlikely to prescribe a precise method of taking the credits into account.⁹⁷ Moreover, applying a waiver offset after taking the availability of tax credits into account furthers the purposes of the waiver. The waiver is intended to balance the perceived benefits of supporting biofuel production against the potential for severe harm to consumers if the level of biofuel consumption is set too high. Using a waiver offset allows the Administrator to achieve the same conditions for consumers as if the tax credits had not existed, while strengthening the support of the biofuel industry. Failure to take the tax credits into account in determining the level of mandated biofuel consumption will, on the other hand, deprive biofuel producers of the long-term economic support of the tax credits and will perversely subsidize fossil fuel consumption.⁹⁸

However, in circumstances where the threat of the severe harm came from the impact on other markets, such as food markets for corn,⁹⁹ the Administrator likely could not rely on tax credits to cushion the impact of increased mandates. While there could be some indirect reduction in food costs from lower transportation costs due to lower prices for motor vehicle fuel, these are unlikely to be significant in the face of severe harm caused by a corn shortage. This would weaken the Administrator's argument that using a waiver offset is within her statutory authority because the reason for applying the offset—the biofuel tax credits impact on the motor vehicle fuel market—would be unrelated to the purpose of the waiver provision in these

⁹⁵ See *supra* notes 72–75 and accompanying text and figure.

⁹⁶ See *State Farm*, 463 U.S. at 43 (an agency action is “arbitrary and capricious” if the agency “entirely failed to consider an important aspect of the problem”).

⁹⁷ See *id.* (“The scope of review under the ‘arbitrary and capricious’ standard is narrow and a court is not to substitute its judgment for that of the agency.”).

⁹⁸ Cf. 153 CONG. REC. E2665 (daily ed. Dec. 28, 2007) (statement of Rep. John Dingell (D-Mich.)) (suggesting that intent of the biofuel mandate was to cause increased biofuel consumption to offset or replace gasoline consumption when stating “used approximately 6 billion gallons of ethanol, thereby burning 4 billion fewer gallons of gasoline”); *Am. Petroleum Inst. v. Cooper*, 681 F. Supp. 2d 635, 643 (E.D.N.C. 2010) (“Though technically separate from the ‘renewable fuel program’ defined by 42 U.S.C. § 7545(o), this tax credit works in tandem with that program by providing further economic incentive to blending.”).

⁹⁹ Cf., e.g., 154 CONG. REC. S3469–70 (daily ed. Apr. 29, 2008) (statement of Sen. James Inhofe).

circumstances—alleviating the mandate’s impact on food prices.¹⁰⁰ The Administrator could argue that Congress should be understood as calling the Administrator to directly take the economic incidence of the biofuel tax credits into account when making waiver decisions—irrespective of its relation to the harm that triggered the waiver provision—in light of the policies embodied by the entire body of law related to biofuels and the use of a permissive “may” in the provision authorizing waiver. This argument, however, stretches the bounds of reasonable assumptions that can be made about congressional intent.

In summary, administrative law doctrine and the text of the overall waiver provision create a relatively complex classification of circumstances where the Administrator likely does or does not have the power to implement the ideal waiver offset policy described in Part VI in making decisions about the overall waiver. The case for the Administrator’s power to implement ideal waiver offset policy is strongest when the availability of biofuel tax credits should cause the Administrator to change from issuing a waiver in some form to issuing no waiver at all. In these circumstances, she need not worry about the power to partially waive the mandate, and there is a reasonable argument that a court may not review the decision for arbitrariness because the law places no justiciable limit on her decision to refrain from employing her power. However, this situation is likely relatively rare. In the more likely event that the availability of biofuel tax credits should cause the Administrator to change from a partial waiver of one amount to a partial waiver of a different, lesser amount, the uncertainty about the Administrator’s power to issue a partial waiver, and the specter of a court declaring the Administrator’s use of her discretion arbitrary and capricious, raise substantial legal concerns. If the waiver was initially triggered by concerns over fuel prices, these legal concerns are probably surmountable. If the waiver was initially triggered by concerns over some other economic or environmental harm, then they probably are not.

Waivers are not currently in effect under the overall mandate. This analysis suggests that that status quo should be maintained and that the availability of tax credits for the production or consumption of biofuels should provide an additional reason for the EPA to be more reluctant to issue waivers in the future.

B. Cellulosic Biofuel Mandate

The waiver provision for the cellulosic biofuel mandate raises quite different legal issues from the waiver for the overall biofuel mandate. When “the projected volume of cellulosic biofuel production is less than the” statutorily determined level of mandated consumption “the Administrator shall

¹⁰⁰ See *State Farm*, 463 U.S. at 43 (“an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider”).

reduce” the mandated level of consumption “to the projected volume available during that calendar year.”¹⁰¹ Because this provision is poorly drafted, there is considerable legal uncertainty as to its interpretation. There are at least four interpretations that are plausible on their face. Each will be discussed in turn.

The first interpretation is a mechanistic one that initially seems very plausible. Under this interpretation, the Administrator would first sit down and determine the likely production of cellulosic biofuel in the following year. Then if that projection is below the statutory mandate for cellulosic biofuel, a waiver is issued setting the level of mandated consumption to the projected level of capacity. Unfortunately, this interpretation is incoherent because of its circularity. A reasonable projection of the “volume of cellulosic biofuel production” depends on what level of consumption will be mandated in the first place. In general, biofuel producers will produce more of their product if they are told that there will be higher guaranteed demand.

The second interpretation would say that the mandate should only be waived to the extent that producers of cellulosic biofuel could not possibly produce the required amount of biofuels in the following year. Under this interpretation, the entire economic resources of the motor vehicle fuel producers—whose economic fates are tied to the availability of cellulosic biofuels that they are required by law to purchase—could be brought to bear on the problem of quickly ramping up production of cellulosic biofuels.¹⁰² Like a microcosm of America gearing up for World War II, resources could rapidly be redeployed to produce sufficient cellulosic biofuels.

This interpretation leaves much to be desired. This kind of interpretation could lead to extraordinary and very likely unintended consequences. Diverting the greatest possible amount of resources to rapidly ramping up production of cellulosic biofuels could have a very large impact on the motor vehicle fuel market in general. The price of gasoline could increase dramatically. Immense strain could be placed on oil companies. But Congress does not “hide elephants in mouseholes.”¹⁰³ A nearly unbounded requirement of this type is not what the pedestrian term “projection” brings to mind. Moreover, such a requirement could essentially vitiate the waiver provision. There is some limit on the amount of cellulosic biofuels that could possibly be produced within a year, but it is likely to be quite a bit higher than the statutorily mandated level simply because the potential resources that could be brought to bear—those of the entire motor vehicle fuel industry—are so vast. Finally, this interpretation is inconsistent with the idea of

¹⁰¹ 42 U.S.C. § 7545(o)(7)(D) (Supp. IV 2010).

¹⁰² Motor vehicle fuel producers are, of course, typically buyers and not producers of biofuels. However, if their business hinges on them purchasing an amount of biofuels above what can be produced without their aid, then their incentive will be to provide capital to biofuel producers so that they can meet these legal requirements.

¹⁰³ *Whitman v. Am. Trucking Ass'ns, Inc.*, 531 U.S. 457, 468 (2001).

the waiver provision as a “safety-valve” that would prevent just the sort of severe harms to the economy that this interpretation could bring about.¹⁰⁴

A third interpretation would say that the projection to be made is the amount of cellulosic biofuels that would be produced if no additional resources were devoted to production. Under this interpretation, the Administrator would simply ask what amount of cellulosic biofuels will be produced if currently existing facilities continue to operate in essentially the same way that they have been operating in the past. This interpretation has the virtue of conforming well with the passive nature of the term “projection.” However, it is also quite problematic because it would largely defeat the purpose of the mandate. If the level of mandated consumption is simply determined by current production levels and current levels of investment, then there will be no added incentive to invest in the production of cellulosic biofuels. This would turn the waiver not into a safety-net but into a straight-jacket—preventing the mandate from having any effect at all.

A final interpretation would be to ask what is a projection of cellulosic biofuel production consistent with a reasonable impact on the biofuel and motor vehicle fuel markets. Under this interpretation, the Administrator would project that additional resources will be devoted to cellulosic biofuel production at a rate that does not cause great harm to sources of feedstock, purchasers of cellulosic biofuel, or consumers of motor vehicle fuel. This would be very similar to the waiver provision for the overall mandate. This interpretation has the benefit of sailing between the Scylla and Charybdis of the second and third interpretations. It would not require implausibly quick redeployment of resources that would defeat the purpose of a waiver; and it would not completely undermine the functioning of the mandate. This interpretation does raise the question, however, of why the waiver provision for the cellulosic mandate is drafted so differently from the waiver provision for the overall mandate.

None of these interpretations of the text is perfect. The text is poorly drafted because it seems to be oblivious to the circularity of basing the level of consumption mandated on projections of capacity. The fourth interpretation seems the most reasonable, although a court might find the Administrator acting within her authority if she adopted any of the second, third or fourth interpretations.

The availability of tax credits for cellulosic biofuels could allow for less reliance on waivers under each of these three interpretations. Under the second interpretation, the tax credits would provide additional economic resources that could be devoted to increased production. This would make it possible for a greater amount of cellulosic biofuels to be produced and thus decreasing the need for a waiver. However, given the low likelihood that

¹⁰⁴ See 153 CONG. REC. E2666 (daily ed. Dec. 28, 2007) (statement of Rep. John Dingell) (describing the waiver for the cellulosic mandate as a “safety net” to prevent “artificially high” prices).

there would ever be waivers under the second interpretation, this is of limited practical importance. Under the third interpretation, where the impact the mandate can have on biofuel producer's incentive to produce is ignored, the tax credits would provide some additional incentive to produce, just as they would in a free market without a mandate. Thus, the projected amount of production should increase, and there should be less need to rely on a waiver. Under the fourth interpretation, the tax credits could cushion a harmful impact on the motor vehicle fuel market just as they could for the overall consumption mandate.

It is worth stressing two points before going on to consider the biodiesel mandate waiver provision. First, because of poor drafting, the EPA likely has a great deal of flexibility in determining the exact level of mandated consumption of cellulosic biofuels. Second, waivers for cellulosic biofuel are currently in effect.¹⁰⁵ The cellulosic biofuel waiver therefore provides an excellent opportunity for the EPA to carefully consider the availability of biofuel tax credits and their impact on biofuel markets and whether this will allow them to rely less on their waiver authority. Such consideration could allow the EPA to further the policy goals inherent in both the mandate and the tax credits.

C. Biodiesel Mandate

The Administrator is instructed to waive the biodiesel mandate when "there is a significant renewable feedstock disruption or other market circumstances that would make the price of biomass-based diesel fuel increase significantly."¹⁰⁶ It is much more difficult to argue that the Administrator is authorized to consider the impact of tax credits on the biodiesel market. First, the availability of tax credits does not impact any feedstock disruptions. Second, the apparent purpose of the biodiesel waiver is to respond to short-term shocks to the biodiesel supply.¹⁰⁷ The proposed waiver offsets, on the other hand, are a response to the long-term determinants of supply and demand. Therefore, the use of a waiver offset appears to be inconsistent with the purpose of the biodiesel waiver. Thus, it is likely that the use of a biodiesel waiver offset is inconsistent with the Administrator's statutory authority.¹⁰⁸ Therefore, the Administrator should not take the availability of tax

¹⁰⁵ See Regulation of Fuels and Fuel Additives: 2012 Renewable Fuel Standards, 77 Fed. Reg. 1320 (Jan. 09, 2012).

¹⁰⁶ 42 U.S.C. § 7545(o)(7)(E).

¹⁰⁷ See *id.*

¹⁰⁸ There is anecdotal evidence from the temporary lapse of biodiesel tax credits in 2010, which were later reinstated retroactively, that the act of removing tax credits can create a short-term disruption in supply, possibly by making it more difficult to obtain financing in an environment where it appears Congress might withdraw support for biodiesel entirely. See, e.g., *Obama Signs Bill Extending Biodiesel Tax Incentive Into Law*, HIGH PLAINS/MIDWEST AG JOURNAL (Dec. 17, 2010), <http://www.hpj.com/archives/2011/jan11/jan10/1217ObamaSignsTaxBilltoLaws.cfm> ("The lapse of the tax incentive on December 31, 2009 has had a detrimen-

credits into account in future decisions about whether to waive the biodiesel mandate.

VI. CONCLUSION

Biofuel tax credits can lead to unintended consequences when coupled with a biofuel consumption mandate. Models produced by economists have demonstrated that the economic incidence of biofuel tax credits falls on producers of petroleum-based gasoline and consumers of fuel in general rather than on biofuel producers when these credits operate under a binding biofuel consumption mandate. Ideally, these two policies would not be combined. However, these economic models do not take into account how regulatory actors react to the presence of these tax credits, and their economic incidence depends on the presence or absence of a regulatory reaction. Given currently existing law, the EPA has the ability to mitigate the unintended consequences, in certain circumstances, by relying less on its waiver authority to offset the impact of the tax credits on motor vehicle fuel prices and consumption.

The example of biofuel tax credits teaches three general lessons about using tax provisions for regulatory purposes. First, it shows that regulators must pay attention to questions of tax policy when they impact their field of regulation. In order to faithfully carry out the mission delegated to them by Congress, regulators need to have an understanding of how tax provisions affect the markets they are regulating. Second, it shows that tax policymakers need to pay attention to what regulators are doing. It is very well understood that the actions of market actors can shift the economic burden or benefit of a tax provision onto a different person from the person legally subject to tax. However, the same can be true for the actions of regulators, and these actions need to be analyzed as well if the ultimate effect of a tax provision is to be properly understood. Finally, it calls into question the idea of using the tax code for regulatory purposes rather than for raising revenue in a fair and efficient manner. Is a policy that requires regulators to understand public finance and tax policymakers to understand the details of a regulatory field workable in practice? This kind of complexity only adds to the costs of coordinating tax and regulatory policy and makes it more likely that there will be unintended consequences.

tal impact on the domestic biodiesel industry. Conversely, retroactive reinstatement and extension of the tax incentive through 2011, as provided for in [the tax bill approved by the U.S. Senate], is widely expected to increase U.S. biodiesel production.”); *8 Mgy Biodiesel Plant in Wisconsin Shuts Down, Cites Tax Credit Woes*, BIOFUELSDIGEST (Aug. 9, 2010), <http://www.biofuelsdigest.com/bdigest/2010/08/09/8-mgy-biodiesel-plant-in-wisconsin-shuts-down-cites-tax-credit-woes/>. This example presents an interesting set of issues, and should be of concern in any decisions about removing biofuel tax credits, but is beyond the scope of this Note.

