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DESPITE BILLIONS IN SUBSIDIES, CORN ETHANOL HAS NOT CUT U.S. OIL IMPORTS

Robert Bryce, *Senior Fellow*

In the next few weeks, the Environmental Protection Agency is expected to rule on a proposal to increase from 10 percent to 15 percent the amount of ethanol that may be blended into gasoline. If the EPA approves the move, the U.S. motor-fuel market would yet again become the victim of misguided federal intervention.

Since the 1970s, Congress has justified subsidies[1] to the corn ethanol industry with the oft-repeated claim that boosting domestic production of ethanol will increase America's energy security by reducing U.S. oil imports.[2]

That claim has no basis in fact.

Between 1999 and 2009, U.S. ethanol production increased seven-fold, to more than 700,000 barrels per day (bbl/d). During that period, however, oil imports *increased* by more than 800,000 bbl/d. (In addition, U.S. oil exports—yes, exports—more than doubled, to about 2 million bbl/d.[3]) Data from the U.S. Energy Information Administration show that oil imports closely track domestic oil consumption. Over the past decade, as oil demand grew, so did imports. When consumption fell, imports did as well. Ethanol production levels had no apparent effect on the volume of oil imports or on consumption.

So despite more than three decades of subsidies costing taxpayers tens of billions of dollars, the ethanol industry cannot point to

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any decline in oil imports during the period when it experienced its most rapid growth.[4] And yet:

- Tax subsidies provided to corn ethanol producers have been larger than those given to producers of any other form of renewable energy.[5]

- Corn ethanol subsidies are now costing U.S. taxpayers about $7 billion per year, the Congressional Budget Office reported in July.[6] The CBO found that producing enough corn ethanol to match the energy contained in a single gallon of conventional gasoline costs taxpayers $1.78.[7]

- Corn ethanol is a financially inefficient method of cutting carbon dioxide emissions, costing taxpayers $754 per metric ton of CO_2 avoided, the Congressional Budget Office also reported.[8]

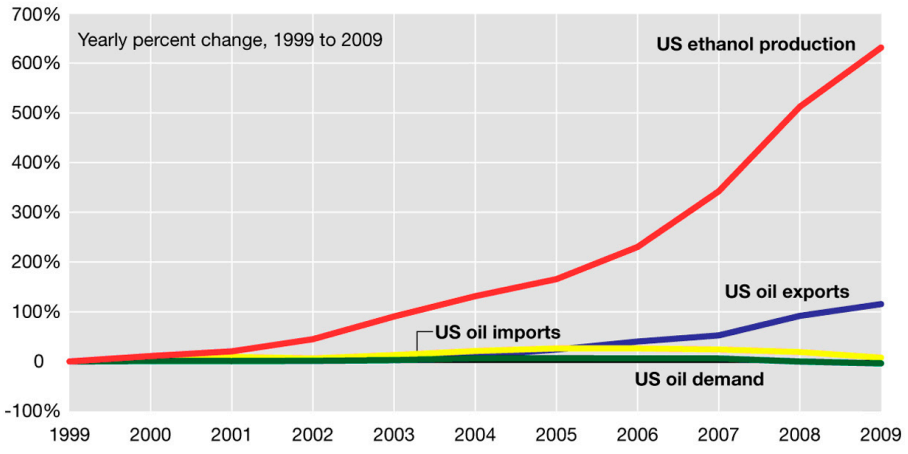
The possibility that the EPA will mandate an increase in the ethanol content of fuel has drawn heavy opposition from numerous environmental and industry groups. In August, thirty-nine of them—ranging from the Alliance of Automobile Manufacturers to the Natural Resources Defense Council—asked Congress to hold hearings on the matter.[9]

BACKGROUND

According to the CBO, "Roughly 11 billion gallons of biofuels were produced and sold in the United States in 2009, and ethanol produced from corn accounted for nearly all (about 10.8 billion gallons) of that total." Companies that blend motor fuel get a tax credit of $0.45 for every gallon of ethanol that they combine with gasoline and then sell.[11] The CBO points out that while the credit is provided to blenders, the main financial beneficiaries are ethanol producers and corn farmers.[12]

The domestic ethanol industry grew slowly from the 1980s to the early 2000s. But with the Energy Policy Act of 2005, Congress elevated ethanol's importance by requiring that U.S. motor fuel contain at least 4 billion gallons of renewable fuels such as ethanol and biodiesel by 2006 and at least 7.5 billion gallons by 2012. Two years later, Congress strengthened the mandates again. The Energy Independence and Security Act of 2007 required U.S. motor fuel to contain 9 billion gallons of renewable fuels by 2008 and 36 billion gallons by 2022, of which 21 billion gallons are to be "advanced biofuels"—fuels made from substances other than corn.[13]

U.S. Ethanol Production Compared to U.S. Oil Imports, Exports, and Demand (1999-2009)



Sources: U.S. Energy Information Administration: Renewable Fuels Association.[10]

These more ambitious biofuel mandates created an investment frenzy in the ethanol sector. Led by German financial giant WestLB AG, lenders poured billions of dollars into new distilleries.[14] In the past five years alone, U.S. ethanol production capacity has more than tripled, to some 13 billion gallons per year.[15] That's far more capacity than the U.S. motor-fuel market can make use of, yet the building frenzy continues. New capacity of some 1.4 billion gallons is under construction.[16]

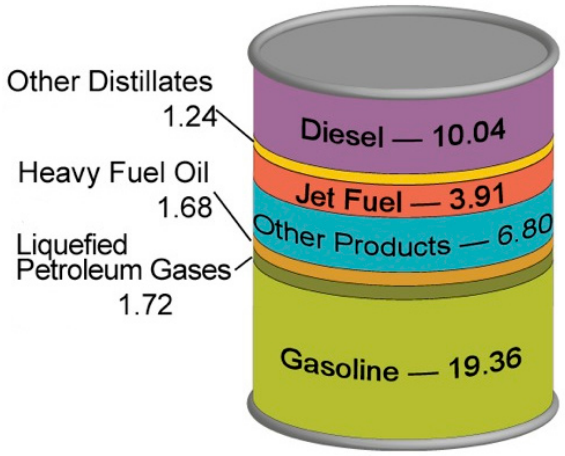
The ethanol sector continues to expand despite numerous bankruptcies. Over the past two years, the casualties have included VeraSun, the second-largest ethanol producer in the United States,[17] Pacific Ethanol,[18] Aventine Renewable Energy,[19] and many others.

SO WHY DOESN'T ETHANOL CUT OIL IMPORTS?

The answer to that question requires an understanding of the refining process. When sent through a refinery, a barrel of crude yields different "cuts," which range from light products such as propane and butane to heavy products such as asphalt.[20] Even the best-quality barrel of crude (42 gallons) yields only about 20 gallons of gasoline. Furthermore, certain types of crude oil, such as light sweet, a high-quality, low-sulfur grade, are better suited than others to gasoline or diesel production. Even the most technologically advanced oil refineries cannot produce just one product from a barrel of crude; they must produce several, and the market value of those various cuts is constantly fluctuating.

The implication is obvious: Corn ethanol has not reduced the volume of oil imports, or overall oil use, and likely never will, because it can replace only one segment of the crude-oil barrel. Unless or until inventors come up with a substance (or substances) that can replace all of the products refined from a barrel of crude oil—from gasoline to naphtha and diesel to asphalt—this country, along with every other one, will have to continue to rely on the global oil market—the biggest, most global, most transparent, most liquid market in human history.

Products Made from a Barrel of Crude Oil (Gallons) (2009)



Source: U.S. Energy Information Administration (http://www.eia.doe.gov/kids/energy.cfm?page=oil_home-basics)

Given the large number of refineries around the world, and the enormous amount of capital required to keep them running, refinery owners are always looking to sell their product in the global marketplace. Thanks in part to burgeoning overseas demand for diesel fuel, American refiners more than doubled their exports over the past decade, from 940,000 bbls/d in 1999 to 2.02 million bbls/d in 2009.[21]

The surge in exports reflects the ongoing growth of the global market in refined-oil products as well as economic and structural changes in the U.S. motor-fuel market. Thanks to the ongoing recession and the improving fuel efficiency of the U.S. auto fleet, domestic gasoline demand has been essentially flat for the past six years.[22] And industry analysts are not expecting a significant increase in demand. In 2008, Exxon Mobil predicted that U.S. demand for transportation fuel will plateau by 2015 and then fall about 10 percent by 2030.[23] In 2009, Cambridge Energy Research Associates predicted that U.S. demand for transportation fuel will peak in 2014.[24]

This peak in consumption is problematic for the ethanol industry. Ethanol producers are wholly dependent on the gasoline market because they must blend their product with conventional fuel. In the words of Bob Dinneen, the president of the Renewable Fuels Association, an ethanol trade group, "We have lots of gallons of ethanol chasing too few gallons of gasoline."[25]

In short, the corn ethanol industry is producing the wrong type of fuel at the wrong time. Proponents of renewable transportation fuels may argue that policymakers should instead be mandating and subsidizing the production of plant-based fuels that can replace conventional diesel fuel or jet fuel. But simple math shows that plant-based fuels—of any kind—will not make a major dent in our oil consumption for the simple reason that energy density of plant materials is simply too low. For instance, even if all the soybeans produced by American farmers were converted into biodiesel, it would yield only about 4.8 billion gallons of diesel fuel, or about 1.5 percent of America's total annual oil needs.[26]

To alleviate its financial problems, the ethanol industry has been seeking yet more taxpayer support in the form of an increase in the volume of ethanol blended into gasoline. The industry is lobbying for an increase to E15, even though there are only about 8 million vehicles on U.S. roads, out of a total fleet of some 250 million, that are designed to burn fuel containing ethanol in concentrations greater than E10. In addition, there are several hundred million non-road engines—in everything from chainsaws to recreational boats—that were not designed to use gasoline containing more than 10 percent ethanol.[27]

It is time to recognize the false promise of corn ethanol. As the data presented above show, increasing the blend rate from E10 to E15 may rescue the ethanol industry, but it will not cut oil imports.

WHO SAYS ETHANOL CUTS OIL IMPORTS? LOTS OF PEOPLE

Producing and using more biofuels are among our most important strategies for reducing our dependence on foreign oil.
— U.S. Senator Tom Harkin (D-Ia.), 2009.[28]

Home-grown ethanol is the shining star in our efforts to reduce our dependence on dirty, imported fossil fuels.
— U.S. Senator Charles Grassley (R-Ia.), 2009[29]

Blending higher percentages of ethanol into our gas is a step we can take right now to create American jobs, increase our energy independence, and improve our environment.
— Growth Energy, an industry lobbying group (undated)[30]

Ethanol is "a vital alternative energy source not only because of our dependency on foreign oil but its greenhouse gas reduction effects."
— U.S. Senator John McCain (R-Ariz.), 2006[31]

American farmers, by making the commitment to grow more corn for ethanol, are at the tip of the spear on the war against terrorism.
— Former CIA Director James Woolsey, 2007[32]

Our focus must be on building energy security through domestically produced renewable fuels.
— U.S. Senator Barack Obama (D-Ill.) and four other senators, 2006[33]

The United States needs to work on "limiting our dependence on foreign oil. And we have a perfect example right here in Iowa about how it can work with all of the ethanol that's being produced here."
— U.S. Senator Hillary Clinton (D-N.Y.), 2007[34]

ENDNOTES

[1] The subsidies began in 1979. For more on the foregone tax revenue, see: Government Accountability Office, "Tax Policy: Effects of the Alcohol Fuels Tax Incentives," March 1997, 41, http://www.gao.gov/archive/1997/gg97041.pdf

[2] For an extended discussion of how the ethanol lobby has used the canard of import oil to justify taxpayer subsidies, see Michael J. Weiss, "The High-Octane Ethanol Lobby," *New York Times Magazine*, April 1, 1990, http://www.nytimes.com/1990/04/01/magazine/the-high-octane-ethanol-lobby.html

[3] EIA data, http://www.eia.gov/dnav/pet/pet_move_exp_dc_NUS-Z00

[4] The Environmental Working Group has estimated that between 2005 and 2015, total federal subsidies to the corn ethanol industry will total some $53.6 billion. Craig Cox and Andrew Hug, "Driving Under the Influence: Ethanol & Energy Security," Environmental Working Group, June 2010, Table 2, http://www.ewg.org/files/EWG-corn-ethanol-energy-security.pdf

[5] US Senate Committee on Energy & Natural Resources, "Path Forward for Biofuel Incentives," July 14, 2010, http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=7949a86e-5a85-4205-8529-b3e2f06bb665&Month=7&Year=2010&Party=0

[6] Bryant Furlow, "Sen. Bingaman supports push to cut ethanol subsidies," *New Mexico Independent*, July 16, 2010, http://newmexicoindependent.com/59525/sen-bingaman-supports-push-to-cut-ethanol-subsidies.

[7] Congressional Budget Office, "Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals," July 2010, 10, http://www.cbo.gov/ftpdocs/114xx/doc11477/07-14-Biofuels.pdf. The $1.78 figure is extremely high given that in early September, the near-month futures price for gasoline was $1.92. For the latest energy prices, see Bloomberg: http://www.bloomberg.com/markets/commodities/energy-prices/

[8] Ibid, 13. Note that this estimate does not include possible land use changes and their effect on greenhouse gases.

[9] Followthescience.org, "39 Groups Request Congressional Hearing on EPA Ethanol Decision," August 31, 2010, http://www.followthescience.org/2010/08/39-groups-request-congressional-hearing-on-epa-ethanol-decision/

[10] For EIA data on US oil demand (product supplied), see: http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTUPUS2&f=A. For EIA import data, see: http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbblpd_a.htm. For EIA export data, see: http://www.eia.gov/dnav/pet/pet_move_exp_dc_NUS-Z00_mbblpd_a.htm. For ethanol production data, see: http://www.ethanolrfa.org/pages/statistics/. Note that data for 1980 to 2008 was calculated using RFA data in gallons which was then converted to bbls/day. The 2009 ethanol bbl/d figure of 701,000 bbl/d comes from the same page on the RFA website.

[11] The subsidy is formally known as the Volumetric Ethanol Excise Tax Credit.

[12] CBO, op cit., vii.

[13] General Accounting Office, "Biofuels: Potential Effects and Challenges of Required Increases in Production and Use," August 2009, 2, http://www.gao.gov/new.items/d09446.pdf

[14] Ryan C. Christiansen, "Communities 'hopeful" waiting for WestLB's next move on ethanol plants," *Ethanol Producer Magazine*, April 14, 2009, http://www.ethanolproducer.com/article.jsp?article_id=5553

[15] Renewable Fuels Association data, http://www.ethanolrfa.org/pages/statistics#C

[16] Ibid.

[17] Robert Bryce, "Ethanol Bankruptcies Continue, 14 Studies Have Exposed the High Cost of Ethanol and Biofuels," *Energy Tribune*, February 4, 2009, http://www.energytribune.com/articles.cfm?aid=1281

[18] Dale Kasler, "Pacific Ethanol files bankruptcy reorganization plan," Sacramento Bee, March 30, 2010, http://www.sacbee.com/2010/03/30/2642358/pacific-ethanol-files-bankruptcy.html#mi_rss=Business

[19] Reuters, "Corn ethanol maker Aventine files for bankruptcy," April 8, 2009, http://www.reuters.com/article/deborahCohen/idUSTRE5373IH20090408

[20] For more, see EIA data, http://www.eia.doe.gov/kids/energy.cfm?page=oil_home

[21] EIA data, http://www.eia.gov/dnav/pet/pet_move_exp_dc_NUS-Z00_mbblpd_a.htm

[22] EIA data, http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=WGFUPUS2&f=4. Note that the rolling four-week average demand for the last week in September 2010 was 9.128 million barrels of gasoline per day, about the same level as the EIA recorded in September 2004, when demand was 9.154 million barrels per day. See also this July 23, 2010, news release from the American Petroleum Institute, which discusses falling gasoline demand, which points out that 2010 summer gasoline demand was the lowest for any year since 2004: http://www.api.org/Newsroom/gas-demand-lower.cfm

[23] Exxon Mobil, Energy Outlook 2008, 10. Available: http://www.exxonmobil.com/corporate/files/news_pub_2008_energyoutlook.pdf
[24] Cambridge Energy Research Associates, "Automotive Fuel Outlook," May 15, 2009.
[25] http://www.nytimes.com/2010/05/05/business/energy-environment/05ethanol.html?ref=business
[26] Farmers can produce about 40 bushels of soybeans per acre, enough to make about 60 gallons of biodiesel. In 2006, U.S. farmers produced 3.188 billion bushels of soybeans. That quantity would yield about 4.8 billion gallons of diesel fuel per year or about 313,000 barrels of oil per day. For soybean production figures see U.S. Department of Agriculture data, available: http://www.ers.usda.gov/News/soybeancoverage.htm. For additional explanation of this, see Robert Bryce, *Gusher of Lies*, 63-64.
[27] Estimate is from Kris Kiser of the Outdoor Power Equipment Institute, see Rolf Westgard, "'Blend wall' decision on ethanol will have multiple side effects," MinnPost.com, May 26, 2010, http://www.minnpost.com/community_voices/2010/05/26/18433/blend_wall_decision_on_ethanol_will_have_multiple_side_effects
[28] Tom Harkin, "Statement of Senator Tom Harkin at the Hearing on Expanding the Role of Biofuels for America," September 1, 2009, http://harkin.senate.gov/press/release.cfm?i=319174
[29] Charles Grassley, "Ethanol tax credit," October 2, 2009, http://grassley.senate.gov/news/Article.cfm?customel_dataPageID_1502=23472
[30] Growth Energy, "E15 Fact Sheet," undated, http://www.growthenergy.org/ethanol-issues-policy/e15-green-jobs-waiver/e15-fact-sheet/
[31] Jon Birger, "McCain's farm flip," *Fortune*, October 31, 2006. Available: http://money.cnn.com/magazines/fortune/fortune_archive/2006/11/13/8393132/?postversion=2006103111
[32] Roy Roberson, "Former CIA director says farmers leading terrorism fight," *Southeast Farm Press*, March 8, 2007. Available: http://southeastfarmpress.com/grains/030807-farmers-terrorism/
[33] Ken Silverstein, "Barack Obama Inc.," *Harper's*, November 2006, http://www.harpers.org/archive/2006/11/0081275
[34] RNC Research, "Hillary's Field of Schemes," January 29, 2007. Available: http://www.gop.com/media/PDFs/012907Research.pdf