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Introduction to the Issue: The 2018 Farm Bill and Brexit

Richard J. Sexton and Daniel A. Sumner

We're very pleased to present *ARE Update* readers with an expanded issue focused on two timely policy topics: The passage of the 2018 Farm Bill and the impending "Brexit" of the United Kingdom from the European Union.

The Agriculture Improvement Act of 2018 is the official title of the newest Farm Bill. It is the most recent of a line of periodic laws that authorize a set of loosely related government programs that are mostly administered by the U.S. Department of Agriculture (USDA). The nickname "Farm Bill" emerged when these laws dealt mostly with farm issues, something that has not been true for decades. Today food and nutrition subsidies, programs far removed from the farm, comprise the great bulk of the authorized spending.

Although agricultural programs have existed in the U.S. since the earliest days of the republic, the modern era of farm commodity subsidies, price regulations, crop insurance, storage programs, and soil conservation and environmental programs began in 1933 with New Deal legislation. Every few years for the next nine decades, these

programs have been renewed and modified. As is also true with the 2018 Farm Bill, much of the content of these farm bills took the form of amending the previous law for a fixed number of years. For example, many of the 2014 authorizations expired in 2018, so some legislation was needed or else those programs would have simply ended or reverted to so-called "permanent legislation" that is more than half a century out of date. Much of the current Farm Bill authorizes programs and annual expenditures on them only for the next five years, so the cycle continues.

The 2018 Farm Bill has 12 Titles. Our first article by Lee and Sumner focuses mainly on Title I on commodities. They also touch on Titles X (Horticulture) and XI (Crop Insurance). The authors highlight changes in 2018 that provide added subsidies to dairy (the largest farm revenue generator in California) and cotton.

The second article by Bruno and Zilberman addresses conservation, Title II. They report that total funding for conservation programs is little changed in the new Farm Bill, but funds have been

reallocated across key programs. The authors break down what it all means for California.

Ambrozek and Beatty address Title IV on Nutrition. The major change in these programs involves work requirements for able-bodied adults without dependents (ABAWD) in the Supplemental Nutrition Assistance Program (SNAP). Ambrozek and Beatty also draw attention to administrative rules proposed by the USDA subsequent to passage of the 2018 Farm Bill that will tighten requirements for states to obtain exemptions from enforcing work requirements for ABAWD.

Brexit is scheduled to occur on March 29 of this year. UC Davis professor Colin Carter is on leave this year in Ireland and, with co-author Doris Läpple, provides *Update* readers with key insights into the disruptions to international agricultural trade that loom on the eve of Brexit. Carter and Läpple forecast major disruptions in Irish trade of beef and dairy products to Britain, and explain what it is likely to mean for other major agricultural exporters, including the United States.

California Farm Commodities and the 2018 Farm Bill

Hyunok Lee and Daniel A. Sumner

Commodity provisions in the 2018 Farm Bill are much like those in the 2014 Act, except for dairy and cotton, where the new law increases subsidies and, for dairy, increases production incentives for small farms.

The Agriculture Improvement Act of 2018, popularly known as the 2018 Farm Bill, is the latest in a long line of similar legislation stretching back to the New Deal of the 1930s that authorizes expenditures and sets regulations related to food, agriculture, rural development, and more. Unlike the passage of the previous Farm Bill, the Agricultural Act of 2014, which was delayed for 18 months due to contentious debate, the 2018 Farm Bill, which expires in 2023, was signed into law by the president on December 20, 2018, essentially on time. The Congressional Budget Office (CBO) projects total outlays of \$867 billion over the next 10 years for the programs authorized by the 2018 Farm Bill, which is down \$89 billion from similar CBO projections under the 2014 Farm Bill.

Although it has kept the nickname "Farm Bill" that was attached more than a half century ago, in recent iterations the great bulk of the Farm Bill budget authorization goes to food and nutrition subsidies for low-income people, with at best only indirect and tangential impacts on farms. Over the next five years, out of \$428 billion of Farm Bill budget authorization, the share of food assistance exceeds 76%, and crop insurance, commodity programs, and farm environmental and conservation programs together have a 23% budget share.

In the current Farm Bill, most farm program provisions changed only slightly from the 2014 Farm Bill. The commodity-related provisions in the Farm Bill

are most important for grains and oil-seed crops that are grown mainly in the South and Midwest. Therefore, rather than attempting to list every commodity-related change in the new law, this article focuses on explaining changes in those few parts of the 2018 Farm Bill that may have potentially significant impacts on markets for farm products that are important in California.

Outline and Overview

We consider first the changes in dairy subsidies, in particular the changes to the main remaining dairy subsidy program, which, in 2014, replaced the old dairy price supports and direct farm payments. A new cotton subsidy program was introduced and expanded in 2018, and despite the decline in the California upland cotton industry, the new cotton program may be important for some California producers.

We then turn to a brief summary of changes for the other field crops such as rice. Fruits, tree nuts, vegetables, and other specialty crops do not have specific commodity subsidies, but there are a few provisions that are new or modified in the Horticulture Title of the bill. We also address (relatively minor) changes in provisions in the Crop Insurance Title, including those that apply to horticultural crops.

Crop insurance programs have their own authorization legislation and most major changes to crop insurance programs has occurred outside Farm Bill legislation. Finally, we address a few miscellaneous provisions that have gotten attention, such as legalization and regulation of industrial hemp production in the United States.

Dairy Programs

The most important change in the dairy provisions of the new Farm Bill relates to the Dairy Margin Coverage

(DMC) program, renamed from the Margin Protection Program, which has been the main dairy subsidy program since its introduction in the 2014 Farm Bill, and which was expanded and made more costly in the Bipartisan Budget Act of February 2018. The DMC continues to provide payments whenever the margin between milk price and feed costs falls below some legislated thresholds. The premium subsidy declines for higher margins and disappears for high margins for large quantities per farm.

DMC program payments are tied to a shortfall in the *national average* price of milk minus a *national average* cost of corn, soybeans, and alfalfa hay that is needed to produce that milk. Thus, the program does not use information about the *actual* milk price to feed cost margin of the actual farm enrolled. Under the new DMC program, farms may enroll in margin coverage from \$4.00 up to \$9.50 per cwt, for up to 5 million pounds of milk per farm. For additional milk, the highest margin covered is \$8.00 per cwt, and premium rates are far higher.

For perspective, a margin of \$4.00 has been rare and leads to huge losses on most farms because that margin leaves too little revenue to pay for the labor, cow replacement costs, capital costs, equipment, health services, management, and other dairy farm expenses. A margin of \$8.00 may allow profits on some farms, but for others, the combination of low milk prices or high feed costs would squeeze the long-term viability of the operation.

The 2018 Farm Bill increases subsidies and increases the maximum coverable margin from \$8.00 to \$9.50 per cwt for the first of 5 million pounds of coverage. Based on recent data, with a covered margin of \$9.50 per cwt, a

farm would expect a payout exceeding the premium more than half the time. The result of these 2018 changes is substantially more subsidy for the first 5 million pounds of milk per farm, which is especially important for the small dairies that predominate in the East. Production of 5 million pounds is equivalent to the milk from about 200 cows. This is above the average herd size in most states in the Eastern United States, but would cover only 10% to 15% of herds in California and other major Western dairy states.

To offset expected government budget costs of providing more subsidies for small farms, the 2018 Farm Bill raised the premiums for milk enrolled above 5 million pounds per farm per year. Thus, the new Farm Bill strongly favors the small farms in the East to the detriment of dairy farms in California and the West. The favored farms tend to be high-cost (and high-price) producers, sometimes targeting niche markets but also selling butter, milk powder, and cheese on national and global markets.

These added subsidies are large enough to keep smaller, high-cost operations in production during downturns when they might otherwise exit, and encourage expansion in herd size among farms with fewer than about 200 cows. Both these implications are likely to result in larger price declines and longer durations of low prices and thus lower revenues for larger farms that receive relatively little benefit from the program.

Such impacts may be important for California dairies, so we will provide a numerical example to illustrate the magnitudes. Let us consider the revenue impacts of the DMC program for a typical California dairy farm in the San Joaquin Valley with 1,600 cows producing 40 million pounds of milk per year compared to a typical New England farm with 160 cows producing 4 million pounds of milk per year.

The California dairy has milk revenue of about \$6.0 million per year (assuming farm milk price of \$15 per cwt) and in recent years has lost money or barely broken even at that price. The New England farm, that typically has had higher milk production costs but higher milk prices, has also lost money or barely broken even with an example price of \$17 per cwt and revenue of about \$680,000 per year.

To make the comparison easy, assume that both farms enroll 3.8 million pounds in the program (the maximum 95% of the base milk production of the smaller farm) at a margin of \$9.00 per cwt. The farms pay a Tier I premium of \$0.11 per cwt for a cost of \$4,180. Consider a year when the calculated margin is lower than \$9.00, say \$8.00 per cwt because national average feed prices are high or national average milk prices are low. With this example, both farms get a payment of \$38,000 (\$1 / cwt times 38,000 cwt) for their invested premium of \$4,180. For the California farm, the net payment of \$33,820 is about 0.56% of revenue, thus too little to affect farm survival or decisions about production. Notice that added revenue does not provide an incentive to expand the herd, because producing more milk would not increase the amount allowed to be enrolled below the 5 million-pound limit. Any milk enrolled above 5 million pounds is only eligible for a maximum of an \$8 margin at the very high premium of \$1.816 per cwt, which will be attractive to few producers and would have been a major net loss in our example.

For the New England farm, the benefits are the same in dollar terms, but are of far more significance in farm operations. The \$33,820 insurance gain is about 5% of milk revenue, implying that the margin payment would increase expected net revenue substantially. This increase in expected income would allow the smaller farm to weather margin downfalls and

continue to produce milk when it would otherwise exit. Importantly, for industry-wide impacts, the smaller herds could, and likely would, respond to the subsidy by increasing milk production. The small herd used in this example could expand by 31%, from the current 160 cows up to 210 cows to maximize its expected DMC program benefits and remain under the 5 million pound limit.

The numbers in this comparison are for illustration only, and were chosen to make the calculations simple. But, they are not unrealistic. They illustrate the potential negative impact for California dairies (and other dairy farms with larger herds) of a subsidy program designed especially for the smaller herds. The DMC program encourages an expansion by smaller herds with fewer than 200 cows that produce about 20% of U.S. milk. This expansion would lower the market price of milk for all U.S. dairy farms. For the larger farms, only a tiny share of this loss in revenue due to the lower market price would be offset by DMC payments.

Let us illustrate a conservative estimate of expected market price impacts. If DMC subsidies expand production of smaller farms by say 10% relative to what they would have otherwise produced, this leads to a 2% increase in aggregate milk production. Using a short-run demand elasticity of -0.5, the implication is for prices to be 4% lower than they would otherwise be.

Starting with a price in California of \$15 per cwt, under this example, the DMC would cause the price of milk to be \$0.60 per cwt lower at \$14.40. This \$0.60 per cwt decline would reduce revenue for a typical California dairy with 1,600 cows (producing 40 million pounds of milk) by about \$240,000—far more than any realistic DMC payment gain (such as the \$33,820 in our example).

The DMC provides a range of options for dairy farms, but the main thrust

of the 2018 changes were to make the program far more lucrative for small farms. When enrollment incentives are combined with incentives for smaller herds to increase milk supply, the implication is that milk prices will be even lower, especially during periods of already low prices. The bottom line for larger farms is clearly negative. The DMC program was driven by interests of small, typically high-cost dairy farms that produce a small and declining share of milk in the United States. The subsidy in the program transfers money from the USDA budget to dairy producers, but the likely impact is a net loss to larger dairy farms such as those in California.

Grains and Oilseeds, Including Rice

The 2018 Farm Bill continues with little modification of the subsidy programs for grains and oilseeds. Eligible farms enroll in one of two programs: the Price Loss Coverage (PLC), which pays when prices are below a government-set threshold, and the Agricultural Risk Coverage (ARC), which pays when crop revenue falls below the government-set threshold. An important provision of the 2018 Farm Bill is that farms are allowed to update the per-acre yields used to determine their production eligible for payments under these programs. With average yields gradually rising, such updating allows for larger payments and creates an added incentive to adopt yield-enhancing practices.

The other provision that may be important for California producers using these traditional commodity programs is relaxation of limitations that had attempted to reduce payments to larger family operations with members that supply management, but not physical labor on the farm. For California, rice is the most important crop covered by these programs. The 2018 Farm Bill also includes a separate and higher government-set reference

price for japonica-type rice. California produces a japonica-type medium grain rice, which now has a program provision separate from the indica-type medium-grain and long-grain rice that is grown in the rest of the United States. These changes in provision allow for higher expected payments for California rice farms than they would have otherwise expected.

Cotton

The 2014 Farm Bill replaced farm program subsidies for cotton with a heavily subsidized, insurance-style subsidy. Despite the subsidy, most cotton acreage did not enroll, and the program was unpopular. The Bipartisan Budget Act of February 2018, mentioned above in the context of increased dairy subsidies, reintroduced cotton eligibility for the ARC and PLC subsidies under the guise of subsidies not for cotton lint (fiber) but for “seed cotton” (meaning the seeds to which the cotton lint is still attached prior to ginning). Cottonseed is used for oil and meal, as are other oilseeds such as soybeans. Since the cottonseed and cotton lint are produced together, the payments, based on either seed or lint, go to cotton producers and create an incentive to plant cotton. The 2018 Farm Bill extends this new seed-based cotton program and makes it even more lucrative for producers of upland cotton.

The government-set reference price for seed cotton, which is a weighted average of the price of cotton lint and the price of the cottonseed by-product, has been set high enough that budget analysts expect substantial payments under the program. Based on price projections for the next decade (averaging \$0.34 per pound), the payment rates per pound are in the range of \$0.025, and the resulting total cotton payments would be in the range of \$400 million per year—about 7.5% of the market revenue of cotton lint. However, like other such programs, the potential subsidy rate may be much higher if cotton

prices fall significantly. Low prices similar to those that occurred from 2006 to 2008, which averaged about \$0.21 per pound, would mean payments would expand to \$2.5 billion per year and be more than 75% of market revenue of cotton lint.

Three other changes to commodity program provisions are now also important for cotton subsidies. First, the update of program yields will allow higher payments per acre and create an incentive to undertake yield-enhancing practices to gain from future updates. Second, broader payment eligibility for family members will likely increase the payments for cotton. And, third, the 2018 Farm Bill adjusted rules for setting the effective reference price that triggers payments, which will likely increase cotton payment per pound from above the projections made under the February 2018 program.

Crop Insurance

Provisions of the federal crop insurance program, which is permanently authorized under the Federal Crop Insurance Act, changed little under the 2018 Farm Bill. The subsidies include administration and operations costs, reinsurance provided to insurance companies, and premium subsidies averaging about 60% of total premiums. The Congressional Budget Office projected crop insurance outlays for the next 10 years to be about \$7.8 billion per year, which is almost 40% of all agriculture-related outlays. Crop insurance subsidy has been an important source of revenue for field crops such as cotton, feed grains, and oilseeds for many years. However, it has been a smaller share of revenue for specialty crops, even though its availability has expanded to most fruit and nut crops and some vegetables.

One change to crop insurance provisions in the 2018 Farm Bill, which may be important for small California specialty crop farms, is the increase in the administrative fee (from \$300 to

\$655) for enrolling a crop in the premium-free catastrophic risk protection. Catastrophic insurance, also called CAT, is fully government-subsidized, except for the administrative fee for each policy (defined as an enrolled crop in a county). The CAT enrollment fee increase may induce some smaller farms to no longer enroll.

CAT provides indemnity payments based on 55% of the “normal” price for losses of more than 50% of normal yield, and is, thus, designed to provide farms with basic protection at no premium in the event of severe crop loss. However, with the new fee increase, some farms with small acreage of some crops may find it cheaper to enroll in conventional (non-catastrophic) crop insurance (also called buy-up), which also offers higher protection in return for (still subsidized) farmer-paid premiums.

Consider an example of an almond farm with revenue of \$6,000 per acre. For this farm, the premium for buy-up insurance with the same protection as CAT would be about \$33 per acre (assuming the 2% premium rate applied to the liability of \$1,650 per acre). With about two-thirds of that premium paid by the government, the cost to the farm is about \$11 per acre. For this example, the premium cost of buy-up crop insurance is cheaper than the CAT fee for growers with less than about 60 acres (\$655/\$11). This is an increase from 28 acres under the previous fee of \$300. Given that many specialty crop farms in California grow several crops, the \$655 fee per crop can be a substantial cost for farms with small acreage of each crop, and the CAT fee increase may cause some farms that had enrolled in the CAT to go uninsured.

Other Provisions of Interest to California Agriculture

The 2018 Farm Bill includes little change in specialty crops programs from the 2014 law. It maintains specialty crop research programs and

international promotion programs that are used heavily by California industry groups. For organic farms, it adds a few million per year of authorized funding for organic programs and strengthens the organic certification requirements for imported agricultural products.

One specific provision has received much attention in the popular media. The 2018 Farm Bill removes severe limits on production of industrial hemp. The new law defines industrial hemp as a cannabis plant that has no significant amount of THC. Industrial hemp produces fiber that may have some commercial uses and oil that has some attractive properties. It has been produced in Canada for many years, and is typically grown as an alternative in rotation with wheat, feed grains, and other oilseeds.

Industrial hemp may also be used as a source of CBD, a compound that has garnered considerable interest for health-related claims. In addition to relaxing production restrictions, the 2018 Farm Bill has made hemp eligible for subsidized crop insurance along with other field crops. It is not yet clear where in California growers may have a comparative advantage in hemp production.

Final Remarks

The 2018 Farm Bill commodity provisions are mostly business as usual. We have highlighted a few places, especially in dairy and cotton policy, where the 2018 Farm Bill increases subsidy rates or made the programs more lucrative for some farms.

As with previous farm bills, food and nutrition subsidies dominate “Farm Bill” spending. Those policies mainly operate as income assistance for the poor and linkage to the commodity-oriented farm programs is tenuous at best. It is, therefore, once again important to ask why a “Farm Bill” that combines such unconnected sets of policies should be formulated as a single piece of legislation. Of course,

there may be practical political reasons (probably less compelling in the recent environment) to cobble together these disparate sets of policies. But, in terms of sound public policy, it seems hard to rationalize. A thorough evaluation of food and nutrition funding that provides income support for the poor and a separate thorough evaluation of farm commodity subsidy and revenue support for farm businesses would likely lead to policies more suited to public goals in both arenas.

Authors’ Bios

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For additional information, the authors recommend:

Congress.gov. H.R.2-Agriculture Improvement Act of 2018. www.congress.gov/bill/115th-congress/house-bill/2.

Lee, H. and D. A. Sumner. 2014. “The 2014 Farm Bill, Commodity Subsidies, and California Agriculture.” *ARE Update* 17(4) (2014): 1–4. University of California Giannini Foundation of Agricultural Economics. <https://giannini.ucop.edu/publications/are-update/issues/2014/17/4/2014-farm-bill-commodity/>.

Sumner, Daniel A. 2018. Dairy Policy Progress. Completing the Move to Markets. January 29. American Enterprise Institute. <http://www.aei.org/publication/dairy-policy-progress-completing-the-move-to-markets/>.

What Does the 2018 Farm Bill Mean for California and the Environment? Spotlight on the Conservation Programs

Ellen M. Bruno and David Zilberman

The 2018 Farm Bill largely reauthorizes the same conservation programs from the 2014 Agricultural Act. Funding changes in the Conservation Title will result in an expansion and contraction of the pre-existing primary programs, with impacts to California agriculture and the environment.

On Dec. 20, 2018, the newest Farm Bill, the Agricultural Improvement Act of 2018, was signed into law, replacing and reauthorizing many of the components of the 2014 Agricultural Act. Every four to six years, a new Farm Bill is passed with programs to support farm income, nutrition, and agricultural resource conservation. The Conservation Title is a designated section of the bill designed to support specific environmental objectives, including improvements in soil and water quality. The total allocation of funds to the Conservation Title is largely unchanged under the new bill; however, different programs within the title will expand or contract, with implications for climate, land, and natural resource use over the coming years.

Farming and the Environment

The relationship between agriculture and the environment is one of complex coexistence. The environmental and ecological impacts of agriculture can include soil erosion, groundwater depletion, greenhouse gas emissions, and impacts on wildlife and natural habitats, both terrestrial and aquatic. The magnitude of these impacts depends on the interplay between agricultural practices and their environmental and climate context.

Agricultural practices can be geared to provide environmental services, and this defines an important role of the Farm Bill. The most recent Farm Bill includes provisions aimed at incentivizing agricultural practices that minimize environmental impacts or provide ecological services. The programs can be divided into two primary categories: 1) working lands programs that provide financial incentives for farmers to establish conservation practices on actively farmed lands; and 2) land retirement and easement programs that provide incentives to take land out of production in environmentally sensitive areas. Examples of the former include integrated pest management, cover cropping, and altered tillage practices. Without financial incentives offered through the Farm Bill, many farmers would not introduce these practices, which can incur short-run costs in exchange for long-run, and somewhat diffuse benefits.

The two largest working lands programs are the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP). EQIP is a cost-sharing program to incentivize cover crops, forest stand improvement, prescribed grazing, and improved irrigation. EQIP subsidizes the costs associated with various conservation improvements on actively managed land, including the costs to install structures that limit runoff of fertilizers.

Land retirement and easement programs pay private individuals for long-term or permanent land use changes, typically under 10- to 15-year contracts. The Conservation Reserve program (CRP) and the Agricultural Conservation Easement Program

(ACEP) fall under this category. The larger of the two land retirement programs, CRP, pays farmers annual rental payments, based on both soil attributes and the cash rental value of the land, to convert land from crop production to vegetative cover.

Other conservation programs exist that encompass both working farm-land and land-retirement efforts. The Regional Conservation Partnership Program, which was created under the 2014 Farm Bill, was introduced to address watershed-scale or regional conservation concerns, rather than farm-level issues, by leveraging private-public partnerships. In California, recently funded projects included several water conservation and flood capture initiatives.

Brief History and Role of Economics in the Farm Bill

The Conservation Title, which specifies programs related to the environment, was first included in the 1985 Farm Bill. However, iterations of the bill have incorporated provisions for the environment since its creation in 1933 following the Dust Bowl. The CRP originated out of the Soil Bank Program of the 1956 Agricultural Act, but was formally established in 1985 as the program we are familiar with today. EQIP was initiated about a decade later as part of the 1996 Farm Bill.

Conservation programs in the Farm Bill rely primarily on payments for environmental services, whereby farmers are compensated or subsidized for undertaking actions that improve environmental conditions. This stands in contrast to many other environmental policies where environmental “bads,” such as pollution,

are taxed or otherwise limited via regulation.

An ideal agri-environmental policy is one that achieves the greatest net benefits to all those that depend on agriculture and/or the environment. This requires thinking systematically about the costs and benefits associated with farming and the environment, and how different policies stack up. Designing and evaluating programs to meet environmental objectives while minimizing costs to the agriculture industry is a major area of research in agricultural economics.

Over time, environmental programs in the Farm Bill have been improved to more efficiently provide environmental benefits. Newer incentive structures better incorporate heterogeneity in the value of management practices, maximizing the benefits per dollar expended. Similarly, by allowing farmers flexibility in their approaches to environmental best-management practices, diverse, site-specific techniques are being incentivized that maximize the value of conservation spending.

The CRP, for example, has transitioned over time to a more cost-effective incentive structure by implementing benefit-cost targets for enrollment of land in the program. The CRP previously targeted either the most affordable or the most environmentally sensitive land to pay owners to retire land. The program now targets land that exhibits the highest benefit-cost ratio, which is designed to maximize environmental benefit at minimal cost.

Changes in the 2018 Farm Bill

The Conservation Title remains the third largest program on the bill by projected outlays, following the nutrition and crop insurance titles. Funding allocated to agricultural resource conservation remains largely unchanged in the new act. However, some reallocation and reorganization among programs will occur under the

Table 1. Estimated Changes in Spending Outlays under the 2018 Farm Bill
(By Fiscal Year, Millions of Dollars)

Title II – Conservation	By Fiscal Year, in Millions of Dollars							
	2019	2020	2021	2022	2023	2019–2023	2019–2028	
Sec. 2201, Conservation Reserve Program	38	-52	-110	-80	15	-189	0	
Sec. 2301, Conservation Stewardship Program	-25	-358	-796	-1,103	-1,387	-3,669	-12,426	
Sec. 2302 and 2308, Environmental Quality Incentives and Conservation Stewardship Program	170	356	539	692	903	2,660	8,451	
Sec. 2401, Small Watershed Rehabilitation	2	8	19	29	37	95	317	
Sec. 2405, Grassroots Source Water Protection Program	2	2	1	0	0	5	5	
Sec. 2406, Voluntary Public Access and Habitat Incentive	10	10	10	10	10	50	50	
Sec. 2408, Feral Swine Eradication and Control Pilot	15	25	20	10	5	75	75	
Sec. 2601, Agricultural Conservation Easement Program	73	151	177	187	198	786	1,779	
Sec. 2701, Regional Conservation Partnership Program	80	141	157	174	191	742	1,742	
Subtotal, Title II	365	283	17	-81	-29	555	-6	

Source: Congressional Budget Office, (https://www.cbo.gov/system/files?file=2018-12/hr2conf_0.pdf).

Notes: The table lists estimated spending changes relative to a baseline that was calculated assuming the continuation of 2014 Farm Bill provisions.

The location of the CSP program in the bill was moved to the same section as EQIP, which explains the organization of outlays by CBO.

new title. Table 1 shows the estimated changes in spending outlays under the 2018 bill by fiscal year in millions of dollars, as reported by the Congressional Budget Office (CBO) in December 2018. Estimated changes in spending are expressed relative to CBO's April 2018 baseline projections, which assumed a continuation of 2014 Farm Bill provisions.

With 24 million acres under contract, the largest portion of the Conservation Title budget continues to support the CRP. Over the next decade, spending in this program is projected to remain constant. However, the cap on how many acres that can be enrolled in the program will increase, expanding to 27 million by 2023.

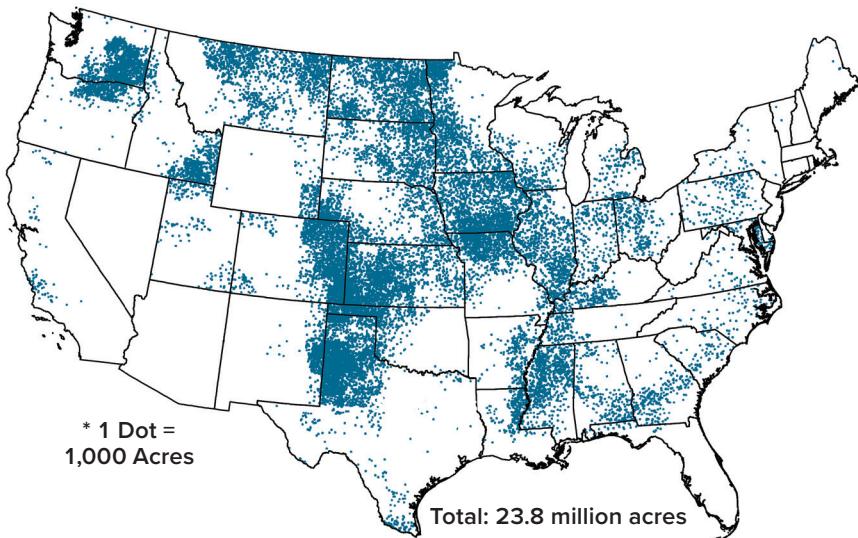
How can CRP spending remain constant while the cap on enrolled acreage increases? The answer lies in changes to the bid limits or county rental rates for CRP contracts. The bill imposes a 10% cut on the maximum CRP rental

rate. Furthermore, if corn and soybean prices continue to decline, then farmers growing those crops may be willing to enroll land in CRP for less. As a result, we may expect to see regional shifts in the location of contracted acres in response to lower bid caps and changing commodity prices.

Figure 1 (on page 8) illustrates enrollment in the CRP in 2016. California had far fewer acres enrolled compared to other agriculturally productive states, due in part to the high cost of land in California and the balance of crops grown there. Since California grows high-value crops with high yields, the opportunity cost of land is generally high. This opportunity cost is capitalized in the land rent and translates to lower enrollment in CRP relative to other states.

Arguably the most significant changes to the Farm Bill pertain to the Conservation Stewardship Program (CSP), where enrollment will likely

Figure 1. 2016 Enrollment in the Conservation Reserve Program (CRP)



Source: USDA's Farm Service Agency : <https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/Conservation/PDF/CRPEnrollmentMar2016DotDensity.pdf>

be reduced. From 2014–2017, total CSP obligations averaged \$1.1 billion per year, where total obligations are defined by money spent on all binding agreements (contracts and services), either now or in the future. Under the 2018 bill, 2019–2023 funding will drop to an average of \$800 million annually. EQIP, on the other hand, will likely see an expansion of its enrollment. From 2014–2017, total EQIP obligations averaged \$1.42 billion, while the new bill reports annual funding increases that average \$1.86 billion per year from 2019–2023.

The contraction of CSP and expansion of EQIP could have important implications for California agriculture. Based off of data from fiscal years 2009–2017, California received the largest share of EQIP financial assistance obligations of any state, which implies that California stands to gain from an expansion of this program. Yet California ranks as the 24th state in terms of its share of CSP financial assistance obligations based off 2010–2017 numbers. If we assume that the primary beneficiaries of EQIP will gain and the primary beneficiaries of CSP will lose as a result of these changes, then it appears as if California may benefit on balance.

The Congressional Budget Office projects a reduction of \$12.4 billion in estimated outlays for CSP, and a combined increase for EQIP/CSP of \$8.4 billion (Table 1). The net decrease will be offset by the increases in funding to the Agricultural Conservation Easement Program and Regional Conservation Partnership Program, which total \$3.5 billion.

Across all conservation programs, the 2018 Farm Bill will increase short-term funding (first five years), but projects a fairly constant long-term funding outlay over the next 10 years, with a net decrease in projected outlays of \$6 million by 2028.

Conclusion

The new Farm Bill has implications for the environment. It incorporates adjustments to previous environmental policies that may induce land use changes, impacting California agriculture and its relationship to the environment. The greatest impacts due to changes in the Conservation Title will likely stem from expansion of EQIP, contraction of the CSP, and adjustments to rental rates in CRP, which constitute changes to the primary programs.

Overall, the 2018 Farm Bill largely reauthorizes the conservation programs from 2014. It does little to address new, emerging issues in agricultural resource conservation, nor takes a substantially different approach to old issues. The biggest concern around this new bill may not be how the allocation of funding has shifted, but rather what is not being covered. The bill takes small strides towards addressing climate change or inspiring climate-smart agriculture and climate adaptation. Incorporating cost-effective solutions to address a changing climate and other challenges at the interface of agriculture and the environment will define a key role of the agricultural economics community over the coming years.

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Lichtenberg, E. 2018. "Conservation Programs in the 2018 Farm Bill." Available: www.aei.org/wp-content/uploads/2018/10/Conservation-Programs-in-the-2018-Farm-Bill.pdf.

Zilberman, D. and K. Segerson. 2012. "Top Ten Design Elements to Achieve More Efficient Conservation Programs." Available: https://agecon-search.umn.edu/bitstream/156623/2/Zilberman-Segerson_final.pdf.

Changes to Nutrition Programs in the 2018 Farm Bill

Charlotte Ambrozek and Timothy Beatty

Nutrition programs comprise 76% of Farm Bill spending. These programs target families, children, and other vulnerable populations, and have historically enjoyed wide bipartisan support. A broad literature documents positive health and well-being effects on program participants. Changes in the most recent Farm Bill and in proposed rules by the USDA will affect eligibility requirements, restricting the population of individuals who qualify for food stamps. We synthesize these changes and consider likely consequences.

Most spending allocated by the Farm Bill goes to nutrition programs—\$326 billion over 2019–2023, which constitutes 76% of total Farm Bill spending. This funding will go to social safety net programs focused on ensuring food and nutrition security, especially the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC), the National School Lunch Program (NSLP), and the School Breakfast Program among other food distribution and child nutrition programs.

SNAP is by far the largest of the nutrition programs in terms of both reach and spending. More than 12% of the U.S. population participated in FY2018. Studies show that SNAP and WIC increase food security of participants, while participating in WIC improves child health and nutrition outcomes. Research suggests longer run educational and economic improvements from participating in food assistance. Figure 1 shows how SNAP

spending has evolved over time relative to WIC and NSLP, the next largest food assistance programs.

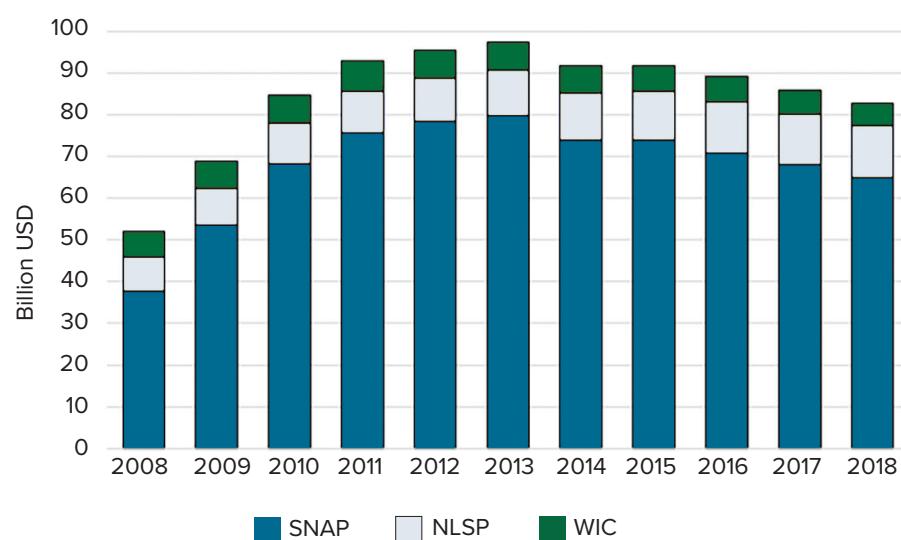
Households become eligible for SNAP when their income falls below the state limit. Individuals must also be American citizens or qualified legal immigrants. For California's SNAP program, CalFresh, households with net income less than 100% of the federal poverty level may participate. More than 4 million Californians use SNAP, and 1 in 10 SNAP participants lives in California, but the share of eligible people participating is lower in California than in most other states. Average SNAP household income is low, at 61% of the poverty line in FY2016. The average household on SNAP has two people and receives \$252 per month for groceries, a quarter of the total funds for the household. Most SNAP households include children, although elderly and disabled people also make up a sizeable share of participants.

Programs like SNAP, WIC, and NSLP are designed to act as automatic stabilizers during recessions. Eligibility is

tied to the federal poverty level – when incomes drop, more people may participate. Figure 2 (on page 10) illustrates expansion of participation in food assistance programs across the Great Recession, showing the unemployment rate and the number of program participants from 2008 to 2018. Generally, nutrition programs enjoy broad bipartisan support given the appeal of supporting children, families, and other vulnerable populations, but some lawmakers have raised concerns about continued (relatively) high levels of participation despite relatively low levels of unemployment.

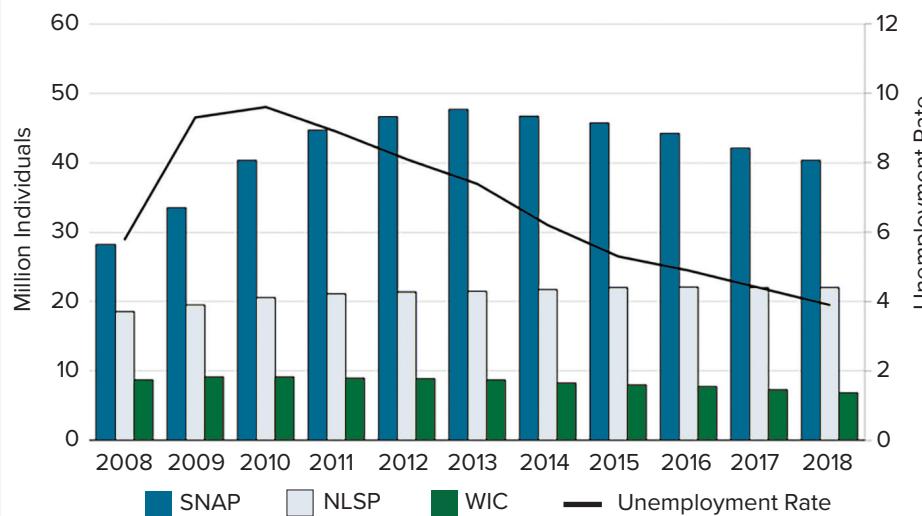
Over the period 2019–2023, total Farm Bill spending on nutrition will increase by 0.03%, or \$98 million, mostly as a result of the employment and training (E&T) and nutrition targeting items discussed below. Changes to federal nutrition programs in the 2018 Farm Bill focused largely on work requirements for participants in SNAP. No explicit legislative changes were made to WIC, and minor clarifications were made to the administration of the

Figure 1. Annual Spending on Select Nutrition Programs, FY2008–2018



Data from USDA FNS Program Data site: <https://www.fns.usda.gov/pd/overview>

Figure 2. Annual Participation, Selection Nutrition Programs, FY2008–2018



Data from USDA FNS Program Data site: <https://www.fns.usda.gov/pd/overview>

NSLP, specifically enforcing the “Buy American” requirement. In this brief overview, we focus on changes made to SNAP as part of the Farm Bill and also on a proposed rule change issued by USDA shortly after the Farm Bill was signed.

Changes to SNAP in the Farm Bill

Changes to SNAP in the Farm Bill largely focused on work requirements, particularly for able bodied adults without dependents (ABAWDs) who make up 8.8% of the 43.6 million SNAP participants. An ABAWD is defined as an individual age 18–49 who is of sufficient physical and mental health to work (not disabled) and has no dependents (not pregnant and does not care for a child or incapacitated family member).

Since implementation of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996, receipt of SNAP benefits for ABAWDs is limited to three months in a 36-month period, unless those individuals work 80 hours per month, participate in E&T activities, or comply with a state-approved volunteering program. States can apply for discretionary waivers from these work requirements. However, the 2018 Farm

Bill reduces the number of waivers allocated to each state agency from 15% to 12% of the state’s caseload that is ineligible for program benefits because of the ABAWD time limit. Importantly, the current Farm Bill did not implement a proposed change to apply work requirements to individuals ages 18–59 with dependent children aged 6–18 as well as those aged 50–59 without dependents under the age of 6.

Changes to SNAP in the Farm Bill will affect E&T programs that are designed to increase the ability of ABAWDs to obtain regular employment, for example through trainings, services for job seekers, or volunteering activities. Funding for E&T programs will be expanded by more than 10%, and the new Farm Bill imposes minimum requirements for state spending on E&T programs. SNAP participants who fulfill the work requirement through job search programs must now attend a program that has direct supervision.

The 2018 revisions in the Farm Bill allow E&T programs to be designed by non-State agencies, and allow for partnerships between private institutions and SNAP administration in implementing these programs. These changes expand opportunities for

private organizations to receive state funds for administering E&T programs. New entrants to these E&T partnerships will be restricted by another change—previously funded E&T programs have an assured 50% share of future funding.

Changes to SNAP not related to work requirements generally focused on reducing fraud and tightening nutrition targeting of the SNAP program. Experts on food assistance policy have testified before the House that rates of fraud are notably low. Previous work has concluded that tighter fraud prevention measures likely would not be cost effective.

The nutrition component allocates additional funding for nutrition education and produce prescription programs that would allocate fruits and vegetables to households. These programs have the advantage of providing healthful foods to participants, but may result in wasted food and resources if barriers to uptake are sufficiently large. Finally, the bill eliminated an additional deduction option for homeless SNAP participants.

Changes to SNAP after the Farm Bill

Shortly after the Farm Bill was signed into law, U.S. Department of Agriculture, Food and Nutrition Service (FNS) proposed a new rule that would lead to tighter work requirements for ABAWDs. Historically, states have been able to apply for exemption from ABAWD work requirements for areas of the state where unemployment is exceptionally high or where there aren’t enough jobs to go around. These exemptions are generally referred to as ABAWD waivers. Waivers were widely used during and after the Great Recession.

Reasoning that economic conditions have changed, a current policy priority is to reduce the number of waivers in use, since the administration believes

that present use of waivers is out of step with the intent of the law.

The proposed rule, entitled “Supplemental Nutrition Assistance Program: Requirements for Able-Bodied Adults Without Dependents,” would generally tighten the criteria for states to apply for waivers of work requirements for ABAWDs. States may no longer group towns, counties, or cities at a level smaller than that of a labor market area when applying for ABAWD waivers. The proposed rule eliminates the use of non-federal data to evaluate waiver eligibility. For instance, an academic report showing a declining employment-to-population ratio would no longer suffice for waiver status.

As long as Bureau of Labor Statistics (BLS) unemployment rate statistics are available, these statistics must be used to determine waiver eligibility. If appropriate data for eligibility determination are not available, the entire state may apply for a waiver. Importantly, states would be prohibited from applying for waivers unless the state overall has an unemployment rate greater than 10% or greater than both 120% of the national average rate and 7%. States may still apply for waivers for counties or cities that specifically have very high unemployment rates.

Three additional mechanisms for waiver eligibility are eliminated. The first mechanism was designation as a labor surplus area, meaning that the two-year average unemployment rate was 20% higher than the same 2-year national average. The proposed rule disallows states from implementing a waiver prior to approval even if the state meets the waiver criteria. Also, having a historical seasonal unemployment rate greater than 10% would no longer be a criterion for approval. This last change may well strike agricultural communities and their fluctuating workforces particularly hard.

Effects of Policy Changes on SNAP Participants

The policy debate around the changes from the Farm Bill and other proposed regulations on food assistance programs hinges on the participation and expenditure effects. Additional work requirements will almost certainly drive some participants off SNAP. In the current form, this will occur as jurisdictions are less easily able to obtain waivers or to qualify under revised E&T programs. Larger drops in participation would result from expanding the populations for which work requirements apply, as proposed by an initial draft of the Farm Bill.

Evidence from a report by the Hamilton Project suggests that most of the individuals who would be affected by tighter requirements on ABAWDs are either in the labor force already, although failing to meet the 80 hour a month requirement because of unstable employment, or might be eligible for hardship exemptions. These are individuals who, during a particular month, are unemployed, not in the labor force, or working less than twenty hours, but, over two years, are much more likely to transition into part- or full-time work. These individuals cite health or job-related issues when asked why they are not working during a month. If the labor force is a football game, these are individuals who are sidelined for part of the game, but will cycle in and out of play.

These participation losses result in a variety of mechanisms for loss of social welfare from SNAP. First, food assistance programs have well documented health and well-being benefits for participants. Cutting eligible participants off from the program eliminates those improvements. Secondly, tightening eligibility requirements has the unintended consequence of increasing administrative burden for both states and participants as caseworkers and households navigate an increasingly

complex process. Another unintended consequence is pushing otherwise eligible households into alternative safety net programs, such as disability insurance, offsetting the intended cost reduction from restricting SNAP participation.

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Bauer, L., D. Schanzenbach, and J. Shambaugh. October 2018. “Work Requirements and Safety Net Programs.” Brookings, The Hamilton Project: Washington, D.C. http://www.hamiltonproject.org/papers/work_requirements_and_safety_net_programs.

Neuberger, Z. February 2017. “SNAP and WIC Help Young Children Now and in the Future.” Center on Budget and Policy Priorities. <https://www.cbpp.org/blog/snap-and-wic-help-young-children-now-and-in-the-future>

USDA FNS. 2019. “Supplemental Nutrition Assistance Program: Requirements for Able-Bodied Adults Without Dependents”. Proposed Rule 84 FR 980. <https://www.federalregister.gov/documents/2019/02/01/2018-28059/supplemental-nutrition-assistance-program-requirements-for-able-bodied-adults-without-dependents>

Brexit and the Disruption of Agricultural Trade: A View from Ireland

Colin A. Carter and Doris Läpple

Agricultural markets across the 28 Member States in the European Union (EU) customs union are closely integrated under the Common Agricultural Policy. The United Kingdom (U.K.) has chosen to leave the EU, and the separation has become known as Brexit. While Brexit itself is complicated, with less than two months to the exit date, no decision on how to leave the EU has been made, which further aggravates already prevailing uncertainty surrounding its implications. Brexit will disrupt agricultural supply chains and trade within Europe and will also affect European agricultural trade with other countries, including the United States.

A hard Brexit might be tough on the dairy industry, but it would be ‘catastrophic’ on the beef industry in Ireland.

—Mike Brady, Agricultural Consultant,
Brady Group, Ireland

The United Kingdom (U.K.) will exit the European Union (EU) on March 29, 2019. With less than two months to go, no decision on how to leave the EU has been made. The default is a “no-deal” Brexit, also known as a “hard Brexit.” The consequences of an exit without a trade agreement would be severe for the U.K. and its trading partners. The main purpose of this article is to discuss the impacts of Brexit on Ireland’s agricultural sector. We focus on Ireland because Irish farmers will be the hardest hit of all EU countries, due to the fact Irish farmers rely heavily on exports to the U.K. We also draw out implications for world food trade, as the impact

of Brexit will be felt all the way from Australia to California to Italy.

On June 23, 2016, citizens of the U.K. voted, in a referendum, to leave the EU—the Brexit vote. The vote was won by a slim margin, but it passed by more than two to one among U.K. farmers. U.K. farmers will be adversely hit, which illustrates that the decision was not made by economic interests, but for other reasons such as issues relating to sovereignty and immigration.

However, Scotland and Northern Ireland, both part of the U.K., voted not to leave. The stakes are particularly high in Northern Ireland because of its strong geographic and economic linkages with the Republic of Ireland (RoI). The border between the Republic and Northern Ireland is now invisible but that could soon change to a hard border with serious negative impacts on commerce, not to mention the political consequences of possible renewed violence in the North.

It is particularly problematic that the U.K. parliament cannot decide on how to leave the EU. The withdrawal agreement, resulting from 18 months of negotiations between the U.K. and EU, was rejected by the British House of Commons in early January 2019. The main reason for rejecting the withdrawal agreement was the “backstop” provision, which was drafted to honor the 1998 Good Friday peace agreement and includes a commitment made by the U.K. not to re-introduce a hard border between RoI and Northern Ireland. This exit plan would have kept the U.K. in the EU customs union, if a free trade deal that eliminates the need for a hard border between the EU and the U.K.

could not be reached by the end of 2020.

Inventing a new technology to allow for an electronic border (without the normal border infrastructure) is regarded as an alternative arrangement. An e-border would permit commerce between the EU and the U.K. to proceed with very minimal border transaction costs, through scanning truck contents without stopping them, etc. The problem, however, is that such a technology has not been developed.

As a result of the uncertainty surrounding the UK’s access to food imports, U.K. consumers are understandably worried about food supply disruptions and higher prices after Brexit. This is why a retailer in the U.K. is briskly selling “Brexit Boxes,” retailing at about \$400, with food rations to last a household 30 days. Additionally, U.K. merchants and consumers are stockpiling frozen foods and general hoarding of food has apparently begun in the United Kingdom.

Brexit will have significant implications for global agricultural trade as the U.K. is a large importer of food including meat, dairy products, and fruits and vegetables. Post Brexit, assuming no deal, the EU will have an external border on the island of Ireland interrupting an efficient supply chain that seamlessly moves goods back and forth on the Irish island (between the RoI and Northern Ireland) and across the Irish Sea into Great Britain and continental Europe.

The EU operates as a single trading bloc, with common external tariffs and other trade barriers. It also has numerous free-trade agreements with

Table 1. Irish Beef Exports (2015–2017 annual average)

Partner	Exports \$Millions	Percent of Exports
U.K.	1,069.7	46.3
France	216.7	9.4
Netherlands	207.0	9.0
Italy	182.5	7.9
Germany	141.2	6.1
Sweden	77.4	3.3
Belgium	57.6	2.5
Spain	56.4	2.4
Denmark	39.9	1.7
World	2,311.9	

Source: UN Comtrade. HS codes: 0201,0202, 021020, 160210, 1620250

countries outside the customs union. The U.K. would be giving this all up, and after Brexit, the U.K. will establish its own trade agreements with the United States and all other trading partners.

If the U.K. opts for a no-deal break and cuts itself off from the EU customs union preferences on trade, then the U.K.'s existing World Trade Organization (WTO) commitments on agriculture will have to be renegotiated with all WTO members. This will create challenges and opportunities for agricultural exporters who would like greater access to the U.K. market, but at the same time not wanting to forego future market access to the remaining 27 countries in the EU. After Brexit, the U.K. may source some of its food imports from outside the EU, pivoting towards low-cost exporters like Australia, Brazil, or the United States.

When the U.K. abandons free trade within the EU, some U.K. trading partners will be affected more than others; but as the above quote suggests, the Irish agricultural sector will be severely hit, at least in the short run. RoI is a small country and its agriculture is very dependent on international trade, much like New Zealand.

A View from Ireland

Agriculture is one of RoI's most important indigenous sectors, generating about 7% of gross value added and accounting for over 10% of national exports. There are about 137,500 farms in RoI, and beef and dairy are the dominant sectors with 72,400 and 16,637 farms, respectively, accounting for almost 70% of annual gross agricultural output. RoI is the sixth largest exporter of beef in the world, and the largest in Europe, and provides about 2% of world dairy exports.

From an environmental perspective, the Irish dairy and beef sectors perform relatively well, as RoI has the joint lowest carbon footprint per kg of milk and the fifth lowest carbon footprint per kg of beef produced within the EU. Approximately 90% of beef and dairy products are exported, but dependence on export markets differs, as shown in Tables 1 and 2.

RoI exports over 46% of its beef to the U.K. in a typical year (Table 1), which means Brexit will have an outsize influence on Irish beef farmers because significant U.K. trade barriers will come into play after Brexit. According to Bord Bia (the Irish Food Board), a hard Brexit

would mean U.K. beef tariffs on Irish imports would be an average of 65%. This would no doubt disrupt the supply chain because Ireland is the only foreign beef supplier to the three largest U.K. supermarkets: Tesco, ASDA, and Sainsbury's, as well as to McDonald's and Burger King. In a January 28, 2019, letter from the top ten U.K. supermarkets to Members of Parliament, the CEOs wrote in relation to a hard Brexit:

We anticipate significant risks to maintaining the choice, quality, and durability of food that our customers have come to expect in our stores, and there will be inevitable pressure on food prices from higher transport costs, currency devaluation, and tariffs.

Irish dairy, in general, is not so dependent on the U.K., shipping about 24% of its exports to the U.K. in a typical year (Table 2). However, we see from Table 3 that the Irish exports of certain dairy products are heavily concentrated on the U.K. market. This is especially true for cheese, as about 53% of Irish cheese exports are sold to the U.K. in a given year, which suggests that some Irish dairy farmers will be more exposed to the impact of Brexit than others. Butter, and milk powder and infant formula are more diversified across import markets. It is notable that RoI exports approximately 30% of its milk powder and infant formula to China. With Brexit, RoI may try to increase this market share to replace lost sales to the United Kingdom.

Brexit brings into question the likely transition of Irish agriculture to more market discipline if it loses preferential access to the U.K. market. It is important to recognize that Irish agriculture is highly subsidized, especially in the case of beef. There is an astonishing difference in farm incomes and subsidy dependence between Irish dairy and beef farms. Figure 1 shows a three-year average of

farm incomes and subsidies received by dairy and beef farms, as well as corresponding average farm sizes, which are relatively small.

Remarkably, 101% of beef farm income is due to subsidies, indicating that, on average, beef farmers do not make a profit. However, the vast majority of farm families have off-farm incomes or are receiving pensions, as 30% of all Irish farmers are 65 or older. The high subsidy dependence of beef farming introduces another important way that Brexit will affect Irish farmers. The U.K. has been a net contributor to the EU budget, and unless the U.K.'s contributions are met by the remaining Member States, which is unlikely to happen, the EU budget will be reduced. It is expected that this will imply almost a 10% reduction in direct payments, which would present a major challenge to the Irish beef sector.

In contrast, dairy farming is a profitable industry in RoI, and subsidy dependence is much lower, at 29%. (For comparison purposes, according to the Organisation for Economic Co-operation and Development [OECD], U.S. farms receive about 10% of their income from subsidies, while the EU average is about 20%.) RoI has one of the lowest costs of producing milk worldwide due to favorable agronomic and weather conditions that sustain a grass-based, spring calving milk production system.

Moreover, the Irish dairy sector is currently undergoing a major phase of expansion, facilitated through the abolition of EU milk quotas on April 1, 2015. Milk production has increased by over 50% over the last 10 years. Access to land is one of the main constraints to further expansion, and the implications of Brexit on the beef industry may benefit the dairy industry as it will likely free up land.

Table 2. Irish Dairy Exports (2015–2017 annual average)

Partner	Exports \$Millions	Percent of Exports
U.K.	948.3	24.4
China	550.4	14.2
Netherlands	346.6	8.9
Germany	262.6	6.8
USA	203.4	5.2
France	162.1	4.2
Saudi Arabia	153.7	4.0
Belgium	120.8	3.1
Hong Kong	105.0	2.7
World	3,883.0	

Source: UN Comtrade. HS codes: 0401 through 0406, 2105, 3501, 190110

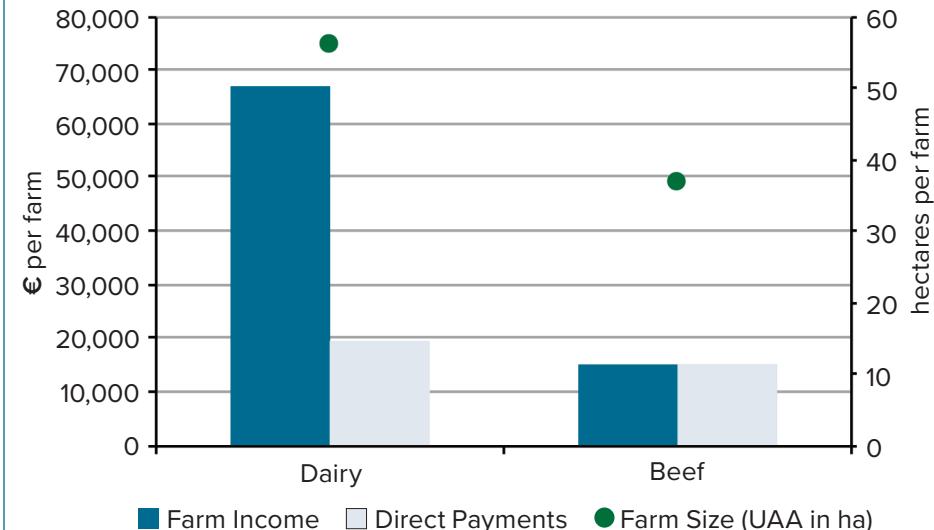
Brexit also threatens Irish-EU trade that moves via a “land bridge” through the English Channel tunnel. The Freight Transportation Association of Ireland estimates that 80% of the Irish truck freight that reaches mainland Europe passes through the U.K. The land bridge is by far the quickest route for trucks between Ireland and the rest of the EU. For instance, Irish beef exports to Italy are shipped via truck through the U.K., with fruits and vegetables back-hauled. Brexit will threaten the shelf-life of that backhaul. A hard

border will disrupt that truck traffic due to customs inspections, relating to phytosanitary standards and other issues.

Implications for Other Agricultural Exporters

Like other WTO members, the EU uses import barriers such as tariff rate quotas (TRQs), which allow imports of fixed quantities of a good (e.g., beef and dairy products) at a relatively low tariff. For import volumes above the quota amount, typically a much higher tariff is applied. The TRQs protect

Figure 1. Annual Farm Income, Subsidy Dependence, and Size of Dairy and Beef Farms in Ireland (2015–2017)



Note: Farm incomes are derived by subtracting production expenses from total sales and direct payments.

Source: Teagasc National Farm Survey data

farmers at home but they are part and parcel of the EU TRQs and so would have to be renegotiated by the U.K. after Brexit. Such negotiations will involve most global agricultural exporters serving Europe as the EU has over 80 different TRQs in place for agricultural products.

After the U.K. leaves the EU it will have to establish its own set of tariffs on imports, in compliance with WTO rules. This will be complicated with agricultural products subject to TRQs because the TRQ import quantity is based on EU-wide demand. Therefore, the TRQs will have to be modified to account for U.K. demand versus demand in those countries remaining in the EU.

In 2017 the U.K. and the EU proposed to the WTO a way of splitting the TRQs based on historical imports, but some exporters (e.g., Argentina, Brazil, Canada, the U.S., and others) have complained this proposal would reduce their overall market access. One of the WTO principles is that no member can be made worse off (in terms of market access) by any splitting of the TRQs.

The U.K. accounts for about 10% of the overall EU population. Suppose that the UK's historical share of the EU imports of a good under existing TRQs is 20%. Post Brexit, if the U.K. takes 20% of the TRQ share for that product and then demand in the U.K. wanes, the exporters would not be able to shift supplies towards the EU because their quota would be fixed at the historical level. This is a market access issue.

Conclusion

All major players in global agricultural trade will be impacted by Brexit. For instance, U.S. President Trump recently stated the likelihood of any future U.S.-U.K. trade agreement could depend on the details of how the U.K. will leave the EU. We have

Table 3. Top Foreign Markets for Irish Dairy Products (2015–2017 annual average)

Top Irish Export Markets (Percent of Irish Exports)		
Cheese (\$824 million)	Butter (\$800 million)	Milk Powder / Infant Formula (\$1,696 million)
UK (53%)	UK (28%)	China (30%)
Germany (6%)	Netherlands (18%)	UK (11%)
Netherlands (5%)	Germany (14%)	Netherlands (7%)
France (5%)	Belgium (12%)	Saudi Arabia (7%)
USA (4%)	France (8%)	Hong Kong (6%)
Algeria (4%)	USA (8%)	Germany (4%)

Source: UN Comtrade. Product code aggregation follows USDA product description for exports.

outlined the impact of Brexit on Irish agriculture, which is highly concentrated on beef and dairy and dependent on exports to the U.K. While Brexit will no doubt have negative consequences for Irish beef farmers due to trade destruction with U.K.'s departure from the customs union and reduced direct payments, the impact on Irish dairy farmers will be more diverse. New trade flows will also be created with other agricultural exporters seeking access to the U.K. market.

From an environmental and social point of view, there could also be wider implications—say, for instance, U.K. imports more beef from Brazil, and less from the Irish industry. Reductions in Irish beef production that is made up by less carbon-efficient beef production, would have negative environmental consequences, but will free up land that may be utilized by an expanding dairy sector in ROI. Expanded Irish dairy exports to China and elsewhere could crowd out exporters like the United States in that market, which again will shift the environmental balance of production. Given that California agriculture is also reliant on dairy product exports, with China being an important market, expanded Irish dairy sales to China will impact the California industry.

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