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U.S. Farm Income Outlook: December 2020 Forecast

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SUMMARY

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U.S. Farm Income Outlook: December 2020 Forecast

The U.S. Department of Agriculture (USDA) projects that U.S. farm profitability—as measured by net farm income and net cash income—increased substantially in 2020 from 2019 levels. In nominal dollars (not adjusted for inflation), both income measures are projected to attain their highest levels since 2013. Net farm income (calculated on an accrual basis) was projected to rise 43.1% year-over-year in 2020 to $119.6 billion, up $36.0 billion from last year. Net cash income (calculated on a cash-flow basis), was projected at $134.1 billion in 2020, up $24.7 billion or 22.6% from 2019.

The year-to-year increase in both net farm income and net cash farm income is primarily due to a substantial increase in direct government payments to a record $46.5 billion in 2020. At this level, government support payments would account for nearly 39% of net farm income—the highest share since the year 2000, when government subsidies accounted for 46% of net farm income. In contrast with federal direct payments to producers, farm income from cash sales of crop and livestock products and other farm-related activities were forecasted to decline by 0.9% in 2020.

The record government farm assistance in 2020 included $12.6 billion from farm programs authorized by the 2018 farm bill (P.L. 115-334) and $33.9 billion in ad hoc (i.e., authorized outside of omnibus farm legislation) program outlays, including $3.7 billion from the 2019 Market Facilitation Program (MFP) payments, $5.9 billion from the Paycheck Protection Program (PPP), and $24.3 billion from the Coronavirus Food Assistance Program (CFAP). If realized, the 2020 government payments of $46.5 billion would represent a 107.1% increase from 2019's $22.4 billion in government support, and would nearly double the previous record of $24.4 billion (nominal dollars) in 2005.

Farm asset values in 2020 were projected at $3.1 trillion, up 1.5% from 2019. Farm asset values reflect farm investors' and lenders' expectations about long-term profitability of farm sector investments. Another measure of the farm sector's well-being is aggregate farm debt, which was projected to be at a record $435.2 billion in 2020—up 4.0% from 2019. Both the debt-to-asset and the debt-to-equity ratios have risen for eight consecutive years as both ratios inch upward toward their long-run historical averages. At the farm household level, average farm household incomes have been well above average U.S. household incomes since the late 1990s. However, this advantage derives primarily from off-farm income as a share of farm household total income.

USDA will continue to fine-tune farm income estimates for 2020 as more and better data become available through 2021. USDA released its first forecast of U.S. farm income for 2021 on February 5, 2021. Farm prices for corn, soybeans, wheat, and cotton ended 2020 on an upswing—driven by a declining outlook for carryover stocks and increasing international demand. Despite this hopeful pattern for commodity prices, the outlook for 2021 farm income remains clouded by several critical uncertainties. The potential speed at which the economic effects of the Coronavirus Disease 2019 (COVID-19) pandemic could be abated as vaccination distribution expands nationwide is unknown. This may be critical to when and how the general economy will recover and consumer demand patterns return to normal. Another uncertainty is whether agricultural and food supply chains will emerge in a more resilient and responsive form that revives investment and growth at both the producer and retail levels. Finally, despite the signing of a Phase One trade agreement with China on January 15, 2020, it is unclear how soon—if at all—the United States may resume normal trade with China.

USDA Farm Income Projections as of December 2, 2020

The most recent aggregate national net farm income projections for calendar year 2020 were issued by USDA's Economic Research Service (ERS) on December 2, 2020. This is the third of three ERS forecasts for 2020: the first farm income forecast was announced on February 5, 2020. The second forecast was released on September 2, 2020.

The first USDA forecast of U.S. net farm income for 2021 occurred on February 5, 2021, and will be discussed in a separate report.

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Introduction

The U.S. Department of Agriculture (USDA) periodically forecasts several economic measures of the U.S. agricultural sector as an aid to Congress and policymakers who monitor and respond to the changing health of the U.S. farm sector. From among these economic measures, annual U.S. net farm income is the most-watched indicator of farm sector well-being. Net farm income measures the profitability of U.S. crop and livestock production.[1] In a single statistic, it captures and reflects the entirety of economic activity across the range of production processes, input expenses, and marketing conditions that have prevailed during the calendar year.[2] When national net farm income is reported together with a measure of the national farm debt,[3] the two summary statistics provide quick and widely referenced indicators of the economic well-being of the national farm economy.

USDA also measures and reports net cash income in tandem with net farm income. Net cash income uses a cash-flow basis to compare cash receipts to cash expenses, while net farm income uses an accrual basis to include the value of farm production as well as noncash balance sheet items, such as capital replacement, implicit rent, home consumption, and other noncash income and expenses.[4]

This report discusses the results of the third of three official USDA national farm income outlook forecasts released for 2020 (see box "ERS's Annual Farm Income Forecasts" in the **Appendix**) by USDA's Economic Research Service (ERS).[5] This release of December 2, 2020, provided the most comprehensive view of annual net farm income for the year because harvests were close to completion for most crops, and a substantial share of the harvested crops already had been sold. However, USDA will continue to fine-tune farm income estimates for 2020 as more and better data become available through 2021. This report's **Appendix** has a discussion of how the December forecast aligns with prior forecasts from earlier in 2020.

USDA Forecasts Higher Farm Income in 2020

U.S. farm profitability—as measured by net farm income and net cash income—was projected to increase substantially in 2020 from 2019 levels. In nominal dollars (not adjusted for inflation), both measures were projected to attain their highest level since 2013. Net farm income was projected to rise 43.1% year-over-year in 2020 to $119.6 billion, up $36.0 billion from last year (**Table 1**). Net cash income (calculated on a cash-flow basis) was projected at $134.1 billion in 2020, up $24.7 billion or 22.6% from 2019.

[1] See the box "Measuring Farm Profitability" in the **Appendix** for definitions of *net farm income* and its companion *net cash income*.

[2] The **Appendix** includes supporting tables and charts that provide additional details on the Economic Research Service's (ERS's) farm income forecast.

[3] For example, the debt-to-asset or debt-to-equity ratios are discussed in "Farm Finances: Assets, Debt, and Equity."

[4] A major difference between the two measures of net income is their different treatment of unsold harvested crops. Net farm income includes a crop's value after harvest, even if it remains in on-farm storage. In contrast, net cash income includes a crop's value only when it is sold. Thus, crops placed in on-farm storage are included in net farm income but not net cash income. Net cash income tends to be more stable on a year-to-year basis than net farm income, as farm households will adjust their sales from on-farm inventories to meet both farm business and household cash-flow needs.

[5] USDA, ERS, "Webinar: Farm Income and Financial Forecasts, December 2020 Update," December 2, 2020, at https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/webinars-on-forecast-highlights/.

Table 1. Annual U.S. Farm Income ($ Billions) Since 2017, Including 2020 Forecasts

Item	2017	2018	2019	2020F	2019 to 2020 Difference	2019 to 2020 Change (%)[a]
Cash Income Statement						
1. Cash receipts	**370.4**	**371.4**	**369.7**	**366.5**	**-3.2**	**-0.9%**
Crops[b]	194.9	195.1	193.7	200.2	6.5	3.3%
Livestock	175.6	176.3	176.0	166.3	-9.7	-5.5%
2. Government payments[c]	**11.5**	**13.7**	**22.4**	**46.5**	**24.0**	**107.1%**
PLC-ARC[d]	7.0	3.2	3.0	6.1	3.1	106.3%
Marketing loan benefits[e]	0.0	0.0	0.0	0.2	0.2	2,154.8%[f]
Conservation	3.8	4.0	3.8	3.8	0.0	0.4%
Disaster and emergency[g]	0.7	0.9	1.4	2.2	0.8	54.0%
All other[h]	0.0	5.6	14.5	34.1	19.6	135.3%
3. Farm-related income[i]	**31.2**	**29.1**	**34.7**	**34.1**	**-0.6**	**-1.8%**
4. Gross cash income (1+2+3)	413.2	414.2	426.9	447.1	20.2	4.7%
5. Cash expenses[j]	311.9	311.4	317.5	313.0	-4.5	-1.4%
6. NET CASH INCOME	**101.3**	**102.8**	**109.4**	**134.1**	**24.7**	**22.6%**
Farm Income Statement						
7. Total gross revenues[k]	413.2	414.2	426.9	447.1	20.2	4.7%
8. Non-money income[l]	18.3	19.1	18.4	19.5	1.2	6.3%
9. Inventory adjustment	-6.0	-8.2	-12.9	-3.4	9.5	-73.4%
10. Total gross income	425.4	425.1	432.3	463.2	30.9	7.1%
11. Total production expenses[m]	350.4	343.8	348.7	343.6	-5.2	-1.5%
12. NET FARM INCOME	**75.1**	**81.3**	**83.6**	**119.6**	**36.0**	**43.1%**

Source: Congressional Research Service (CRS) using data from USDA, Economic Research Service (ERS), "Farm Income and Wealth Statistics: U.S. and State Farm Income and Wealth Statistics," updated as of December 2, 2020. NA = not applicable.

Notes: F = forecast.

a. Change represents year-to-year projected change between 2019 and the December 2 forecast for 2020.
b. Includes Commodity Credit Corporation loans under the farm commodity support program.
c. Government payments reflect payments made directly to all recipients in the farm sector, including landlords. The nonoperator landlords' share is offset by its inclusion in rental expenses paid to these landlords and thus is not reflected in net farm income or net cash income.
d. PLC = Price Loss Coverage. ARC = Agriculture Risk Coverage.
e. Includes loan deficiency payments, marketing loan gains, and commodity certificate exchange gains.
f. In 2020, USDA made Marketing Assistance Loan (MAL) payments of $169 million compared with $7 million in 2019.
g. Includes payments made under the Wildfire and Hurricane Indemnity Program (WHIP).
h. Includes ad hoc programs such as the Market Facilitation Program (MFP), Coronavirus Food Assistance Program (CFAP), and the cotton ginning cost-share program, as well as the biomass crop assistance program, milk income loss, and other miscellaneous payments.
i. Income from crop insurance indemnities, custom work, machine hire, agritourism, forest product sales, and other farm sources.
j. Excludes depreciation and perquisites to hired labor.
k. Total gross revenue (#7) is the same as gross cash income (#4).
l. Value of home consumption of farm products plus the imputed rental value of operator and hired labor dwellings.
m. Cash expenses (#5) plus depreciation and perquisites to hired labor.

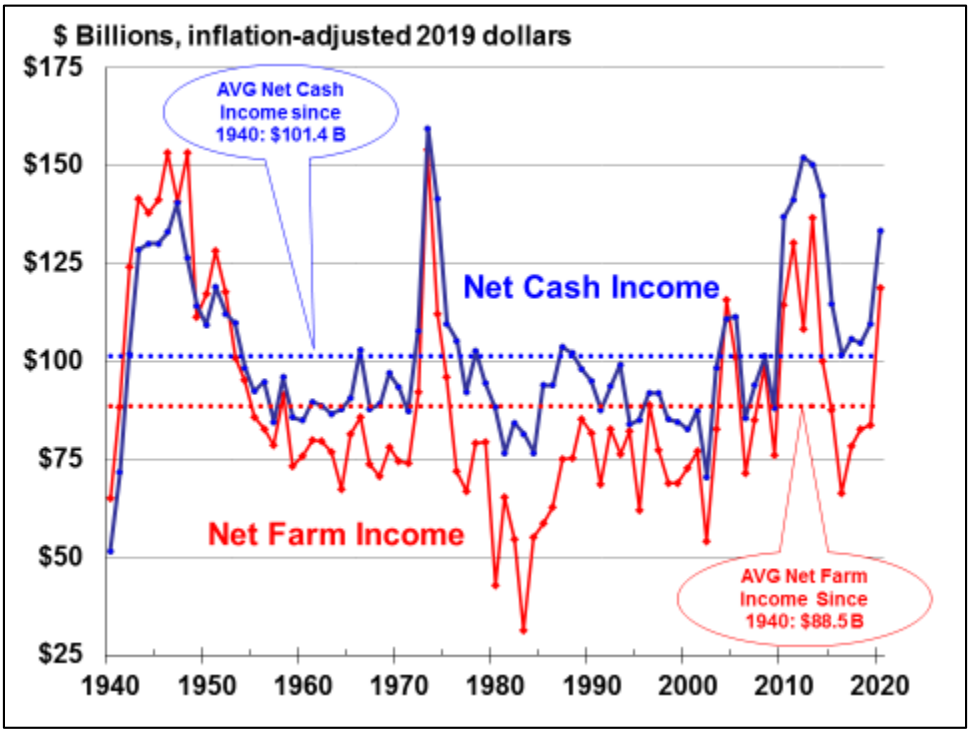
The year-to-year increase in both net farm income and net cash farm income is due to record government payments of $46.5 billion in 2020. At this level, government support payments

account for nearly 39% of net farm income—the highest share since the year 2000, when government subsidies accounted for 46% of net farm income.

In contrast to federal direct payments, farm income from cash sales of crop and livestock products (-0.9%) and other farm-related activities (-1.8%) were forecasted to decline from 2019. Additionally, sales from on-farm inventories from prior years' crops are expected to make a smaller contribution to net cash income in 2020 than in 2019 (**Table 1**). The 2020 net cash income forecast of $134.1 billion included $3.4 billion in sales from on-farm inventories. In 2019, sales of on-farm crop inventories contributed $12.9 billion to net cash income.

When adjusted for inflation and represented in 2019 dollars (**Figure 1**), both the net farm income and net cash income for 2020 were projected to be above their average values since 1940 of $88.5 billion and $101.4 billion, respectively. The net farm income forecast for 2020 was the third highest in inflation-adjusted terms since 1973.

Figure 1. U.S. Farm Sector Inflation-Adjusted Income, 1940-2020F



Sources: CRS using data from USDA, ERS, "2020 Farm Sector Income Forecast," December 2, 2020. All values are adjusted for inflation using the chain-type gross domestic product (GDP) deflator, where 2019 = 100. Bureau of Economic Analysis (BEA), real GDP chained dollars (accessed December 11, 2020), coupled with projections from the Congressional Budget Office, July 2020. Values for 2020 are forecasts.

For historical perspective, both net cash income and net farm income achieved inflation-adjusted peaks three times since 1940: first, in the late 1940s when U.S. exports were flowing into war-torn Europe; second, in the mid-1970s when oil and commodity markets experienced surges in prices; and finally, during the 2011-2014 period when prolonged widespread drought impacted U.S. crop yields and reduced available supplies.

Farm Sector Revenues

Farms earn revenue from three principal sources: cash receipts from crop and livestock production activities; government direct payments; and other on-farm activities.

Cash Receipts for Crop and Livestock Production

Cash receipts for crop and livestock production in 2020 were projected to be down 0.9% relative to 2019 (**Table 1**). Crop receipts were forecasted to increase by $6.5 billion in 2020, but these gains were more than offset by a forecast decline of $9.7 billion for livestock receipts.

Table 2. U.S. Farm Sector Cash Receipts from Production of Commodities

Commodities	Share All	Share Sub[a]	2017	2018	2019	2020F	Change: 2019 to 2020	
			——$ Billions——				$ Billions	%
Row Crops	**31.1%**	**59.1%**	**115.2**	**117.7**	**115.0**	**114.9**	**-0.2**	**-0.1%**
Corn	12.3%	23.4%	45.6	48.6	49.4	46.9	-2.5	-5.1%
Soybeans	10.4%	19.8%	38.5	37.0	34.2	36.8	2.6	7.5%
Wheat	2.3%	4.5%	8.7	9.5	8.7	8.6	-0.1	-1.0%
Cotton	2.0%	3.9%	7.6	7.5	7.2	6.6	-0.6	-7.8%
Hay	1.7%	3.3%	6.4	6.9	7.6	7.8	0.2	2.9%
Rice	0.7%	1.2%	2.4	2.5	2.8	2.7	0.0	-0.6%
Peanuts	0.4%	0.7%	1.4	1.5	1.1	1.2	0.2	14.4%
Other row crops[b]	1.2%	2.3%	4.6	4.1	4.2	4.3	0.1	2.5%
Specialty Crops	**21.5%**	**40.9%**	**79.7**	**77.4**	**78.7**	**85.3**	**6.6**	**8.4%**
Fruits and nuts	8.3%	15.7%	30.6	29.2	28.8	33.4	4.6	16.1%
Vegetables/Melons	5.5%	10.5%	20.5	18.5	18.9	19.6	0.7	3.7%
All other crops[c]	8.1%	15.4%	30.0	31.0	32.0	33.1	1.1	3.5%
Total Crops	**53%**	**100%**	**194.9**	**195.1**	**193.7**	**200.2**	**6.5**	**3.3%**
Livestock Products								
Cattle and calves	18.1%	38.1%	66.9	67.0	66.2	62.3	-4.0	-6.0%
Hogs	5.7%	12.0%	21.0	20.9	22.0	20.9	-1.1	-5.1%
All dairy	10.2%	21.6%	7.9	35.2	40.5	40.4	-0.1	-0.2%
Poultry and eggs	11.6%	24.4%	42.8	46.2	40.4	35.8	-4.6	-11.4%
Other livestock[d]	1.9%	3.9%	6.9	6.9	6.9	7.0	0.1	1.2%
Total Livestock	**47%**	**100%**	**175.6**	**176.3**	**176.0**	**166.3**	**-9.7**	**-5.5%**
GRAND TOTAL	**100%**	na	**370.4**	**371.4**	**369.7**	**366.5**	**-3.2**	**-0.9%**

Source: CRS using data from USDA, ERS, "Farm Business Income," December 2, 2020.
Notes: F = forecast.

a. Sub = Subcategory. There are two subcategories: "total crops" and "total livestock."
b. Other row crops include other feed grains, hay, and minor oilseeds.
c. All other crops include sugar beets, sugarcane, hops, mint, mushrooms, and other miscellaneous crops.
d. Other livestock includes aquaculture, sheep and lambs, honey, mohair, wool, pelts, and other miscellaneous animal products.

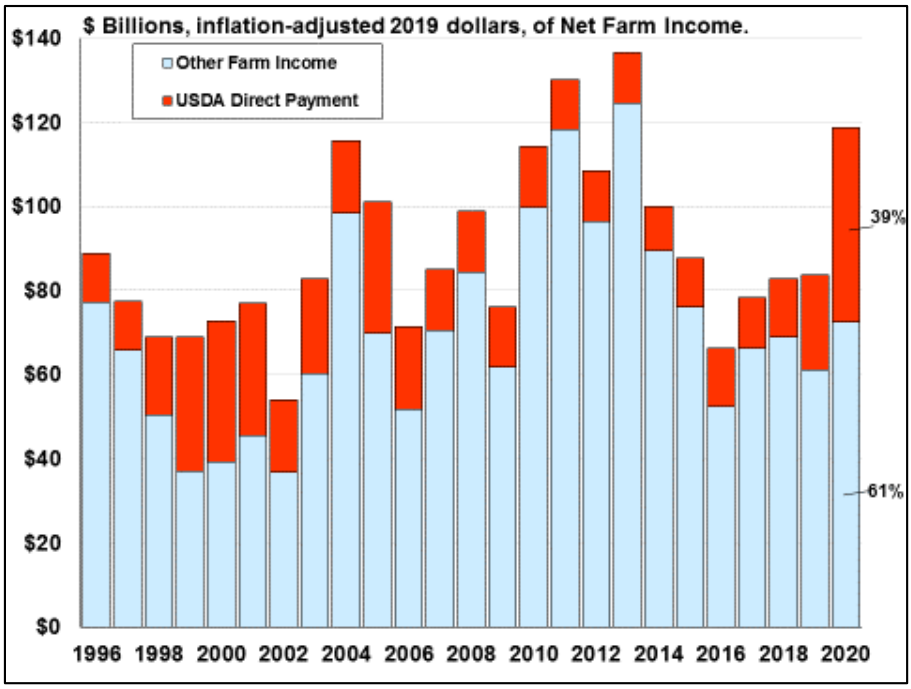
For row crops, cash receipts were forecasted to decline by 0.1%, with the bulk of the decline coming from sales of corn, cotton, and wheat (**Table 2**). USDA forecasts higher prices for corn, cotton, and wheat for the 2020-2021 marketing year (**Table A-2**); however, 2020 cash receipts also include sales for the 2019-2020 marketing year, which had relatively lower prices for these commodities. For specialty crops, cash receipts were forecasted to increase by 8.4%, the bulk of the increase coming from sales of fruits and nuts.

With respect to livestock production, cash receipts were forecasted to be lower for poultry and eggs (-11.4%), for cattle and calves (-6.0%), for hogs (-5.1%), and for dairy (-0.2%). These declines are driven by declines in market prices (**Table A-2**), as domestic production of beef, pork, broilers, and dairy were forecasted to increase in 2020 relative to 2019 levels (**Table 10**).

Government Payments

USDA projected government direct payments to U.S. farmers and landowners at a record $46.5 billion in 2020. If realized, the $46.5 billion would be the largest annual federal subsidy outlay to the agricultural sector on record in both nominal and inflation-adjusted dollars.[6] Furthermore, it accounted for 39% of net farm income (**Figure 2**)—the largest share since 2000, when government payments of $23.2 billion (nominal dollars) accounted for 46% of net farm income.[7]

Figure 2. Net Farm Income by Source, 1996-2020F



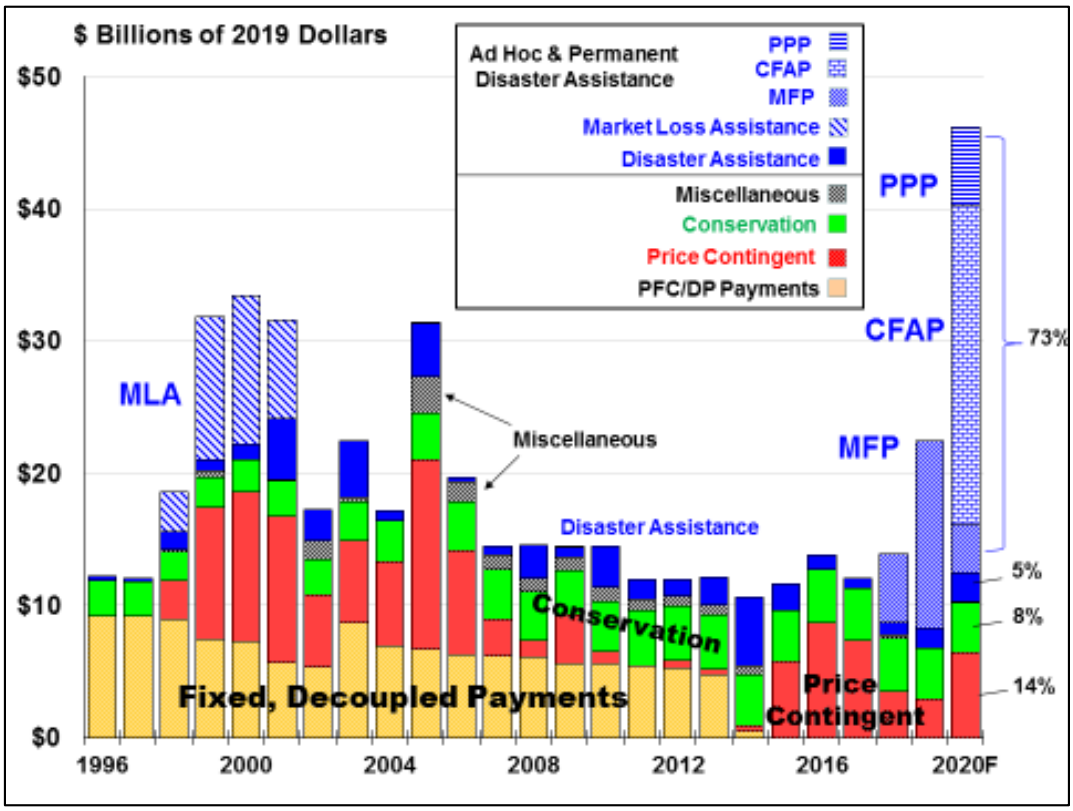
Source: CRS using data from USDA ERS, "2020 Farm Sector Income Forecast," December 2, 2020. Sources of net farm income, expressed as percentage shares (right-hand side), are for 2020. Values for 2020 are forecasts.

[6] Indirect subsidies, such as crop insurance premium subsidies, are not included in the $46.5 billion subsidy total.

[7] The government share of net farm income peaked at 65.2% in 1984 during the height of the farm crisis of the 1980s.

The record government farm assistance in 2020 included $12.6 billion from traditional farm programs authorized under the 2018 farm bill (P.L. 115-334)[8] and $33.9 billion from ad hoc programs—authorized outside of traditional farm omnibus legislation in response to the Coronavirus Disease 2019 (COVID-19) pandemic, as well as continuing support for trade-related market disruptions.[9] If realized, the federal subsidies of $46.5 billion would represent a 107.1% increase from 2019's $22.4 billion in government support and would easily surpass the previous record farm subsidy outlay of $24.4 billion (nominal dollars; $31.4 billion in 2019 dollars) in 2005 (**Table 1** and **Figure 3**).

Figure 3. U.S. Government Farm Support, Direct Outlays, 1996-2020F



Source: CRS using data from USDA ERS, "2020 Farm Sector Income Forecast," December 2, 2020. All values are adjusted for inflation using the chain-type GDP deflator, where 2019 = 100. Values for 2020 are forecasts. Government payments as percentage shares (right-hand side) are for 2020.

Notes: Data are on a calendar-year basis and reflect the timing of the actual payment. "Direct Payments" include production flexibility contract (PFC) payments enacted under the 1996 farm bill and fixed direct payments (DP) of the 2002 and 2008 farm bills. "Price-Contingent" outlays include loan deficiency payments, marketing loan gains, countercyclical payments (CCP), Average Crop Revenue Election (ACRE), Price Loss Coverage (PLC), Agriculture Risk Coverage (ARC), the dairy Margin Protection program (MPP), and Dairy Margin Coverage (DMC) payments. "Conservation" outlays include CRP payments along with other conservation program outlays. "Ad Hoc and Permanent Disaster Assistance" is divided into payments under the 2018 and 2019 Market Facilitation Programs (MFP), Paycheck Protection Program (PPP), both rounds of the Coronavirus Food Assistance Program (CFAP), Market Loss Assistance (MLA), and "Disaster Assistance" programs, each of which is identified with a different blue pattern. "Disaster Assistance" is an aggregate category

[8] CRS Report R45730, *Farm Commodity Provisions in the 2018 Farm Bill (P.L. 115-334)*.

[9] See CRS Report R45310, *Farm Policy: USDA's 2018 Trade Aid Package*; CRS Report R45865, *Farm Policy: USDA's 2019 Trade Aid Package*; CRS Report R46395, *USDA's Coronavirus Food Assistance Program: Round One (CFAP-1)*; and CRS Report R46645, *USDA's Coronavirus Food Assistance Program: Round Two (CFAP-2)*.

that includes supplemental crop and livestock disaster payments and other emergency payments to the agriculture sector, such as payment made under the Wildfire and Hurricane Indemnity Program (WHIP). "Miscellaneous" outlays include payments under the cotton ginning cost-share, biomass crop assistance, peanut quota buyout, milk income loss contract, tobacco transition, and other miscellaneous payment programs.

Traditional Farm Revenue-Support Programs

Historically, direct government farm program payments have included a mixture of support but have come primarily from programs authorized by omnibus farm legislation.[10] These programs have included the payments listed below.

- Direct payments (decoupled payments based on historical planted acres),[11] which were terminated by the 2014 farm bill (P.L. 113-79).
- Price-contingent payments (both coupled and decoupled program outlays linked to market conditions) include the benefits available under the Marketing Assistance Loan (MAL) program, the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs, and the Dairy Margin Coverage (DMC) program. Payments under price contingent programs were projected at $6.3 billion in 2020—including $5.0 billion for PLC, $1.1 billion for ARC, $184 million for DMC, and $169 million for MAL.[12]
- Conservation programs include all conservation programs operated by USDA's Farm Service Agency and the Natural Resources Conservation Service that provide direct payments to producers. Conservation payments were forecasted at $3.8 billion for 2020, unchanged from 2019.[13]
- Agricultural disaster assistance includes payments under the four permanent disaster assistance programs—the Livestock Indemnity Program (LIP), Livestock Forage Program (LFP), Tree Indemnity Program (TIP), and Emergency Assistance for Livestock, Honey Bees, and Farm-Raised Fish Program (ELAP)—as well as payments under emergency supplemental programs (described below).[14] Outlays under the four permanent disaster assistance programs were projected at $543 million in 2020.
- Other miscellaneous legislatively authorized payment programs include the biomass crop assistance program, peanut quota buyout, milk income loss, tobacco transition, and other miscellaneous programs. Miscellaneous program outlays were projected at $29 million in 2020.

[10] Government farm payments do not include premium subsidies or indemnities paid under the federal crop insurance program—indemnity payments are included as "farm-related income." Also, government payments do not include USDA loans, which are listed as a liability in the farm sector's balance sheet.

[11] *Decoupled* means that payments are not linked to current producer behavior and, instead, are based on some other measure outside of the producer's decisionmaking sphere, such as historical acres planted to program crops. Decoupling of payments is intended to minimize their influence on producer behavior.

[12] For details, see CRS Report R43448, *Farm Commodity Provisions in the 2014 Farm Bill (P.L. 113-79)*; and CRS Report R46561, *U.S. Farm Policy: Revenue Support Program Outlays, 2014-2020*.

[13] CRS Report R45698, *Agricultural Conservation in the 2018 Farm Bill*.

[14] Fiscal year payments generally involve outlay commitments incurred during the previous crop year. For example, FY2019 disaster assistance payments are primarily related to disasters for crops that were grown and harvested in 2018. For information on available farm disaster programs, see CRS Report RS21212, *Agricultural Disaster Assistance*.

Ad Hoc and Emergency Supplemental Payments

Since 2018, ad hoc programs initiated by the Trump Administration, outside of traditional farm-bill authorities, have played an increasingly important role in supporting farm incomes.[15] These include the Market Facilitation Program (MFP) payments to offset retaliatory tariff damages (2018-2020) and the Coronavirus Food Assistance Program (2020) in response to the COVID-19 pandemic.

In addition, Congress has frequently authorized emergency supplemental crop and livestock disaster payments—but outside of omnibus farm legislation—that have targeted the agricultural sector in response to natural disasters, such as the Wildfire and Hurricane Indemnity Program (WHIP). Most of the $2.2 billion in agricultural disaster and emergency payments projected for 2020 were expected to come from WHIP Plus, enacted through the Disaster Relief Act of 2019 (P.L. 116-20).[16]

The 2018 and 2019 MFPs—initiated by USDA using authority under the CCC Charter Act of 1938—represented USDA's attempt to provide "trade-damage" payments to U.S. producers in response to retaliatory tariffs by other countries, including China.[17] Payments under the two MFPs were expected to total $23.1 billion spread over 2018 to 2020.[18] On September 9, 2020, USDA announced a new MFP-like program—referred to as the Seafood Trade Relief Program (STRP)—valued at $530 million targeted U.S. seafood products that had been affected by retaliatory tariffs.[19] However, seafood is not included as part of ERS farm income forecasts. In addition, no further MFP payments have been announced for 2021 by either the Trump Administration or the current Biden Administration.

The surge in federal subsidies in 2020 was driven by large ad hoc payments made under three Trump Administration-initiated programs: $3.7 billion in remaining payments under the 2019 MFP, $5.9 billion from the Paycheck Protection Program (PPP), and $24.3 billion from two rounds of payments under the Coronavirus Food Assistance Program (CFAP1 and CFAP2). The PPP and CFAP programs were designed to address COVID-19-related damages that occurred during 2020.

With respect to CFAP, USDA allocated $16 billion in funding for the first round (CFAP1) and up to an additional $14 billion for the second round (CFAP2).[20] As of December 28, 2020, $10.5 billion of CFAP1 and $13.0 billion of CFAP2 funding had been dispersed.

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[15] Previous historically important ad hoc programs have included the Market Loss Assistance (MLA) payments for relief of low commodity prices (1998-2001) and the Cotton Ginning Cost-Share program (2016 and 2018).

[16] CRS In Focus IF11539, *Wildfires and Hurricanes Indemnity Program (WHIP)*.

[17] USDA initiated the two trade aid packages with up to $28 billion of financial support designed to partially offset the negative price and income effects of lost commodity sales to major markets. The 2018 trade aid package was valued at up to $12 billion (see CRS Report R45310, *Farm Policy: USDA's 2018 Trade Aid Package*), and the 2019 trade aid package was valued at up to $16 billion (see CRS Report R45865, *Farm Policy: USDA's 2019 Trade Aid Package*).

[18] The projected $8.6 billion in 2018 Market Facilitation Program (MFP) payments include $5.1 billion in 2018 and $3.5 billion in 2019. The projected $14.5 billion in 2019 MFP payments were expected to occur as $10.8 billion in 2019 and $3.7 billion in 2020.

[19] USDA, "USDA Supports U.S. Seafood Industry Impacted by Retaliatory Tariffs," press release, September 9, 2020, at https://www.usda.gov/media/press-releases/2020/09/09/usda-supports-us-seafood-industry-impacted-retaliatory-tariffs.

[20] For details, see CRS Report R46395, *USDA's Coronavirus Food Assistance Program: Round One (CFAP-1)*; and CRS Report R46645, *USDA's Coronavirus Food Assistance Program: Round Two (CFAP-2)*.

Additionally, farmers are projected to receive additional income for COVID-19-related damages from the Small Business Administration's (SBA's) PPP, authorized under the CARES Act (P.L. 116-136). USDA expected that $5.9 billion of $7.3 billion of PPP loans to agriculture-related enterprises would be forgiven and counted as farm income in 2020.[21] The December 2020 COVID-19 relief package—contained as Division N within the omnibus Consolidated Appropriations Act, 2021 (P.L. 116-260)—includes new funding for a third round of CFAP ($11.2 billion) and for a second round of PPP support ($284 million).[22]

Income from Other On-Farm Activities

Income from other on-farm activities includes crop insurance indemnities, custom work, machine hire, agritourism, and other farm sources of income (**Table 3**). Net farm income also includes an imputed measure of the rental value of farm dwellings, which is not included in net cash farm income.

Income from other on-farm activities was forecasted to increase by $0.5 billion or 1% in 2020 as compared with 2019. The bulk of the increase is due to forecast increases in the imputed rental value of farm dwellings, which were forecasted to increase by $1.1 billion. Indemnities from federal crop insurance were forecasted to decline by $0.4 billion; however, the declines in indemnities from federal crop insurance were forecasted to be more than offset by gains in indemnities from nonfederal crop insurance policies.

Table 3. Income from Other On-Farm Activities

Farm-related Income	2017	2018	2019	2020F	Change: 2019 to 2020	
	$ Billions				$ Billions	%
Forest products sold	0.7	0.7	0.6	0.6	0.0	1%
Gross imputed rental value of farm dwellings	17.9	18.7	17.9	19.0	1.1	6%
Machine hire and custom work	4.6	3.9	4.1	4.0	-0.1	-3%
Federal commodity insurance indemnities	5.2	6.2	10.2	9.8	-0.4	-4%
Non-federal commodity insurance indemnities	1.9	1.4	2.1	2.6	0.5	25%
Net cash rent received by operator landlords[a]	2.3	2.1	2.3	2.3	0.0	2%
Other farm income[b]	16.4	14.8	15.4	14.7	-0.7	-4%
Total	**49.1**	**47.8**	**52.6**	**53.1**	**0.5**	**1%**

Source: CRS using data from USDA, ERS, "Farm Business Income," as of December 2, 2020.

Notes: The total from this table equals the summation of rows #3 and #8 from **Table 1** adjusted for double counting (e.g., the imputed value of home consumption of farm products counted in cash receipts).

a. Net cash rent received by operator landlords excludes income from land rented under crop-share agreements. Income from land rented under crop-share agreements is included in income from cash receipts (**Table 2**).

b. Income from agritourism, recreational activities, and other farm sources.

[21] For information on the Paycheck Protection Program (PPP) loan forgiveness, see CRS Report R46397, *SBA Paycheck Protection Program (PPP) Loan Forgiveness: In Brief*.

[22] John Newton, "What's in the New COVID-19 Relief Package for Agriculture?," *Market Intel*, American Farm Bureau Federation, December 22, 2020; and Jacqui Fatka, "PPP changes in COVID Relief Bill Offer More Aid for Farmers," *Feedstuffs*, December 31, 2020.

Farm Sector Expenses

Overall, cash expenses for production of farm commodities were forecasted at $313 billion in 2020, down $4.5 billion or 1% from 2019 (**Table 4**). Expenses for livestock and poultry purchases (-7%), interest payments (-25%), and fuel and oil (-14%) were projected to decline. These declines were partially offset by increases in expenses for labor (+2%), property taxes and fees (+8%), fertilizer and lime (+5%), and net rent to landlords (+6%).

Projected reductions in expenditure for interest payments, livestock and poultry purchases, and fuel and oil purchases partially reflect reductions in the prices of these items from 2019 to 2020. For example, average interest rates for interest-bearing debt held by the U.S. Treasury declined from 2.4% in December 2019 to 1.7% in November 2020, reflecting the lower interest rate environment generally.[23] Prices for crude oil, gasoline, diesel, and heating oil declined from 2019 to 2020, reflecting the impact of COVID-19-related declines in global demand for these commodities.[24] Price declines for livestock and poultry in 2020 (**Table A-2**) also link to declines in prices for breeding stock as a result of COVID-19-related disruptions in normal operations of meatpacking and livestock processers.

Table 4. U.S. Farm Sector Cash Expenses

Expenses	2017	2018	2019	2020F	Change: 2019 to 2020F	
	$ Billions				$ Billions	%
Feed purchased	54.5	53.8	59.4	59.7	0.2	0%
Labor	35.8	33.8	34.7	35.3	0.6	2%
Livestock and poultry purchases	27.4	29.2	28.7	26.7	-1.9	-7%
Fertilizer and lime	22.0	23.2	22.3	23.5	1.1	5%
Seed	22.5	21.9	21.2	21.3	0.0	0%
Net rent to landlords	19.3	16.8	18.1	19.1	1.0	6%
Pesticides	15.8	15.4	15.5	15.5	0.0	0%
Interest	17.5	19.4	19.7	14.7	-5.0	-25%
Property taxes and fees	12.7	12.7	13.3	14.3	1.0	8%
Fuel and oil	12.8	13.2	13.2	11.3	-1.9	-14%
Electricity	5.8	6.1	5.7	5.8	0.0	0%
Other expenses[a]	65.8	65.8	65.5	65.8	0.3	0%
Total	**311.9**	**311.4**	**317.5**	**313.0**	**-4.5**	**-1%**

Source: CRS using data from USDA, ERS, "Farm Income and Wealth Statistics: Net Cash Income," as of December 2, 2020.

Notes:

a. Other expenses exclude maintenance for operator dwellings and landlord capital consumption.

[23] U.S. Department of the Treasury, TreasuryDirect, "Average Interest Rates on U.S. Treasury Securities," at https://www.treasurydirect.gov/govt/rates/avg/avg.htm.

[24] U.S. Energy Information Administration, *Short Term Energy Outlook*, December 8, 2020, at https://www.eia.gov/outlooks/steo/report/prices.php.

USDA does not forecast the extent to which these production expenses vary by farm typology, commodity specialization, or region.[25] For example, most farms benefit from lower fuel and oil prices; however, only operations that purchase livestock and poultry benefit from declines in the prices of these commodities.[26]

Similarly, many farm operations may hold farm debt and therefore benefit from lower interest payments on that debt. The median household debt holdings for residential, intermediate, and commercial farms in 2019 were $90,025, $84,697, and $496,275, respectively.[27] If this pattern were maintained for 2020, then commercial farms likely received the largest share of benefits from lower interest payments on debt holdings.

Farm Finances: Assets, Debt, and Equity

Farm asset values and debt levels were projected to reach record levels in 2020—asset values at $3.1 trillion (+1.5% year-over-year) and farm debt at $435.2 billion (+4.0%)—pushing the projected debt-to-asset ratio up to 13.9%, the highest level since 2002 (**Table 5**).

Table 5. Balance Sheet of the U.S. Farming Sector

		2017	2018	2019	2020F	2019 to 2020F	
Category	Share %	——$Billions——				Change $Billions	Change %
Assets	**100.0%**	**3,005.9**	**3,026.7**	**3,075.2**	**3,120.6**	**45.5**	**1.5%**
Real estate	82.1%	2,472.8	2,510.2	2,546.0	2,569.4	23.4	0.9%
Machinery/vehicles	8.8%	272.3	271.0	279.0	287.3	8.4	3.0%
Financial assets	2.9%	81.1	72.6	87.5	108.9	21.4	24.5%
Animals and products	3.7%	107.1	97.1	99.2	92.6	-6.6	-6.6%
Crop inventory	1.9%	56.8	59.7	49.6	48.6	-1.0	-2.1%
Purchased inputs	0.6%	15.8	16.1	13.9	13.8	-0.1	-0.7%
Debt	**100.0%**	**390.4**	**402.0**	**418.6**	**435.2**	**16.6**	**4.0%**
Real estate	60.2%	236.2	245.7	266.8	283.0	16.2	6.1%
Non-real estate	39.8%	154.2	156.3	151.8	152.1	0.4	0.2%
Equity	**100.0%**	**2,615.5**	**2,624.7**	**2,656.6**	**2,685.4**	**28.9**	**1.1%**
Debt-to-asset ratio		**13.0%**	**13.3%**	**13.6%**	**13.9%**	0.3%	2.4%
Debt-to-equity ratio		**14.9%**	**15.3%**	**15.8%**	**16.2%**	0.4%	2.8%

Source: CRS using data from USDA, ERS, "Assets, Debt, and Wealth," as of December 2, 2020.

Notes: Data for 2020 are USDA forecasts.

[25] Robert A. Hoppe and James M. MacDonald, *Updating the ERS Farm Typology*, USDA, ERS, EIB-110, April 2013.

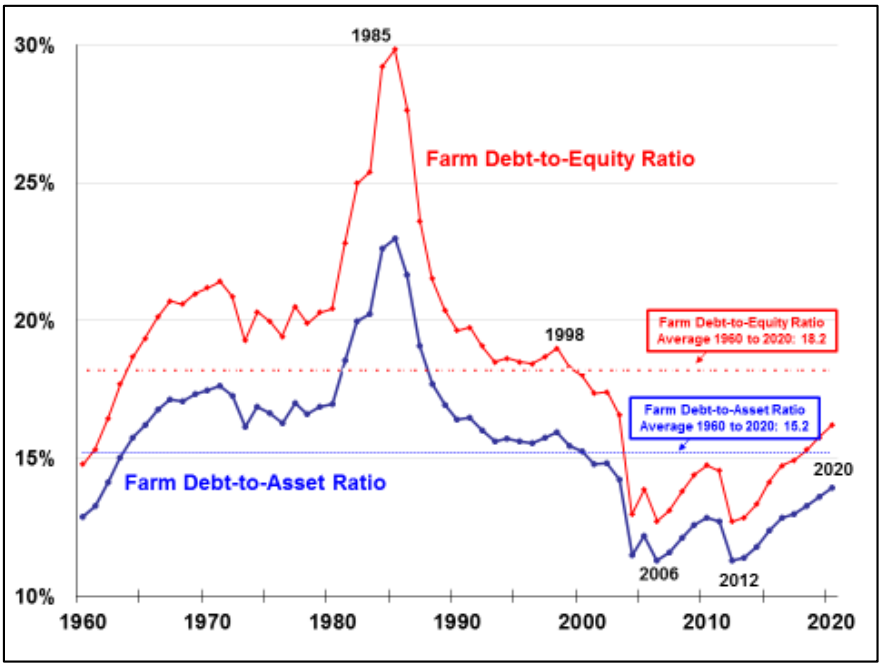
[26] See "Farm Business Income by Location, Commodity Specialization" for a discussion of farm businesses by specialization.

[27] See "Farm Type Varies by Gross Sales and On-Farm Share of Income" for definitions of residential, intermediate, and commercial farm businesses. Household debt statistics are from USDA, ERS, "Farm Household Income and Characteristics," *Principal farm operator household finances by ERS farm typology, 2019*, December 2, 2020, at https://www.ers.usda.gov/webdocs/DataFiles/48870/table02.xlsx?v=7167.6.

The values of financial assets (+24.5%), machinery and vehicles (+3.0%), and real estate (+0.9%) were forecasted to increase from 2019 to 2020, while the values of animals and products (-6.6%), crop inventories (-2.1%), and purchased inputs (-0.7%) were forecasted to decline in 2020. Increases in values for real estate and machinery and vehicles may reflect increasing prices, increasing inventories held, or both.[28] The values of inventories of crops and livestock declined in part because farmers were holding less inventory for a number of commodities relative to previous years (see, for example, **Figure 7** for corn, soybeans, wheat, and cotton).

Debt held by the U.S. agricultural sector also was forecasted to increase in 2020 to $435.2 billion (up 4%), both for real estate (+6.2%) and non-real estate (+0.9%) loans. These increases likely reflect the lower cost of holding debt—historically low interest rates have reduced the cost of holding more debt.[29] Increases in farm asset values were forecasted to more than offset increases in farm debt, leading to a year-on-year increase in farm equity of 1.1%. The debt-to-asset and debt-to-equity ratios both were forecasted to increase in 2020 (the eighth consecutive year of increase in both ratios); however, both ratios are still low relative to their long-term historical averages (**Figure 4**).

Figure 4. Farm Sector Debt-to-Asset and Debt-to-Equity Ratios, 1960-2020



Source: CRS using data from ERS, "2020 Farm Sector Income Forecast," December 2, 2020. 2020 values are forecasts.

Notes: Both the farm debt-to-asset and debt-to-equity ratios peaked in the 1980s during the farm loan crisis.

[28] For example, in the Corn Belt, land prices and farm equipment holdings increased in 2020 relative to 2019. David Oppendahl, *AgLetter: November 2020*, Federal Reserve Bank of Chicago, AgLetter no. 1990, November 2020, at https://www.chicagofed.org/publications/agletter/2020-2024/november-2020.

[29] For example, Corn Belt average loan rates from commercial agricultural lenders for operating loans, feeder cattle, and real estate declined by 1.06 percentage points, 0.98 percentage points, and 0.64 percentage points for July, August, and September 2020, respectively, as compared with the same period in 2019. Oppendahl, *AgLetter: November 2020*.

Annual bankruptcy filings declined for farmers and fishermen between September 30, 2019, and September 30, 2020; however, the rate of the decline was smaller than for all bankruptcy filings overall (**Table 6**).

Loan delinquency rates at commercial banks remained below the long-run average for 2010-2020 for real-estate loans and less than 1% above the long-run average for 2010-2020 for non-real-estate loans.[30] Delinquency rates for the Farm Credit System institutions declined on a year-over-year basis from 0.30% in September 2019 to 0.28% in September 2020.[31]

Although individual farms may be experiencing elevated levels of farm financial stress, the evidence from farm bankruptcy filings and loan delinquencies suggests that the total number of individual farms experiencing financial stress may be on par with recent historical levels.

Table 6. Bankruptcy Rates for Selected Businesses, 2019-2020

Bankruptcy Type	12-months ending September 30, 2019	12-months ending September 30, 2020	% Change
All Chapters	776,674	612,561	-21.1%
Chapter 12 (for farmers and fishermen)	580	571	-1.6%

Source: CRS using data from United States Courts, "Statistics & Reports," *Table F-2 Bankruptcy Filings for September 30, 2019, and September 30, 2020*, at https://www.uscourts.gov/statistics/table/f-2/bankruptcy-filings/2020/09/30.

Average Farm Household Income

Farm households may earn income from their farm businesses as well as from off-farm sources—for example, if members of the household work off-farm jobs or the farm's asset portfolio includes financial assets that have increased in value during the year.

- Average farm household income was forecasted at $132,558 in 2020, up 7.4% from 2019, with increases in on-farm income (+54.0%) offsetting decreases on off-farm income (-2.5%) (**Table 7**).
- About 25% ($33,460) of total farm household income in 2020 was projected to be from farm production activities (including government payments), while the overwhelming majority, 75% ($99,098), was earned off the farm.

Lower off-farm income for farm households in 2020 may be an indicator of lower incomes for rural populations more generally during the COVID-19 pandemic, as farm households and other rural households generally participate in the same labor market. However, counties where employment is concentrated in farming may have experienced lower unemployment rates than counties where employment is concentrated in other sectors of the economy (e.g., mining, manufacturing, recreation).[32] This suggests that the decline in off-farm income forecast for farm households may be less than the decline in incomes for rural households in general.

[30] CRS calculations using data from the Federal Reserve Bank of Kansas City, *Commercial Bank Call Report Data*, December 4, 2020, at https://www.kansascityfed.org/~/media/files/publicat/research/indicatorsdata/agfinance/call_report_data_historical_data_q3_2020.xlsx.

[31] Hal Johnson, *Farm Credit System Condition and Performance as of September 30, 2020*, Farm Credit Administration, Office of Examination, at https://www.fca.gov/template-fca/about/2020DecQuarterlyReportonFCSCondition.pdf.

[32] John Cromartie et al., *Rural America at a Glance: 2020 Edition*, USDA ERS, EIB-221, at https://www.ers.usda.gov/publications/pub-details/?pubid=100088.

Table 7. Average Annual Income per U.S. Household, Farm Versus All, 2015-2020
($ per household)

	2015	2016	2017	2018	2019	2020	Change 2019-2020
Average U.S. farm income by source (nominal dollars)							
On-farm income							54.0%
	24,740	24,731	21,842	18,425	21,730	33,460	
Off-farm income							-2.5%
	95,140	93,187	89,747	93,786	101,638	99,098	
Total farm income							7.4%
	119,880	117,918	111,589	112,210	123,368	132,558	
Average U.S. farm income by source (share as a %)							
On-farm income							
	21%	21%	20%	16%	18%	25%	54.0%
Off-farm income							
	79%	79%	80%	84%	82%	75%	-2.5%
Total farm income							
	100%	100%	100%	100%	100%	100%	7.4%
Avg. U.S. HH income	79,263	83,143	86,220	90,021	98,088	NA	NA
Farm household income as a share of U.S. average household income							
Share (%)	**151%**	**142%**	**129%**	**125%**	**126%**	**NA**	**NA**

Source: CRS using data from ERS, "Farm Household Income and Characteristics," *Principal farm operator household finances*, data set updated as of December 2, 2020.

Notes: HH = household; NA = not available. Data for 2020 are USDA forecasts.

USDA does not forecast average annual income by farm typology.[33] However, in 2019, off-farm income accounted for more than 90% of average farm household income for residential and intermediate farms and more than 20% of average farm household income for commercial farms.[34] If this pattern was maintained for 2020, then average farm household income more likely increased year-over-year for the largest farm business category—commercial farms—than for smaller residential and intermediate farms.

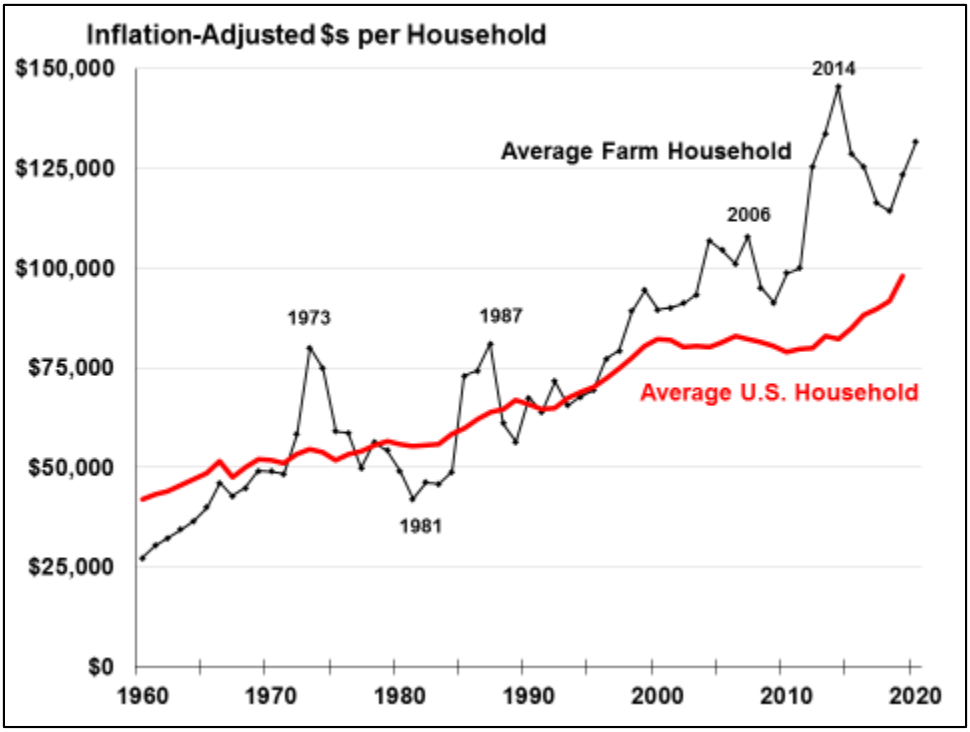
U.S. Total vs. Farm Household Average Income

Since the late 1990s, farm household incomes have surged ahead of average U.S. household incomes (**Figure 5**). In 2019 (the last year for which comparable data were available), the average farm household income of $123,368 was about 26% higher than the average U.S. household income of $98,088 (**Table 7**).

[33] See "Farm Income by Farm Type, Specialization, Region."

[34] See "Farm Type Varies by Gross Sales and On-Farm Share of Income" for definitions of residential, intermediate, and commercial farm businesses. On- and off-farm income statistics are from USDA, ERS and National Agricultural Statistics Service (NASS), *Principal farm operator household finances, by farm type, 2019*, Agricultural Resource Management Survey, data as of December 2, 2020.

Figure 5. Average Farm Household Compared with Average U.S. Household Income



Source: ERS, "2020 Farm Sector Income Forecast," December 2, 2020. All values are adjusted for inflation using the chain-type GDP deflator, 2019 = 100; BEA. Values for 2020 are forecasts.

Farm Income by Farm Type, Specialization, Region

The U.S. farm sector is vast and varied. It supplies a wide array of markets for food, animal feed, fuel, fibers, and forestry products in the United States and abroad. It encompasses production activities relating to traditional field crops (such as corn, soybeans, wheat, and cotton) and livestock and poultry products (including meat, dairy, and eggs), as well as fruits, tree nuts, and vegetables. In addition, U.S. agricultural output includes greenhouse and nursery products, forest products, custom work,[35] and other farm-related activities. The intensity and economic importance of each of these activities, as well as their underlying market structure and production processes, vary regionally based on the agroclimatic setting, market conditions, and other factors. As a result, farm income and rural economic conditions may vary substantially across the United States.

As seen in the previous section, measures of farm household income, which include income earned on and off of the farm, provide a view into the welfare of farm households and the rural economy. In contrast, measures of farm business income provide a view into the profitability of crop and livestock production.[36] Both types of metrics may be useful to policymakers in understanding the extent of COVID-19-related impacts on the farm sector and on the aggregate supply of food, feed, fuel, fibers, and forestry products for U.S. and international markets.

[35] Custom work involves performing machine operations for another landowner in exchange for a set fee or rate.

[36] ERS forecasts farm business income and farm household income.

Farm Type Varies by Gross Sales and On-Farm Share of Income

Net farm income and net cash farm income are measures of profitability of the sector overall. However, the profitability of any individual farm can depend on the type of farm business and scale of production of the operation. Additionally, some farms may derive limited income from their farm operations because their operators work primarily in off-farm activities.

USDA reports average net cash farm income (NCFI) for all U.S. farms as well as for specific categories of farms based on farm ownership, gross value of sales, and farm typology (**Table 8**).

- **Farm Ownership.** USDA distinguishes between family farms—operations where the majority of the business is owned by an operator and individuals related to the operator—and nonfamily farms where an operator and persons related to the operator do not own a majority of the business. Family farms account for more than 97% of all U.S. farms.
- **Gross Value of Sales.** USDA classifies farm operations into five categories based on gross sales value. The largest category consists of the more than 80% of U.S. farms earning less than $100,000 in gross sales.
- **Farm Typology.** USDA classifies farms into three types based on the farm operator's primary occupation and the farm's gross cash income—residence farms, intermediate farm businesses, and commercial farm businesses.
    - **Residence farms**—farms operated by those whose primary occupation is something other than farming and where the operation reports gross cash farm income of under $350,000.
    - **Intermediate farm businesses**—farming is the operator's primary occupation; the operation reports gross cash farm income of under $350,000.
    - **Commercial farm businesses**—the farming operation reports gross cash farm income of over $350,000.

USDA's Agricultural Resource Management Survey (ARMS) data for 2019 indicate that approximately 10% of U.S. farms are commercial farm businesses, 38% are intermediate farm businesses, and the remaining 52% are residence farms (**Table 8**).[37] According to ERS, farm businesses account for fewer than half of U.S. farms but contribute more than 90% of the farm sector's value of production and hold most of its assets and debt.[38]

[37] For more information on the Agricultural Resource Management Survey (ARMS) survey, see USDA, NASS, "ARMS," at https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Ag_Resource_Management/.

[38] USDA, ERS, "Farm Sector Income and Finances: Farm Business Income," as of December 2, 2020, at https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-business-income/.

Table 8. Average Net Cash Farm Income for All Farms by Sales Class and Typology

	All Farms[a]	2017	2018	2019	2020F	2019 to 2020F	
Farm Characteristics	Share %	——$1,000 per farm——				Change $1,000	Change %
All farms	100.0%	39.0	35.5	38.0	51.8	13.8	36.3%
Family farms	97.6%	35.2	31.9	32.6	45.2	12.6	38.7%
Farms by gross sales value							
$1,000,000 or more	3.9%	657.7	624.2	677.5	858.4	180.9	26.7%
$500,000 - 999,999	3.5%	183.1	196.9	174.5	239.7	65.2	37.4%
$250,000 - 499,999	4.4%	92.6	94.3	98.5	132.8	34.3	34.8%
$100,000 - 249,999	6.5%	47.3	35.9	40.4	58.5	18.1	44.8%
Less than $100,000	81.8%	-0.3	-2.4	-1.5	0.8	2.3	153.3%
Farm typology							
Farm businesses[b]	47.9%	81.6	76.8	78.8	104.5	25.7	32.6%
Commercial farms[c]	10.4%	333.5	325.9	336.9	435.8	98.9	29.4%
Intermediate farms[d]	37.6%	9.8	6.9	7.5	13.0	5.5	73.3%
Residence farms[e]	52.1%	0.3	-1.2	0.5	3.4	2.9	580.0%

Source: USDA, ERS, "Farm Business Income," as of December 2, 2020.

Notes: F = forecast. Net cash farm income does not include off-farm income. The category "All farms" encompasses family farms (97.6% of total farms) and nonfamily farms (2.4% of total farms, not displayed on the table). The total shares of all farms by gross sales value sum to 100%. The category "Farm Typology" encompasses farm businesses (47.9% of total farms) and resident farms (52.1% of total farms). Farm businesses can be subdivided into commercial farms (10.4% of all farms) and intermediate farms (37.6% of all farms). The average net cash income for all farms will be approximately equal to the weighted sum of average net cash income for farm businesses and residence farms, with differences possible due to rounding errors.

a. USDA estimated 2,015,068 farms in the United States in 2019, including 1,967,617 (97.6%) family farms.
b. Farm businesses are farms that have annual gross cash farm income of at least $350,000 or smaller operations in terms of gross sales but where farming is reported as the operator's primary occupation.
c. Commercial farm business operations are farms with gross cash farm income of over $350,000.
d. Intermediate farm business operations are farms with gross cash farm income < $350,000 but where farming is reported as the operator's primary occupation.
e. Residence farms are small farms (with annual gross cash farm income less than $350,000) operated by those whose primary occupation is something other than farming.

For U.S. farms overall, average NCFI was forecasted to increase 36.3% in 2020 to $51,800 per farm from $38,000 in 2019. Average NCFI was also forecasted to increase for every category of farm (i.e., gross sales value and typology), with the largest increase in dollar terms reported for the largest-scale operations.

- Average NCFI for farms with gross sales value of $1,000,000 or more was forecasted to increase by $180,900 from 2019 to 2020 (in nominal dollars), or an increase of 26.7%, while farms with smaller gross sales were forecasted to have smaller year-over-year increases in average nominal NCFI but with larger percentage changes.

- Similarly, commercial farm business were forecasted to have greater absolute increases in average NCFI from 2019 to 2020 than either intermediate farm businesses or residence farms.
- Although the largest operations (commercial farms) were forecasted to have the largest year-over-year increase in average NCFI in nominal dollars (+$98,900), smaller farm operations (intermediate and residence farms) were forecasted to have larger increases in percentage terms.

USDA analyses of farms in 2016 and 2017 indicated that beginning farmers, limited resource farm households, and socially disadvantaged farmers tended to operate smaller farms and, as a result, earned less income from on-farm activities compared with farms that were not operated by beginning, limited resource, or socially disadvantaged farmers.[39] If this pattern was maintained in 2020, it suggests that farms operated by beginning, limited resource, or socially disadvantaged farmers likely received a smaller year-over-year increase in farm income compared with farms whose operators did not fall into any of those categories.

Farm Business Income by Location, Commodity Specialization

In addition to forecasting average NFCI for farms based on gross farm sales, USDA forecasts average NFCI for farm businesses by region and by commodity specialization. USDA's regions divide the continental United States into areas that contain similar types of farms and similar physiographic, soil, and climate traits (**Figure 6**).[40] USDA determines commodity specialization for farm businesses where at least 50% of the value of production derives from a particular commodity. However, farm businesses often produce multiple commodities, so average NFCI statistics should not be interpreted as resulting solely from the production and sale of the commodity highlighted as the commodity specialization.

USDA forecasted average NFCI to increase for farm businesses in all regions of the United States in 2020 (**Table 9** and **Figure 6**). The three regions forecasted to gain the most from 2019 to 2020 in dollar terms were the Fruitful Rim, Northern Great Plains, and Mississippi Portal, which also were forecasted to be the regions with the highest average NFCI for farm businesses. The three regions forecasted to gain the most from 2019 to 2020 in percentage terms were the Mississippi Portal (+42.8%), the Northern Great Plains (+41.7%), and the Basin and Range (+40.9%).

USDA forecasted average NFCI to increase from 2019 to 2020 for farm businesses that specialize in wheat, corn, soybeans, cotton, specialty crops, and certain other commodity crops (**Table 9**). The three commodity specializations with the largest increases in dollar terms were cotton, specialty crops, and wheat. The three commodity specializations with the largest increases in percent terms were wheat, cotton, and soybeans. USDA also forecasted average NFCI to increase from 2019 to 2020 for farm business that specialize in most types of livestock production—poultry being the exception (**Table 9**). The livestock specializations with the largest increases in

[39] According to USDA ERS, *beginning farmers* are defined as farmers who have materially and substantially participated in the operation of any farm or ranch for 10 years or less. *Limited-resource farm households* are defined as households with low farm sales and low household incomes for two years. *Socially disadvantaged farmers* are defined as operators who belong to a group whose members have been subject to racial, ethnic, or gender prejudice because of their identity as members of the group without regard to their individual qualities. See USDA, ERS, "Beginning, Limited Resource, Socially Disadvantaged, and Female Farmers," at https://www.ers.usda.gov/topics/farm-economy/beginning-limited-resource-socially-disadvantaged-and-female-farmers/.

[40] For a description of the ERS resource regions, see ERS, *Farm Resource Regions*, Agricultural Information Bulletin no. 760, September 2000.

dollar terms were dairy and hogs, and the largest increases in percentage terms were other livestock and cattle and calves.

Table 9. Average Net Cash Income for Farm Businesses by Region and Commodity

	All Farms	2017	2018	2019	2020F	2019 to 2020F	
Farm Characteristics	Share %	———$1,000 per farm———				Change $1,000	Change %
Farm Businesses	47.9%	81.6	76.8	78.8	104.5	25.7	32.6%
Resource region[a]							
Heartland	10.8%	109.8	110.8	102.5	130.5	28.0	27.3%
Northern Crescent	6.8%	66.3	62.4	59.2	79.0	19.8	33.4%
Northern Great Plains	2.5%	109.5	101.0	113.4	160.7	47.3	41.7%
Prairie Gateway	6.6%	68.9	63.7	76.7	101.9	25.2	32.9%
Eastern Uplands	5.9%	13.6	13.8	32.6	39.5	6.9	21.2%
Southern Seaboard	5.5%	47.9	30.5	36.3	49.0	12.7	35.0%
Fruitful Rim	5.4%	165.0	149.9	149.9	202.5	52.6	35.1%
Basin and Range	2.8%	52.2	71.8	39.6	55.8	16.2	40.9%
Mississippi Portal	1.6%	97.3	88.1	103.4	147.7	44.3	42.8%
Commodity Specialization: Crops							
Wheat	0.5%	82.3	102.3	107.3	160.5	53.2	49.6%
Corn	5.1%	139.1	171.8	143.3	190.9	47.6	33.2%
Soybeans	2.1%	98.8	76.4	77.6	110.5	32.9	42.4%
Cotton	0.3%	259.4	190.2	252.3	366.8	114.5	45.2%
Specialty crops[b]	4.3%	222.6	189.1	196.4	262.2	65.8	33.5%
Other crops[c]	11.4%	67.1	65.2	56.8	80.4	23.6	41.5%
Commodity Specialization: Livestock							
Cattle and calves	16.3%	23.1	23.0	19.6	27.9	8.3	42.3%
Hogs	0.5%	288.6	249.0	341.6	386.7	45.1	13.2%
Poultry	1.8%	96.2	105.5	141.6	139.1	-2.5	-1.8%
Dairy	1.8%	269.3	215.8	260.6	333.3	72.7	27.9%
Other livestock[d]	3.9%	12.8	5.7	12.2	17.8	5.6	45.9%

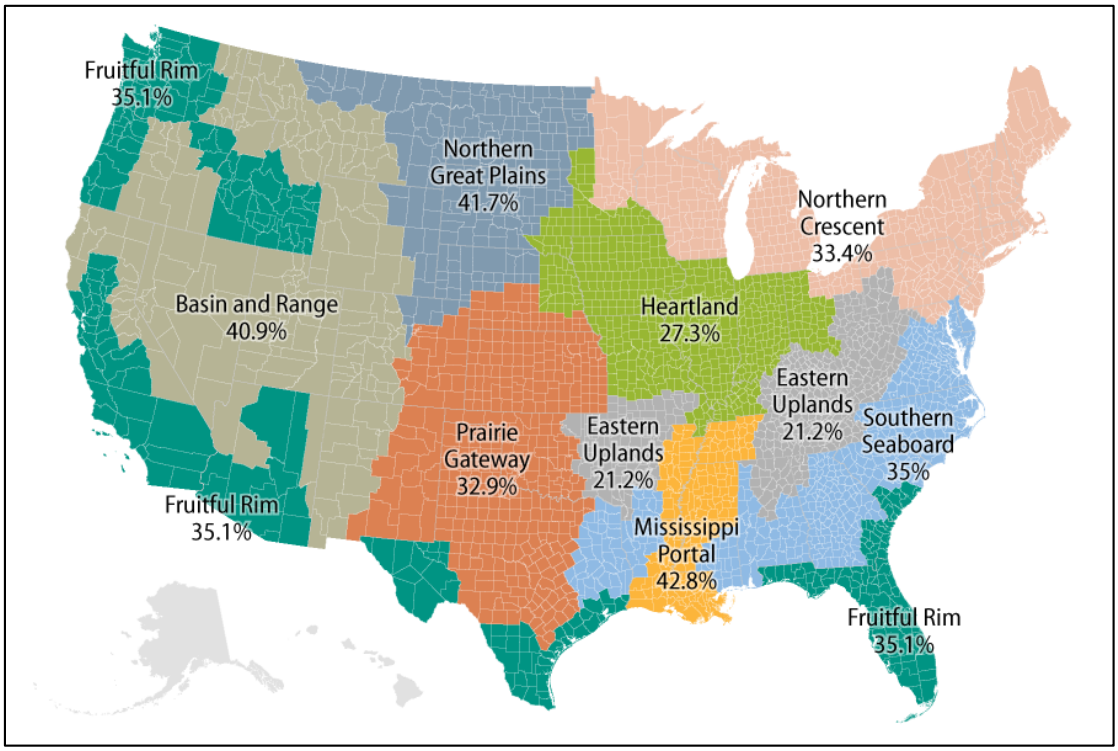
Source: CRS using data from USDA, ERS, "Farm Business Income," as of December 2, 2020.

Notes: F = forecast. Commodity specialization is determined by a farm business having at least 50% of the value of production from a particular commodity. Farm businesses often produce multiple commodities, so average net cash farm income statistics should not be interpreted as resulting solely from the production and sale of the commodity highlighted as the commodity specialization.

a. For a description of the ERS resource regions, see **Figure 6** and accompanying notes.
b. Specialty crops include fruits and tree nuts, vegetables, and nursery and greenhouse products.
c. All remaining crops not listed, including feed grains (sorghum, barley, and oats), peanuts, sunflower, minor oilseeds, rice, pulse crops, tobacco, sugar, and other miscellaneous crops.
d. All other livestock not listed, including eggs, aquaculture, sheep and lambs, honey, mohair, wool pelts, and other miscellaneous animal products.

Figure 6. Farm Business Average Net Cash Farm Income by Resource Region

2020F compared with 2019



Source: CRS using data from USDA, ERS, "Farm Business Income," as of December 2, 2020.

Notes: F = forecast. For a description of the ERS resource regions, see USDA ERS, *Farm Resource Regions*, Agriculture Information Bulletin no. 760, September 2000.

Sources of Revenue for Commercial and Residential Farms

Individual farms vary widely in the share of revenue they derive from each of the three potential sources—cash receipts, government payments, and other farm income sources. USDA does not forecast the extent to which these sources vary by farm typology, commodity specialization, or region.

Because farm programs provide benefits for specific commodities and producers, the importance of government payments as a percentage of net farm income varies by crop and livestock sector specialization and by region. For example, the USDA direct payment programs CFAP1 and CFAP2 were forecasted to make a large contribution to government payments in 2020.[41] As of December 27, 2020, the largest shares of CFAP1 and CFAP2 payments had been paid to producers of cattle and corn; thus, it is likely that farms that specialize in corn and/or cattle benefited more from increases in government payments in 2020 than farms that specialize in other types of commodities.[42]

[41] See "Government Payments" section.

[42] See CRS Report R46395, *USDA's Coronavirus Food Assistance Program: Round One (CFAP-1)*; and CRS Report R46645, *USDA's Coronavirus Food Assistance Program: Round Two (CFAP-2)*.

Summary of 2020 Farm Income Forecast

The global COVID-19 pandemic disrupted normal operations of markets for a number of agricultural products in the United States and abroad and continues to disrupt operations for markets for some commodities in 2021. Despite these disruptions, production of most agricultural commodities and total farm sector income increased in 2020 on a year-over-year basis. In addition, USDA's farm income forecasts improved with each successive forecast throughout the year (**Table A-1**).

Three key reasons for why farm sector income may have increased in 2020 include the following:

1. **Government payments increased.** Government payments increased by over 100% from 2019 to 2020, constituting the highest levels of government payments on record, the largest share of total farm sector income in more than 30 years, and exceeding the amount of revenue lost from reductions in the value of agricultural output in 2020.
2. **Reductions in income from farm cash receipts were smaller than initially expected.** Although prices for many agricultural commodities declined by more than 5% during the first two quarters of the year, some of these commodities saw full price recoveries by the end of 2020. Because some farmers were able to delay sales of certain commodities by holding crops in storage until later in 2020, the overall impact of early price declines on farm income was less than would have occurred if the price declines had persisted through the end of the year.
3. **Reductions in farm production expenses in 2020 partially offset the decline in output values.** COVID-19-related disruptions to global markets for fuel and credit allowed farmers to benefit from lower prices for fuel and oil to run their farm operations and from lower interest payments on debt.

World trade also impacted farm income in 2020. China's purchases of agricultural commodities, although less than the levels specified under the U.S.-China Phase One trade agreement, contributed to the price recovery of some commodities in late 2020. Farmers also received the final tranche of MFP payments in 2020, along with CFAP payments, which contributed to the total amount of income attributable to government payments. The United States-Mexico-Canada Agreement (USMCA) was signed in 2020; however, its effects on farm income are expected to be modest and to accrue mostly to dairy and poultry.[43]

Even though national farm income increased in 2020, the impact of COVID-19 varied at the individual farm level and was severe for some farms and commodity sectors. USDA's national forecasts do not reflect changes to the range of incomes that individual farms received in 2020.

2020 Year in Review for Farm Sector

Several major economic and policy events have occurred since 2018 that helped to shape the U.S. farm income outlook for 2020. These include the U.S.-China trade dispute and subsequent Phase One trade agreement between the two countries, as well as the COVID-19 pandemic and several federal direct payment programs targeting affected producers in response to these events. In addition, the year 2020 saw three major weather events that impacted the U.S. agricultural sector: wet spring conditions in the upper Midwest that resulted in a second year of large prevent-plant acres; an unprecedented derecho wind storm through the heart of the Corn Belt that damaged

[43] CRS Report R45661, *Agricultural Provisions of the U.S.-Mexico-Canada Agreement*.

several million acres of prime cropland; and a late-season drought across the western Corn Belt. Finally, China began making large-scale purchases of U.S. corn and soybeans in the third and fourth quarter of the year. These and other important events of 2020 are briefly reviewed here.

State of the U.S. Agricultural Sector Heading into 2020

Corn, soybeans, wheat, and cotton are the four largest commercial crops produced annually in the United States in terms of area harvested, volume of output, and value (**Table 2**).[44] Since 2015, these four commodities have experienced relatively strong growth in output, helping to build stockpiles through the 2018 season, while upland cotton saw its end-of-year stocks surge in 2019 (**Figure 7**). The outlook for abundant supplies relative to demand for these four major commodities contributed to weak commodity price outlook heading into 2020.

In 2018, the U.S.-China trade dispute emerged as an impediment to trade and contributed to lower soybean prices.[45] The U.S.-China trade dispute led to declines in U.S. farm exports to China—a major market for U.S. agricultural products—in 2018 and 2019 and added to market uncertainty in 2020. The difficulties associated with the trade dispute were exacerbated in 2018 when U.S. farmers produced a record soybean harvest of 4.4 billion bushels, which resulted in both record end-of-year stocks and a record stocks-to-use ratio (22.9%). The record soybean harvest combined with the sudden loss of the Chinese soybean market kept downward pressure on U.S. soybean prices through 2019 and into early 2020.

In 2019, U.S. producers encountered extremely wet conditions in the spring that delayed planting of major row crops in many regions of the country and resulted in a record 19.6 million acres prevented from being planted.[46] The reduction in planted acres, primarily for corn and soybeans, coupled with unfavorable weather during the fall harvests, resulted in below-average yields and an unexpectedly smaller crop in 2019.[47] Despite a smaller crop and lower stocks in 2019, the reduction in U.S. soybean exports to China prevented a price recovery that year.

In response to the U.S.-China trade dispute, USDA used its authority under the Commodity Credit Corporation (CCC) Charter Act[48] to initiate successive direct payment programs in 2018 and 2019—referred to as Market Facilitation Programs (MFPs)—to partially offset the commodity price effects of the trade dispute on U.S. producers.[49] As of November 23, 2020, USDA had paid out a combined $23.1 billion under the two MFP programs.[50]

[44] The U.S. hay crop exceeds the U.S. cotton crop in area, volume, and value but is less commercially traded and is used primarily by the livestock sector. In recent years, two specialty crops—grapes and almonds—have rivaled cotton for fourth place in terms of the value of production, depending on market prices and production.

[45] CRS Report R45929, *China's Retaliatory Tariffs on U.S. Agriculture: In Brief*.

[46] CRS Report R46180, *Federal Crop Insurance: Record Prevent Plant (PPL) Acres and Payments in 2019*.

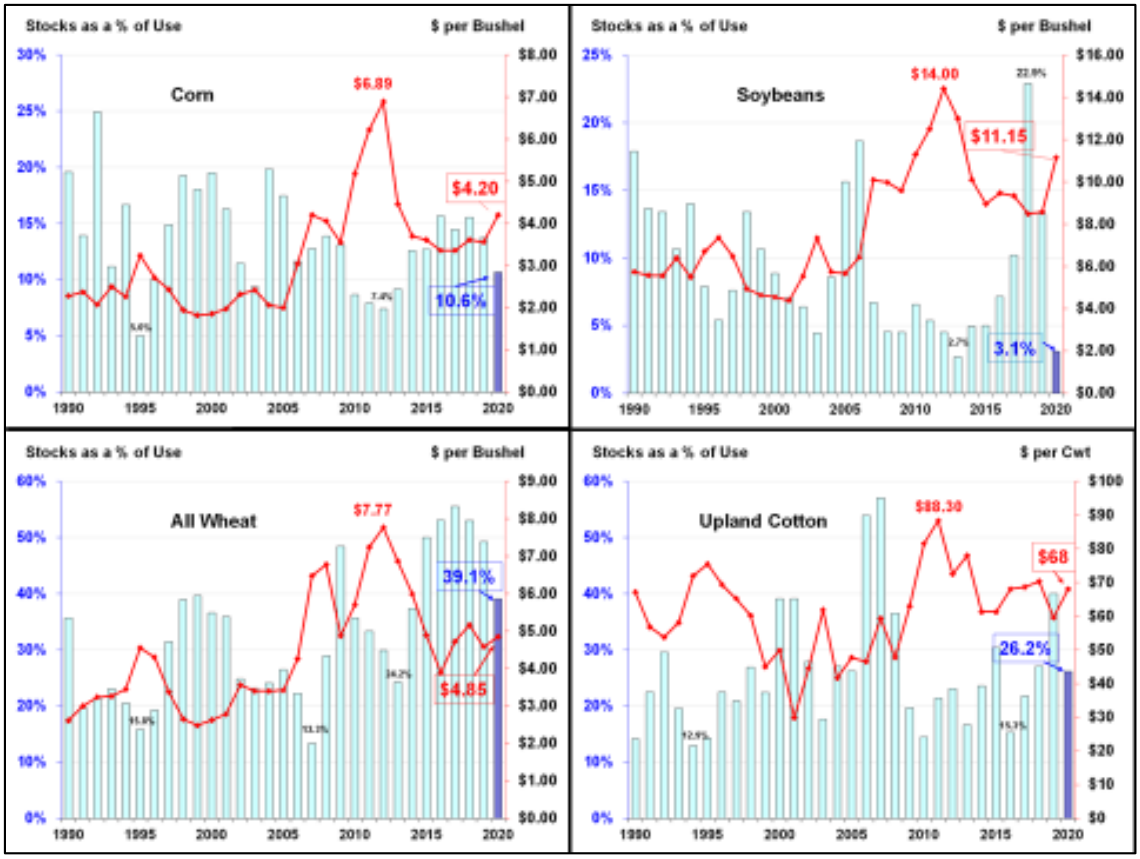
[47] CRS Report R46132, *U.S. Farm Income Outlook: November 2019 Forecast*.

[48] CRS Report R44606, *The Commodity Credit Corporation (CCC)*.

[49] The 2018, MFP was authorized by Agriculture Secretary Sonny Perdue at up to $12 billion in financial assistance, including up to $10 billion in direct payments (see CRS Report R45310, *Farm Policy: USDA's 2018 Trade Aid Package*). The 2019, MFP was authorized by Secretary Perdue at up to $16 billion in financial assistance, including up to $14.5 billion in direct payments (see CRS Report R45865, *Farm Policy: USDA's 2019 Trade Aid Package*).

[50] Data include $8.6 billion under the 2018 MFP and $14.5 billion under the 2019 MFP. See USDA, Farm Service Agency (FSA), "MFP," at https://www.farmers.gov/manage/mfp.

Figure 7. Stocks-to-Use Ratios and Farm Prices: Corn, Soybeans, Wheat, and Cotton



Source: CRS using data from USDA, World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*, January 12, 2021. All values are nominal. Values for 2020 are forecasts, are in dark blue, and are separated from historical data.

Notes: Stocks-to-use equals the ratio of season-ending stocks relative to the season's total usage. Data are reported on a market-year basis—the market year is the 12-month period that begins at harvest time, during which the harvested crop is either stored or used on farm or sold in the marketplace. For example, for corn and soybeans, the 2020 market year started on September 1, 2020, and runs through August 31, 2021. Wheat data are on a June-May market year basis, and upland cotton data are on an August-July market year.

U.S.-China Agree on Phase One Trade Deal in Early 2020

On January 15, 2020, President Trump signed a "Phase One" executive agreement with the Chinese government on trade and investment issues, including agriculture.[51] The agreement was expected to improve market access for U.S. products into China, including a commitment by China to import $32 billion worth of additional U.S. agricultural products (relative to a 2017 base of $24 billion) over a two-year period. Most observers expected the Phase One agreement to provide improved opportunity for certain U.S. exporters; however, there is uncertainty over whether the agreement may lead to a rearrangement of global trading patterns or create new market demand.

[51] CRS In Focus IF11412, *U.S.-China Phase I Deal: Agriculture*.

Farmer optimism from the U.S.-China Phase One trade agreement contributed to expectations for large planted acres in March 2020 (discussed below in "Weather Factors Influence Crop Outcomes in 2020").[52] The large acreage projections, plus the uncertainty over how quickly China might restart large-scale imports of U.S. farm products, hindered market price recovery during the first quarter of 2020. This recovery was also stymied by the emergence of COVID-19 in mid-January 2020.

COVID-19 Pandemic Impacts Food Supply Chain

In mid-January 2020, COVID-19 first appeared in the United States and spread rapidly through the country. The COVID-19 pandemic produced an aggregate demand shock across the U.S. economy, including the agricultural sector.[53] In particular, the COVID-19 pandemic induced widespread business closures, massive lay-offs, and 2020 GDP declines (annualized basis) of -4.8% for the first quarter and -31.7% for the second quarter.[54] In August 2020, 24.2 million persons were unable to work because their employer closed or lost business due to the pandemic, and the overall U.S. unemployment rate reached 8.4%—up sharply from a seasonally adjusted rate of 3.5% in February.[55]

COVID-19-related lockdowns caused widespread supply chain disruptions that shifted, and in some cases stopped, the flow of agricultural commodities through the various supply chains and led to sharp declines in farm prices and considerable market uncertainty. The principal impact on the U.S. agricultural sector was primarily the result of the COVID-19-related demand shock on food demand, including institutional, hospitality, and retail (i.e., dine-in restaurant) purchasing.[56] The short-run impact was lower farm prices, stock building of grains and oilseeds, and a temporary backup of unmarketable surpluses of market-ready livestock, poultry, and dairy products, as well as perishable fruits and vegetables. Similarly, people canceled travel plans and many businesses and schools shifted to full-time telework, thus dramatically reducing transportation fuel consumption, including of corn-based ethanol (which comprises roughly 10% of all fuel consumption for cars and light trucks and accounts for roughly 30% of U.S. corn usage).

Congress and USDA Respond to COVID-19 Pandemic with Large-Scale Programs

In response to the COVID-19 pandemic, on April 17, 2020, USDA initiated the Coronavirus Food Assistance Program (CFAP1) valued at $19 billion, including $16 billion in direct payments to affected agricultural producers and $3 billion for food purchases and distribution.[57] As of January 10, 2021, USDA had made $10.6 billion in direct payments under CFAP1.[58]

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[52] USDA, NASS, *Prospective Planting*, March 31, 2020.

[53] CRS Report R46347, *COVID-19, U.S. Agriculture, and USDA's Coronavirus Food Assistance Program (CFAP)*.

[54] GDP growth estimates are on an annualized basis, from U.S. Bureau of Economic Analysis, "Gross Domestic Product, 2nd Quarter 2020 (Second Estimate); Corporate Profits, 2nd Quarter 2020 (Preliminary Estimate)," news release no. BEA 20-41, August 27, 2020.

[55] U.S. Bureau of Labor Statistics, "The Employment Situation—August 2020," USDL-20-1650, September 4, 2020.

[56] Todd Hubbs and Scott Irwin, "Crop Markets Suffer Massive Demand Shock from COVID-19," *Economic Impact of COVID-19 on Food and Agricultural Markets*, CAST Commentary, June 2020.

[57] For information, see CRS Report R46395, *USDA's Coronavirus Food Assistance Program: Round One (CFAP-1)*.

[58] USDA, Coronavirus Food Assistance Program Data, "CFAP 1.0 Dashboard," January 10, 2021, at

On September 18, 2020, USDA announced a second CFAP payment program (CFAP2) with funding of up to an additional $14 billion.[59] Signup for CFAP2 began on September 21 and ran through December 11, 2020.[60] As of January 10, 2021, USDA had made $13.1 billion in direct payments under CFAP2.[61]

The Trump Administration announced several other new programs in response to the COVID-19 pandemic, including $349 billion in funding to support the SBA's lending programs and the new PPP.[62] The PPP provides short-term, low-interest loans that could be forgiven under specified circumstances to qualifying small business (including agricultural firms) and nonprofits. As of August 8, 2020, the PPP had made $7.3 billion in potentially forgivable loans to agriculture-related enterprises.[63]

The long-run impact of the COVID-19 pandemic will depend on how quickly the economy recovers from Depression-level high unemployment and widespread restaurant and retail business shutdowns. The speed of the vaccination roll out for the COVID-19 pandemic coupled with the speed of the subsequent business reopening is expected to influence the recovery prospects for both the U.S. economy and the U.S. agricultural sector.

Weather Factors Influence Crop Outcomes in 2020

The early spring outlook for large crop plantings coupled with the demand-depressing impact of the COVID-19 pandemic contributed to plunging commodity prices from January 2020 into July. But, three major weather events—wet spring conditions in the upper Midwest that resulted in a second year of large prevent-plant acres, an unprecedented derecho wind storm through the heart of the Corn Belt that damaged several million acres of prime cropland, and a late-season drought across the western Corn Belt and Plains states—reversed the price decline and contributed to late-year price increases for several major crops, including corn and soybeans. USDA was slow to capture the weather-related supply effects in its monthly crop reports, and this resulted in USDA having to reverse its preliminary optimistic crop outlook. This reversal helped to trigger a strong upward movement in farm prices starting in mid-August.

The early year market optimism—based on the Administration's U.S.-China Phase One trade agreement—contributed to projections in March for large planted acres in 2020, including 97.0 million acres for corn (up 8.1% from 2019), 83.5 million for soybeans (+9.7%), 44.7 million for wheat (-1.1%), 13.7 million for cotton (unchanged), and 319.1 million total acres planted to principal crops (+5.4%).[64] However, eventual planted acres for major field crops in 2020 were

https://www.farmers.gov/cfap1/data.

[59] See CRS Report R46645, *USDA's Coronavirus Food Assistance Program: Round Two (CFAP-2)*.

[60] For more information, see USDA, "USDA to Provide Additional Direct Assistance to Farmers and Ranchers Impacted by the Coronavirus," press release no. 0378.20, September 18, 2020.

[61] USDA, Coronavirus Food Assistance Program Data, "CFAP 2.0 Dashboard," January 10, 2021, at https://www.farmers.gov/cfap/data.

[62] For information on the federal response to the COVID-19 pandemic for different sectors of the U.S. economy, visit the CRS COVID-19 Resources page at https://www.crs.gov/Resources/coronavirus-disease-2019.

[63] The Small Business Administration (SBA) stopped taking PPP applications on August 8, 2020. Final loan data for PPP reported here were obtained via a Freedom of Information Act request by an anonymous nongovernmental organization and shared with CRS.

[64] USDA, NASS, *Prospective Plantings*, March 31, 2020. Principal crops include corn, sorghum, oats, barley, rye, winter wheat, Durum wheat, other spring wheat, rice, soybeans, peanuts, sunflower, cotton, dry edible beans, chickpeas, potatoes, sugarbeets, canola, proso millet, all hay, tobacco, and sugarcane but also include double cropped acres and unharvested small grains planted as cover crops.

limited by a second year of above-normal prevented planting, estimated at over 10 million acres, compared with a record 19 million acres of prevented planting acres in 2019.[65] By comparison, from 2000 to 2018, prevented planting averaged 4.1 million acres annually. In June, when USDA surveyed farmers for their actual plantings, farmers reported that they had planted 311.9 million acres to principal crops (up 3.1% from 2019 but down over 7 million acres from the March survey of intentions). This total included 92.0 million of corn (+2.6%), 83.8 million of soybeans (+9.7%), 44.3 million of wheat (-2.0%), and 12.2 million of cotton (-11.3%).[66]

Except for the prevent-planting acreage, most principal crops were planted on time and under good soil moisture conditions. However, in mid-July, widespread hot, dry conditions set in over much of the western United States, including portions of the Corn Belt—that is, the Dakotas, Nebraska, Iowa, and northern Illinois (**Figure 4**). The poor growing conditions began to negatively impact yields for corn and soybeans but were slow to impact USDA crop forecasts. For example, in August, USDA's initial outlook for 2020 crop production projected a record corn crop of 15.3 billion bushels and a near-record large soybean crop of 4.4 billion bushels.[67] Forecasts for both crops included record yields of 181.8 and 53.3 bushels per acre, respectively, for corn and soybeans. This initial forecast included declines in market-year average farm prices (MYAPs) for corn to $3.10 per bushel (-13.9% from 2019) and for soybeans to $8.35 per bushel (-2.3%) for 2020.

On August 10, 2020, a large derecho storm system plowed through the Midwest.[68] Early news reports suggested substantial damage, including approximately 10 million acres of corn and soybeans, roughly a third of Iowa's total cropland, damaged by rain, hail, and wind. Also, starting in mid-August, China began to make large purchases of U.S. corn and soybeans.[69] While much uncertainty remains about the eventual size of Chinese grain and oilseed imports, market optimism about Chinese purchases and concerns about weather-related production losses fueled a rise in commodity prices in the U.S. futures market. The price rally that began on August 12 pushed soybean prices for the nearby futures contract above $10 per bushel on September 14, 2020, and above $14 per bushel on January 12, 2021.[70]

Similarly, USDA began to gradually lower its yield and harvested area projections and to raise its price projections in successive monthly crop outlook reports starting in September. For example, in USDA's September crop report, national corn and soybean yield estimates were reduced to 178.5 and 51.9 bushels per acre, respectively.[71] The harvested-corn acreage estimate was lowered to 83.473 million acres, a reduction of 550,000 acres—all from Iowa. Soybean acres were left unchanged. MYAPs were revised substantially upward to $3.50 per bushel for corn and $9.25 per bushel for soybeans. In November, USDA raised the 2020 corn price forecast to $4.00 per bushel.

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[65] USDA, FSA, "FSA Crop Acreage Data Reported to FSA, 2020 Crop Year," September 1, 2020. See also CRS Report R46180, *Federal Crop Insurance: Record Prevent Plant (PPL) Acres and Payments in 2019*.

[66] USDA, NASS, "Acreage," June 30, 2020.

[67] USDA, World Agricultural Outlook Board (WAOB), *World Agricultural Supply and Demand Estimates (WASDE)*, released August 12, 2020.

[68] A *derecho* is a weather event caused by severe thunderstorms and often characterized by 70-100 mph straight-line winds. Krissa Welshans, "Derecho storm causes widespread, significant damage," *Feedstuffs*, August 11, 2020.

[69] Keith Good, "China Could Become Largest Corn Importer, While Soybean Variables Come Into Focus," Farm Policy News, September 10, 2020.

[70] Chicago Mercantile Exchange (CME), Soybean Futures Quotes for nearby contracts: the September 14, 2020, price is for the November 2020 contract (accessed on September 15, 2020); and the January 12, 2021, price is for the January 2021 contract (accessed on January 14, 2021).

[71] USDA, WAOB, WASDE, released September 11, 2020.

In December, USDA raised the soybean farm price to $10.55 per bushel. In January 2021, USDA raised both corn and soybean prices to $4.20 per bushel and $11.15 per bushel (up from the August forecasts of $3.10 and $8.35, respectively).[72]

Commodity Production and Usage in 2020

New Production of Principal Crops and Livestock

USDA forecasted that production of corn, oats, rice, sorghum, and soybeans would increase in 2020 and that production of barley, cotton, and wheat would decline. Increases in corn, oats, rice, sorghum, and soybean production are driven by year-over-over increases in acreage planted and harvested, and higher yields per acre. Declines in wheat and barley production are driven by year-over-year declines in acreage planted and harvested, and lower yields per acre. Declines in cotton production are driven by declines in acreage planted and harvested.

Despite short-term COVID-19-related shutdowns to slaughterhouses and meatpacking facilities in 2020, total production of beef, broiler chickens, milk, and pork was forecasted to increase on a year-over-year basis. However, production of eggs was forecasted to decline on a year-over-year basis.

Table 10. U.S. Domestic Production of Key Agricultural Commodities

2019 and 2020 crop years

Commodity	Units	2019 Production	2020F Production	Change Quantity	Change %
Row Crops					
Corn	Mil. Bushels	13,620	14,182	562	4%
Soybeans	Mil. Bushels	3,552	4,135	618	16%
Wheat	Mil. Bushels	1,932	1,826	-106	-5%
Sorghum	Mil. Bushels	341	373	32	9%
Rice	Mil. Hundredweight	185	228	43	23%
Barley	Mil. Bushels	172	165	-7	-4%
Oats	Mil. Bushels	53	65	12	23%
Cotton	Mil. 480 lb Bales	19.9	15.0	-4.9	-25%
Livestock, Dairy, Poultry, and Eggs					
Broilers	Mil. Pounds	43,905	44,550	645	1%
Pork	Mil. Pounds	27,638	28,296	658	2%
Beef	Mil. Pounds	27,155	27,158	3	0%
Eggs	Mil. Dozens	9,447	9,258	-189	-2%
Milk	Bil. Pounds	218.4	222.9	4.5	2%

Source: CRS using data from USDA, *World Agricultural Supply and Demand Estimates*, released January 12, 2021.

Notes: F = forecast values for 2020 production.

[72] USDA, WAOB, WASDE, report releases for November 10, 2020, December 10, 2020, and January 12, 2021.

End-of-Year Crop Inventories for 2020

By December 2020—after taking into account the downward revisions to acres, yields, and usage—stocks-to-use ratios for corn, soybeans, wheat, and cotton were forecasted to decline in 2020 from 2019 (**Figure 7**). Declining stocks-to-use ratios for corn and soybeans primarily reflect increasing sales to China from both inventories carried over from prior year harvests, as well as from new crop production. Increases in corn sales to China helped to offset lost demand for corn for ethanol production, which paralleled the short-term declines in U.S. gasoline sales related to the COVID-19 pandemic. Declining stocks-to-use for wheat primarily reflects increasing domestic demand for wheat. Declining stocks-to-use for cotton primarily reflects decreasing year-over-year production and COVID-19-related declines in global demand.

Early 2021 Developments

Two recent developments—U.S. corn and soybean farm prices projected at the highest levels in six years (**Figure 7**) and China's resurgent interest in buying U.S. corn and soybeans—generated substantial optimism in the U.S. farm sector heading in 2021.[73] Furthermore, if dry weather patterns persist in key South American corn and soybean production zones, they could further tighten global supplies and support U.S. farm prices.

USDA's first projection of U.S. farm income for 2021 was released on February 5, 2021.[74] Early farm income estimates rely primarily on trends for crop yields and commodity demand from both domestic and international markets. Despite the initial optimism, the U.S. agricultural picture for 2021 is clouded by several major uncertainties related to potential weather and trade developments.

- First, as of early 2021, much of the western United States, including much of the western Corn Belt, remains mired in a prolonged drought that developed in late summer of 2020 (**Figure 8**).

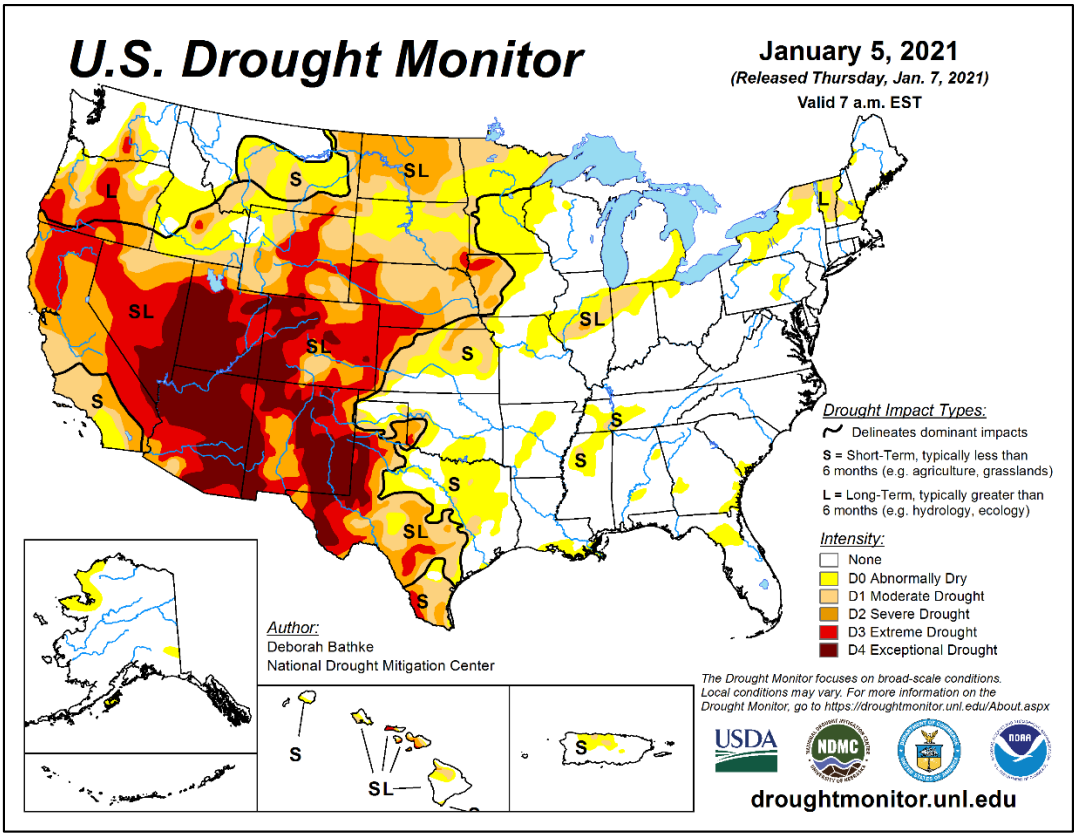
  On the positive side, dry conditions allow for early field work activity in the spring and often contribute to greater-than-expected plantings; however, they also signal potential yield loss and above-normal acreage abandonment if precipitation patterns do not return to normal during the crop growing season. The potential extent of weather-related effects on planted acres in 2021 will not be known until spring planting is completed—most likely not before June 2021, while the effect on yields and early crop development is often not known with certainty until harvest.
- A second uncertainty is the extent to which the COVID-19 pandemic may persist in 2021 and how quickly a successful vaccination campaign can be achieved.
- Third, also related to the COVID-19 pandemic, is when and how the general economy will recover and consumer demand patterns return to normal.
- Fourth, it is not yet known whether agricultural and food supply chains might resuscitate themselves in a more resilient and responsive form that revives investment and growth at both the producer and retail ends.
- Finally, despite the signing of a Phase One trade agreement with China, it is unclear if the United States may resume normal trade with China. Also unknown

[73] James Mintert and Michael Langemeier, "Farmer sentiment rises as income prospects improve, concerns about key policy issues remain," Purdue/CME Group, *Ag Economy Barometer*, January 5, 2021.

[74] USDA farm income projections for 2021 are not covered in this report.

is whether Chinese large-scale grain purchases in late 2020 and early 2021 could be one-off events related to the rapid rebuilding of its hog sector following its collapse from the onset of the African Swine Flu in late 2018.

Figure 8. U.S. Drought Monitor for December



Source: The National Drought Mitigation Center, University of Nebraska-Lincoln, at https://droughtmonitor.unl.edu/.

Appendix. Supporting Material on Farm Income

Measuring Farm Profitability

Two different indicators measure farm profitability: net cash income and net farm income.

Net cash income compares cash receipts to cash expenses. As such, it is a cash flow measure representing the funds that are available to farm operators to meet family living expenses and make debt payments. For example, crops that are produced and harvested but kept in on-farm storage are not counted in net cash income. Farm output must be sold before it is counted as part of the household's cash flow.

Net farm income is a more comprehensive measure of farm profitability. It measures value of production, indicating the farm operator's share of the net value added to the national economy within a calendar year independent of whether it is received in cash or noncash form. As a result, net farm income includes the value of home consumption, changes in inventories, capital replacement, and implicit rent and expenses related to the farm operator's dwelling that are not reflected in cash transactions. Thus, once a crop is grown and harvested, it is included in the farm's net income calculation, even if it remains in on-farm storage.

Key Concepts Behind Farm Income

- Net cash income is generally less variable than net farm income. Farmers can manage the timing of crop and livestock sales and purchase of inputs to stabilize the variability in their net cash income. For example, farmers can hold crops from large harvests in on-farm storage to sell in the forthcoming year when output may be lower and prices higher.
- Off-farm income and crop insurance subsidies, both of which have increased in importance in recent years, are not included in the calculation of aggregate farm income. Crop insurance indemnity payments are included.

National vs. State-Level Farm Household Data

Aggregate data often obscure or understate the diversity and regional variation that occurs across America's agricultural landscape. For insights into the differences in American agriculture, visit the Economic Research Service (ERS) web pages on "Farm Structure and Organization" and "Farm Household Well-Being."[75]

ERS's Annual Farm Income Forecasts

ERS releases three farm income forecasts each calendar year. The first forecast generally is released in February as part of the President's budget process and coincides with the U.S. Department of Agriculture's (USDA's) annual outlook forum, which convenes toward the end of every February. The initial forecast consists primarily of trend projections for the year since it precedes most agricultural activity, which occurs later in the spring and summer. The initial projections rely heavily on assumptions of trend yields and USDA's baseline forecasts for market conditions.

ERS's second farm income forecast is generally released in late August or early September as part of what USDA refers to as the mid-session budget review. By late August, most planting of major program crops is finished and crop growing conditions are better known, thus contributing to improved yield estimates. Domestic and international market conditions and trade patterns also have been established, thus improving forecasts for most commodity prices and potential farm revenue support outlays. It is not unusual for large variations in farm income projections to occur between the first and second farm income forecasts.

ERS's third farm income forecast is generally released in late November (in 2020, it was released on December 2) and represents a tightening up of the data—preliminary forecasts of planted acres and yields are gradually replaced with estimates based on actual field surveys and crop reporting by farmers to USDA. In most years, only small variations in farm income estimates occur between the second and third forecasts. The farm income forecast cycle then begins anew in the succeeding year. However, changes to estimates from previous years continue to occur for several years as more complete data become available.

This report discusses aggregate national net farm income projections for calendar year 2020 as reported by ERS on December 2, 2020,[76] which is the third of three USDA farm income forecasts for 2020 (**Table A-1**).

[75] U.S. Department of Agriculture (USDA) Economic Research Service (ERS), "Farm Structure and Organization," at http://www.ers.usda.gov/topics/farm-economy/farm-structure-and-organization.aspx; and USDA, ERS, "Farm Household Well-Being," at http://www.ers.usda.gov/topics/farm-economy/farm-household-well-being.aspx.

[76] For both national and state-level farm income, see USDA, ERS, "U.S. and State Farm Income and Wealth Statistics," http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx.

Table A-1. USDA Forecasts of U.S. Farm Income in 2020 ($ Billions)

Item	2019	2020 Forecasts 2-05-20	9-02-20	12-02-20	2020: Feb. to Dec. (%)[a]
1. Cash receipts	**369.7**	**384.4**	**358.3**	**366.5**	**-4.7%**
Crops[b]	193.7	198.6	196.6	200.2	0.8%
Livestock	176.0	185.8	161.7	166.3	-10.5%
2. Government payments[c]	**22.4**	**15.0**	**37.2**	**46.5**	**210.0%**
CCP-PLC-ARC[d]	2.7	3.9	4.8	6.1	56.4%
Marketing loan benefits[e]	0.0	0.5	0.9	0.2	-60.0%
Conservation	3.8	4.2	4.0	3.8	-9.5%
Ad hoc and emergency[f]	1.4	2.5	1.6	2.2	-12.0%
All other[g]	14.5	4.3	25.8	34.1	693.0%
3. Farm-related income[h]	**34.7**	**31.5**	**33.3**	**34.1**	**8.3%**
4. Gross cash income (1+2+3)	426.9	430.9	428.8	447.1	3.8%
5. Cash expenses[i]	317.5	321.3	313.5	313.0	-2.6%
6. NET CASH INCOME	**109.4**	**109.6**	**115.2**	**134.1**	**22.4%**
7. Total gross revenues[j]	432.3	451.3	446.8	463.2	2.6%
8. Total production expenses[k]	348.7	354.7	344.2	343.6	-3.1%
9. NET FARM INCOME	**83.6**	**96.7**	**102.7**	**119.6**	**23.7%**

Source: CRS using data from USDA, ERS, "Farm Income and Wealth Statistics: U.S. and State Farm Income and Wealth Statistics," forecasts dated February 5, 2020, September 2, 2020, and December 2, 2020.

Notes:

a. Change represents the change between the initial February 2 forecast and the December 2 forecast for 2020.
b. Includes Commodity Credit Corporation loans under the farm commodity support program.
c. Government payments reflect payments made directly to all recipients in the farm sector, including landlords. The nonoperator landlords' share is offset by its inclusion in rental expenses paid to these landlords and thus is not reflected in net farm income or net cash income.
d. CCP = countercyclical payments. PLC = Price Loss Coverage. ARC = Agriculture Risk Coverage.
e. Includes loan deficiency payments, marketing loan gains, and commodity certificate exchange gains.
f. Includes payments made under the Wildfire and Hurricane Indemnity Program (WHIP), as well as the Average Crop Revenue Election (ACRE) program, which was eliminated by the 2014 farm bill (P.L. 113-79).
g. Market Facilitation Program (MFP), Coronavirus Food Assistance Program (CFAP), cotton ginning cost-share, biomass crop assistance program, milk income loss, and other miscellaneous payments.
h. Income from crop insurance indemnities, custom work, machine hire, agritourism, and other farm sources.
i. Excludes depreciation and perquisites to hired labor.
j. Gross cash income plus inventory adjustments, the value of home consumption, and the imputed rental value of operator dwellings.
k. Cash expenses plus depreciation and perquisites to hired labor.

USDA Farm Prices Received Indexes for Selected Commodities

Table A-2 presents the annual average farm price received for several major commodities, including the USDA forecast for the 2020-2021 marketing year for major program crops and 2021 for livestock products.

In addition, **Figure A-1** to **Figure A-4** present USDA data on monthly farm prices received for several major farm commodities—corn, soybeans, wheat, upland cotton, rice, milk, cattle, hogs, and chickens. The data are presented in an indexed format where monthly price data for year 2010 = 100 to facilitate comparisons.

Table A-2. U.S. Farm Prices and Support Rates for Selected Commodities Since 2018-2019 Marketing Year

Commodity[a]	Unit	Mkt Yr.	2018-2019	2019-2020	2020-2021[b]	% Chg. 19/20-20/21	2021-2022[b]	% Chg. 20/21-21/22	LR[c]	RP
Wheat	$/bu	Ju-My	5.16	4.58	4.85	5.9%	—	—	3.38	5.50
Corn	$/bu	S-Ag	3.61	3.56	4.20	18.0%	—	—	2.20	3.70
Sorghum	$/bu	S-Ag	3.26	3.34	4.70	40.7%	—	—	2.20	3.95
Barley	$/bu	Ju-My	4.62	4.69	4.60	-1.9%	—	—	2.50	4.95
Oats	$/bu	Ju-My	2.66	2.82	2.70	-4.3%	—	—	2.00	2.40
Rice	$/cwt	Ag-Jl	12.60	13.50	13.20	-2.2%	—	—	7.00	14.00
Soybeans	$/bu	S-Ag	8.48	8.57	11.15	30.1%	—	—	6.20	8.40
Soybean Oil	¢/lb	O-S	28.26	29.65	38.50	29.8%	—	—	—	—
Soybean Meal	$/st	O-S	308.28	299.5	390.0	30.2%	—	—	—	—
Cotton, Upland	¢/lb	A-Jl	70.3	59.6	68.0	14.1%	—	—	45-52	none
Livestock Products		**CY**	**2018**	**2019**	**2020**	**% Chg. 19-20**	**2021**	**% Chg. 20-21**	—	—
Choice Steers	$/cwt	Ja-D	117.12	116.78	108.5	-7.1%	115.5	6.4%	—	—
Barrows/Gilts	$/cwt	Ja-D	45.93	47.95	43.2	-9.9%	49.5	14.6%	—	—
Broilers	¢/lb	Ja-D	97.8	88.6	73.2	-17.4%	81.0	10.7%	—	—
Eggs	¢/doz	Ja-D	137.6	94.0	112.2	19.4%	107.5	-4.2%	—	—
Milk	$/cwt	Ja-D	16.27	18.63	18.30	-1.8%	17.65	-3.6%	—	—

Source: CRS using data from various USDA agency sources as described in the notes below.

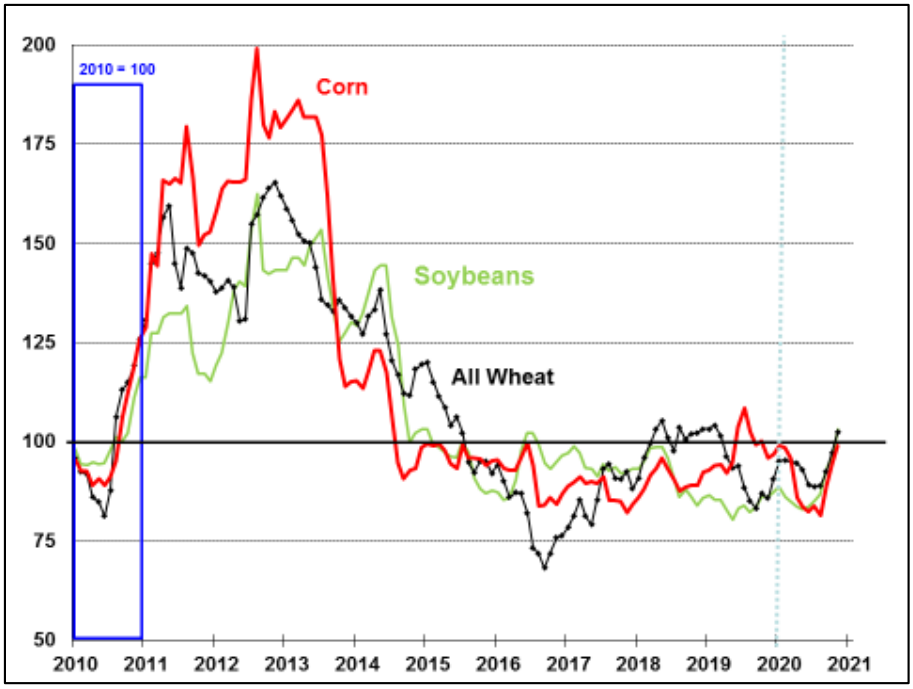
Notes: Chg = change, CY = calendar year, LR = loan rate, RP = reference price, bu = bushels, cwt = 100 pounds, lb = pound, st = short ton (2,000 pounds), doz = dozen, Ja-D = January to December, Ju-My = June to May, S-Ag = September to August, O-S = October to September, A-Jl = August to July.

a. Price for grains and oilseeds are from USDA, *World Agricultural Supply and Demand Estimates (WASDE)*, released January 12, 2021. "—" = no value. USDA's out-year 2021-2022 crop price forecasts will first appear in the May 2021 *WASDE*. Soybean and livestock product prices are from USDA, Agricultural Marketing Service: soybean oil—Decatur, IL, cash price, simple average crude; soybean meal—Decatur, IL, cash price, simple average 48% protein; choice steers—Nebraska, direct 1,100-1,300 lbs.; barrows/gilts—national base, live equivalent 51%-52% lean; broilers—wholesale, 12-city average; eggs—Grade A, New York, volume buyers; and milk—simple average of prices received by farmers for all milk.

b. Data for 2020-2021 are USDA forecasts. Data for 2021-2022 are USDA projections.

c. Loan rates (LRs) and reference prices (RPs) are for the 2020-2021 market year as defined under the 2018 farm bill (P.L. 115-334). The loan rate for upland cotton equals the average market-year-average price for the two preceding crop years but within the range of 45 cents/lb. and 52 cents/lb. See CRS Report R45525, *The 2018 Farm Bill (P.L. 115-334): Summary and Side-by-Side Comparison*.

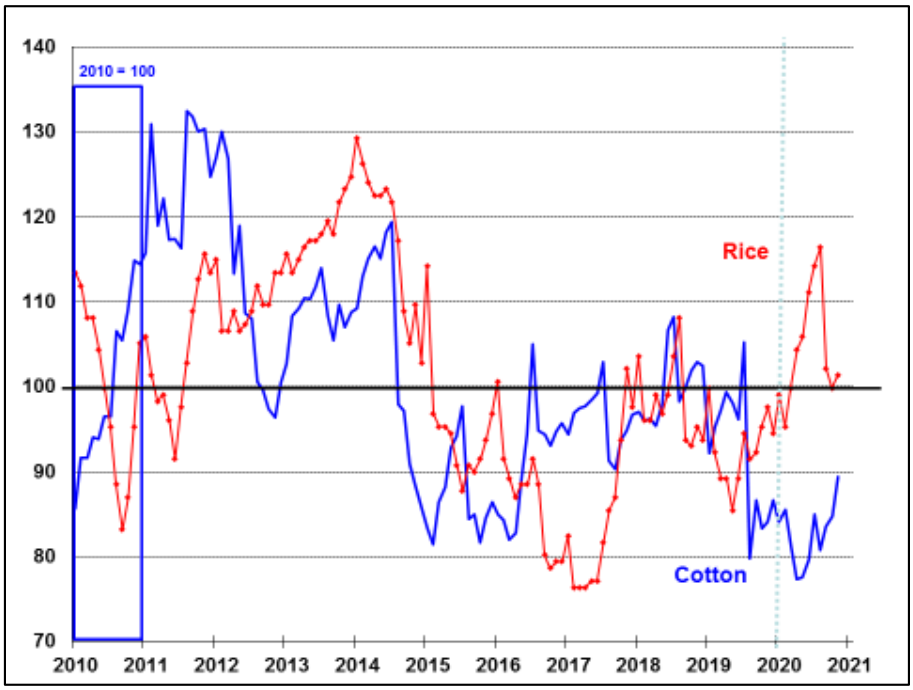
Figure A-1. Monthly Farm Prices for Corn, Soybeans, and Wheat, Indexed Dollars



Source: USDA, National Agricultural Statistics Service (NASS), *Agricultural Prices*, December 30, 2020. Calculations by CRS.

Notes: Monthly farm prices for the 2010-2020 period have been divided by the annual average price for 2010 and multiplied by 100 such that 2010 = 100. Such price indexing facilitates relative comparisons.

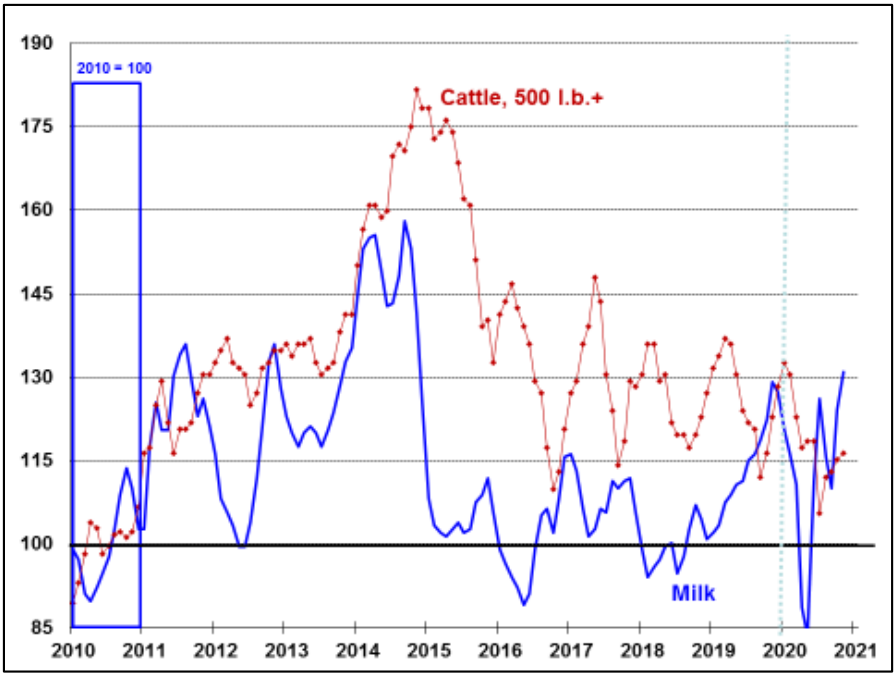
Figure A-2. Monthly Farm Prices for Cotton and Rice, Indexed Dollars



Source: USDA, NASS, *Agricultural Prices*, December 30, 2020. Calculations by CRS.

Notes: Monthly farm prices for the 2010-2020 period have been divided by the annual average price for 2010 and multiplied by 100 such that 2010 = 100. Such price indexing facilitates relative comparisons.

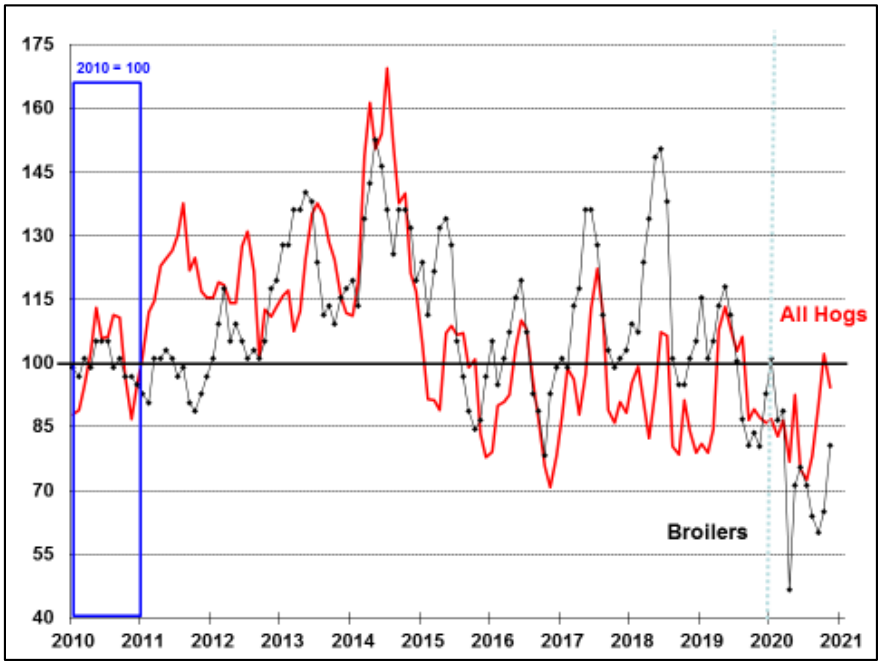
Figure A-3. Monthly Farm Prices for All-Milk and Cattle (500+ lbs.), Indexed Dollars



Source: USDA, NASS, *Agricultural Prices*, December 30, 2020. Calculations by CRS.

Notes: Monthly farm prices for the 2010-2020 period have been divided by the annual average price for 2010 and multiplied by 100 such that 2010 = 100. Such price indexing facilitates relative comparisons.

Figure A-4. Monthly Farm Prices for All Hogs and Broilers, Indexed Dollars



Source: USDA, NASS, *Agricultural Prices*, December 30, 2020. Calculations by CRS.

Notes: Monthly farm prices for the 2010-2020 period have been divided by the annual average price for 2010 and multiplied by 100 such that 2010 = 100. Such price indexing facilitates relative comparisons.

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