United States Government Accountability Office

Report to the Chairwoman, Committee on Agriculture, Nutrition, and Forestry U.S. Senate

November 2021

USDA MARKET FACILITATION PROGRAM

Stronger Adherence to Quality Guidelines Would Improve Future Economic Analyses

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GAO-22-468

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Highlights

Highlights of GAO-22-468, a report to the Chairwoman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

November 2021

USDA MARKET FACILITATION PROGRAM

Stronger Adherence to Quality Guidelines Would Improve Future Economic Analyses

Why GAO Did This Study

In 2018, the President, citing national security concerns in one action and unfair foreign trade practices in another, increased tariffs on certain imported products. Affected trade partners retaliated with tariffs targeting U.S. exports. USDA's 2018 MFP and 2019 MFP provided a total of $23 billion to address the effect of foreign trade actions on U.S. agricultural producers.

GAO was asked to review USDA's methods for estimating trade damages and providing payments to producers. This report examines (1) the extent to which the methodologies USDA used to estimate trade-related damages for the 2018 MFP and 2019 MFP addressed key elements of an economic analysis, and how those methodologies affected the estimates, and (2) strengths and limitations of the methodologies USDA used to calculate payments for the 2018 MFP and 2019 MFP and how the methodologies affected the payments. GAO reviewed USDA's documentation, data and calculations, and written responses from USDA.

What GAO Recommends

GAO is making two recommendations to USDA that the Office of the Chief Economist (OCE) revise its internal review processes to ensure that future economic analyses provide documentation that transparently describes the methodologies and use representative baselines. OCE disagreed, stating that its role was to inform policymakers, who determined the baseline and program design. GAO continues to believe that transparently describing its methodology and providing representative baselines will help OCE improve future economic analyses, as discussed in the report.

View GAO-22-468. For more information, contact Kimberly Gianopoulos at (202) 512-8612 or gianopoulosk@gao.gov.

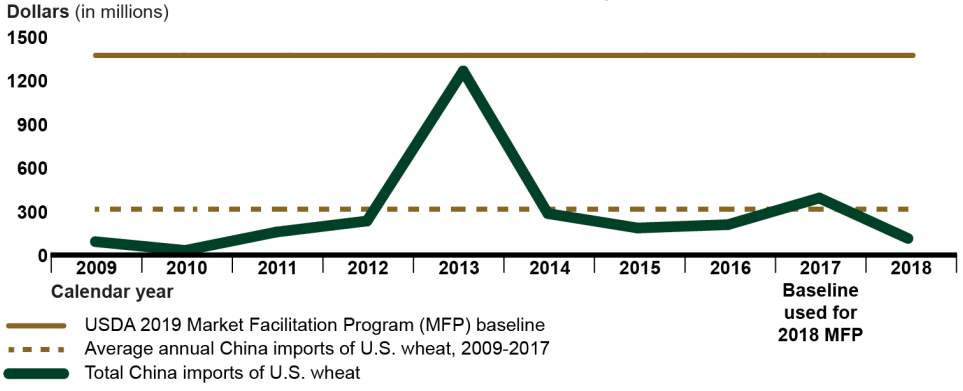
What GAO Found

The U.S. Department of Agriculture's (USDA) 2018 and 2019 Market Facilitation Programs (MFP) provided payments to help farm producers affected by foreign retaliatory tariffs. In its estimation of the effect of these foreign actions on farm producers (i.e., trade damages), USDA addressed several key elements of an economic analysis. For example, USDA assessed the sensitivity of its analysis to alternative assumptions. However, for the 2019 MFP, USDA used baselines that did not best represent what trade would be absent the retaliatory tariffs, and that increased trade damage estimates.

Trade damage estimates. USDA used an economic model to estimate the percentage that U.S. exports of each eligible commodity to retaliating countries would decline due to retaliatory tariffs. The model used trade data and academic sources for the value of parameters—known as elasticities—that estimate how foreign importers would respond to price changes. USDA then multiplied the percentage decline by a baseline of past exports to calculate trade damages.

For the 2018 MFP, USDA used a justifiable baseline, the value of retaliating country imports from the U.S. of an eligible commodity in 2017, the year before retaliatory tariffs. For example, USDA estimated that China imports of U.S. wheat would decline by 61 percent due to retaliatory tariffs and applied that decline to the $391 million value of 2017 trade, producing a trade damage estimate of $238 million. For the 2019 MFP, USDA policymakers requested baseline options from OCE and chose to base trade damages on a baseline OCE calculated as a sum of the highest retaliating country imports in any year from 2009-2018 of each product defining the commodity. As a result, USDA used unrepresentative baselines equal to or higher than the highest value of retaliating country imports in any one year. For example, in 2013, China imports of U.S. durum wheat were $182 million and of "other wheat" were at their highest ($1.1 billion)—a total of $1.3 billion. In 2017, China imports of U.S. "other wheat" were lower but durum wheat was at its highest, $289 million. USDA's 2019 MFP wheat baseline summed the two separate highest values and exceeded $1.3 billion. USDA used the new baseline and the same estimated 61 percent decline to calculate 2019 MFP wheat trade damage of $836 million—more than three times the 2018 MFP estimate and more than twice the 2017 value of China imports of U.S. wheat.

USDA 2019 MFP Baseline and Nominal Value of Chinese Imports of U.S. Wheat, 2009-2018



Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

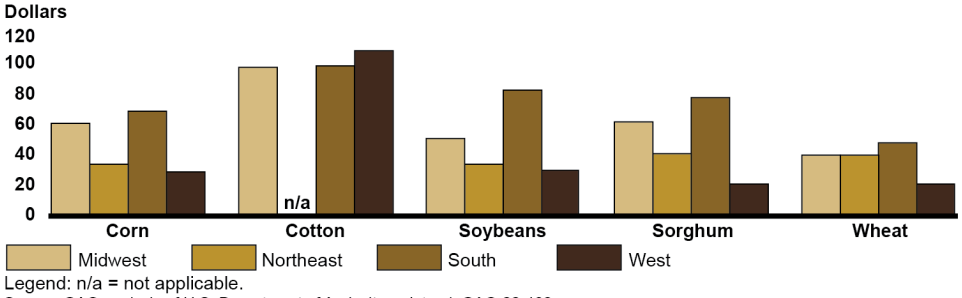
For 14 of the 29 MFP-eligible commodities USDA analyzed, USDA's 2019 MFP baseline was higher than the highest value of retaliating country imports from the U.S. in any one year from 2009 through 2018. USDA officials said USDA's baseline methodology treated commodities equitably and was responsive to concerns expressed about the 2018 MFP baseline by attempting to account for policy factors such as nontariff barriers that may have been in place at different points, making it difficult to identify a single baseline. In addition to using unrepresentative baselines, USDA did not transparently document its 2019 MFP baseline methodology or selection of elasticity values.

The limitations in USDA's economic analyses occurred even though USDA conducted an internal review designed to ensure it adhered to Information Quality Guidelines requiring sound analytical methods and transparency to the extent possible. As a result, USDA increased its 2019 trade damage estimates in a manner that was not transparent to decision makers and the public.

Payments. USDA's methodology for calculating 2019 MFP payments addressed some limitations of its 2018 methodology but resulted in (1) producers of the same nonspecialty crop (such as corn and soybeans) being paid differently in different counties, and (2) total payments for a nonspecialty crop different from USDA's estimate of trade damage to the crop. USDA's 2018 approach—dividing each commodity's trade damage estimate by its 2017 production—ensured the payments were proportional to trade damages, but excluded indirectly affected nonspecialty producers. In 2019, seeking to address this limitation and avoid influencing planting decisions, USDA calculated separate payment rates per acre for each county and paid the same rate to all nonspecialty producers in the county. USDA calculated each county's rate as its weighted average trade damage per acre—dividing the county's total trade damage to multiple eligible nonspecialty crops by the county's historical acres of eligible crops.

USDA's county-based payment methodology for the 2019 MFP resulted in different payment rates for producers of the same nonspecialty crop in different counties. For the 2019 MFP, a county's crop mix (i.e., what others in the county planted) affected the payment rate. USDA paid higher rates to producers of a crop in a county where others planted crops with higher trade damages per acre than it paid producers of that same crop where others planted crops with lower trade damages per acre. Crop payment rates were generally higher in the South because of the South's higher proportion of cotton, sorghum and soybeans, which had higher trade damages per acre. For example, though corn yields are higher in the Midwest and West, corn producers received an estimated average of $69 per acre in the South, $61 in the Midwest, $34 in the Northeast, and $29 in the West. USDA used minimum and maximum county rates to help address potential inequities, but regional differences remained.

Estimated Average County Per-Acre Payment Provided by the 2019 Market Facilitation Program by Region for Selected Nonspecialty Crops



Legend: n/a = not applicable.
Source: GAO analysis of U.S. Department of Agriculture. | GAO-22-468

Because USDA decoupled an individual nonspecialty crop's trade damage and its payment rate, USDA provided total payments to a nonspecialty crop higher or lower than the crop's estimated trade damage. GAO estimated that, for example, total 2019 MFP payments to corn producers were approximately $3 billion more than USDA's estimate of trade damage to corn, while payments to soybeans, sorghum, and cotton producers were lower than their estimated trade damages.

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Abbreviations

CCC	Commodity Credit Corporation
DDGS	distiller's dried grains with solubles
EU	European Union
FAS	Foreign Agricultural Service
FPDP	Food Purchase and Distribution Program
FSA	Farm Service Agency
GSIM	Global Simulation Model
HS	Harmonized System
MFP	Market Facilitation Program
NASS	National Agricultural Statistics Service
OCE	Office of the Chief Economist
UN	United Nations
UN Comtrade	United Nations Commodity Trade Statistics Database
USDA	U.S. Department of Agriculture
USTR	Office of the U.S. Trade Representative
WTO	World Trade Organization

GAO@100 U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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November 18, 2021

The Honorable Debbie Stabenow
Chairwoman
Committee on Agriculture, Nutrition, and Forestry
United States Senate

In 2018 and 2019, the President, citing national security concerns[1] and discriminatory and burdensome foreign trade practices,[2] increased tariffs on certain imported products. Affected trade partners retaliated with tariffs targeting U.S. exports, including agricultural exports. In response, the U.S. Department of Agriculture (USDA) provided a total of $23 billion through the 2018 Market Facilitation Program (MFP) and 2019 MFP to support farm producers affected by trade actions of foreign governments.[3] Total MFP payments and payment rates varied widely among commodities and regions. Some Members of Congress and academics have raised questions about USDA's methodologies for estimating trade damages and distributing payments to farm producers, specifically about the size of the program and reasons for the variation in payments by commodity and region.

You asked us to review the methods USDA used to estimate the trade damages from foreign actions and provide payments to farm producers. This report examines (1) the extent to which USDA's methodologies for estimating trade-related damages addressed key elements of an

[1]Tariffs were imposed under Section 232 of the Trade Expansion Act of 1962. Pub. L. No. 87-794, Title II, § 232, 76 Stat. 872, 877 (codified as amended at 19 U.S.C. § 1862). See Proclamation 9705 of March 8, 2018, 83 Fed. Reg. 11,625 (Mar. 15, 2018) and Proclamation 9704 of March 8, 2018, 83 Fed. Reg. 11,619 (Mar. 15, 2018).

[2]Tariffs were imposed under Section 301 of the Trade Act of 1974. Pub. L. No. 93 - 618, § 301, 88 Stat. 1978, 2041-43 (1975) (codified as amended in 19 U.S.C. §§ 2411-2417). See e.g. 83 Fed. Reg. 28,710 (June 20, 2018).

[3]For the 2018 MFP, USDA's Farm Service Agency (FSA) distributed about $8.6 billion in MFP payments in all 50 states and Puerto Rico. For the 2019 MFP, FSA distributed about $14.4 billion in MFP payments in all 50 states and Puerto Rico to 643,965 farming operations comprised of 870,427 individual members. See GAO, *USDA Market Facilitation Program: Information on Payments for 2019*, GAO-20-700R (Washington, D.C.: Aug. 21, 2020). USDA also provided approximately $2.6 billion in additional support through its Food Purchase and Distribution Program (FPDP), which purchased surplus agricultural commodities for nutrition assistance programs, and approximately $300 million for the Agricultural Trade Promotion Program to assist in developing export markets.

economic analysis, and how those methodologies affected the estimates and (2) strengths and limitations of USDA's methodologies for calculating payments and how those methodologies affected the payments.

To examine the extent to which USDA's methodologies for estimating trade-related damages address key elements of an economic analysis and how those methodologies affected the estimates, we reviewed USDA's publicly available descriptions of its methodologies, the sources it cited for inputs to the trade damage estimates, and relevant academic literature. We reviewed the data analyses USDA used to calculate trade damages, and checked the trade data USDA provided against publicly available sources for the data to assess their reliability and found the data sufficiently reliable for our purposes. We then assessed USDA's economic analyses for estimating trade damages using GAO's *Assessment Methodology for Economic Analysis* and USDA's Information Quality Guidelines.[4] To identify how USDA's methodologies affected the trade damage estimates, we reviewed USDA's documentation and academic literature, and compared the values of retaliating country imports USDA selected as the baseline against which USDA measured trade damages in its analysis to trends in those data prior to retaliatory tariffs. We also reviewed USDA's trade damage and county payment rates calculations for the 2019 MFP and, for comparison, calculated county rates using a baseline of 2017 trade values to illustrate the effect of USDA's baseline choices.

To examine the strengths and limitations of USDA's methodologies for calculating MFP payments and how those methodologies affected the payments, we reviewed USDA's publicly available descriptions of its methodologies, the sources it cited for production data used in the payment calculations, and its calculations of commodity and county payment rates. We downloaded data from the National Agricultural Statistics Service (NASS) and other USDA sources to verify the production data used to calculate payment rates and to examine the effect of USDA's choice of production data on its payment rates. We checked the production data and county payment rate data provided by USDA against publicly available sources for the data to assess their reliability and found the data sufficiently reliable for our purposes. We reviewed USDA's calculations of county payment rates for nonspecialty crops, including the source data on historical acres and yields that USDA

[4]GAO, *Assessment Methodology for Economic Analysis*, GAO-18-151SP (Washington, D.C.: Apr. 10, 2018).

used to calculate those rates. We then calculated the 2019 MFP payment rates per acre by region and commodity to examine the effect of USDA's use of a county payment rate methodology on the payments received by nonspecialty crop producers. For more information on our objectives, scope and methodology, see appendix I.

We conducted this performance audit from March 2020 to November 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Retaliatory Tariffs and Creation of MFP

In 2018, the President imposed increased tariffs (i.e., import taxes) on certain products from foreign countries, citing national security concerns.[5] In 2018 through 2019, the President imposed tariffs through four separate lists on specific U.S. imports from China to address certain acts, policies and practices of the government of China. China, Canada, Mexico, the European Union (EU), Turkey, and India responded to the U.S. tariffs with tariffs targeting various U.S. products, including agricultural commodities. According to fiscal year 2017 USDA Economic Research Service data on U.S. agricultural exports, prior to the imposition of retaliatory tariffs, China, Canada, and Mexico were the three largest importers of U.S. agricultural exports, and the EU the fifth largest. Together, the six retaliating countries imported approximately half of all U.S. agricultural exports.[6] In 2018 and 2019, many U.S. agricultural commodities experienced declining exports to retaliating countries. For example, soybean exports declined approximately $6.9 billion from calendar year 2017 to calendar year 2018 and $7.3 billion from calendar year 2017 to calendar year 2019 (see table 1). To help farm producers adjust to disrupted markets, manage surplus commodities, and expand and develop new markets, USDA created the 2018 MFP in July 2018 and the 2019 MFP in May 2019. Appendix II provides a timeline of U.S. and

[5]For both steel and aluminum, imports from some countries, such as Mexico and Canada, during certain months were exempt from the tariffs.

[6]USDA used values for the EU as a single country in its trade damage estimates; therefore, for the purposes of this report, we refer to the EU as a retaliating country.

foreign trade actions and key dates in the implementation of MFP from March 2018 to February 2020.

Table 1: Change in Value of Exports of Selected Market Facilitation Program–Eligible Agricultural Commodities to Retaliating Countries, Calendar Years 2017-2018 and 2017-2019

Dollars in millions

Commodity	Change in exports to retaliating countries (Calendar Years 2017-2018)	Change in exports to retaliating countries (Calendar Years 2017-2019)
Corn[a]	112	-214
Cotton	76	-259
Dairy/milk[b]	-89	-248
Pork/hogs[c]	-806	-380
Sorghum	-230	-824
Soybeans[d]	-6,880	-7,254
Wheat	-278	-324
Total	**-8,095**	**-9,503**

Source: GAO analysis of USDA documents and United Nations International Trade Statistics Database, Department of Economic and Social Affairs/Statistics Division (UN Comtrade) data. | GAO-22-468

Notes:

To calculate the actual changes in value of trade in 2018 and 2019, we used 2017 as the baseline year, the year before the retaliatory tariffs were imposed. In keeping with USDA's methodology, we define U.S. exports as imports from the U.S. reported by retaliating countries to UN Comtrade. The UN Comtrade data we used was aggregated at the six-digit Harmonized System (HS) code level. The HS is a standardized numerical method of classifying traded products used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics. The HS assigns specific six-digit codes for varying classifications and commodities. Countries may add longer codes to the first six digits for further classification. For products that faced retaliation at the more-detailed eight-digit level we examined the six-digit HS code that encompassed the eight-digit code. We calculated the change in trade values based on calendar years. The first round of retaliatory tariffs began in April 2018. In addition, changes in trade could have been driven by factors other than retaliatory tariffs. Therefore, the changes shown are not directly comparable to USDA trade damage estimates but rather show trade patterns around the time of when the tariffs where implemented.

UN Comtrade data are regularly updated; the data above are as of February 8, 2021. All retaliating countries had submitted their data at the time of our download.

[a]Our value for the change in trade for corn does not include distiller's dried grains with solubles (DDGS) and ethanol in 2019. For the 2019 MFP, USDA added the trade damage estimates for DDGS and ethanol to the trade damage estimate for corn before calculating the corn commodity rate. USDA did not include DDGS and ethanol in its estimates of trade damage for the 2018 MFP.

[b]For dairy, retaliating countries in 2018 included Mexico, Canada, and China. Our estimate of the change in trade in 2018 includes all three countries. Our estimate of the change in trade in 2019 includes only China. Canada and Mexico withdrew their tariffs in 2019 and USDA did not include them in its calculation of trade damages for the 2019 MFP.

[c]For pork, retaliating countries in 2018 included Mexico and China. Our estimate of the change in trade in 2019 includes only China. Mexico withdrew its tariffs in 2019 and USDA did not include Mexico in its calculation of trade damages for the 2019 MFP.

[d]Our value for the change in trade for soybeans does not include soybean oil in 2019. For the 2019 MFP, USDA added the trade damage estimate for soybean oil to the trade damage estimate for soybeans before calculating the soybean commodity rate. USDA did not include soybean oil in its estimates of trade damage for the 2018 MFP.

MFP Authority and Recipients

USDA provided MFP payments using the existing authority of the Commodity Credit Corporation (CCC).[7] CCC is a wholly government-owned entity that finances a broad array of agriculture support programs. CCC has permanent authority to borrow up to $30 billion at any given time from the U.S. Treasury.[8]

Producers of eligible **nonspecialty crops** (e.g., corn, cotton, soybeans, sorghum, and wheat) received 94.5 percent of total payments.[9] Producers of eligible **specialty crops** (e.g., fruits, vegetables, and tree nuts) received about 1.5 percent of total payments.[10] **Dairy and hog** operations received about 4 percent of total payments. Figure 1 shows total 2018 and 2019 MFP payments by commodity type.

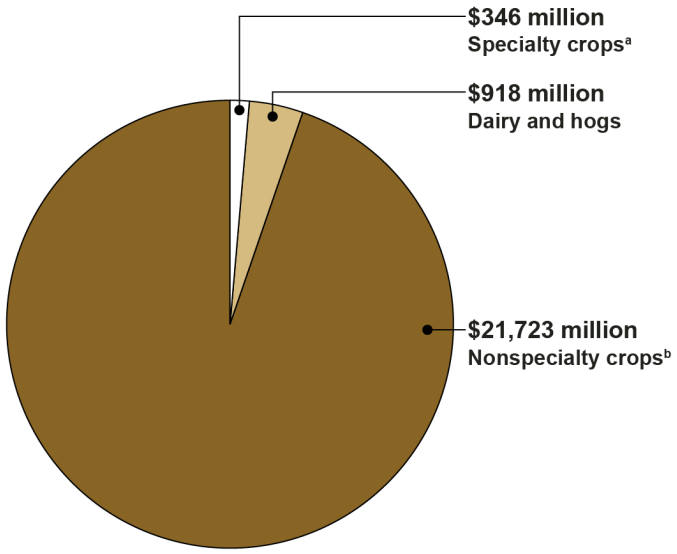
[7]See the 2018 MFP rule at https://www.federalregister.gov/documents/2018/08/30/2018-18842/market-facilitation-program, and the 2019 MFP rule at https://www.federalregister.gov/documents/2019/07/29/2019-15700/trade-mitigation-program, both accessed Jun. 22, 2021. The USDA Office of Inspector General has previously reviewed USDA's 2018 and 2019 trade mitigation programs, including MFP, and concurred that USDA had the authority to create and fund the programs through the CCC Charter Act. See: USDA Office of Inspector General, *USDA's 2018 and 2019 Trade Mitigation Packages*, Audit Report 50601-0009-31 (Washington, D.C.: May 11, 2020).

[8]The CCC Charter Act is codified at 15 U.S.C. §§ 714-714p.

[9]In 2018, MFP-eligible nonspecialty crops were corn, cotton, sorghum, soybeans, and wheat. In 2019, MFP-eligible nonspecialty crops were alfalfa hay, barley, canola, corn, crambe, dried beans, dry peas, extra-long staple cotton, flaxseed, lentils, long grain and medium grain rice, millet, mustard seed, oats, peanuts, rapeseed, rye, safflower, sesame seed, small and large chickpeas, sorghum, soybeans, sunflower seed, temperate japonica rice, triticale, upland cotton, and wheat.

[10]The 2018 MFP-eligible specialty crops were almonds and sweet cherries. In 2019, MFP-eligible specialty crops were cranberries; ginseng; sweet cherries; table grapes; and six tree nuts: almonds, hazelnuts, macadamias, pecans, pistachios, and walnuts.

Figure 1: Total 2018 and 2019 MFP Payments by Commodity Type



Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

[a]In 2018, MFP-eligible specialty crops were almonds and sweet cherries. In 2019, MFP-eligible specialty crops were cranberries; ginseng; sweet cherries; table grapes; and six tree nuts: almonds, hazelnuts, macadamias, pecans, pistachios, and walnuts.

[b]In 2018, MFP-eligible nonspecialty crops were corn, cotton, sorghum, soybeans, and wheat. In 2019, MFP-eligible nonspecialty crops were alfalfa hay, barley, canola, corn, crambe, dried beans, dry peas, extra-long staple cotton, flaxseed, lentils, long grain and medium grain rice, millet, mustard seed, oats, peanuts, rapeseed, rye, safflower, sesame seed, small and large chickpeas, sorghum, soybeans, sunflower seed, temperate japonica rice, triticale, upland cotton, and wheat.

USDA Requirements for Economic Analysis and Documentation

USDA's analyses are subject to USDA's Information Quality Guidelines, which require USDA agencies and offices to use sound analytical methods, and take steps to ensure transparency of the analysis, to the extent possible. USDA was also required to conduct cost benefit analyses

of the 2018 MFP and 2019 MFP.[11] USDA released cost benefit analyses in July 2018 and July 2019, providing information about its analytical methodology.[12] In addition, USDA released two documents with information about its methodologies for estimating trade damages and calculating payments for the 2018 MFP and 2019 MFP, which this report refers to as the 2018 methodology paper and the 2019 methodology paper.[13]

USDA Methodologies for Estimating Trade Damages and Calculating Payments

USDA's Office of the Chief Economist (OCE)[14] estimated the damage to trade in agricultural commodities from foreign actions using an economic model that incorporated available trade data, as well as parameters—known as elasticities—that estimate how foreign importers would respond to price changes.[15] For both the 2018 MFP and the 2019 MFP, USDA calculated trade damages as the model's estimated percentage decline in the values of U.S. exports of eligible commodities to retaliating countries

[11]Cost benefit analyses systematically examine, estimate, and compare the economic costs and benefits of implementing a new rule. Each MFP constituted a major rulemaking subject to the Congressional Review Act, and executive orders require cost benefit analyses for a major rulemaking that results from significant regulatory action. See: Pub. L. No. 104-121, § 251, 110 Stat. 847, 868-874 (codified as amended at 5 U.S.C. §§ 801 *et seq*.); Exec. Order No. 12866, 58 Fed. Reg. 51,735 (Oct. 4, 1993); and Executive Order No. 13563, 76 Fed. Reg. 3,821 (Jan. 21, 2011). USDA found that notice and comment procedures for the final rule each year were contrary to the public interest due to the need to expeditiously provide assistance to agricultural producers. For rules that are determined to be significant because their annual economic effect is likely to exceed a $100 million threshold, covered agencies are required to conduct a more in-depth cost benefit analysis. The Office of Management and Budget designated the MFP as economically significant under Executive Order 12866.

[12]U.S. Department of Agriculture, "Cost Benefit Analysis—Market Facilitation Program" (July 24, 2018); "Cost Benefit Analysis—Trade Mitigation Program" (June 20, 2019).

[13]U.S. Department of Agriculture, Office of the Chief Economist, *Trade Damage Estimation for the Market Facilitation Program and Food Purchase and Distribution Program* (U.S. Department of Agriculture, Sept. 13, 2018) and *Trade Damage Estimation for the 2019 Market Facilitation Program and Food Purchase and Distribution Program* (U.S. Department of Agriculture, Aug. 22, 2019).

[14]According to the USDA website (https://www.usda.gov/oce), OCE is the focal point for economic and policy-related research and analysis for USDA. OCE aims to inform public and private decision makers by providing unbiased information and data-driven analyses of current and emerging issues impacting agriculture.

[15]These elasticities include the import demand elasticity—the estimated change in imports due to price changes—and the substitution elasticity—the estimated amount that foreign importers will begin importing from other suppliers. Import demand elasticities in USDA's cited sources were by country and product code, and substitution elasticities were at the individual commodity or commodity group level.

due to retaliatory tariffs relative to baseline trade. For the 2018 MFP, USDA used a baseline of 2017 trade. For example, to estimate trade damages for the 2018 MFP for almonds:

- USDA defined the almond baseline as the sum of the value of 2017 imports from the U.S. reported by China and Turkey to the United Nations Commodity Trade Statistics Database (UN Comtrade) of Harmonized System (HS) codes 08021100 (almonds, in shell) and 08021200 (shelled almonds).[16]
- In 2017, Turkish imports of the two almond HS codes from the U.S. amounted to $104.4 million and 2017 Chinese imports of the two almond HS codes from the U.S. amounted to $92.9 million. Adding these together produced a baseline of $197.3 million.
- USDA then multiplied the $197.3 million baseline by the 32.1 percent reduction in trade estimated by the economic model to produce a trade damage estimate of $63.3 million.

For the 2019 MFP, USDA updated tariff and commodity information and applied the model's estimated percentage decline to a different baseline.[17] For the 2019 MFP, USDA redefined the baseline by employing "a longer time-series to estimate gross trade damages by surveying trends in U.S. bilateral trade over a 10-year period (2009-2018)," according to the 2019 methodology paper."[18] However, for commodities where the amount and target of the retaliatory tariffs had not changed,

[16]The Harmonized System (HS) is a standardized numerical method of classifying traded products. The HS is used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics. The HS assigns specific six-digit codes for varying classifications and commodities. Countries may add longer codes to the first six digits for further classification.

[17]For the 2019 MFP, USDA updated the amount and target of retaliatory tariffs used in its analysis to account for new tariffs from India, additional tariffs from China, changes in Turkey tariff rates, and the withdrawal of tariffs from Canada and Mexico.

[18]The 2019 methodology paper cited as examples: unwarranted regulatory and trade-distorting measures imposed on U.S. corn exports, China's imposition of anti-dumping and countervailing duties on distiller's dried grains with solubles (DDGS), unilateral tariff increases on ethanol, and multi-year market access barriers for rice and wheat.

USDA applied the same estimated percentage decline it calculated for the 2018 MFP to its redefined 2019 MFP baseline.[19]

USDA's Farm Service Agency (FSA) provided payments to farm producers. According to USDA, the department's Farm Production and Conservation mission area calculated 2019 MFP payment rates on the basis of OCE's trade damage estimates.[20] For the 2018 MFP, USDA calculated nationwide payment rates for each eligible commodity by dividing OCE's 2018 MFP trade damage estimate by the commodity's total U.S. production in 2017 (or, in the case of hogs, by total U.S. inventory) obtained from NASS survey data.[21]

For the 2019 MFP, USDA divided the eligible commodities into three groups: (1) nonspecialty crops, (2) specialty crops, and (3) dairy and hogs, and calculated payments using a methodology that differed across the three groups.[22] For **nonspecialty crops**, USDA calculated payment rates per acre for every county in the U.S. and paid all eligible producers of eligible nonspecialty crops within a county the same rate, regardless of which nonspecialty crop they grew. To calculate the payment rate for each county, USDA first calculated a commodity rate per unit of production for each eligible nonspecialty crop, using the same formula it had used in 2018—dividing the OCE estimate of trade damage to the crop by its historical total U.S. production from NASS survey data. For historical production for the 2019 MFP, USDA used the average of the commodity's production from 2015-2017 rather than the 2017 data that it

[19]USDA used the same estimated percentage decline for the 2019 MFP that it had for the 2018 MFP for cotton, corn, soybeans, sorghum, wheat, and sweet cherries. USDA re-estimated the percentage decline using the same economic model for dairy, hogs, and almonds, all of which were subject to different tariffs in 2019, and also used the model for commodities newly eligible for the 2019 MFP.

[20]USDA's Farm Production and Conservation mission area includes multiple USDA agencies and is USDA's focal point for the nation's farmers and ranchers and other stewards of private agricultural lands and nonindustrial private forest lands. FSA is part of Farm Production and Conservation. FSA provides the personnel to carry out many of the programs funded by the CCC and is responsible for the overall coordination of budgetary and fiscal matters of the CCC.

[21]In both 2018 and 2019, dairy and hogs were also eligible for USDA purchases through the Food Purchase and Distribution Program (FPDP). USDA subtracted the estimated amount of FPDP purchases for each commodity from their estimated trade damage before calculating its MFP payment rate.

[22]USDA also applied payment limits and eligibility requirements for MFP payments to producers for the 2018 MFP and 2019 MFP.

had used for the 2018 MFP.[23] USDA then used each county's historical average acres and yields of nonspecialty crops to calculate a county-specific payment rate per acre.[24] Each **specialty crop** received a nationwide payment rate per acre. **Dairy and hogs** received a nationwide payment rate per unit of production, as they had in 2018. See appendix III for further information on USDA commodity trade damage estimates and payment rates methodologies for the 2018 MFP and 2019 MFP, and the trade damages it estimated and payment rates it calculated using those methodologies.

USDA Addressed Several Elements of an Economic Analysis, but Used an Unrepresentative Baseline That Increased Trade Damage Estimates and Had Limitations in Transparency

USDA's trade damage estimates for the 2018 MFP and 2019 MFP had limitations in transparency and USDA used an unrepresentative baseline for the 2019 MFP.[25] When estimating trade damages, USDA addressed several key elements of an economic analysis. However, USDA selected a 2019 MFP methodology that was based on unrepresentative baseline values of U.S. exports, which led to higher trade damage estimates relative to other methodologies, and USDA did not transparently document its choice of 2019 baseline and of modeling inputs. Appendix

[23]According to USDA officials, final production data for 2018 were not yet available.

[24]MFP payment rates varied across counties from a minimum of $15 per acre to a maximum of $150 per acre.

[25]We assessed USDA's economic analyses for estimating trade damages using GAO's assessment methodology for economic analysis (see GAO-18-151SP). Specifically, we evaluated relevant portions of the analysis against the elements of an economic analysis as defined in GAO-18-151SP. On the basis of our evaluation, we determined whether the analysis considered and addressed each of these defined elements. Each key element consists of economic concepts that represent best practices. GAO-18-151SP provides a framework for assessing the sufficiency of economic analyses and was developed by synthesizing economic concepts identified by consulting with experts on economic analysis and in federal and international agency guidance. The key methodological elements presented in GAO-18-151SP are not intended to be exhaustive or supplant or alter relevant federal and agency requirements for economic analysis, but serve to establish a sound baseline framework for the assessment of an economic analysis.

IV provides a summary table of the key elements of an economic analysis and our evaluation of USDA's trade damage methodologies.[26]

USDA Addressed Several Key Elements of an Economic Analysis

USDA Identified the Objective and Scope of Its Economic Analyses

USDA's documents describing its 2018 and 2019 MFP methodologies each include information describing the objective and scope of its economic analyses. USDA's documents state that the trade damage estimates are meant to estimate the level of gross trade damage caused by retaliatory tariffs to U.S. agricultural exports by commodity. USDA's analyses identify the timing of the effects and specify that these are direct effects to producers of eligible tariff-affected commodities. Thus, the economic analyses focus on U.S. agricultural producers and the 2018 analysis captures short-term effects, which is the time frame that the 2018 MFP is intended to cover.[27]

USDA Used a Well-Known Economic Model That Allowed It to Estimate Trade Damages for Individual Commodities

For both the 2018 and 2019 MFPs, USDA used an established model, the Global Simulation Model (GSIM), to develop its estimates of the percentage decline in trade due to retaliatory tariffs. Because the model isolates the effect of the retaliatory tariff by holding all other factors constant, its estimates are not confounded by changes in other factors affecting trade, such as changes in income in other countries or changes in weather that affect production. As a partial equilibrium model, GSIM allowed USDA to estimate effects on individual commodities in a

[26]The USDA Office of Inspector General previously reviewed OCE's analysis of trade data for commodities included in the 2018 trade mitigation package. As part of its review, the Inspector General reviewed certain outputs of OCE's model for soybeans, pork/hogs, and dairy/milk—approximately 80 percent of the trade damages OCE estimated for 2018. The Inspector General concluded that OCE consistently applied its single model across commodities and that OCE's approach for estimating trade damages through a single model was reasonable. The report did not state conclusions regarding the 2019 MFP model outputs or documentation or the assumptions, logic, and inputs used in OCE's trade damage estimates. See U.S. Department of Agriculture Office of Inspector General, *USDA's 2018 and 2019 Trade Mitigation Packages*, Audit Report 50601-0009-31 (May 2020).

[27]In the 2019 MFP, however, it is unclear whether the analysis captures only the short-term effects of the retaliatory tariffs. According to USDA's 2019 methodology paper, USDA adjusted the 2019 baseline selection approach to account for other contributing variables, such as longstanding trade barriers and the longer-term impact of prolonged retaliatory tariffs. However, the model USDA used is designed to estimate short-term impacts of the 2018 and 2019 retaliatory tariffs, and it is unclear how a redefined baseline would account for longer-term effects.

consistent manner across commodities. According to USDA, it used the same model for all commodities in order to have an equitable approach to estimating trade damages. A partial equilibrium model is also suitable for estimating short- or mid-term effects.

Unlike a general equilibrium model, a partial equilibrium model generally cannot take into account intermarket linkages, such as cross-commodity effects—how the price for one commodity affects markets for other commodities.[28] However, USDA's 2018 methodology paper discloses this characteristic of its methodological approach, stating that indirect or secondary effects from the tariff, such as cross-commodity effects, are not reflected in its trade damage estimate. Further, according to USDA's 2019 cost benefit analysis, USDA adjusted its approach in developing the payment rates for the 2019 MFP in order to better address concerns with cross-commodity effects.[29]

USDA Considered Several Alternatives for Estimating Trade Damages

The methodology USDA selected estimated the trade damages to U.S. producers as their gross loss in trade with retaliating countries of eligible commodities.[30] According to documentation USDA provided, USDA also considered the following alternatives for estimating trade damages:

[28]Two main categories of models are used to analyze trade policy: partial equilibrium and general equilibrium models. Partial equilibrium implies that the analysis considers only the effects of a given policy action, such as retaliatory tariffs, in the market or markets that are directly affected. Generally, the analysis does not account for the economic interactions between the various markets in a given economy. In a general equilibrium model, all markets are simultaneously modeled and interact with each other to produce overall estimates of effects.

[29]Retrospective studies have produced trade damage estimates that are different from USDA's for certain commodities. Through a literature search and USDA's recommendation, we found several studies conducting retrospective analysis on the effect of retaliatory tariffs on U.S. agricultural trade and two studies that explicitly focus on isolating the effects of the retaliatory tariffs on U.S. agricultural exports. Results from these studies approximated USDA's estimates for some commodities but varied substantially from USDA's estimates for others. Appendix V compares trade damages between two retrospective studies and USDA's estimates and discusses factors that may have contributed to the differences.

[30]USDA's estimated trade damages estimate the loss in trade to retaliating countries as a result of the tariffs and thus estimate the loss to U.S. producers if USDA took no action. One of the key elements of an economic analysis includes applying the criterion of net present value, which is applied when costs or benefits occur at different points in the future. However, because USDA did not explicitly estimate long-term effects, its analyses did not have to use the criterion of net present value.

- accounting for offsetting gains to alternative markets for each of the nine commodities in the 2018 MFP
- using a proxy to quantify the loss from additional marketing and storage costs due to the tariffs at the state and regional level for soybeans and corn
- using observed price changes as well as a hybrid approach (model-based price changes and observed price changes) for seven of the nine 2018 MFP-eligible commodities[31]

In addition, USDA's cost-benefit analyses for the 2018 and 2019 MFPs state that it considered alternatives such as adding additional eligible commodities, which would increase the cost of the program, and covering additional trade actions for the 2018 MFP.[32]

USDA Assessed the Sensitivity of Results to Alternative Assumptions

In addition to considering alternative methods, USDA also considered the impact of alternative assumptions within the method it selected—a sensitivity analysis. Methodologies such as USDA's may be sensitive to parametrization—the assumptions modelers make about the ability of an individual market to adjust to the tariffs—and USDA's choice of parameters affected its resulting trade damage estimates. Except for the sensitivity to the choice of economic model for soybeans, USDA did not describe its sensitivity analyses in its public documents that described its methodology or in the cost benefit analyses. USDA provided us documentation of the analysis it performed regarding the effects of its

[31]USDA did not discuss its analyses of the quantification of alternatives related to offsetting gains, marketing and storage costs, and price changes in public documents. Because USDA quantified alternatives, the analysis used the concept of opportunity cost. USDA did not discuss how other effects that could not be quantified, such as cross-commodity effects, affected the comparison of alternatives. However, USDA adjusted the payment approach for the 2019 MFP in order to better address cross-commodity effects.

[32]The 2019 cost benefit analysis noted that the 2019 MFP already covered a broader scope of affected commodities than the 2018 program. The cost benefit analysis stated that, as any additional commodities would likely be specialty crops (e.g., fruits and vegetables), administrative complexity would increase because of the unique production and marketing characteristics associated with many of these crops, such as multiple harvest periods and specific marketing windows. In addition, a payment program could lead to increased planting and thus market distortions given the concentrated nature of the markets for some of these crops. Thus, USDA determined that the FPDP was a more practical mechanism for addressing the trade damages to some specialty crops.

choice of substitution elasticity estimates,[33] baseline,[34] model calibration,[35] and economic model.[36]

USDA Listed Data Sources and Used a Justifiable Baseline for the 2018 MFP

USDA's 2018 Methodology Paper lists data sources that USDA used for its 2018 trade damage estimate, and the 2019 Methodology Paper states that USDA used the same model for the 2019 MFP trade damage estimate.[37]

USDA provided a reasonable justification for using 2017 trade data as an appropriate baseline against which to estimate the trade damages from retaliatory tariffs for the 2018 MFP. According to the 2018 methodology paper, USDA used 2017 trade data because 2018 data were not final and were months away from being complete. Moreover, the 2018 trade data would likely show a biased impact because of the tariffs.

[33]USDA provided us with documentation of the sensitivity analysis it performed at a preliminary stage of the analysis around the different elasticity estimates for the 2018 MFP. For the nine commodities eligible for the 2018 MFP, the difference between the lowest value and the highest value based on the different elasticity estimates ranged from 2 percent to 42 percent. For five of the nine commodities, the difference was less than 15 percent.

[34]For the 2019 MFP, USDA estimated trade damages using different possible baseline periods, which included various individual and combinations of years from the 2009 through 2018 time period.

[35]According to our analysis of the analysis files USDA provided to us, the results of using a different period to calibrate the model were similar to the results of using 2016, the estimates for some commodities were slightly higher and other estimates were slightly lower.

[36]The alternative modeling approach showed similar results for soybeans. Although USDA did not conduct this type of analysis for the other commodities, soybeans were by far the most significant MFP-eligible commodity in terms of trade value.

[37]Although USDA's documentation lists most of the sources for the data used, it does not explain the potential limitations of the data used nor discuss the implications of limitations in the data, such as the potential limitations associated with available substitution elasticity estimates USDA used in its analyses (e.g., that the elasticities are not available at the level of aggregation used in USDA's analyses).

USDA Chose an Unrepresentative Baseline for the 2019 MFP That Increased Trade Damage Estimates

USDA's 2019 MFP Baseline Is Not Representative

For the 2019 MFP, according to USDA officials, USDA policymakers requested a range of trade damage estimates from OCE based on different baseline options to develop the 2019 MFP. Based on these options, USDA policymakers decided that the trade damage estimates underlying the 2019 MFP would be based on the baseline option that employed trade values that equaled or exceeded the highest value of U.S. exports of the commodities to retaliating countries in any one year.

For the baseline option selected for the 2019 MFP program, USDA

- identified the highest annual value of imports by a retaliating country in any year from 2009 through 2018 for each HS code that USDA used to define the commodity,
- added together those highest annual values of imports for each HS code by the retaliating country, and then
- added together the total of the highest annual values of imports by HS code for all retaliating countries.[38]

Because the baseline option selected for the 2019 MFP program used the highest values in individual years for its baseline, in all instances the resulting baseline is equal to or greater than the highest value of U.S. commodities imported by the retaliating countries for the product facing retaliatory tariffs in any one year from 2009 through 2018. For example, the value of Chinese imports of U.S. cotton ranged between $514 million and $3.7 billion between 2009 and 2018. USDA used the highest value of

[38]USDA did not adjust for inflation. According to the Gross Domestic Product Price Index from the Department of Commerce Bureau of Economic Analysis, the value of inflation was 2.4 percent in 2018 and about 1.6 percent per year, on average, from 2009 through 2018. According to USDA officials, controlling for inflation was not relevant for their estimates, because the trade damages were defined as projecting trade damages at the time of the analysis. For example, according to USDA, the 1-year time frame would result in a change due to inflation that would fall below the margin of error. USDA also stated that not adjusting for inflation for the MFP is consistent with its practice for all other ad hoc programs, which also do not adjust for inflation. For the 2019 MFP, USDA used the nominal trade value when summing maximum trade values for 2009 through 2018 as the baseline to estimate trade damages.

Chinese imports of U.S. cotton—$3.7 billion in 2012—as the baseline in its trade damage calculations.[39]

For some commodities, such as corn and wheat, the baseline option USDA employed for the 2019 program resulted in baseline values that were higher than the value of imports of U.S. products by the retaliating partner in any one year from 2009 through 2018, as USDA constructed the baseline by (1) adding together the highest values of U.S. products imported by different countries from different years, or (2) adding together the highest values of different HS codes for the commodity from different years.

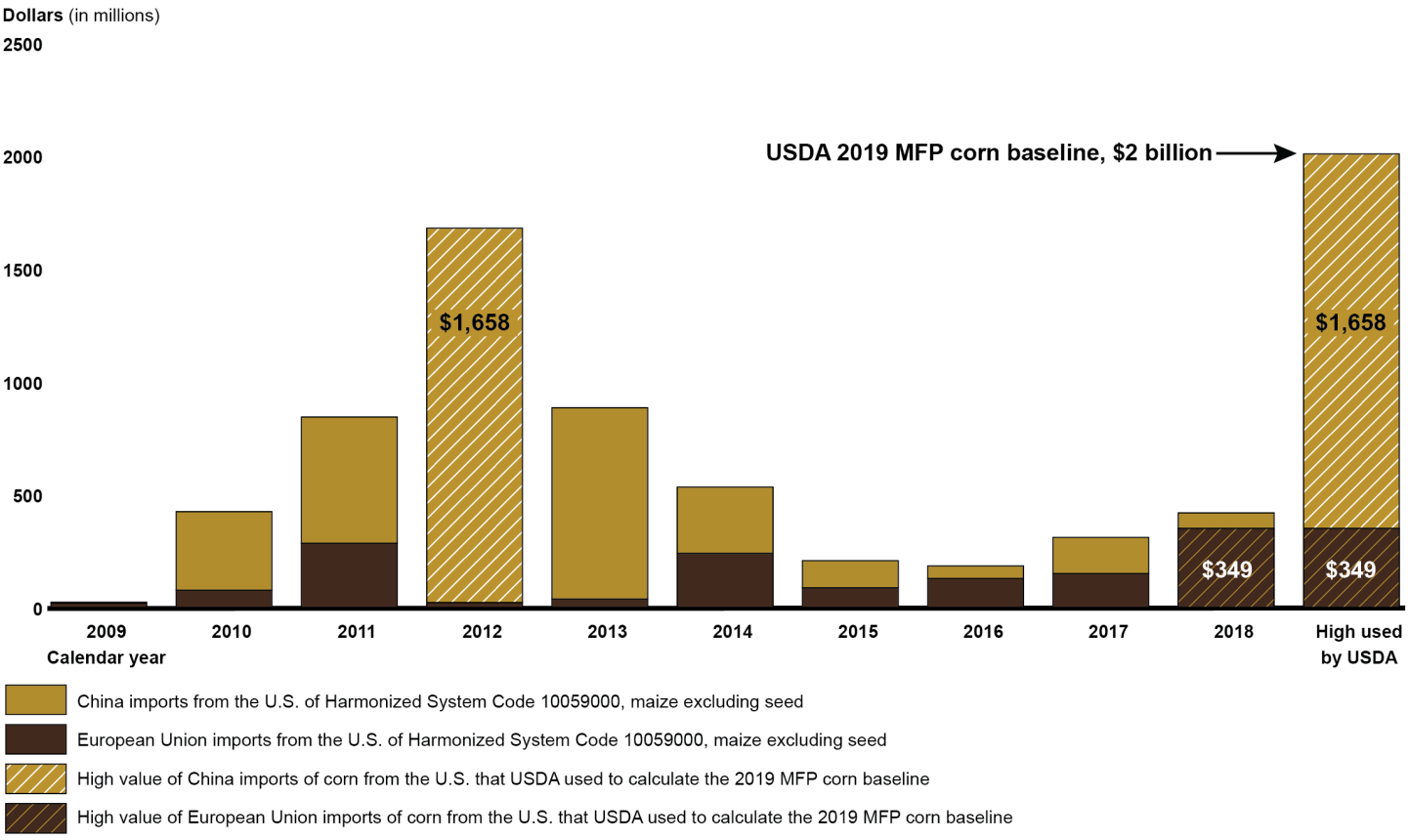
For corn, the baseline option USDA employed for the 2019 program involved summing import values in different countries across different years.[40] As figure 2 shows, by adding values from the two different retaliating countries and different years, USDA calculated a 2019 MFP baseline value for corn of $2.0 billion, higher than the highest total value of EU and China corn imports from the U.S. in any year from 2009 through 2018 ($1.7 billion in 2012).[41]

[39]According to the USDA FAS and Economic Research Service, Chinese cotton imports rose rapidly at this time as a result of imports by state-owned enterprises for policy purposes, such as adding to China's national reserve.

[40]According to FAS, reduced production from U.S. competitors for the EU market in 2018, including Serbia, Brazil and Argentina, enabled U.S. exporters to increase exports to the EU market.

[41]According to FAS, in 2013, China rejected shipments of U.S. corn because they contained unapproved genetically modified varieties of corn and, as a result, Chinese importers began to import greater quantities of sorghum as a substitute for corn. USDA also included the high values of Chinese imports of other corn products such as flour, starch, and bran in its 2019 MFP baseline calculation. However, these other products' high trade values are far smaller than the value of trade of HS code 1005900, approximately 0.3 percent of the China and EU high import values of HS code 10059000.

Figure 2: Combination of 2009-2018 Retaliating Country High Import Values for Corn for Harmonized System (HS) Code 10059000 That USDA Used to Calculate Baseline for 2019 MFP



Legend: MFP = Market Facilitation Program.

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

Note: USDA used values for the EU as a single country in its trade damage estimates; therefore, for the purposes of this report, we refer to the EU as a retaliating country. USDA also included the high values of Chinese imports of other corn products such as flour, starch, and bran in its 2019 MFP baseline calculation. However, these other products' high trade values are far smaller than the value of trade of HS code 1005900, approximately 0.3 percent of the China and EU high import values of HS code 10059000, and are not shown due to the scale of this chart.

For wheat, USDA added together the highest values of different HS codes for the commodity from different years. Specifically, USDA calculated the $1.4 billion baseline as the sum of the highest value from 2009 through 2018 of Chinese imports from the U.S. of HS code 10011900 (durum wheat), approximately $289 million in 2017, and the highest value of Chinese imports from the U.S. of HS code 10019900

(other wheat), approximately $1.1 billion in 2013.[42] USDA's 2019 MFP wheat baseline summed the two separate highest values and exceeded $1.3 billion, the high value of Chinese imports of these two wheat HS codes to China in any one year from 2009 through 2018. In all, the baseline trade values against which USDA measured trade damages for the 2019 MFP were higher than the highest value of imports from the U.S. by retaliating countries in any one year from 2009 through 2018 for 14 of the 29 MFP-eligible commodities for which USDA calculated commodity payment rates.[43]

According to USDA officials, the rationale for using the sum of 10-year highs of different components of a commodity was that the 10-year high for each of these individual products could fall in a different year, reflecting policy factors such as nontariff measures or other barriers that may have been in place at different points during the 2009 through 2018 period. However, it is unclear how applying the model's estimate of the decline in trade due to retaliatory tariffs to a baseline that sums the 10-year highs for each HS code relates to the effects of nontariff measures or other barriers.[44] In addition, the high trade values with retaliating countries for individual commodities can result from factors other than the

[42]According to FAS, China wheat imports increased in 2013 due to quality issues with its domestic crop that year and growing demand for feed-quality wheat. High domestic wheat prices and lower supplies drove China to import feed-quality wheat from foreign sources to meet growing demand. However, in 2014, China had a record wheat crop and demand for feed wheat dropped, owing to competitive corn prices and larger domestic corn stocks, causing imports to plummet.

[43]These 14 commodities include only those for which the difference between the USDA baseline and the highest trade had been in any one year from 2009 through 2018 was greater than 1 percent.

[44]According to USDA's 2019 methodology paper, USDA adjusted the 2019 baseline selection approach to account for other contributing variables, such as longstanding trade barriers and the longer-term impact of prolonged retaliatory tariffs. However, the model USDA used is designed to estimate short-term impacts of the 2018 and 2019 retaliatory tariffs, and it unclear how a redefined baseline would account for longer-term effects.

absence of tariffs or nontariff barriers.[45] According to USDA officials, USDA had explained in the Cost Benefit Analysis, the 2019 methodology report, and more extensively in the October 31, 2019 Report to Congress, that many of the commodities affected by retaliatory tariffs were also subject to many longstanding nontariff barriers that suppressed export levels below what would have been expected in the absence of those barriers.[46] USDA officials stated that the 2019 baseline approach also ensured that all affected commodities were treated in an equitable manner, particularly given that different commodities were affected by nontariff barriers in different years, making it difficult to identify a single baseline that could address concerns that the baseline used for the 2018 program was not representative because it did not account for nontariff barriers. According to USDA officials, the approach was deemed necessary given the need to expeditiously provide assistance to U.S. farmers.

The baseline option USDA employed for the 2019 MFP program was substantially higher in comparison to the 2018 MFP baseline methodology for each of the five nonspecialty crops for which USDA calculated the vast majority of trade damages.

[45]For example, according to FAS and the USDA Economic Research Service, Chinese cotton imports reached their 2012 peak as a result of imports by state-owned enterprises for policy purposes, such as adding to China's national reserve. In addition, according to FAS, the high trade value of EU imports of corn in 2018, which USDA selected as the EU baseline, occurred because U.S. competitors for the EU market had poor harvests. The 2018 high trade value did not occur because of the absence of retaliatory tariffs, which were already in effect in 2018. Appendix VI provides further information about the value of the 2019 MFP baseline USDA used in its calculation of trade damages for MFP-eligible commodities in comparison to historical trade with retaliating countries of those commodities. According to USDA officials, as explained in the 2019 Report to Congress, many of these trade barriers were longstanding. USDA officials stated that these trade barriers were only relaxed when the country needed to increase imports and offered as an example China's ability to control imports of grains through tariff rate quotas administered to State Trading Enterprises in a discretionary manner. More specifically, according to USDA officials, China has a history of keeping its imports of wheat and other grains artificially low through its administration of quotas in a manner inconsistent with its World Trade Organization (WTO) commitments, as had been ruled by a WTO dispute panel, and years in which it had relaxed such barriers may thus be viewed as being more representative of the market potential.

[46]Section 119 of public law 116-59 required the Secretary of Agriculture to submit a report to the House and Senate Committees on Appropriations and Agriculture that included an "analysis of trade damage caused by retaliatory tariffs and separately by non-tariff trade barriers, including dumping, on U.S. agricultural producers." See https://www.usda.gov/sites/default/files/documents/MFP-Report-to-Congress-October-2019.pdf.

- USDA's 2019 MFP corn baseline of $2 billion is more than 6 times the amount of a baseline calculated with the 2018 MFP methodology of 2017 trade values ($311 million).
- The 2019 MFP baselines for cotton, sorghum, and wheat were, respectively, 3.8, 2.6, and 3.5 times the baseline value used for the 2018 MFP.
- The 2019 MFP baseline for soybeans was approximately 1.2 times the 2018 MFP baseline.

USDA stated that it did not use 2017 as its baseline for the 2019 MFP because, for some commodities, 2017 was not the most representative base year. However, the baseline option USDA employed for the 2019 MFP program also uses a year—for each HS code component of an eligible commodity, the year in which the trade value was highest—that may not be the most representative base year against which to estimate trade damages. Appendix VI compares the value of the 2019 MFP baselines USDA used in its calculation of trade damages to historical trade with retaliating countries of MFP-eligible commodities.

USDA's 2019 MFP baseline methodology also resulted in trade damage estimates for some commodities that were higher than total U.S. exports of that commodity to retaliating countries in 2017—the year before the countries began imposing retaliatory tariffs. For example, among 2019 MFP-eligible nonspecialty crops, USDA's trade damage estimates were higher than 2017 U.S. exports to retaliating countries of corn, distiller's dried grains with solubles (DDGS), ethanol, cotton, soybean oil, rice, and wheat.

- The $2.1 billion in total estimated trade damage to corn, DDGS, and ethanol was more than five times the $378 million value of U.S. exports to retaliating countries of these commodities in 2017.
- The total estimated trade damage to cotton and wheat were each more than twice the total value of U.S. exports to the retaliating countries of these commodities in 2017.

Appendix VI compares USDA's 2019 MFP trade damage estimates to 2017 trade.

According to USDA officials, the trade damage analyses for the MFP were subject to OCE's internal review process, including consultation with USDA economists and subject matter experts in other USDA agencies, such as NASS, FSA, the Foreign Agricultural Service (FAS), and the

Economic Research Service, to ensure the analyses' compliance with USDA's Information Quality Guidelines. USDA officials stated that, as part of its internal review process, OCE economists consulted with experts in these USDA agencies to ensure that the data and methods used for this analysis were objective, accurate, timely, and clearly communicated. In addition, USDA officials stated that they consulted with economists in other U.S. government agencies, including the Council of Economic Advisers, the Office of Management and Budget, and the Office of the U.S. Trade Representative (USTR). USDA's Information Quality Guidelines state that, to ensure the objectivity of information disseminated by USDA agencies and offices in conjunction with their rulemaking activities, the agencies and offices will use sound analytical methods in carrying out economic analyses. However, even with USDA's internal review process, USDA's analyses of trade damages for the 2019 MFP used unrepresentative baseline values of U.S. exports, resulting in trade damage estimates higher than the pretariff trade of some commodities and without a clear relationship to foreign nontariff measures or other barriers.

USDA's Selected 2019 MFP Baseline Methodology Increased Its Trade Damage Estimates More Than Other Alternatives

The methodology USDA used to calculate baseline trade values for its 2019 MFP resulted in higher trade damage estimates than those produced by other baseline methodologies. For the 2019 MFP, USDA used the same estimated percentage decline it had calculated for the 2018 MFP for the five eligible nonspecialty crops for which USDA estimated the vast majority of trade damages in both years—corn, cotton, sorghum, soybeans, and wheat.[47] For the 2018 MFP, USDA multiplied the estimated percentage declines for those five crops by a baseline of 2017 trade with retaliating countries. However, for the 2019 MFP, USDA applied the same estimated percentage declines for the five crops to a higher baseline defined as the sum of the highest value in any year from 2009 through 2018 for each HS code USDA used to define the commodity. For example, for the 2018 MFP, USDA estimated that U.S. exports of wheat to China would decline by 61 percent due to retaliatory tariffs and applied that decline to the $391 million value of 2017 trade, producing a trade damage estimate of $238 million. For the 2019 MFP, USDA used the new baseline and the same estimated 61 percent decline to calculate 2019 MFP wheat trade damages of $836 million.

[47]USDA re-estimated the percentage decline using the same economic model for dairy, hogs, and almonds—all of which were subject to different or additional tariffs in 2019—and also used the model for newly-eligible commodities.

USDA assessed the effect of the choice of 2019 MFP baseline on its trade damage estimates by comparing the results of using different possible baseline periods, which included various individual and combinations of years from the time period of 2009-2018.[48]

To illustrate the sensitivity of USDA's trade damage estimates to its choice of baseline, we estimated 2019 MFP trade damages using USDA's methodology but with a baseline defined as the 2017 trade values with retaliating countries—the baseline USDA used for the 2018 MFP.[49] Table 2 shows USDA's baseline and trade damage estimates for the 2019 MFP for the five nonspecialty crops for which USDA estimated the vast majority of trade damages and the baseline and trade damage estimates for those crops using 2017 as a baseline. Using the 10-year high as a baseline results in higher estimates for each of these crops. For example, the 2019 MFP cotton trade damage estimate of $2 billion is nearly 4 times the $554 million estimate calculated using 2017 trade values as the baseline, and the corn trade damage estimate is more than 6 times the estimate calculated using 2017 trade values as the baseline.

[48]The trade damage estimates produced by USDA's 2019 MFP baseline selection were significantly higher than the trade damage estimates calculated using other baseline options such as the average of 2015-2017 trade values and the 5-year high.

[49]Although we used the 2017 trade values for comparative purposes to illustrate the effect of USDA's choice of methodology for calculating the baseline, we are not asserting that this is the best available method for all commodities. For example, retaliating country imports of sorghum had been trending downward between 2015 and 2017—prior to retaliatory tariffs—and that trend may have continued in the absence of retaliatory tariffs, and using 2017 would increase the pretariff baseline. Conversely, retaliating country imports had been trending upward for several specialty crops, and if that trend had continued in the absence of retaliatory tariffs, using the previous lower-trade year would reduce the baseline.

Table 2: USDA 2019 MFP Baseline and Trade Damage Estimates for Selected Nonspecialty Crops Compared with Baseline and Trade Damage Estimates Calculated Using 2018 MFP Methodology

Dollars in millions

MFP commodity	USDA's selected 2019 MFP baseline (sum of highest trade values in any year, 2009-2018)	2019 MFP baseline calculated with 2018 MFP methodology (2017 trade values)	USDA's 2019 trade damage estimate	USDA trade damage estimate calculated with 2018 MFP methodology
Corn[a]	2,013	311	-1,250	-193
Cotton	3,729	989	-2,088	-554
Sorghum	2,471	956	-811	-314
Soybeans[b]	16,328	13,960	-8,490	-7,259
Wheat	1,371	391	-836	-238
Total (for five crops shown)	**25,911**	**16,608**	**-13,475**	**-8,559**

Legend: MFP = Market Facilitation Program.

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22 468

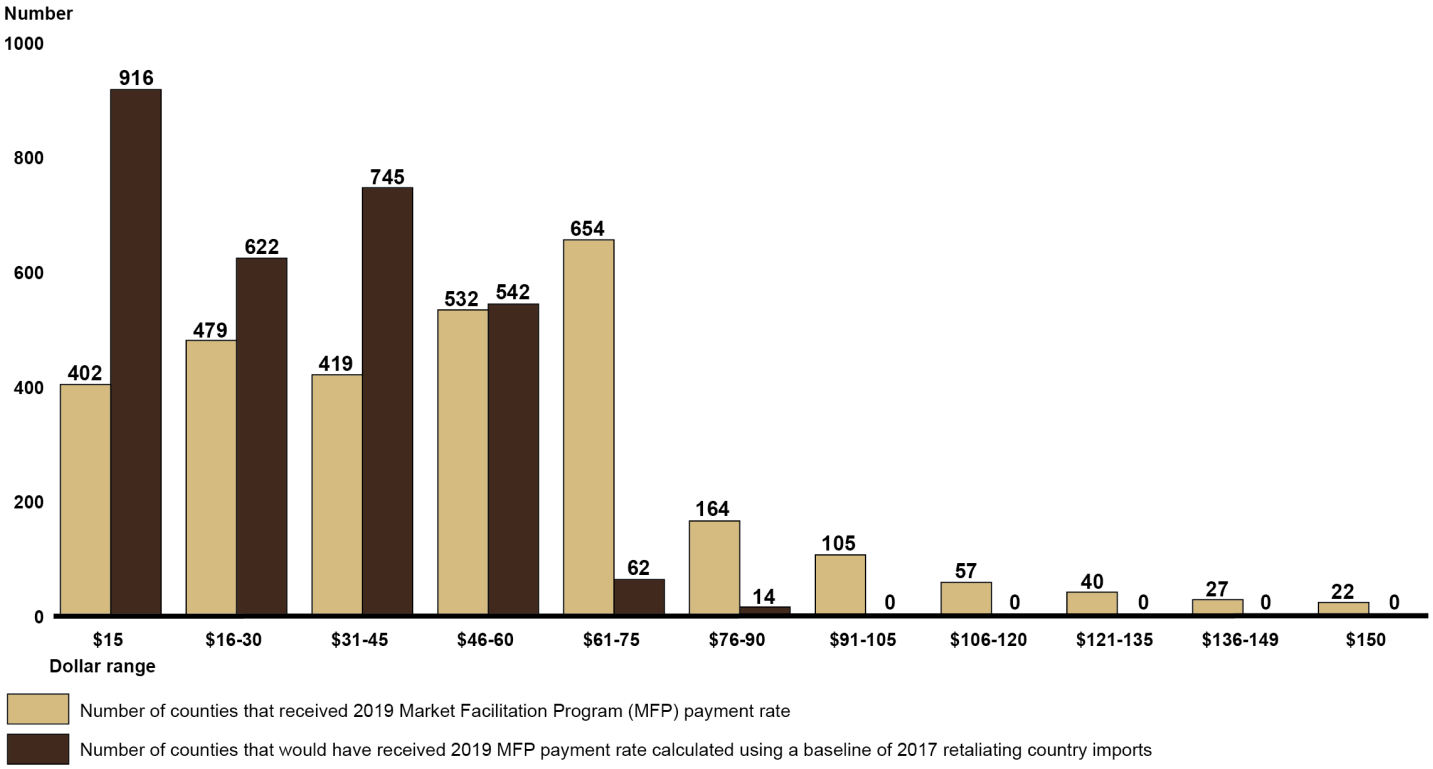
Notes: Totals may not sum due to rounding.

[a]Does not include distiller's dried grains with solubles (DDGS) and ethanol. USDA separately calculated trade damage estimates for DDGS and ethanol and added the $615 million trade damage estimate for DDGS and the $195 million trade damage estimate for ethanol to the corn trade damage estimate before calculating the corn commodity rate.

[b]Does not include soybean oil. USDA separately calculated a $141 million trade damage estimate for soybean oil and added it to the trade damage estimate for soybeans before calculating the commodity rate for soybeans.

Using a baseline defined as the 2017 value of trade with retaliating countries instead of a sum of maximum values—and making no other changes to USDA's methodologies—would have shifted the distribution of the county payment rates for nonspecialty producers for the 2,901 counties receiving payments, and more counties would have received a lower payment rate. Nearly all counties would have received a rate less than $61 per acre. For example, instead of 402 counties receiving USDA's minimum county payment rate of $15 per acre, 916 counties would have received the $15 per acre payment. See figure 3.

Figure 3: Number of U.S. Counties That Received 2019 MFP County Payment Rates and Number of U.S. Counties That Would Have Received Those Rates Calculated with a Baseline of 2017 Retaliating Country Trade Values



Source: GAO analysis of U.S. Department of Agriculture data. | GAO-22-468

For specialty crops, hogs, and milk, using a baseline defined as 2017 trade values—and making no other changes to USDA's methodologies—would also have reduced the trade damage estimates. The trade damage estimates would have been reduced by 20 percent for cranberries, 52 percent for table grapes, 6 percent for ginseng, 35 percent for tree nuts, 52 percent for dairy, and 45 percent for hogs, and would in turn have reduced the payment rates for those commodities. The trade damage estimate would have been unchanged for sweet cherries, whose 10-year high occurred in 2017.

USDA's Use of Gross Trade Damages and Omission of Offsetting Gains Increased Its Trade Damage Estimates

Using Gross Decrease in Export Values to Measure Trade Damages May Have Led to Higher Estimates Than Other Methods

USDA selected gross trade damages—the gross decrease in export value to retaliating countries—as its measure of trade damages from among other available methods that might have produced lower estimates.[50] USDA's 2019 MFP methodology paper noted that, although other methods were available, they chose the gross trade damage measure because it is used in World Trade Organization (WTO) disputes to award damages for a country's failure to comply with its obligations under the WTO agreements.[51]

Economic literature has discussed the strengths and limitations of the gross trade damage approach used in WTO disputes. The gross damages approach may produce larger damage estimates than other approaches. The gross damages approach does not consider trade diversion from countries imposing the tariffs to those that did not impose the tariffs. Approaches based on price or welfare effects might lead to lower trade damage estimates because they do not include the entire lost revenue from reduced exports due to tariffs. However, economists also recognize the benefit of using the gross trade damage approach in the context of WTO disputes, because the larger damage estimates provide more incentives for countries to comply with WTO agreements.[52]

USDA Excluded Offsetting Gains from Other Markets in Its Trade Damage Estimates

USDA estimated the net loss after taking into account offsetting gains to other markets, but it did not use the net loss as its estimates of trade damage; instead, it used the gross trade damage estimates for the 2018

[50]Other methods used in academic literature estimate trade damages on the basis of the tariff's effect on commodity prices and any welfare loss to the producers or consumers. The price effect was the most common trade damage mentioned by associations representing tariff-affected commodities. The model USDA used would allow USDA to calculate damages based on price effect.

[51]USDA's 2019 methodology paper acknowledged there are other forms of economic injury that could be measured but stated that export sale loss provides the most direct link to the retaliatory action(s) and is the single estimate that most comprehensively accounts for the full scale of trade impacts.

[52]Jason Bernstein and David Skully, "Calculating Trade Damages in the Context of the World Trade Organization's Dispute Settlement Process," *Review of Agricultural Economics*, vol. 25, no. 2 (2003): 385-398.

and 2019 MFP. Any gains from growth in exports to nonretaliating countries would reduce the amount of the trade damage estimate. For example, one study found that exports of five nonspecialty commodities to nonretaliating countries increased by approximately $363 million, with soybeans increasing $113 million and corn $188 million. For a further discussion of these retrospective studies of the effect of retaliatory tariffs on trade with retaliating and nonretaliating countries and a comparison of their trade damage estimates to USDA's estimates, see appendix V.

USDA Did Not Transparently Document Its Selection of 2019 MFP Baseline and of Modeling Parameters

USDA's public description of its 2019 MFP baseline methodology does not transparently describe the methodology. USDA's 2019 methodology paper states that USDA developed the baseline "by surveying trends in U.S. bilateral trade over a 10-year period (2009-2018)." However, we found that the baseline selected by USDA summed the highest value of retaliating country imports for each HS code defining an eligible commodity over the 10-year period from 2009 through 2018.

When we inquired about the reason for not describing the methodology as the sum of highest values, USDA officials stated that USDA presented the rationale for using a longer period for the baseline for the 2019 trade damage estimates in its published methodology documents and that the need to act expeditiously made it infeasible for USDA to try to identify which year would be most representative for each commodity covering hundreds of HS codes. The 2019 methodology paper states that the 10-year period "allows estimates to account for other contributing variables, such as longstanding trade barriers imposed by China and other countries that have affected U.S. exports, as well as the longer-term impact of prolonged retaliatory tariffs." However, USDA's public documents do not state that it used a sum of the 10-year highs for each HS code defining an eligible commodity as the baseline. Moreover, USDA's public documents do not discuss the sensitivity analysis it performed around the selection of baseline or state that the selected baseline led to maximizing trade damages relative to other baselines included in the sensitivity analysis.

In addition, although USDA's 2018 methodology paper lists most of the data sources USDA used for its trade damage estimates, we identified gaps that required further explanation from USDA when we sought to trace USDA's selection of the variables it used in its economic model back to the sources it cited. Specifically:

- USDA's 2018 methodology paper does not include the values or the source for the model's **supply elasticities**.[53] USDA officials told us that USDA used the same supply elasticity for all countries 0.1 for nonspecialty crops and 1.0 for livestock, dairy, and specialty crops.
- USDA's 2018 methodology paper does not state which **substitution elasticity** value USDA selected from the two sources identified in the methodology.[54] USDA officials provided us the specific substitution elasticity values chosen and stated that USDA used the Hertel et al. (2007) estimates for all but two commodities, soybeans and sorghum.[55] According to USDA officials, U.S. exports of soybeans and sorghum, two commodities for which China is the predominant market, would have more sensitive responses to changes in Chinese tariffs than reflected in the Hertel et al. elasticities. The two papers from which USDA drew its estimate of the substitution elasticity present different elasticity values for seven of the nine commodities USDA analyzed for the 2018 MFP, and each paper presents two alternative values.[56]
- Approximately half of the **import demand elasticities** USDA used in its modeling for both years are not tied clearly to the data included in the source dataset that USDA cited in its methodology paper,[57] and we could not independently identify the elasticity values USDA used from its published methodology. For some retaliating countries, the relevant tariffed commodity was missing from the dataset. For other retaliating countries, the dataset included the tariffed commodity but did not include an elasticity value for that commodity. In addition, although USDA used data on imports from the U.S. by the entire EU

[53]Supply elasticities are measures of the responsiveness of the quantity supplied of exports to changes in prices.

[54]Thomas Hertel et al., "How Confident Can We Be of CGE-Based Assessments of Free Trade Agreements?" *Economic Modelling*, vol. 24, no. 4 (2007): pp.611-635, and Jason H. Grant, Xin Ning, and Everett Peterson, *Trade Elasticities and Trade Disputes: New Evidence from Tariffs and Relative Preference Margins*, Policy Report CAT-2018-07 (Center for Agricultural Trade, Virginia Tech, 2018).

[55]For soybeans, USDA selected an elasticity estimate from the midpoint of the values presented in the Hertel et al. (2007) and Grant et al. (2018) papers. For sorghum, USDA used an average of the Hertel et al. (2007) and Grant et al. (2018) elasticities.

[56]Of the two alternative values, USDA typically employed elasticities that resulted in a lower 2018 trade damage estimate.

[57]Mahdi Ghodsi, Julia Grübler, and Robert Stehrer, Import Demand Elasticities Revisited, WIIW Working Paper No. 132 (Vienna Institute for International Economic Studies, November 2016).

in its modeling, the dataset had import demand elasticity values for only individual EU member states. Therefore, it is unclear from USDA's documentation what calculation or value USDA used for the EU import demand elasticity. USDA officials provided us with the values USDA used for each country and commodity for which the cited source did not have a value, and stated that USDA had used the values for the EU member countries that it determined were the best proxy for the EU. USDA officials said that USDA applied professional judgment in selecting the elasticity values.

Although USDA's public documentation does not describe the quality assurance process used for the 2018 and 2019 MFP trade damages analyses, USDA officials said that the analyses were subject to OCE's internal review process to ensure compliance with USDA's Information Quality Guidelines. According to the officials, USDA's internal review process included consultation with USDA economists and subject matter experts in other USDA agencies, as well as consultation with other government agencies, to ensure that, among other things, the data and methods used for the analyses were clearly communicated.[58] USDA's Information Quality Guidelines state that, to ensure the objectivity of information disseminated by USDA agencies and offices in conjunction with their rulemaking activities, agencies and offices will ensure transparency of the analysis, to the extent possible, by, among other things, explaining the rationale for using certain data over other data in the analysis and by providing transparent documentation. In addition, USDA guidelines state that when transparency of information is relevant for assessing the information's usefulness from the public's perspective, USDA agencies and offices will ensure that transparency is addressed in their review of the information prior to its dissemination. Without transparent documentation of its selection of the 2019 baseline and

[58]According to USDA officials, OCE worked with economists and subject matter specialists, both in USDA and in the U.S. government interagency, on the economic analysis. According to USDA, once USDA policymakers determined the parameters and design of the program, the Program Rule, Cost Benefit Analysis, Notice of Funding Availability, and other related documents (e.g., Office of General Counsel legal sufficiency, civil rights assessment) were cleared through the USDA Departmental Review and Clearance Process. The Office of Budget and Program Analysis is the department lead for reviewing and obtaining USDA interagency clearance for the rulemaking documents, including the cost benefit analysis. According to USDA, in this case, the rulemaking package was submitted to and cleared by the Office of Civil Rights, the Office of the Chief Information Officer, the Office of Tribal Relations, the Farm Production and Conservation mission area, the Office of the Secretary, and the Chief Economist. According to USDA, once the rulemaking package was cleared through the USDA Departmental Review and Clearance Process, it was transmitted to the Office of Management and Budget for clearance, pursuant to the procedures outlined in Executive Order 12866.

selection of parameters used in its 2018 and 2019 trade damage estimates, USDA has limited its ability to demonstrate the objectivity of its trade damage estimates and inform the public about their choices.

USDA's 2019 MFP Payment Methodology Addressed Some Limitations of the 2018 Methodology but Resulted in Payments Different from Trade Damages

USDA's methodology for calculating MFP payments for trade damages in 2019 addressed some limitations of its 2018 methodology, but the 2019 methodology created different payments for commodities across regions. Unlike its 2018 payment methodology, USDA's 2019 methodology calculated county payment rates based on the weighted average trade damage per acre for multiple nonspecialty crops in a county. As a result, total payments for individual nonspecialty crops differed from the trade damages USDA had estimated for the crops. In addition, producers in different parts of the U.S. received different payments for growing the same nonspecialty crop. In general, crop payment rates were higher in the South because of its higher proportion of cotton, sorghum, and soybeans, which had higher payment rates per acre than other nonspecialty crops. USDA also summed trade damages for all tree nuts to calculate a single average payment rate. If each individual tree nut payment rate had been based on the amount of trade damages estimated for each product, the payment rate per acre for almonds and pecans would have been lower, while payment rates for other tree nuts, such as pistachios, would have been higher than the single tree nut payment rate.

USDA's 2019 MFP Payment Methodology Addressed Some Limitations of the 2018 Methodology

USDA Based 2018 MFP Payments on Estimated Trade Damage for Eligible Commodities but Did Not Address Indirect Effects

The payment methodology USDA used for the 2018 MFP calculated payments proportional to tariffed commodities' estimated trade damages, but it did not address the indirect effects on nontariffed commodities. For the 2018 MFP, USDA divided a commodity's estimated trade damages by its 2017 production or inventory and paid directly-affected producers a single national rate based on the type and quantity of the commodity they produced. This approach had the strength of ensuring that payments were proportional to the amount of estimated trade damage. In addition, because USDA announced the 2018 program after the 2018 planting for most eligible crops, the timing of the program limited the possibility that farm producers would alter their planting decisions based on the MFP, an effect that USDA sought to avoid. However, a limitation of the 2018 payments approach was that producers whose commodities were not

targeted by retaliatory tariffs, but could be indirectly affected by market changes due to tariffs on related commodities, were not eligible for payments.

USDA's 2019 MFP Payments Methodology Was Designed to Address Indirect Effects of Tariffs and Prevent Planting Distortions

USDA modified its 2019 payment methodology to address some limitations of its 2018 methodology. Specifically, USDA's use of a county payment rate addressed indirect effects on nontariffed crops by providing payments to nonspecialty crop producers who did not grow the crops targeted by retaliatory tariffs but might still experience indirect spillover effects due to market changes from the tariffs.[59] Further, to address concerns that the differences in commodity payment rates could distort producers' planting decisions in 2019, USDA's methodology for the 2019 MFP calculated payments to producers of all eligible nonspecialty crops in a given county at the same rate, rather than on the basis of the type and quantity of eligible commodity produced.[60] Paying producers the same rate regardless of their specific nonspecialty crop could reduce incentives for producers to base their crop planting decisions on the payment rates. For example, producers would not have incentives to plant more soybeans and less corn because the soybean payment rate was higher than corn's. In addition, the eligibility of additional crops could reduce the incentive for producers who grew crops not previously eligible for the MFP to switch to MFP-eligible crops.

[59]Thirteen nonspecialty crops eligible for the 2019 MFP had a commodity rate of $0, but producers of these crops were eligible to receive MFP payments at the county rate. Five of the 13 crops—barley, crambe, millet, rye, and triticale—were not subject to retaliatory tariffs. Eight of the 13 crops—canola, flaxseed, mustard seed, oats, rapeseed, safflower, sesame seed, and sunflower seed—were subject to retaliatory tariffs. However, the sum of the high trade value of imports of U.S. commodities by retaliating countries of the eight nonspecialty crops subject to retaliatory tariffs was very small in comparison with the total value of other tariffed nonspecialty crops—approximately 0.3 percent of the baseline high trade value of imports of nonspecialty crops for which USDA calculated a payment rate.

[60]Decoupling payments from the type of crops producers grow may help avoid violating WTO limitations on product-specific support, according to an analysis by the Congressional Research Service. According to a 2020 Congressional Research Service report, a WTO agreement sets limits on the amounts of product-specific and non-product-specific subsidies. Congressional Research Service, *U.S. Farm Support: Outlook for Compliance with WTO Commitments, 2018 to 2020*, R46577 (Washington, D.C.: Oct. 21, 2020). In March 2021, the U.S. submitted the 2018/19 notification on domestic support, which included MFP, to the WTO. The total aggregate measurement of support notified was $13.1 billion, below the U.S. total bound aggregate measurement of support of $19.1 billion.

USDA's 2019 MFP Payment Methodology Resulted in Payments Different from Trade Damages and Different County and Regional Payments to the Same Crop

The County Payment Rate Methodology Resulted in Total Payments to a Nonspecialty Crop Different from USDA's Estimated Trade Damage to the Crop

While the 2019 payment methodology addressed some limitations of the 2018 payment methodology, it had the limitation of providing total payments to nonspecialty crops that were different from the crops' estimated trade damages. The county-specific payment methodology USDA used for the 2019 MFP changed the total payments for nonspecialty crops relative to those the commodities' producers would have received if USDA had calculated payments based directly on the commodities' individual estimated trade damages—the payment methodology USDA used for the 2018 MFP.

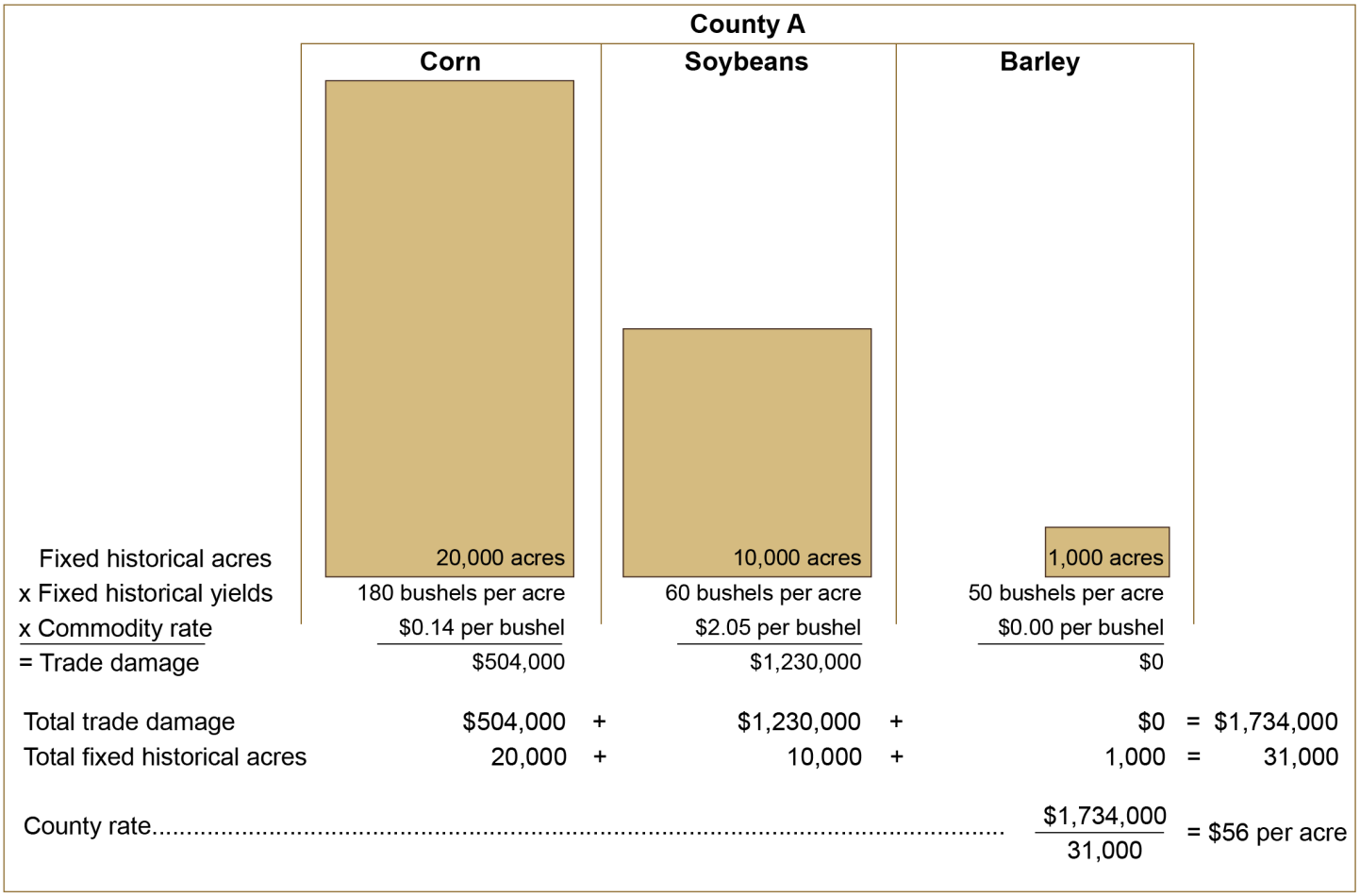
For the 2019 MFP, USDA provided payments at a single county rate calculated as the weighted average trade damage per acre for the multiple nonspecialty crops grown in that county. First, USDA calculated the trade damage to each crop in a county by multiplying each eligible crop's commodity rate by the county's historical planted acres and yields of that crop.[61] USDA then summed the total of the trade damages for every eligible crop in the county to calculate the county's total trade damage. Finally, USDA divided the county's total trade damages by its total historical planted acres of eligible nonspecialty crops to calculate the county payment rate per acre.[62] Figure 4 illustrates the county payment rate methodology as USDA described it for a hypothetical county with historical planting of 20,000 acres of corn, 10,000 acres of soybeans, and 1,000 acres of barley. The county per acre payment rates ranged

[61]For historical acres, USDA used the average acres reported to the Farm Service Agency from 2015-2018. For historical yields, USDA used the county average yield between 2015 and 2017 from either the USDA Risk Management Agency or NASS, depending on data availability. USDA used county-level data yield if it was available, and state- or national-level data if not.

[62]Producers prevented from planting because of adverse weather conditions or other factors were eligible to receive a payment of $15 per acre if they planted a qualifying cover crop.

between the minimum rate ($15 per acre) and maximum rate ($150 per acre) set by USDA.[63]

Figure 4: Illustration of County Rate Calculation Methodology for Nonspecialty Crops for the 2019 Market Facilitation Program

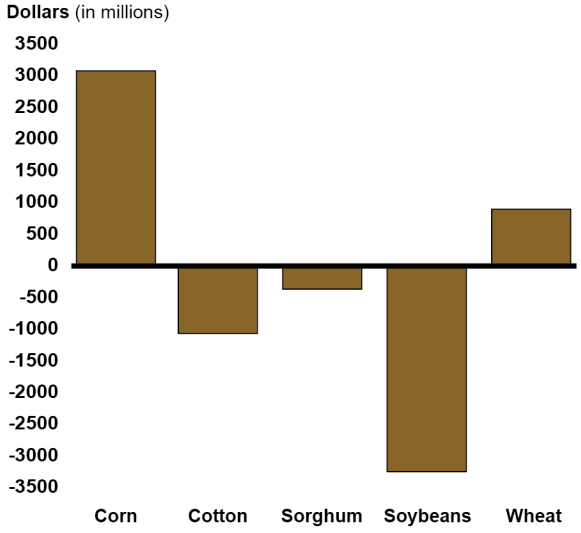


Source: GAO analysis of U.S. Department of Agriculture documents. | GAO-22-468

[63]In all, 402 counties received the minimum rate of $15 per acre and 22 counties received the maximum rate of $150 per acre, with the remaining counties falling somewhere in between. Before applying the maximum rate limit, the county rate calculation for counties receiving the maximum ranged from $150 to $257 per acre. Before applying the minimum rate limit, the county rate calculation for counties receiving the minimum ranged from $0 to $15 per acre, with 17 counties having a rate of $0. Some eligible commodities, such as barley, rye, and oats, had a payment rate of $0 because they were not subject to retaliatory tariffs, or USDA did not calculate a payment rate for the eligible crops. The 17 counties with a $0 payment rate before USDA applied the $15 minimum had eligible plantings of only these $0 rate crops.

Using an average of all damages in the county resulted in payments for individual crops that were driven in part by the other crops grown in the county. By incorporating a county's crop mix into its payment rate calculations, USDA reduced or increased payments for individual crops relative to the commodity rates specific to the crops. Using USDA's hypothetical county as an example, USDA estimated trade damages to the 20,000 acres of corn in the county to be $504,000. However, a payment of $56 per acre to the 20,000 acres of corn results in corn receiving $1.1 million in payments. Conversely, the 10,000 acres of soybeans would receive $560,000 in payments for their estimated $1.2 million in trade damages, and barley, with 0 trade damage, would receive $56,000. In total, we estimated that the 2019 MFP's total payments for corn nationwide amounted to approximately $3 billion more than if USDA had paid producers at a commodity rate calculated on the basis of total trade damages, as it did for the 2018 MFP. Payments for wheat were also higher. In contrast, payments for soybeans, sorghum, and cotton were lower than if USDA had used its 2018 MFP payment methodology. See figure 5.

Figure 5: Difference between Hypothetical Total Nationwide Payments Calculated with 2019 Market Facilitation Program (MFP) Payment Methodology vs. 2018 MFP Payment Methodology



Source: GAO analysis of U.S. Department of Agriculture data. | GAO-22-468

Notes: To compare hypothetical total payments using USDA's 2019 MFP county-rate methodology and its 2018 MFP commodity-rate methodology, we calculated the total payment for a crop based on the county rate by multiplying USDA's 2019 county rate by the historical average number of acres planted for that crop. We calculated the total payment for a crop under the 2018 payment

methodology based on the 2019 commodity payment rate multiplied by the crop's historical yields and acres. We then subtracted the total commodity-based payment from the total county-based payment.

Because 2019 MFP payments are not based directly on commodity rates, the estimated total payments for a commodity shown here are based on historical numbers of acres planted and assume the acres for a specific commodity in 2019 equaled the historical average acres planted. We do not have data on the actual planted acres in 2019.

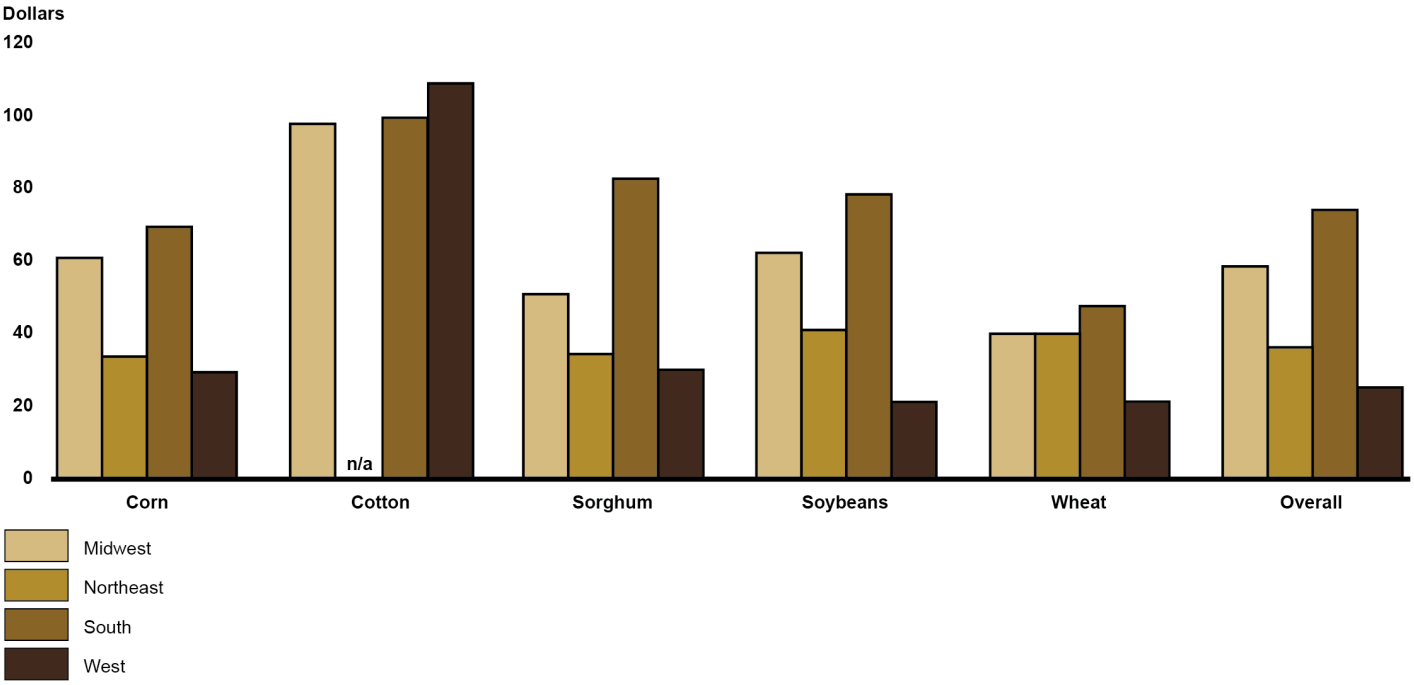
Farmers may rotate some crops, such as soybeans and corn, and thus the acreage for each crop varies from year to year. This calculation illustrates the difference in payments under the two different methodologies. The total payments for each commodity are hypothetical and are not based on the actual acres planted in 2019, for which we did not have data.

Because of adjusted gross income limits and payment caps on individual farm producers, these hypothetical payments may not match actual payments USDA provided in 2019.

USDA's Payment Methodology for 2019 MFP Resulted in Different Payment Rates for Producers of the Same Nonspecialty Crops in Different Regions

The county-based payment methodology for the 2019 MFP resulted in different payment rates for producers of the same nonspecialty crop in different counties and regions. For example, as figure 6 shows, a producer of corn received an average of $69 per acre in the South, $61 per acre in the Midwest, $34 per acre in the Northeast, and $29 per acre in the West. A producer of sorghum received an average of $83 per acre in the South, $51 per acre in the Midwest, $34 per acre in the Northeast, and $30 per acre in the West.

Figure 6: USDA 2019 Market Facilitation Program Estimated Average County Payments per Acre to Nonspecialty Crop Producers by Region



Legend: n/a = not applicable.

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

Notes: To calculate the payment rate in regions by commodity, we calculated the total expected payment for a crop using USDA's county rate methodology, multiplying the county rate by the historical average acres planted for that crop at the county level. We then aggregated total expected payments and total acres to the regional level using the U.S. Census Bureau's definition of region. Commodity rate by region is the total expected regional payments divided by the total regional historical acres of that commodity.

The estimated payments for a commodity are based on the historical numbers of acres planted used by USDA in its calculations and assume the number of acres for a specific commodity in 2019 is the same as the historical average number of acres planted.

Farmers may rotate some crops, such as soybeans and corn, and thus the acreage for each crop varies from year to year. This calculation illustrates the regional differences in payment rates. The payments for each commodity are hypothetical and not based on the actual acres planted in 2019.

The five crops shown received more than 90 percent of the total MFP payments in 2018. Except for cotton, which is not grown in the Northeast, all of the crops are grown in all of the regions. The smallest acreage represented, sorghum in the Northeast, is approximately 16,000 acres.

USDA stated that they recognized the potential effect of geographic location and a county's crop mix on payment rates calculated using the 2019 MFP methodology and noted that the methodology could result in disparities in payment rates between neighboring counties. According to USDA officials, USDA determined it was not possible to develop an adjustment that would treat all regions and eligible commodities equally.

Instead, USDA decided to “cup and cap” the payment rates—establishing a minimum county payment rate of $15 per acre and a maximum county payment rate of $150 per acre—to help address potential inequities. However, our analysis shows that differences between regions persisted despite the “cup and cap” adjustments.

Differences in Crop Mix and Yield Each Contributed to Differences in County and Regional Average Payment Rates, but Crop Mix Had a Greater Effect

USDA’s 2019 MFP payment methodology calculated county payment rates as the weighted average of trade damage per acre for multiple nonspecialty crops grown in a county. Differences in crop mix and yields among counties both contributed to differences in the county payment rates and the regional average payment rates. Of these two factors, however, crop mix had the larger effect.

Crop mix. County payment rates are averages of the trade damages per acre for multiple nonspecialty crops grown in the county, weighted by the share of the historical planted area of each crop. Therefore, a county with a higher historical proportion of acres planted with crops with higher payment rates would have a higher weighted average and thus a higher county payment rate. Cotton had the highest estimated payment rate per acre nationwide, followed by soybeans, sorghum, corn, and wheat. Wheat—a crop with a relatively low estimated payment rate—accounted for about 77 percent of planted acres in the West, while cotton, sorghum and soybeans—three crops with relatively high estimated payment rates—accounted for approximately 57 percent of the acres in the South. The higher concentration of crops with higher estimated payment rates in the South led to a higher overall estimated payment rate in the South than in the West. See table 3.

Table 3: Comparison of Estimated Average Payment Per Acre for the 2019 Market Facilitation Program (MFP) and Crop Mix for Selected Nonspecialty Commodities, by Region

	Estimated average payment per acre (dollars per acre)					Regional share of acreage (percent)			
Nonspecialty crop	Midwest	Northeast	South	West	Nationwide	Midwest	Northeast	South	West
Corn	61	34	69	29	60	43	63	19	16
Cotton	98	n/a	99	109	100	<1	0	21	3
Sorghum	51	34	83	30	63	2	1	6	4
Soybeans	62	41	78	21	65	41	29	30	0
Wheat	40	40	48	21	37	13	7	24	77
Overall (for five crops shown)	59	36	74	25	59	100	100	100	100

Legend: n/a: not applicable as there were no reported acres for cotton in the Northeast
<1: the value is less than 1 percent

Source: GAO analysis of U.S. Department of Agriculture data. | GAO-22-468

Notes: To calculate the payment rate in regions by commodity, we calculated the total expected payment for a crop by multiplying the county rate by the historical average number of acres planted for that crop at the county level. We then aggregated total expected payments and total acreage to the regional level, using the U.S. Census' definition of region. Commodity rate by region is the total expected regional payments divided by the total regional historical acres of that commodity.

The expected payments for a commodity are based on the historical crop acreage and assume the acreage for a specific commodity in 2019 equaled the historical average acreage.

Farmers may rotate some crops, such as soybeans and corn, and thus the acreage for each crop varies from year to year. This calculation illustrates the difference in payment rates in different regions. The payments for each commodity are hypothetical and not based on actual acreage in 2019.

The five crops shown received more than 90 percent of total MFP payments in 2018. Except for cotton, which is not grown in the Northeast, all other crops are grown in all regions. The smallest acreage represented, sorghum in the Northeast, is approximately 16,000 acres.

Yield differences. Differences in historical yields also affected county payment rates. Higher historical yields contributed to higher payment rates because the county payment rate formula multiplied each nonspecialty crop's commodity payment rate by its historical yield to calculate the per-acre payment rates. For example, the Midwest had higher corn yields than other regions and therefore had the highest estimated payment rates per acre for corn as an input in USDA's county payment rate calculation. In contrast, the South had the lowest soybean yields and therefore had the lowest estimated payment rates per acre for soybeans as an input in the county payment rates calculation. See table 4.

Table 4: Comparison of Estimated Average Payment Per Acre for the 2019 Market Facilitation Program (MFP) and Yields for Selected Nonspecialty Commodities, by Region

		Average of the Three-year Average Yields				Estimated average payment per acre used in county payment rates calculation (dollars per acre)[a]			
Nonspecialty crop	Per-acre unit	Midwest	Northeast	South	West	Midwest	Northeast	South	West
Corn	Bushels	160	124	127	153	23	18	18	22
Cotton	Pounds	830	N/A	775	1269	212	N/A	198	325
Sorghum	Bushels	76	62	56	66	129	105	94	112
Soybeans	Bushels	49	43	36	49	101	88	73	99
Wheat	Bushels	57	58	44	57	23	24	18	23

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

[a]The estimated average payment per acre shown is based on the national commodity rate for the crop USDA used in its calculations multiplied by the average yields of the crop in the region. This analysis disaggregates the county payment rates by commodity, removing the averaging effect of the county rate formula to demonstrate the effect that yield per acre had on payment rates. This analysis therefore does not reflect actual 2019 payment rates.

While both crop mix and yield contributed to differences in regional payment rates, crop mix had a larger effect. For example, if the county payment rates were based only on yields and not on crop mix, the higher soybean yields in the Midwest would have led to a payment that was $28 per acre higher in the Midwest ($101 per acre) than in the South ($73 per acre). However, because the difference in the two regions' crop mix counteracted the effect of yields on the payment rates, we estimated that soybean producers had a lower payment rate in the Midwest ($62 per acre) than in the South ($78 per acre). Similarly, owing to the effect of crop mix, we estimated that sorghum producers received a 63 percent higher payment rate in the South than in the Midwest, although sorghum yields in the Midwest were about 36 percent higher than in the South.

USDA's Methodology Resulted in Payments Higher Than Trade Damage Estimates to Almond and Pecan Producers and Lower Payments to Other Tree Nut Producers

For 2019 MFP-eligible specialty crops, USDA changed the production data it used and changed its methodology for calculating tree nut payment rates. USDA paid producers of cherries, cranberries, ginseng, and grapes at a single national rate for each commodity calculated using a methodology similar to the 2018 MFP payment methodology—dividing estimated trade damage by production—but changed the source of its production data from NASS Survey data to NASS Census data. The change in production data used to calculate payment rates for 2019 MFP-eligible commodities affected the resulting payment rates for some eligible commodities in comparison to what USDA would have calculated if it had used the same production data as it did for the 2018 MFP. Appendix VII examines the effect of USDA's change in production data on

2019 MFP payment rates for MFP-eligible commodities. For tree nuts, USDA used a different methodology in which it used an average of trade damages per acre as the 2019 MFP payment rate. For tree nuts, USDA added together the total estimated trade damage for the six eligible tree nuts and divided that sum by the total bearing acres of those nuts in 2017. Table 5 shows USDA's trade damage estimates and acreage data for each type of tree nut, which it used to calculate the tree nuts payment rate.

Table 5: Calculation of 2019 Market Facilitation Program Payment Rate for Tree Nuts

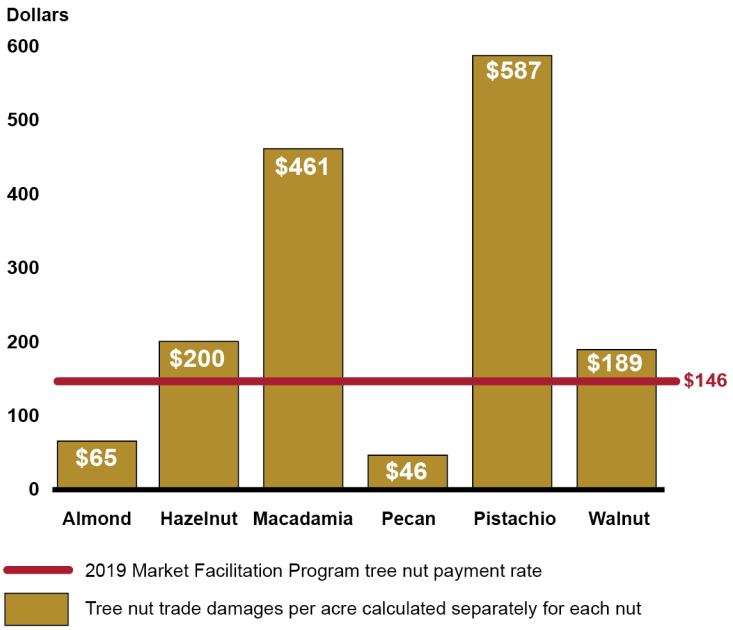
Tree nut	USDA trade damage estimate (dollars in millions)	2017 acreage[a]
Almonds	68.7	1,058,244
Hazelnuts	8.8	43,965
Macadamia	8.1	17,587
Pecans	21.4	461,890
Pistachios	145.6	247,872
Walnuts	65.3	345,019
Total	**317.9**	**2,174,577**
Per-acre payment rate calculation	318 million / 2,174,577 acres = 146/acre	

Source: GAO analysis of USDA data. | GAO-22-468

[a]Acreage data are from the National Agricultural Statistics Service's 2017 Census of Agriculture.

The tree nuts payment methodology for the 2019 MFP resulted in USDA's compensating growers of the individual nuts at rates not directly tied to their corresponding trade damages, increasing payments for some nuts and decreasing payments for others. The trade damages USDA estimated for each nut ranged from $46 per acre for pecans to $587 per acre for pistachios; however, producers of each type of nut received the same payment, $146 per acre (see figure 7). USDA's approach increased payments to almond producers, located predominantly in California, and pecan producers, located primarily in Georgia, Texas, Oklahoma, and New Mexico, and decreased payments to producers of hazelnuts, macadamias, pistachios, and walnuts.

Figure 7: 2019 Market Facilitation Program Trade Damage Estimates for Tree Nut Crops per Acre and Tree Nut Payment Rate per Acre



Source: GAO analysis of U.S. Department of Agriculture data. | GAO-22-468

USDA officials told us that USDA created this average rate rather than calculating individual tree nut rates because data for individual tree nut crops were insufficient and variable and because data on bearing acreage and yields by nut variety were also insufficient. USDA officials later noted that these concerns applied only to the Risk Management Agency yield data for some nut crops, especially pecans, which USDA deemed an inadequate basis on which to calculate a representative yield. However, as the USDA payment methodology for tree nuts uses only USDA trade damage estimates and number of bearing acres, it is not clear how the unavailability of yield data relates to USDA's choice to calculate the payment rates as an average for all six types of nuts.

Conclusions

USDA's 2018 MFP and 2019 MFP provided billions of dollars to farm producers to address the effects of trade actions of foreign governments. To conduct its analysis, USDA selected key inputs—the values of modeling parameters and a baseline against which to measure trade damage—each of which affects the model's results. However—even with USDA's internal review process to ensure, among other things, transparent documentation and sound analytical methods—USDA's

documentation of its methodology did not transparently describe its selection of the modeling parameters and 2019 MFP baseline, limiting USDA's ability to demonstrate the estimates' objectivity. Moreover, USDA's analyses of trade damages for the 2019 MFP used an unrepresentative baseline value of U.S. exports. As a result of the lack of transparency about its baseline selection and the 2019 MFP baseline choice, USDA's methodology increased its trade damage estimates in a manner that was not clearly identifiable to decision makers and the public.

Recommendations for Executive Action

We are making the following two recommendations to USDA:

- The Secretary of Agriculture should ensure that the Office of the Chief Economist revises its internal review process to help ensure that USDA internal reviews of future economic analyses address the transparency of its documentation of the analyses. (Recommendation 1)
- The Secretary of Agriculture should ensure that the Office of the Chief Economist revises its internal review process to help ensure that USDA internal reviews assess whether future economic analyses use representative baselines. (Recommendation 2)

Agency Comments and Our Evaluation

We provided a draft of this report to USDA and USTR. USTR had no comments on the draft. USDA's OCE provided written comments, which are reproduced in appendix VIII and addressed in detail there.

In summary, OCE disagreed with the two recommendations, stating that OCE's role was to provide objective, data-driven economic analyses in order to inform policymakers' decision-making. OCE states that, in its role for the MFP, OCE was asked to provide a range of different analyses and estimates of trade damages to inform USDA leadership in their decision-making. According to OCE, based on the options presented, USDA policymakers determined that trade damage estimates obtained from using the 2019 baseline approach would be the basis for the 2019 trade mitigation package. Therefore, OCE states, the recommendations are incorrectly directed at OCE's economic analysis and review process. However, although OCE did not make the policy decision, it provided options to policymakers that directly affected the program spending levels and payment rates and we found that the options OCE provided were based on analysis that did not fully meet USDA Information Quality Guidelines. Notably, OCE provided an option to policymakers for the 2019 MFP that relied on an unrepresentative baseline equal to or higher than trade with retaliating countries in any one year from 2009 through

2018. OCE also did not use sound analytical methods in presenting a baseline that did not have a clear relationship to foreign nontariff measures or other barriers. In addition, OCE's August 2019 Trade Damage Estimation for the 2019 Market Facilitation Program and Food Purchase and Distribution Program, does not transparently describe the 2019 MFP baseline methodology or OCE's selection of elasticity values. We continue to believe that improvements in OCE's internal review process will help ensure that OCE's economic analyses are transparently documented and use representative baselines.

OCE also disagreed with GAO's analysis of studies examining changes in trade flows after retaliatory tariffs. Notably, OCE states that the ex-post facto studies validated USDA's trade damage estimates. Our report includes an appendix that compares USDA's trade damage estimates to the results from two retrospective (i.e., ex-post facto) studies. While USDA's estimates were close to the estimates from these two studies for some commodities, they differed significantly for other commodities, thus we disagree with the statement that the studies showed that USDA's estimates closely aligned with USDA's trade damage estimates.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees, the Secretary of Agriculture, and the U.S. Trade Representative. In addition, the report will be available at no charge on the GAO website at https://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-8612, or GianopoulosK@gao.gov. GAO staff who made key contributions to this report are listed in appendix IX.

Kimberly Gianopoulos
Director, International Affairs and Trade

Appendix I: Objectives, Scope, and Methodology

Our objectives were to examine the U.S. Department of Agriculture's (USDA) 2018 and 2019 Market Facilitation Programs (MFP), specifically: (1) the extent to which USDA's methodologies for estimating trade-related damages addressed key elements of an economic analysis and how those methodologies affected the estimates, and (2) strengths and limitations of USDA's methodologies for calculating payments and how those methodologies affected the payments.

For both objectives, we reviewed USDA's published material describing its methodologies, including its 2018 and 2019 cost benefit analyses,[1] the Farm Service Agency (FSA) Handbook for MFP,[2] and USDA's 2018 MFP and 2019 MFP methodology papers.[3] We also reviewed USDA fact sheets, an agency briefing, and press releases. We requested and reviewed USDA's spreadsheet data and calculations. After reviewing the material provided by USDA, we asked USDA to clarify or provide additional information about its methodologies and reviewed its responses. To gain additional perspectives on USDA's methodologies, we reviewed relevant academic literature and reviewed the websites of industry associations representing tariff-impacted commodities for statements from farm producers about the MFP.

To examine trade patterns around the time the retaliatory tariffs were implemented, we calculated actual changes in U.S. exports to retaliating countries from 2017 to 2018 and from 2017 to 2019. We calculated these changes for seven of the nine commodities eligible for the 2018 MFP, which together represent about 98 percent of USDA's total estimated payments for the 2018 MFP. We used the same data from the United

[1]"Cost Benefit Analysis – Market Facilitation Program", July 24, 2018, https://www.regulations.gov/document?D=CCC-2018-0002-0003, and "Cost Benefit Analysis – Trade Mitigation Program", June 20, 2019, https://www.regulations.gov/document?D=CCC-2019-0003-0007.

[2]U.S. Department of Agriculture, Farm Service Agency, *FSA Handbook: Market Facilitation Program. For State and County Offices*, 1-MFP (U.S. Department of Agriculture, Aug. 9, 2019), accessed June 3, 2021. https://www.fsa.usda.gov/Internet/FSA_File/1-mfp_r00_a01.pdf.

[3]U.S. Department of Agriculture, Office of the Chief Economist, *Trade Damage Estimation for the Market Facilitation Program and Food Purchase and Distribution Program* (U.S. Department of Agriculture, Sept. 13, 2018), accessed June 3, 2021. https://www.usda.gov/sites/default/files/documents/USDA_Trade_Methodology_Report_2018.pdf; "Trade Damage Estimation for the 2019 Market Facilitation Program and Food Purchase and Distribution Program" (U.S. Department of Agriculture, Aug. 22, 2019), accessed June 3, 2021. https://www.usda.gov/sites/default/files/documents/USDA_Trade_Methodology_Report_2019.pdf.

Nations Commodity Trade Statistics Database (UN Comtrade), organized by six-digit Harmonized System (HS) code, country, and year, that USDA used to define the commodities. We then calculated the actual change in U.S. exports to retaliating countries—as measured by retaliating country annual imports from the U.S. from 2017 to 2018, and from 2017 to 2019—for each of the commodities. To assess the reliability of the UN Comtrade data, we compared the overall trade value of imports from the U.S. worldwide from the UN Comtrade dataset with the published totals from the World Bank World Integrated Trade Solution software. We also compared the trade value of imports from the U.S. with the 2017 trade values used by USDA in their 2018 trade damage estimates, and we performed electronic testing of the data (e.g., we checked for missing values and duplicates). We determined the UN trade data to be reliable for our purposes.

To examine the extent to which USDA's methodologies for estimating trade-related damages addressed key elements of an economic analysis and how those methodologies affected the estimates, we reviewed USDA's publicly available descriptions of its methodologies, the sources it cited for inputs to the trade damage estimates, and relevant academic literature. We also observed officials from the USDA Office of the Chief Economist (OCE) demonstrate the economic model USDA used to estimate the percentage reduction in trade resulting from retaliatory tariffs, using soybeans as an example. We reviewed the data analyses USDA used to calculate trade damages, including its analyses of alternatives, sensitivity analyses, calculation of baseline trade values, and the individual components USDA used to define the eligible commodities for its analyses. We then assessed USDA's economic analyses for estimating trade damages using GAO's *Assessment Methodology for Economic Analysis* and USDA's Information Quality Guidelines.[4] For each of the key elements, we assessed the extent to which USDA's economic analyses considered and addressed each key element. For example, for the key element of transparency, we assessed the extent to which the economic analyses included sensitivity analyses around the different modeling inputs (e.g., the elasticity estimates, the baseline used).

[4]GAO, *Assessment Methodology for Economic Analysis*, GAO-18-151SP (Washington, D.C.: Apr. 10, 2018). We developed this methodology by synthesizing economic concepts identified by consulting with experts on economic analysis and in federal and international agency guidance. Each key element consists of economic concepts that represent best practices. These key methodological elements are not intended to be exhaustive and to supplant or alter relevant federal and agency requirements for economic analysis. Our assessment methodology provides a framework for assessing the sufficiency of economic analyses.

Furthermore, we reviewed the data sources cited in the methodology paper; compared the cited sources to USDA's calculations; checked the elasticity estimates cited in USDA's methodology papers for missing values; and verified that the commodities or products and countries eligible for the 2018 or 2019 MFP were included in the data sources the methodology papers cited.

To assess how well USDA's prospective economic analysis estimated trade damages and to examine the effect of the retaliatory tariffs on trade to retaliating and nonretaliating countries, we conducted a literature review to identify relevant studies and discuss the results of retrospective studies that specifically estimated and quantified the effect of the retaliatory tariffs on U.S. agricultural trade. We present the estimates from these studies for the seven of the nine commodities eligible for the 2018 MFP, which together represent about 93 percent of USDA's total estimated payments for the 2018 MFP.

To examine the baselines USDA used in its analyses, we reviewed USDA's calculations and compared the baseline calculation methodology used in the calculations to USDA's published description of that methodology. Specifically, to determine which country and HS code data USDA used to calculate the baseline for MFP-eligible commodities for the 2018 MFP and 2019 MFP, we (1) reviewed USDA's spreadsheets containing its trade damages calculations and (2) reviewed the 2009-2018 trade value data USDA used in its analysis. We then matched the trade values by HS code to the baseline USDA used in its trade damage calculations. We checked the trade data provided by USDA against publicly available sources for the data to assess their reliability and found the data sufficiently reliable for our purposes. We then compared the values of retaliating country imports USDA selected as the baseline against which USDA measured trade damages in its analysis to the value of trade with retaliating countries prior to retaliatory tariffs. We also used USDA's calculations to, for comparison, estimate what trade damages and USDA's 2019 MFP county payment rates would have been using USDA's 2018 MFP baseline methodology of using of 2017 trade values in order to illustrate the effect of USDA's choice of baseline on the trade damage estimates and county payment rates.

To examine the strengths and limitations of the USDA methodologies for calculating MFP payments and how those methodologies affected them, we reviewed USDA's publicly available descriptions of its methodology, the sources it cited for production data used in the calculations, and its spreadsheet calculations of payment rates. To examine the effect of

USDA's payment methodology in 2019 on the payments received by producers of the same nonspecialty crops in different regions, we obtained USDA's data on historical acres and yields that USDA used to calculate county payment rates. Using these data, we estimated the total amount paid to producers of the five crops that received over 90 percent of the 2018 MFP payments (corn, cotton, soybeans, sorghum, and wheat) by multiplying the county rate, defined as dollars per acre, and the historical average number of acres planted for that crop. We also estimated the amount producers of those crops would have received with the commodity rate methodology USDA used for the 2018 MFP—that is, we multiplied the commodity rate USDA calculated for the 2019 MFP, defined as dollars per production unit, such as bushel or pound, multiplied by historical yields and historical acres planted) for that crop. We then compared and calculated the differences between the total 2019 MFP estimated payments to producers of eligible nonspecialty crops, using USDA's county rate methodology, and the estimated payments those crops would have received with a commodity rate methodology.

To examine the variation in payment rates for the same nonspecialty crops grown in different regions resulting from the 2019 MFP's county payment rate methodology, we estimated the payment rates for the five crops with the largest total payments (corn, cotton, soybeans, sorghum, and wheat) in 2018 by region. We multiplied the county rates by the historical average number of acres planted in each county for each crop. We then aggregated the total payments and total historical acreage within a Census-designated region. We calculated the payment rate for a crop by dividing the crop's total payments with the crop's total historical acreage for each region. We then compared the payment rates, measured in dollars per acre, for the five crops across four different regions.

To examine how crop mix and yields contributed to the variations in payment rates for the same nonspecialty crops grown in different regions, we calculated the share of historical acres for each of the five crops that received the largest total payments by region. We then examined the relationship between a region's estimated average payment rate and its crop mix for selected nonspecialty crops. Additionally, we calculated the regional averages of the three-year average yields for each of the five crops. We then examined the correlation between the regional crop yields and the regional crop payment rates.

To examine the effect of USDA's methodology on the payment rates for tree nuts, we divided USDA's individual trade damage estimates for each

of the six eligible nuts by their corresponding number of bearing acres according to the National Agricultural Statistics Service (NASS) Census to calculate trade damage per acre for each type of nut individually and compared these rates with USDA's single average rate for all tree nut producers.

To examine USDA's methodology for calculating the production data it used to calculate commodity rates, we downloaded data from NASS and other USDA sources to verify the production data USDA used to calculate payment rates. We compared the production data and county payment rate data provided by USDA to publicly available sources for the data to assess their reliability and found the data sufficiently reliable for our purposes. We used the production data and USDA's trade damage estimates to reproduce USDA's stated methodology and data sources and to assess whether its production data matched the production data described in its published methodology. In instances where we could not reproduce USDA's commodity payment rates based on its published methodology, we requested clarification from USDA until we could reproduce the payment rates. We then analyzed the effect of USDA's changes in the production data for the 2019 MFP from the 2018 MFP by using the 2018 MFP production data methodology to calculate 2019 MFP rates, and vice versa, and comparing each year's payment rates.

We conducted this performance audit from March 2020 to November 2021 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

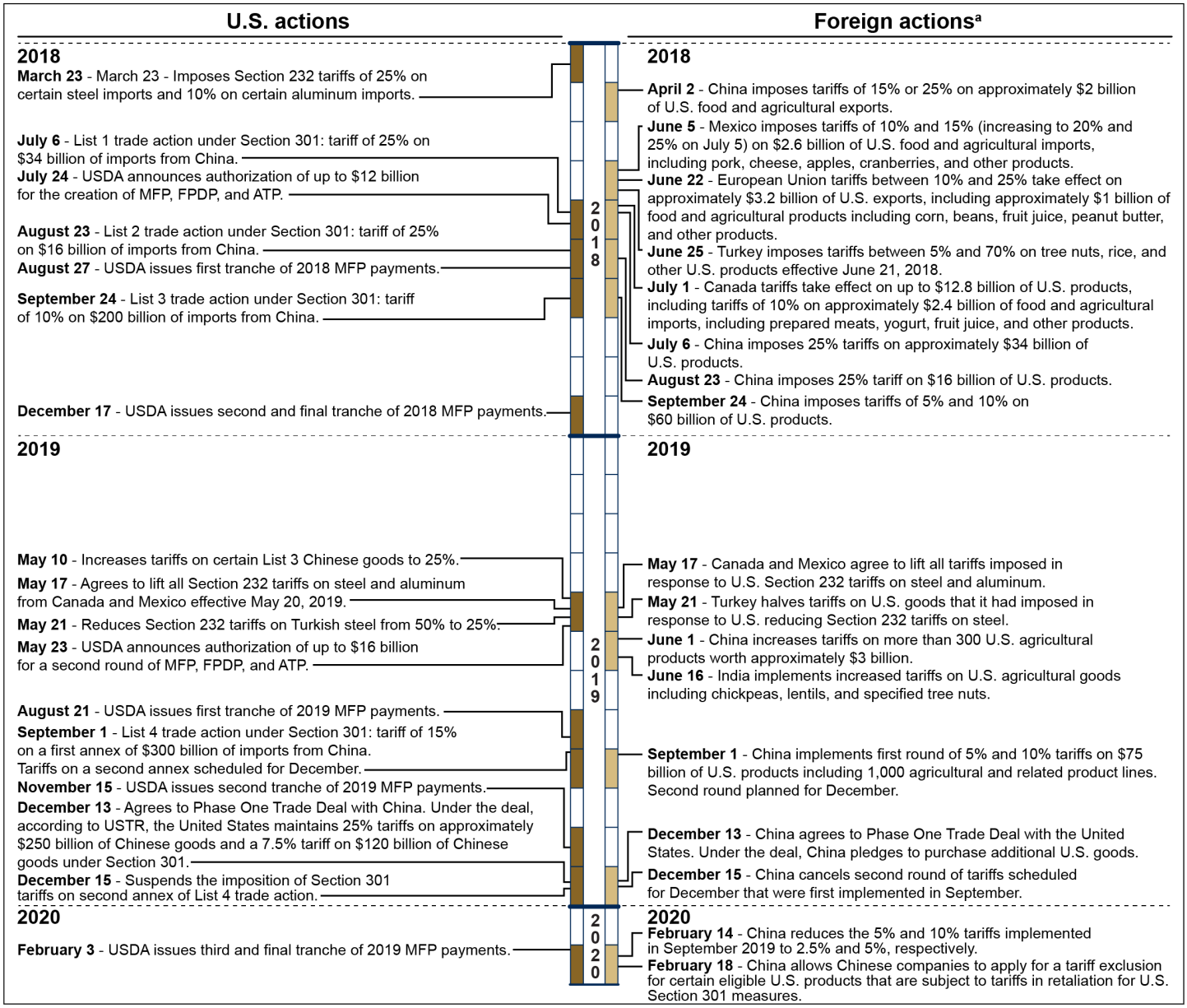
Appendix II: U.S. and Foreign Trade Actions and MFP, 2018-2020

In March 2018 the President concurred with the results of U.S. Department of Commerce investigations, which found that under Section 232 of the Trade Expansion Act of 1962, imports of certain steel and aluminum products "threaten to impair the national security" of the U.S. As a result, the President placed tariffs of 25 percent on certain steel imports and 10 percent on certain aluminum imports to address the national security concerns. In March 2018, the Office of the U.S. Trade Representative (USTR) issued a report of its findings from an investigation it undertook at the instruction of the President under Section 301 of the Trade Act of 1974 as amended. The USTR report identified a number of issues with Chinese acts, policies, and practices, including forced technology transfer, intellectual property theft, discriminatory and nonmarket licensing practices, and state-funded acquisition of U.S. assets. As a result of the investigation, USTR imposed tariffs, beginning in July 2018, to address these practices. Foreign countries, including China, Canada, Mexico, the European Union (EU), Turkey, and India responded to the U.S. tariffs with tariffs of their own targeting various U.S. products, including agricultural commodities.[1]

To address foreign actions affecting trade, USDA announced the creation of the 2018 Market Facilitation Program (MFP) in July 2018 and the 2019 MFP in May 2019. The 2018 MFP provided approximately $8.6 billion in payments to farm producers in two tranches: a first in August 2018 and a second in December 2018. USDA announced the 2019 MFP in May 2019 and provided approximately $14.4 billion in payments in three tranches: one each in August 2019, November 2019, and February 2020. Figure 8 shows a timeline of U.S. and foreign trade actions and key dates in the implementation of the MFP from March 2018 to February 2020.

[1]USDA used values for the EU as a single country in its trade damage estimates; therefore, for the purposes of this report, we refer to the EU as a retaliating country.

Figure 8: Timeline of Selected U.S. and Foreign Trade Actions and the Market Facilitation Program, March 2018–February 2020



Legend: ATP = Agricultural Trade Promotion Program; FPDP = Food Purchase and Distribution Program; MFP = Market Facilitation Program; USDA = U.S. Department of Agriculture.

Source: GAO analysis of Congressional Research Service, U.S. Department of Agriculture, and Office of the U.S. Trade Representative documents. | GAO-22-468

Note: Section 232 tariffs are tariffs imposed pursuant to Section 232 of the Trade Expansion Act of 1962, Pub. L. No. 87-794, Title II, § 232, 76 Stat. 872, 877 (codified as amended at 19 U.S.C. § 1862).

Section 301 refers to Section 301 of the Trade Act of 1974. Pub. L. No. 93 - 618, § 301, 88 Stat. 1978, 2041-43 (1975) (codified as amended in 19 U.S.C. §§ 2411-2417).

[a]GAO obtained statements about foreign actions from USDA reporting and press releases from the Office of the U.S. Trade Representative and did not independently verify those statements.

Appendix III: 2018 MFP and 2019 MFP Trade Damage Estimate and Payment Methodologies

For both the 2018 Market Facilitation Program (MFP) and 2019 MFP, the U.S. Department of Agriculture (USDA) used U.S. government sources to identify tariff-affected commodities, international data sources to define the baseline value of U.S. exports of those commodities, and an economic model to estimate the percentage by which U.S. exports would decline due to retaliatory tariffs. USDA then multiplied the percentage of decline it estimated using its economic model by its selected baseline to calculate the trade damage estimate. USDA used the same methodology in each year, but redefined the baseline against which it measured trade damages for the 2019 MFP. Table 6 summarizes USDA's trade damage methodologies.

Table 6: Summary of USDA 2018 MFP and 2019 MFP Trade Damage Estimate Methodologies

	2018 MFP	2019 MFP
Identification of tariff-affected commodities	USDA stated that it reviewed reports from its Foreign Agricultural Service and information from the Office of the U.S. Trade Representative (USTR), and also worked with the Department of Commerce, and the Council of Economic Advisors to verify tariff information.	
Value of U.S. exports of eligible commodities	USDA used the trade value of imports of MFP-eligible commodities from the U.S. reported by retaliating countries to the United Nations Commodity Trade Statistics Database (UN Comtrade).[a] USDA defined the individual eligible commodities in the UN Comtrade data using one or more of the Harmonized System (HS) codes for each commodity.[b]	
Trade baseline	The total 2017 value of U.S. exports to retaliating countries.	A longer time-series to estimate gross trade damages by surveying trends in U.S. bilateral trade over a 10-year period (2009-2018).
Estimated reduction in the value of U.S. exports	The percentage decline estimated by an economic model known as the Global Simulation Model (GSIM).[c]	
Selection of economic modeling parameters	The **import demand elasticity**—the estimated change in imports due to price changes, for which USDA used estimated values by country and product from the Vienna Institute for International Economic Studies.[d] The **substitution elasticity**—the amount that foreign importers will begin importing from other suppliers—for which USDA used two different sources: estimates based on a study by researchers affiliated with the Global Trade Analysis Project, or estimates from researchers at Virginia Tech.[e] These estimated values were by individual commodity or commodity group.	

Legend: MFP = Market Facilitation Program

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]According to USDA, it chose to use data on retaliating country imports, rather than export data from the U.S., because (1) the tariffs are paid by the importer and import data are more likely to be accurate and (2) retaliating countries often applied tariffs at the eight-digit HS code level, which is unique to each country. U.S. export data would not align with the importing countries' HS codes at the eight-digit level.

[b]The Harmonized System is a standardized numerical method of classifying traded products. The Harmonized System is used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics. The HS assigns specific six-digit codes for varying classifications and commodities. Countries may add longer codes to the first six digits for further classification.

[c]The GSIM is an Armington partial equilibrium model, a type of economic model that assumes that goods supplied by different partner countries are imperfect substitutes for each other. To calibrate the GSIM, USDA used 2016 trade data from UN Comtrade.

[d]See Mahdi Ghodsi, Julia Grübler, and Robert Stehrer, *Import Demand Elasticities Revisited*, WIIW Working Paper No. 132 (Vienna Institute for International Studies, November 2016).

[e]See Thomas Hertel et al., "How Confident Can We Be of CGE-Based Assessments of Free Trade Agreements?" Economic Modelling, vol. 24, no. 4 (2007): pp. 611-635; and Jason H. Grant, Xin Ning, and Everett Peterson, *Trade Elasticities and Trade Disputes: New Evidence from Tariffs and Relative Preference Margins*, Policy Report CAT-2018-07 (Center for Agricultural Trade, Virginia Tech, 2018).

USDA MFP Payment Calculation Methodologies

USDA calculated commodity payment rates for the 2018 MFP and 2019 MFP by dividing its trade damage estimate for each eligible commodity by the commodity's historical production. For the 2018 MFP, USDA multiplied the commodity rates by an eligible producer's production of an eligible commodity in 2018 to determine the producer's MFP payment for that commodity. For nonspecialty crops eligible for the 2019 MFP, USDA used the commodity rates, along with county-level data on historical acres and yields, to calculate county-level payment rates per-acre for each U.S. county; all eligible nonspecialty crop producers within a county were paid that rate. For eligible specialty fruits and ginseng in the 2019 MFP, USDA multiplied the commodity rate by the commodity's average yield per acre to calculate a payment rate per acre. For tree nuts, USDA divided the sum of the total estimated trade damage for the six eligible nuts by their total 2019 bearing acres to calculate a per-acre payment rate. USDA calculated the 2019 MFP commodity payment rates for hogs and dairy by dividing their 2019 trade damage estimates by, respectively, the March 2019 inventory report for hogs and 2017 production from the Margin Protection Program for Dairy. Table 7 summarizes USDA's payments methodologies for the 2018 and 2019 MFP.

Table 7: Summary of USDA 2018 MFP and 2019 MFP Payments Methodologies

Commodity group	2018 MFP	2019 MFP
Nonspecialty crops	Nationwide commodity rates per unit of production.	Separate payment rates between $15 and $150 per acre for each county to producers of any eligible nonspecialty crop. County payment rates were calculated using the nationwide nonspecialty crop commodity rates and the county's fixed historical acres and yields.
Specialty crops	Nationwide commodity rates per unit of production.	Nationwide commodity rates per acre. For cranberries, ginseng, sweet cherries, and table grapes, USDA calculated national commodity rates per pound by dividing each commodity's estimated trade damage by its production.[a] USDA then multiplied the per-pound payment rate by nationwide average yields from the USDA Risk Management Agency and paid producers nationwide at the resulting payment rate per acre.[b] For tree nuts, USDA calculated a payment rate per acre for the six eligible nuts (almonds, hazelnuts, macadamias, pecans, pistachios, and walnuts) by summing the total estimated trade damage for each nut and dividing the total trade damages for all six nuts by the total 2017 NASS Census bearing acreage of the six nuts. Each eligible tree nut received the same payment rate of $146 per acre.
Dairy and Hogs	Nationwide commodity rates per unit of production for dairy or inventory for hogs.	

Legend: MFP = Market Facilitation Program; NASS = National Agricultural Statistics Service

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]For production data, USDA stated in its 2019 methodology paper that it used 2017 acreage data from the NASS Census for cranberries, sweet cherries, and table grapes. USDA used data sources other than NASS Census when that data set was incomplete. For sweet cherries, USDA used the USDA Risk Management Agency data on insured acres of sweet cherries sold fresh because NASS Census data also includes cherries sold for processing, which were not MFP-eligible. NASS Census data also does not delineate by type of grape. Therefore, to estimate national table grape acreage, USDA used a combination of data from the NASS Census and NASS Survey. The NASS Survey has data on table grape acreage specifically, but only for California, so USDA used this combination of data to estimate table grape acreage for the other states.

[b]For ginseng, USDA used the same formula but used industry and academic sources—the Wisconsin Ginseng Board and Purdue University, according to USDA officials—as its source for yield data.

Table 8 shows the trade damages USDA estimated and the payment rates it calculated for the 2018 MFP.

Table 8: 2018 Market Facilitation Program (MFP) Trade Damage Estimates and Payment Rates

Commodity	Trade damage estimate (dollars in millions)	MFP Payment rate (dollars per unit)
Almonds (shelled)	63	0.03/pound
Cherries (fresh sweet)	111	0.16/pound
Corn	192	0.01/bushel
Cotton	554	0.06/pound
Hogs[a]	1,139	8/head
Dairy[b]	340	0.12/hundredweight
Sorghum	314	0.86/bushel
Soybeans	7,259	1.65/bushel
Wheat	238	0.14/bushel

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]USDA subtracted $559 million in estimated purchases through the Food Purchase and Distribution Program (FPDP) from the hogs trade damage estimate before calculating the MFP payment rate.

[b]USDA subtracted $85 million in estimated purchases through the FPDP from the dairy trade damage estimate before calculating the MFP payment rate.

Table 9 shows the trade damages USDA estimated and the commodity rates it calculated for the 2019 MFP-eligible nonspecialty crops that it used to calculate the county payment rates per-acre for nonspecialty producers.

Table 9: 2019 Market Facilitation Program Trade Damage Estimates and Nonspecialty Crop Commodity Rates USDA Used to Calculate County Payment Rates

Nonspecialty Crop[a]	Trade damage estimate (dollars in millions)	Commodity rate (dollars per unit)
Alfalfa Hay	162	2.81/ton
Chickpeas[b]	7	1.48/hundredweight
Corn[c]	2,059	0.14/bushel
Cotton[d]	2,088	0.26/pound
Dried Beans	51	8.22/hundredweight
Lentils	34	3.99/hundredweight
Peanuts[e]	46	0.01/pound
Peas	17	0.85/hundredweight
Rice[f]	125	0.63/hundredweight
Sorghum	811	1.69/bushel
Soybeans[g]	8,631	2.05/bushel
Wheat	836	0.41/bushel

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]USDA used a payment rate of $0 for barley, canola, crambe, flaxseed, millet, mustard seed, oats, rapeseed, rye, safflower, sesame seed, sunflower seed, and triticale.

[b]Chickpeas includes large and small chickpeas.

[c]Corn includes distiller's dried grains with solubles (DDGS) and ethanol. USDA added the $615 million trade damage estimate for DDGS and $195 million trade damage estimate for ethanol to the $1,250 million trade damage estimate for corn before calculating the corn commodity rate.

[d]Cotton includes extra-long staple cotton and upland cotton.

[e]Peanuts includes peanuts and peanut butter. USDA summed the $14 million trade damage estimate for peanut butter and the $32 million trade damage estimate for peanuts before calculating the peanut commodity payment rate.

[f]Rice includes long grain rice, medium grain rice, and temperate japonica rice.

[g]Soybeans includes soybeans and soybean oil. USDA summed the $141 million trade damage estimate for soybean oil and $8,490 million trade damage estimate for soybeans before calculating the soybean commodity rate.

Table 10 shows the trade damages USDA estimated and the payment rates it calculated for specialty crops for the 2019 MFP.

Table 10: 2019 Market Facilitation Program Payment Rates for Specialty Crops

Commodity	Trade damage estimate (dollars in millions)	Payment rate (dollars per unit)
Cranberries	28	641/acre (0.03 per pound x 21,371 pounds per acre)
Ginseng	6	5,700/acre (2.85 per pound x 2,000 pounds per acre)
Sweet Cherries	111	1,555/acre (0.17 per pound x 9,148 pounds per acre)
Table Grapes	70	625/acre (0.03 per pound x 20,820 pounds per acre)
Tree Nuts[a]	318	146/acre

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]USDA summed the trade damage estimates for almonds ($69 million), hazelnuts ($9 million), macadamias ($8 million), pecans ($21 million), pistachios ($146 million), and walnuts ($65 million) before calculating the tree nuts payment rate.

Table 11 shows the trade damages USDA estimated and the payment rates it calculated for hogs and dairy for the 2019 MFP.

Table 11: 2019 Market Facilitation Program Payment Rates for Hogs and Dairy

Commodity	Trade damage estimate (dollars in millions)	Payment Rate (dollars per unit)
Hogs[a]	1,091	11/head
Dairy[b]	439	0.20/hundredweight

Source: GAO analysis of U.S. Department of Agriculture (USDA) documents. | GAO-22-468

[a]USDA subtracted $260 million in estimated purchases through the Food Purchase and Distribution Program (FPDP) from the hogs trade damage estimate before calculating the MFP payment rate.

[b]USDA summed the $350 million dairy trade damage estimate and $89 million trade damage estimate for “other dairy” products—such as infant formula, ice cream, casein, and lactose—and subtracted $85 million in estimated purchases through the FPDP from the dairy trade damage estimate before calculating the dairy MFP payment rate.

Appendix IV: Summary Assessment of Economic Analyses for the Market Facilitation Program (MFP)

The following table summarizes our assessment of the U.S. Department of Agriculture's (USDA) economic analyses to estimate trade damages for the 2018 and 2019 Market Facilitation Programs (MFP). We assessed USDA's economic analyses for estimating trade damages using GAO's *Assessment Methodology for Economic Analysis*.[1] Specifically, we evaluated relevant portions of the analysis against the elements of an economic analysis as defined in GAO's *Assessment Methodology for Economic Analysis*. Each key element consists of economic concepts that represent best practices. On the basis of our evaluation, we determined whether the analysis considered and properly dealt with each of these defined elements. These key methodological elements are not intended to be exhaustive or supplant or alter relevant federal and agency requirements for economic analysis.

[1]GAO, *Assessment Methodology for Economic Analysis*, GAO-18-151SP (Washington, D.C.: Apr. 10, 2018). The *Assessment Methodology* provides a framework for assessing the sufficiency of economic analyses and was developed by synthesizing economic concepts identified by consulting with experts on economic analysis and in federal and international agency guidance.

Table 12: Review of Key Elements of an Economic Analysis for the U.S. Department of Agriculture's (USDA) 2018 and 2019 Market Facilitation Programs (MFP)

Description of key element (GAO-18-151SP)	Summary of review of USDA's economic analyses
Objective and scope: The economic analysis explains the action examined and includes a rationale and justification for the action. The analysis states its objective. The scope of the analysis is designed to address this objective. Unless otherwise justified, the analysis focuses on economic effects that accrue to citizens and residents of the United States, and its time horizon is long enough to encompass the important economic effects of the action.	The analyses state the rationale for the action, the objective and scope, and focus on U.S. agricultural producers. The 2018 analysis captures effects in the short term, which is the timeframe that the program is intended to cover. In the 2019 analysis, however, it is unclear whether the analysis captures only the short-term effects of the retaliatory tariffs[a]
Methodology: The economic analysis examines the effects of the action by comparing alternatives, using one of them as the baseline. Unless otherwise justified, it considers alternatives that represent all relevant alternatives, including that of no action. The analysis defines an appropriate baseline. The analysis justifies that the world specified under each alternative considered (including the baseline) represents the best assessment of what the world would be like under that alternative. The analysis identifies the important economic effects for each alternative considered, their timing, and whether they are direct or ancillary effects.	USDA provided analyses where it considered other alternatives.[b] USDA's methodology measures the effect to U.S. producers in terms of loss in trade to retaliating countries under a no-action scenario. The 2018 analysis uses a justifiable baseline. However, the baseline used in the 2019 analysis is not appropriate. USDA's analyses identify the timing of the effects (i.e. the loss in trade resulting from retaliatory tariffs in 2018 and 2019) and specify that these are direct effects to producers. Although USDA quantified ancillary effects in the preliminary stages of the analysis, specifically offsetting gains to alternative markets, USDA's final estimates did not account for such effects.[c]
Analysis of effects: Where feasible, the economic analysis quantifies the important economic effects and monetizes them using the concept of opportunity cost. The analysis applies the criterion of net present value, or related outcome measures, to compare these effects across alternatives. It controls for inflation and uses economically justified discount rates. Where important economic effects cannot be quantified, the analysis explains how they affect the comparison of alternatives. Where the equity and distributional impacts are important, the full range of these impacts is separately detailed and quantified, where feasible.	USDA quantified alternatives, and therefore the analysis used the concept of opportunity cost. The analyses did not use the criterion of net present value. Given that the analyses did not explicitly estimate long-term effects, there was no need for USDA to use the criterion of net present value.[d] USDA did not adjust for inflation. USDA officials stated that controlling for inflation was not relevant for their estimates because trade damages were defined as trade damages inflicted at the time of the analysis, not retrospective impacts.[e] USDA did not discuss how other effects that could not be quantified, such as cross-commodity effects, affected the comparison of alternatives. However, USDA adjusted the payment approach for the 2019 MFP in order to better address cross-commodity effects. USDA used the same model for all commodities. According to USDA, it used the same model in order to have an equitable approach to estimating trade damages.

Description of key element (GAO-18-151SP)	Summary of review of USDA's economic analyses
Transparency: The economic analysis describes and justifies the analytical choices, assumptions, and data used. The analysis assesses how plausible adjustments to each important analytical choice and assumption affect the estimates of the economic effects and the results of the comparison of alternatives. The analysis explains the implications of the key limitations in the data used. Where feasible, the analysis adequately quantifies how the statistical variability of the key data elements underlying the estimates of the economic analysis impacts these estimates, and the results of the comparison of alternatives.	USDA's documentation provides a justification for their modeling approach, and describes the model used and some of its assumptions. USDA's documentation does not fully describe the choice of the 2019 MFP baseline methodology or the specific parameter values USDA selected from the available data, or justify the choices. The documentation does not explain the potential limitations or discuss the implications of the potential limitations associated with available trade elasticity estimates USDA used in its analyses (e.g., that they are not available at the level of aggregation used in USDA's analyses). USDA conducted sensitivity analyses around the parameter values, the baselines and the model used. However, except for one of the sensitivity analyses, USDA did not discuss the results from the sensitivity analyses and how the choices affected their estimates in its public documents. USDA provided us these documents in response to our requests.
Documentation: The economic analysis is clearly written, with a plain language summary, clearly labeled tables that describe the data used and results, and a conclusion that is consistent with these results. The analysis cites all sources used and documents that it is based on the best available economic information. The analysis documents that it complies with a robust quality assurance process and, where applicable, the Information Quality Act. The analysis discloses the use and contributions of contractors and outside consultants.	USDA issued methodology papers for the 2018 MFP and 2019 MFP that summarized the methodology for the public. USDA listed the sources for most of the data used in the model and used a well-known economic model. Although the public documentation does not describe the quality assurance process, USDA rulemakings are subject to review by the Office of Management and Budget and USDA's economic analyses are subject to USDA's Information Quality Guidelines. USDA provided further details of their internal quality assurance process in response to our requests.

Source: GAO analysis of USDA documents. | GAO-22-468

Notes:

[a]Though there is the potential for long-term effects, such as long-term effects on trade relations, the stated time frame of the 2018 program was short-term (i.e., it was designed to compensate for short-term loss in trade to retaliatory countries). An example of a potential long-term effect is the loss of market share, a concern expressed by associations representing almond, cotton, rice, and wheat producers. According to USDA's 2019 methodology paper, USDA adjusted the 2019 baseline selection approach to account for other contributing variables, such as longstanding trade barriers and the longer-term impact of prolonged retaliatory tariffs. However, the model USDA used is designed to estimate short-term impacts of the 2018 and 2019 retaliatory tariffs, and it is unclear how a redefined baseline would account for longer-term effects.

[b]Some of these alternatives were not discussed in public documents, but USDA provided them to us at our request.

[c]Although the type of model used by USDA does not account for intermarket linkages, such as cross commodity effects, according to USDA's 2019 cost benefit analysis, USDA's adjusted its approach in developing the payment rates for the 2019 MFP to better address concerns with cross-commodity effects.

[d]According to USDA's 2018 and 2019 cost benefit analyses, the payments, which are based on the trade damage estimate, represent the benefits to producers and is the cost to the government for the program. USDA did not include other benefits or costs in this calculation. Given that both of these occur in the same year and no other benefits or costs were included in this calculation, USDA did not need to use the criterion of net present value.

[e]According to USDA officials, for the 2018 trade damages, a 1-year time frame would result in a change due to inflation that would fall below the margin of error. In addition, not adjusting for inflation is consistent with all other USDA ad hoc programs, for which the economic results are not adjusted for inflation. The value of inflation according to the Gross Domestic Product Price Index from the Department of Commerce's Bureau of Economic Analysis was 2.4 percent in 2018 and during the 2009-2018 period it was about 1.6 percent per year, on average. For the 2019 MFP, when using the sum of the maximum trade values during the 2009 through 2018 period as the baseline to estimate trade damages for the 2019 MFP, USDA used the nominal trade value. Adjusting for inflation would make a larger difference if the maximum trade value occurred earlier in the period.

Appendix V: Trade Damage Estimates from USDA's Prospective Analysis and Two Retrospective Studies

The U.S. Department of Agriculture (USDA) conducted a prospective analysis to estimate the trade damage due to retaliatory tariffs. USDA noted that implementing a timely program to respond to retaliatory tariffs did not allow for multi-year data collection to observe the actual trade damage. Therefore, it relied on an economic model to simulate the would-be export value under the retaliatory tariffs. USDA's model takes into account the level of the tariffs; the sensitivity of the retaliatory partner's import demand to the higher prices caused by the additional tariffs (trade elasticities and import demand elasticities); the availability of substitute suppliers for the retaliating importer; and the willingness of other countries to import from the U.S. The difference between the baseline export value and the simulated export value from the analysis, after considering the various demand responses to changing prices, is the estimated trade damage. The parameters in the simulation model, including the substitution elasticity, preference parameter, and import demand elasticity, play a key role in determining the size of the reduction in export values, the trade damage, and, ultimately, the size of MFP payments.

One way to retrospectively assess a prospective economic analysis such as USDA's is to look at how well it performed in predicting what would happen relative to what actually transpired. Through a literature search, we found several studies conducting retrospective analysis on the effect of retaliatory tariffs on U.S. agricultural trade. This appendix focuses on two studies recommended by USDA that explicitly focus on isolating the effects of the retaliatory tariffs on U.S. agricultural exports. USDA's economists co-authored one of the studies. These two studies use methods different from USDA's prospective analysis. Specifically, the studies use regression analysis to isolate the changes in exports due to tariffs after controlling for other factors. Both construct a "control group" using trade statistics in an attempt to quantity the "would-be" export values in the absence of tariffs.

Using an event study framework,[1] Carter and Steinbach (2020)[2] conducted a 12-month before-and-after study of retaliation against U.S. agricultural products. To measure the effect of tariff increases, they

[1]An event study framework allows for measuring the contemporaneous effects of a change, in this case, the tariff increases. The model examines the differences in export quantities, values, and unit values between products subject to tariffs and not subject to tariffs over time to identify the effect of the event, that is, the tariff increase.

[2]Colin A. Carter and Sandro Steinbach, 2020. *"The Impact of Retaliatory Tariffs on Agricultural and Food Trade"* Working Paper no. 27147, National Bureau of Economic Research.

analyze product level variation (defined as 10-digit Harmonized System (HS) product codes) in export supply, and rely on tariff changes as the identifying source of variation. They study the differences in export quantities, values, and unit values between targeted and nontargeted products over time. Because they observe eight waves of retaliatory tariff increases for agricultural and food products in 2018, they construct for each tariff increase an event window of 12 months around the month the tariff was announced. To estimate the trade destruction and trade deflection effects of retaliatory tariff increases, they use U.S. export data and assign tariff increases at the 10-digit HS code level.[3] The database the paper used provided trade data for the period from January 2017 to October 2019.

Using a gravity model,[4] Grant et al.[5] analyzed the effects of retaliatory tariffs by examining disaggregated monthly product-specific bilateral trade values from January 2016 through December 2019. To measure the effect of tariff increases, they analyze product-country level variation (defined as six-digit HS product codes). They study the variations in export values in country (whether a country imposed retaliatory tariffs) and product (whether a product had retaliatory tariffs) over time (before and after the retaliatory tariffs). The estimation equation contains a set of exporter-importer-product-month specific fixed effects designed to absorb all time-invariant product-and-month specific bilateral trade cost or promoting effects.

The differences between USDA's estimated trade damage and the two retrospective studies' are fairly small for some commodities but large for others. For example, USDA's 2018 MFP estimated trade damage for soybeans—the commodity for which USDA estimated the highest amount of trade damage—is within 3 percent of Carter and Steinbach's retrospective estimate, but USDA's 2019 MFP estimate was about 20 percent higher than Carter and Steinbach's. For both corn and cotton, USDA's estimates were much closer to the papers' results in 2018 than in 2019. For example, compared to Carter and Steinbach's estimate for

[3]Trade destruction effect refers to the reduction in trade with the countries that impose the retaliatory tariffs. Trade deflection effect refers to the increase in trade with countries that did not impose such tariffs.

[4]A gravity model examines the sensitivity of trade flows with respect to various factors, such as transportation cost, tariff barriers, and free trade agreements.

[5]JH Grant, S Arita, C Emlinger, R Johansson, C Xie, *Agricultural exports and retaliatory trade actions: An empirical assessment of the 2018/2019 trade conflict,* Applied Economics Perspectives and Policy. 2021;1-22. https://doi.org/10.1002/aepp.13138

cotton, while USDA's estimated damage in 2018 is almost 80 times higher, its estimate in 2019 is almost 300 times higher. Compared to Grant et al.'s estimate for corn, USDA's estimated damage in 2018 is approximately 89 percent of Grant et al.'s, but its estimate in 2019 is more than 5 times higher. One of the largest differences between USDA's estimates and Grant et al.'s is for sorghum, for which USDA's 2018 estimated damage is about one third of Grant et al.'s. Table 13 provides a summary comparison of USDA's prospective estimates to the estimates from the two retrospective studies.

Table 13: Comparing Trade Damage Estimates from USDA's Prospective Analysis and Two Retrospective Analyses for Selected MFP-eligible Commodities

Dollars in millions

MFP Commodity	USDA 2018 trade damage estimate	USDA 2019 trade damage estimate	Carter & Steinbach estimate for countries with retaliatory tariffs	Carter & Steinbach estimate for countries with no retaliatory tariffs	Grant et al annualized estimate
Corn[a]	-192	-1,250	-73	188	-216
Cotton	-553.8	-2,088	-7	3	-371
Dairy/milk[b]	-339.6	-439	-367	43	-263
Pork/hogs[c]	-1,139.4	-1,091	-828	93	-1,083
Sorghum/coarse grains	-313.6	-811	-616	2	-904
Soybeans[d]	-7,259.4	-8,490	-7,074	113	-10,664
Wheat	-238.4	-836	-111	57	-344
Total	**-10,036.4**	**-15,005**	**-9,076**	**499**	**-13,845**

Source: GAO analysis of U.S. Department of Agriculture (USDA) trade damage estimates; Colin A. Carter and Sandro Steinbach, *The Impact of Retaliatory Tariffs on Agricultural and Food Trade*, Working Paper no. 27147 (National Bureau of Economic Research, 2020); and JH Grant, S Arita, C Emlinger, R Johansson, C Xie, *Agricultural exports and retaliatory trade actions: An empirical assessment of the 2018/2019 trade conflict*, Applied Economics Perspectives and Policy. 2021;1-22. | GAO-22-468

[a]To make USDA's estimates comparable to the two other studies, we excluded distiller's dried grains with solubles (DDGS) and ethanol from USDA trade damage estimate for corn in 2019, which is a sum of estimated damages to corn, DDGS and ethanol. The USDA trade damage estimate for corn in 2018 did not include DDGS and ethanol.

[b]The USDA trade damage estimates for dairy in 2018 included trade damages from retaliatory tariffs by Mexico, Canada, and China. The USDA trade damage estimates for dairy in 2019 included only China, as Canada and Mexico had withdrawn their retaliatory tariffs. USDA also included additional "other dairy" products—such as infant formula, ice cream, casein, and lactose—in its 2019 MFP trade damage estimate that were not tariffed at the time of the 2018 MFP. Grant et al. estimated trade damages for China, Canada, and Mexico separately and the annualized damages were $226 million for China, $1 million for Canada, and $36 million for Mexico.

[c]The USDA trade damage estimates for pork in 2018 included trade damages from retaliatory tariffs by Mexico and China. The USDA trade damage estimates for pork in 2019 included only China, as Mexico had withdrawn its retaliatory tariffs. Grant et al. estimated trade damages for China and Mexico separately, and the annualized damages were $777 million for China and $306 million for Mexico.

[d]To make USDA's estimates comparable to the two other studies, we excluded soybean oil from the USDA trade damage estimate for soybeans in 2019, which is a sum of estimated damages to soybeans and soybean oil. The USDA trade damage estimate for soybeans for 2018 did not include soybean oil.

Notes: Totals may not sum due to rounding.

Timeframe: USDA's 2018 MFP trade damage used 2017 as the baseline year and the trade damage estimate was for the 2018 MFP payments. USDA's 2019 MFP trade damage used the highest values in individual years for its baseline; in all instances the USDA baseline is equal to or greater than the highest value of U.S. exports of the commodities to retaliating countries in any one year from 2009 through 2018. Carter & Steinbach's estimates relied on an event study framework and compared 12-month periods before and after the tariff, thus the damage was for the 12-month period after the tariffs were imposed. Grant et al used monthly data from January 2016 through December 2019 and they presented their results as annualized damage.

Commodities: USDA estimated trade damages for nine commodities (corn, cotton, sorghum, soybeans, pork/hogs, almonds, wheat, sweet cherries, and dairy/milk) for the 2018 MFP. Carter and Steinbach and Grant et al. estimated trade damages for seven of the nine commodities. Both papers estimated damages for tree nuts and fruits but did not have specific damages for almonds and sweet cherries. Together, these seven commodities represent about 93 percent of the total estimated trade damage for the 2018 MFP.

In the Grant et al. study the annualized losses are calculated based on the model's estimated percentage decline in trade as a result of retaliatory tariffs multiplied by the 2017 trade value. According to one of the paper's authors, the Phase One Trade Deal between the U.S. and China uses 2017 as the benchmark year, making 2017 a representative (i.e., closer to "normal") baseline year.

The Carter and Steinbach paper's estimates for countries with retaliatory tariffs were based only on trade with countries with retaliatory tariffs when running their regression model. Thus, for the estimates for countries with retaliatory tariffs, Carter and Steinbach used products exported to countries with retaliatory tariffs but not subject to the tariffs as the control group. In contrast, the Grant et al. study includes countries with and without retaliatory tariffs when running the regression model, thus including trade to countries with no retaliatory tariffs in the control group, which, in the presence of offsetting gains, could lead to overestimating the decline resulting from retaliatory tariffs. Grant et al. did not provide commodity specific estimates of the effect of the tariffs on U.S. exports to countries without retaliatory tariffs. However, according to one of the paper's authors, they had examined the potential for trade deflection and found limited evidence of U.S. exports increasing to alternative markets with no retaliatory tariffs. Trade deflection was positive and statistically significant in only 10 out of 54 product-level estimations, with the largest estimates occurring for sorghum and corn (China retaliation) and limited U.S. soybean exports (China retaliation).

Multiple factors could explain the differences in the estimated trade damage. First, USDA and the studies each used different estimation methodologies. As noted above, USDA's methodology was prospective and relied on parameters from other studies and models to project how the market would react to the tariffs. The two studies are retrospective and relied on regression to isolate the effect of tariffs by comparing trade of products or countries that had different tariff experiences. Second, the two retrospective studies used data from different time periods, with one comparing the 12-month period before the tariffs to the 12-month period after the tariffs, and the other using data from January 2016—about 2 years before the relevant tariffs—to December 2019. According to USDA researchers, trade change calculations are sensitive to time frame. Third, limitations of the retrospective studies may have contributed to the differences. For example, Grant et al. acknowledged that several of their product-level estimates could not be matched to USDA's estimates due to differences in product aggregation. Finally, USDA choices, such as

selection of the baseline using the highest value from different years in estimating the 2019 trade damage, led to higher estimated damages.

Appendix VI: Comparison of 2019 MFP Baseline to Trade Values of Eligible Commodities

Our analysis found that the baseline trade value against which the U.S. Department of Agriculture (USDA) measured trade damages for 14 of the 29 eligible commodities that it used to calculate commodity payment rates for the 2019 Market Facilitation Program (MFP) was higher than trade with retaliating countries had been in any one year from 2009 through 2018.[1]

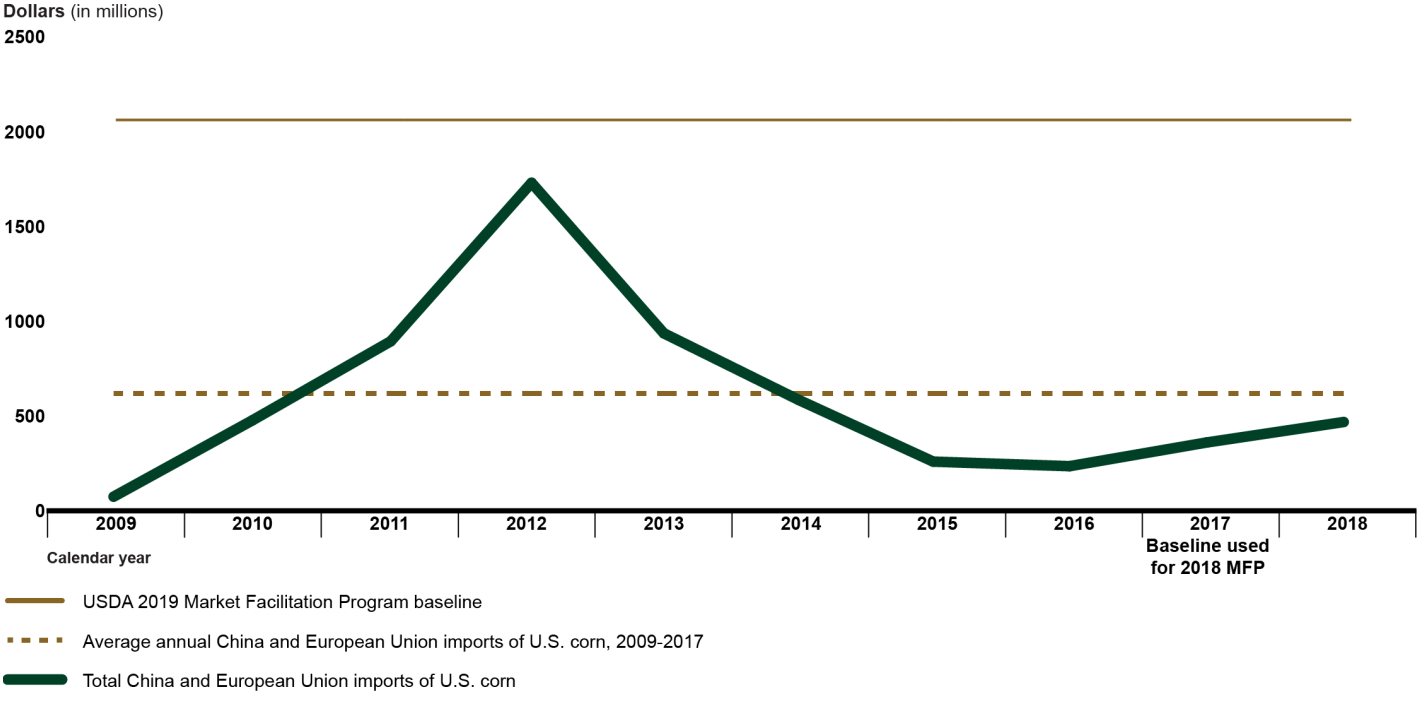
Trade Data and USDA 2019 MFP Baseline for Nonspecialty Crops

Figures 9 through 13 show the USDA 2019 MFP baseline for the five nonspecialty crops for which USDA estimated the highest amount of trade damage—corn, cotton, sorghum, soybeans, and wheat; the nominal trade values for retaliating country imports of those commodities from the U.S. from 2009 through 2018; and, for comparison, the average of those nominal trade values from 2009-2017.[2] For corn and wheat, the USDA baseline is higher than trade with retaliating countries of those commodities had been in any one year from 2009 through 2018. For cotton, sorghum, and soybeans, the USDA baseline is about equal to the highest value in any of the years from 2009 through 2018.

[1]These 14 commodities do not include commodities for which the difference between the USDA 2019 MFP baseline and the highest trade had been in any one year from 2009 through 2018 was less than 1 percent.

[2]We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017. Sorghum trade values were 0 in 2009-2012 and the average is calculated using 2013-2017 data.

Figure 9: USDA 2019 Market Facilitation Program Baseline, Trade Values of Chinese and European Union Imports of Corn from the U.S., 2009 through 2018, and Average Trade Value, 2009-2017



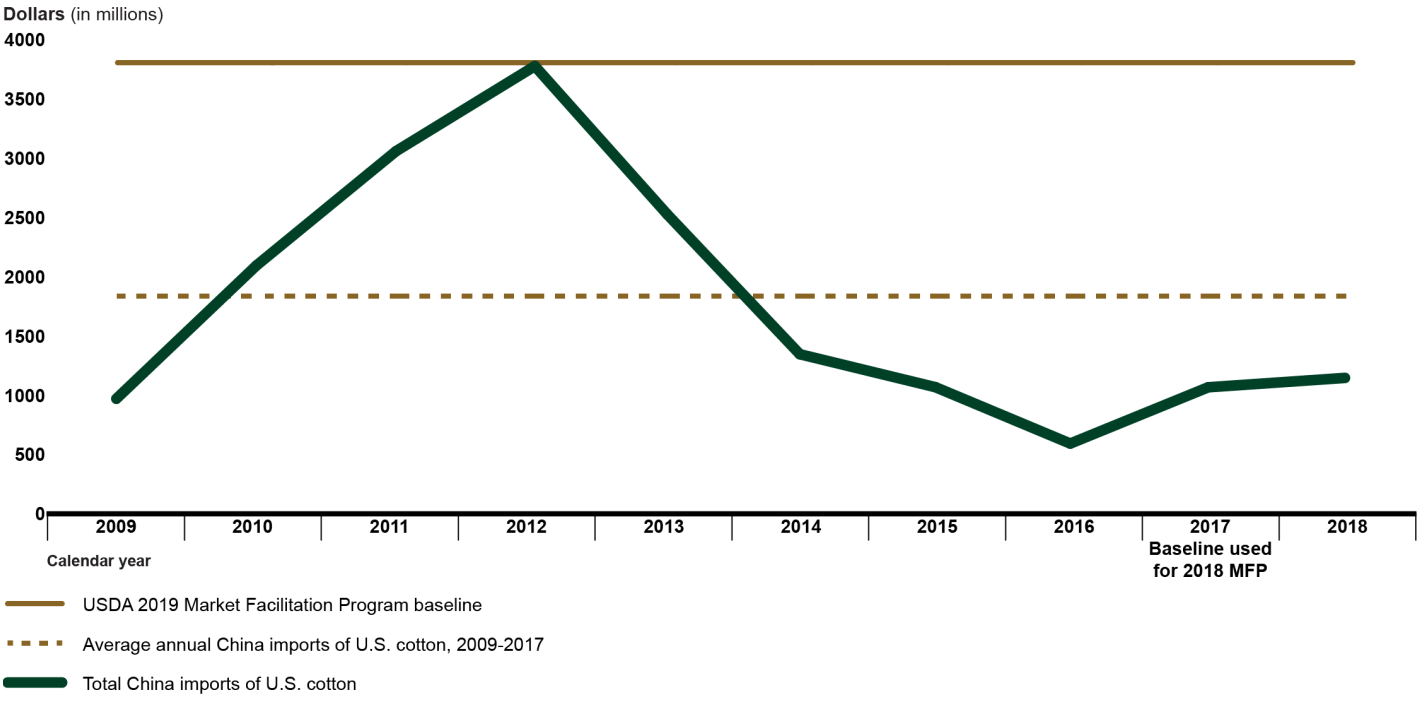
Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

Notes: Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017.

USDA included the high values of Chinese imports of other corn products such as flour, starch, and bran in its 2019 MFP baseline calculations but did not include those products in the 2018 MFP baseline calculation. However, these other products' high trade values amount to only approximately 0.3 percent of the China and EU high import values USDA used to calculate the 2019 MFP baseline.

The corn data shown in the figure do not include distiller's dried grains with solubles (DDGS) and ethanol. USDA added the trade damage estimates for DDGS and ethanol to the trade damage estimate for corn before calculating the corn commodity rate.

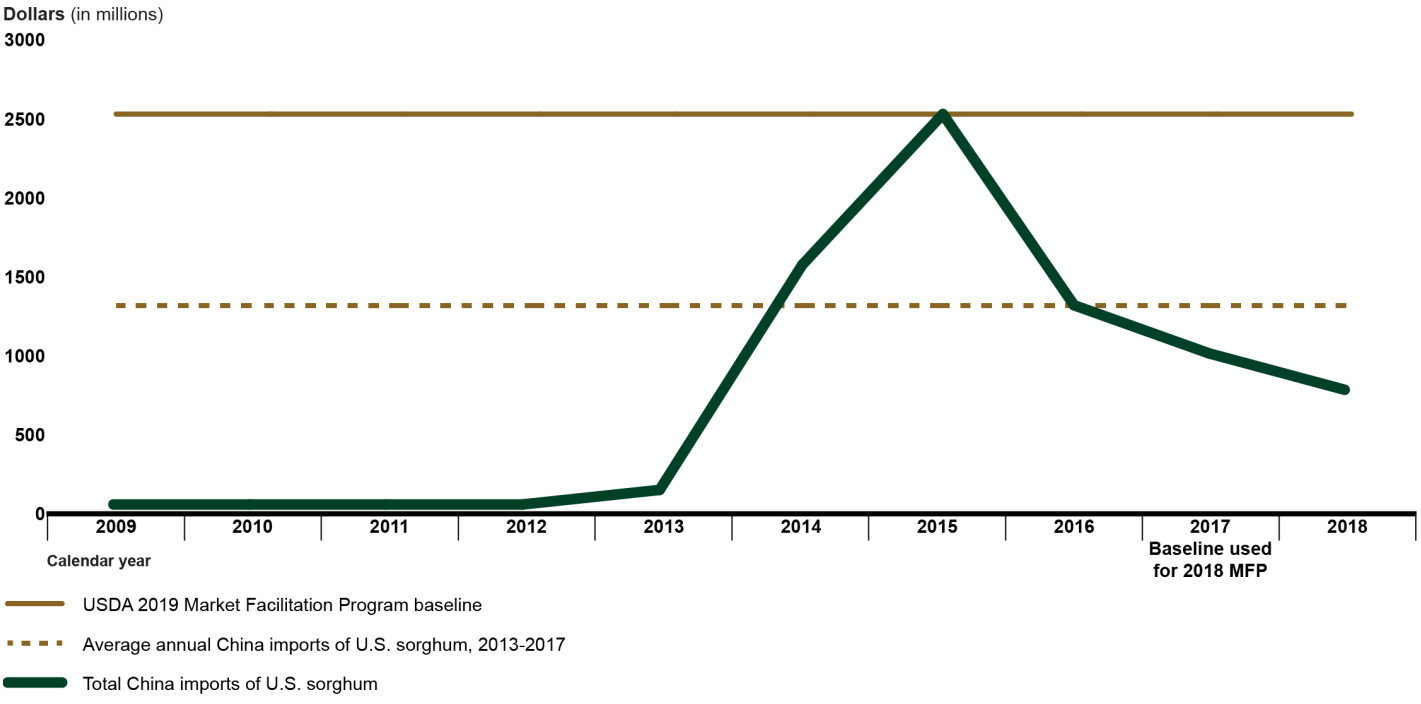
Figure 10: USDA 2019 Market Facilitation Program Baseline, Trade Values of Chinese Imports of Cotton from the U.S., 2009 through 2018, and Average Trade Value, 2009-2017



Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

Notes: Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017.

Figure 11: USDA 2019 Market Facilitation Program Baseline, Trade Values of Chinese Imports of Sorghum from the U.S., 2009 through 2018, and Average Trade Value, 2009-2017

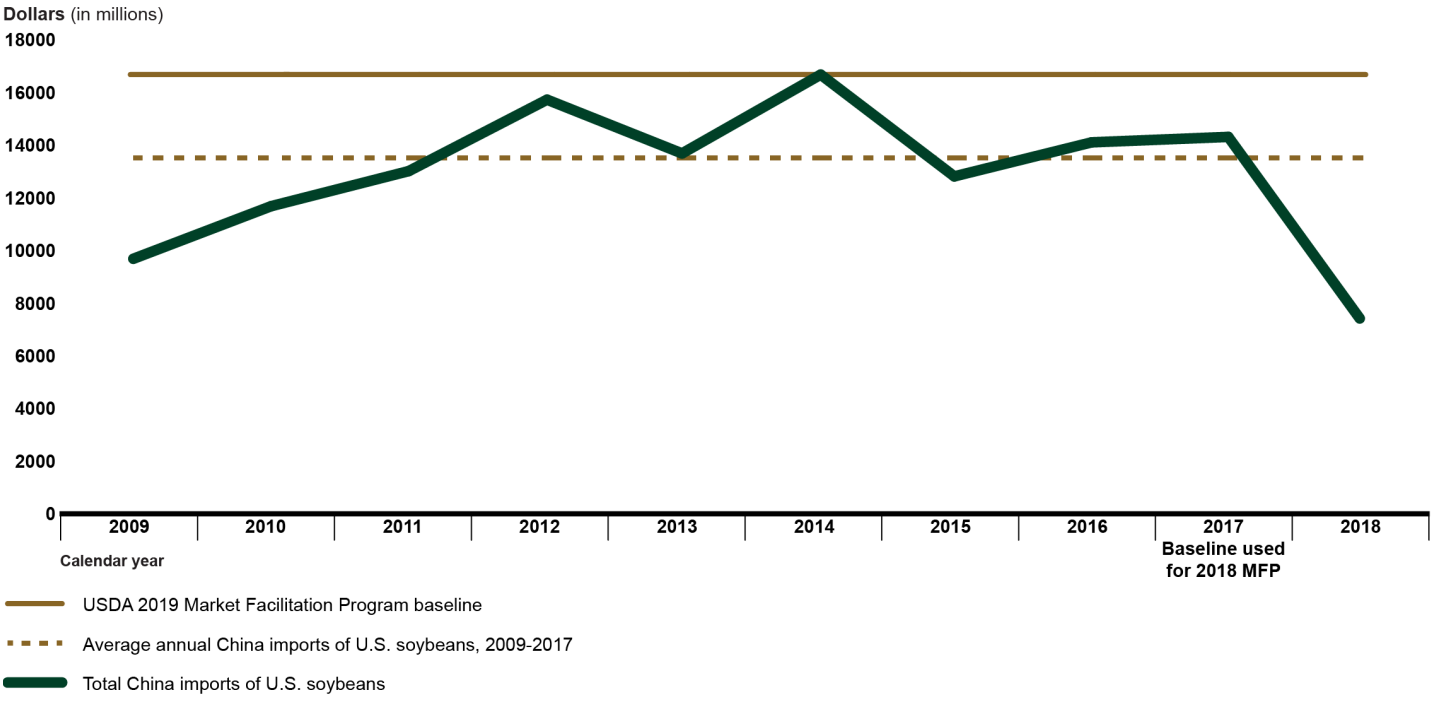


Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

Notes: Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017.

Sorghum trade values with China were 0 in 2009-2012 and the average is calculated using 2013-2017 data.

Figure 12: USDA 2019 Market Facilitation Program Baseline, Trade Values of Chinese Imports of Soybeans from the U.S., 2009 through 2018, and Average Trade Value, 2009-2017

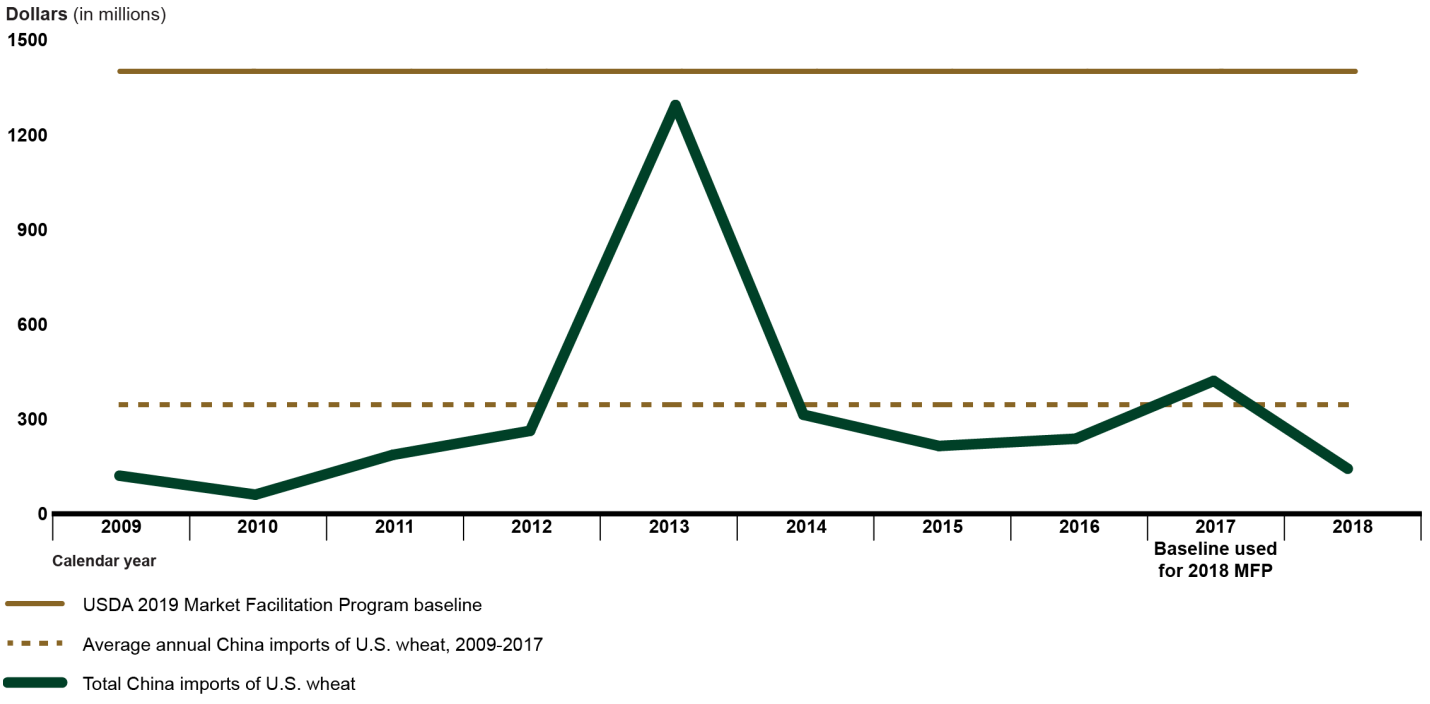


Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

Notes: Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017.

The soybeans data shown in the figure do not include soybean oil. USDA separately calculated the trade damage to soybean oil and added that trade damage estimate to the trade damage estimate for soybeans before calculating the commodity rate for soybeans. The USDA 2019 MFP baseline value of $262.5 million for soybean oil is approximately 1.6 percent of the USDA baseline value for soybeans.

Figure 13: USDA Market Facilitation Program Baseline, Trade Values of Chinese Imports of Wheat from the U.S., 2009 through 2018, and Average Trade Value, 2009-2017



Source: GAO analysis of U.S Department of Agriculture (USDA) data. | GAO-22-468

Notes: Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017.

Like the baselines for corn and wheat, the 2019 MFP baseline that USDA calculated for lentils, peanut butter, and rice were all higher than the value of trade with retaliating countries had been in any one year from 2009 through 2018.[3] The 2019 MFP baseline for the remaining nonspecialty crops was equal to the highest the trade values for those crops had been in any one year from 2009 through 2018.

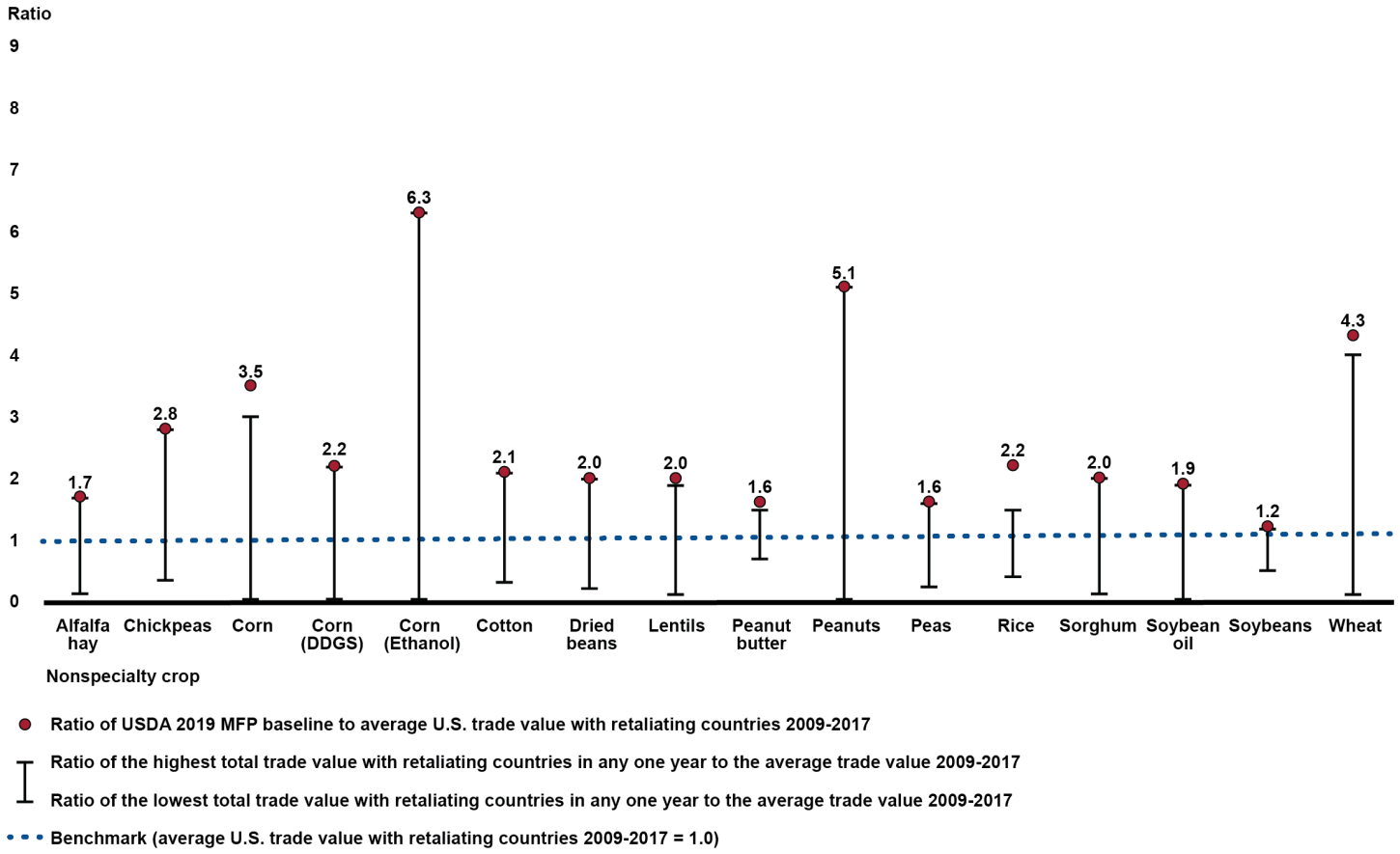
Figure 14 compares the baseline USDA used in its 2019 MFP trade damage estimates for all eligible nonspecialty crops to the range of trade values with retaliating countries of those crops. The figure shows the ratio of the USDA baseline to the average value of retaliating country imports

[3]USDA separately calculated trade damage estimates for peanuts and peanut butter. USDA then summed the trade damage estimates for peanuts and peanut butter before calculating the peanut commodity payment rate.

of MFP-eligible commodities from 2009-2017 and the ratio of the high and low values in individual years to that average.[4] A baseline value higher than the range shown in the figure indicates a baseline value higher than trade had been in any one year from 2009-2018. For example, the USDA 2019 MFP wheat baseline ($1.37 billion) was 4.3 times the $316 million average trade value of wheat imports by retaliating countries from 2009-2017 and higher than $1.26 billion, the highest retaliating country wheat imports had been in any one year from 2009-2018. The lowest annual trade value of retaliating country wheat imports during 2009-2018 was approximately 1/10 the average annual trade value from 2009-2017.

[4]We excluded the 2018 trade value from the average because 2018 trade values may have been affected by retaliatory tariffs.

Figure 14: 2019 MFP Nonspecialty Crops: Ratios of USDA Baseline, Highest Trade Value of Imports in Any One Year, and Lowest Trade Value of Imports in Any One Year to Average 2009-2017 Trade Values



Legend: DDGS = Distiller's dried grains with solubles; MFP = Market Facilitation Program; USDA = U.S. Department of Agriculture.

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

Notes: We excluded the 2018 trade value from the average because 2018 trade values may have been affected by retaliatory tariffs. USDA added the trade damage estimates for DDGS and ethanol to the trade damage estimate for corn before calculating the corn commodity rate. USDA summed the trade damage estimates for peanut butter and peanuts before calculating the peanut commodity rate. USDA summed the trade damage estimates for soybean oil and soybeans before calculating the soybean commodity rate. Sorghum trade values with China were 0 in 2009-2012, and the average is calculated using 2013-2017 data. Peanut trade values with China were 0 in 2009, and the average is calculated using 2010-2017 data.

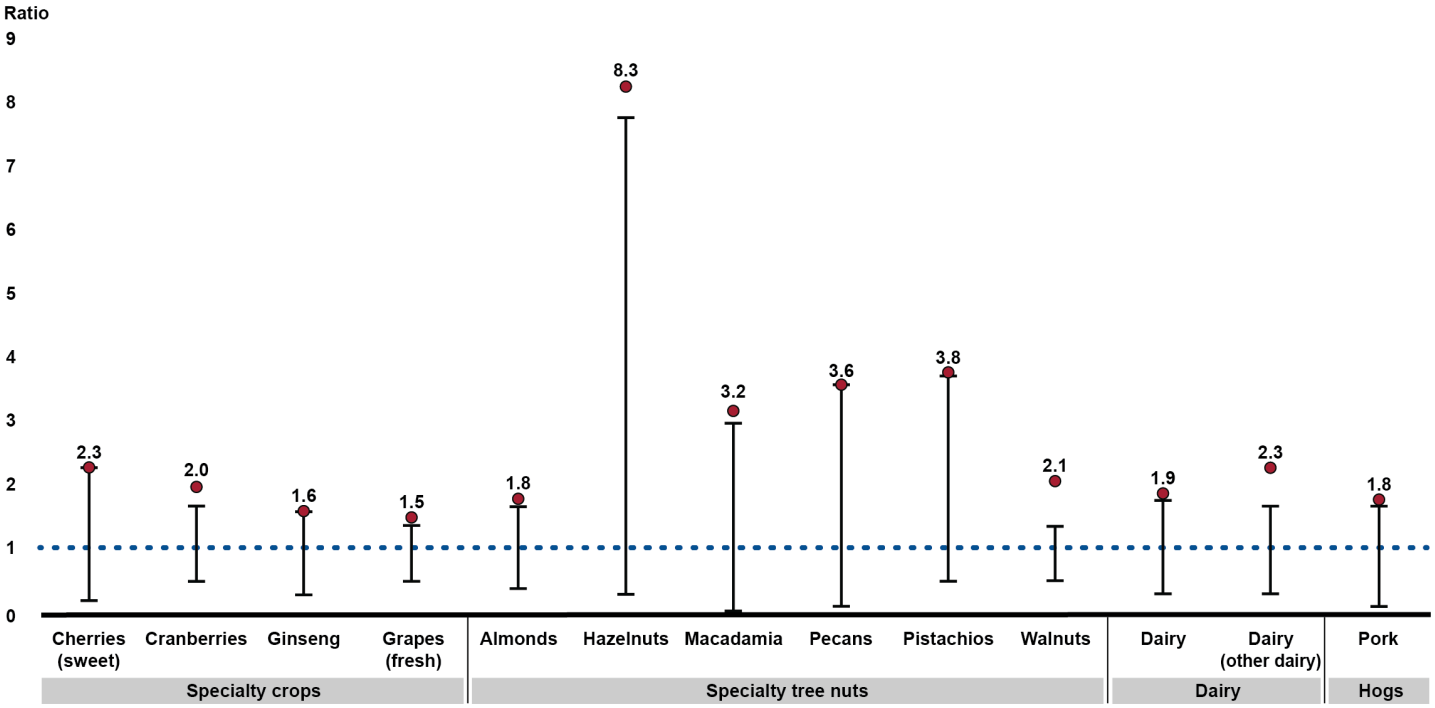
Trade Data and USDA 2019 MFP Baseline for Specialty Crops, Dairy and Pork

With the exception of cherries, ginseng, pecans, and pistachios, the USDA baseline trade values with retaliating countries for all specialty crops, dairy, and pork were higher than those values had been in any one year from 2009 through 2018.[5] The baseline value for cherries, ginseng, pecans, and pistachios was equal to the highest the trade values for those commodities had been in any one year. Figure 15 compares the baseline USDA used in its 2019 MFP trade damage estimates for eligible commodities to the range of trade values with retaliating countries for all eligible specialty crops, dairy, and hogs. The figure shows the ratio of the USDA baseline to the average value of retaliating country imports of MFP-eligible commodities from 2009-2017 and the ratio of the high and low values in individual years to that average.[6] A baseline value higher than the range shown in the figure indicates a baseline value higher than trade had been in any one year from 2009-2018.

[5]The ratio of the USDA 2019 MFP baseline to average trade value for pistachios is 3.75. The ratio of the highest trade value to average trade value is 3.74. Because the difference is very small, we have counted pistachios as having a baseline equal to the high trade value.

[6]We excluded the 2018 trade value from the average because 2018 trade values may have been affected by retaliatory tariffs.

Figure 15: 2019 MFP Specialty Crops, Dairy, and Pork: Ratios of USDA Baseline, Highest Trade Value of Imports in Any One Year, and Lowest Trade Value of Imports in Any One Year to Average 2009-2017 Trade Values



Legend: MFP = Market Facilitation Program; USDA = U.S. Department of Agriculture.

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

Notes: We excluded the 2018 trade value from the average because 2018 trade values may have been affected by retaliatory tariffs. USDA summed the trade damage estimates for dairy and "other dairy" products, such as infant formula, ice cream, casein, and lactose, before calculating the dairy payment rate. The average for cranberries is of 2012-2017 data; trade values for prior years were reported as 0. The ratio of the USDA 2019 MFP baseline to average trade value for pistachios is 3.75, rounded to 3.8. The ratio of the highest trade value to average trade value is 3.74.

As a result of the methodology USDA used to develop a baseline and estimate trade damages for the 2019 MFP, its trade damage estimate for some MFP-eligible commodities was higher than the total trade with retaliating countries of those commodities in 2017—the year prior to retaliatory tariffs.

USDA 2019 MFP Trade Damage Estimate and 2017 Data for Nonspecialty Crops

Table 14 shows the amount of USDA's 2019 MFP trade damage estimate for each nonspecialty crop, the value of trade with retaliating countries in 2017, and the ratio of those two numbers. A ratio in excess of 1 indicates that the 2019 MFP trade damage estimate exceeded 2017 trade with retaliating countries for the commodity. In all, USDA's estimated 2019 MFP trade damage for seven of the 16 nonspecialty commodities for which USDA calculated a commodity rate exceeded those commodities' total trade with retaliating countries in 2017.

Table 14: Comparison of Trade Values of Retaliating Country Imports of Nonspecialty Crops in 2017 and USDA 2019 MFP Trade Damage Estimates

Dollars in millions

Commodity	2017 value of trade with retaliating countries	USDA trade damage estimate, 2019 MFP	Ratio of 2019 trade damage estimate to 2017 trade value
Alfalfa hay	399	162	0.4
Chickpeas	30	7	0.3
Corn	311	1,250	4.0
Corn (DDGS)	66	615	9.2
Corn (Ethanol)	0.3	195	653.9
Cotton	989	2,088	2.1
Dried beans	70	51	0.7
Lentils	45	34	0.8
Peanut butter	29	14	0.5
Peanuts	60	32	0.5
Peas	23	17	0.8
Rice	76	125	1.6
Sorghum	956	811	0.8
Soybean oil	70	141	2.0
Soybeans	13,960	8,490	0.6
Wheat	391	836	2.1

Legend: USDA = U.S. Department of Agriculture; MFP = Market Facilitation Program; DDGS = distiller's dried grains with solubles

Source: GAO analysis of USDA data. | GAO-22-468

Notes: Ratios are rounded to the nearest 1/10th. USDA added the trade damage estimates for DDGS and ethanol to the trade damage estimate for corn before calculating the corn commodity rate. USDA summed the trade damage estimates for peanut butter and peanuts before calculating the peanut commodity rate. USDA summed the trade damage estimates for soybean oil and soybeans before calculating the soybean commodity rate.

USDA 2019 MFP Trade Damage Estimate and 2017 Data for Specialty Crops, Dairy, and Hogs

USDA's 2019 MFP trade damage estimates also exceeded the value of total 2017 imports by retaliating countries for one of the 10 eligible specialty crops: hazelnuts. Table 15 shows the amount of USDA's 2019 MFP trade damage estimate for specialty crops, dairy, and hogs; the value of trade of these commodities with retaliating countries in 2017; and the ratio of those two numbers. A ratio in excess of 1 indicates that the 2019 MFP trade damage estimate exceeded 2017 trade with retaliating countries for the commodity.

Table 15: Comparison of Trade Values of Retaliating Country Imports of Specialty Crops, Dairy, and Hogs in 2017 and USDA 2019 MFP Trade Damage Estimates

Dollars in millions

Commodity	2017 value of trade with retaliating countries	USDA trade damage estimate, 2019 MFP	Ratio of 2019 trade damage estimate to 2017 trade value
Specialty crops			
Almonds	807	69	0.1
Cherries (sweet)	170	111	0.7
Cranberries	62	28	0.4
Ginseng	14	6	0.5
Grapes (fresh)	72	70	1.0
Hazelnuts	3	9	2.7
Macadamia	18	8	0.4
Pecans	24	21	0.9
Pistachios	178	146	0.8
Walnuts	125	65	0.5
Dairy and hogs			
Dairy	426	350	0.8
Other dairy	199	89	0.4
Hogs (Pork)	1,163	1,091	0.9

Source: GAO analysis of USDA data. | GAO-22-468

Notes: Ratios are rounded to the nearest 1/10th. USDA summed the trade damage estimates for dairy and "other dairy" products, such as infant formula, ice cream, casein, and lactose, before calculating the dairy payment rate.

Appendix VII: Production Data for the 2018 MFP and 2019 MFP Payment Rates

The change in production data the U.S. Department of Agriculture (USDA) used to calculate payment rates for the 2019 Market Facilitation Program (MFP) affected the resulting commodity rates for eligible nonspecialty crops in comparison to what USDA would have calculated if it had used the same methodology as for the 2018 MFP. The change in production data source for the 2019 MFP resulted in a higher payment rate for sweet cherries, but did not affect the payment rates for grapes and cranberries. For milk, USDA used production data from the Margin Protection Program instead of data from the National Agricultural Statistics Service (NASS), as it had for the 2018 MFP. The Margin Protection Program does not include all producers, and the lower production from the Margin Protection Program estimate resulted in a higher payment rate for the 2019 MFP.

USDA Changed Production Data for the 2019 MFP, Which Affected Payment Rates

The 2017 Production Data USDA Used to Calculate 2018 MFP Payment Rates Were Close to Actual 2018 Production for Most Commodities

The 2017 production data USDA used to estimate 2018 production generally approximated actual 2018 production.[1] Because production varies year to year, it can be difficult to estimate future years' production based on historical data. However, we found that the 2017 production assumed by USDA for almonds, corn, milk, sorghum, and soybeans were all within 2 percent of 2018 production. Cotton production was 12 percent lower, cherry production 17 percent lower, and wheat production 8 percent higher.[2] Using an average of 2015-2017 production—the approach USDA used for the 2019 MFP—would have increased payment rates for cotton, soybeans, hogs, and sweet cherries and reduced payment rates for sorghum and wheat. The rates for almonds, corn, and milk would not have changed (see table 16.)

[1]According to USDA officials, final 2018 production data was not available at the time of the 2018 MFP and 2019 MFP programs.

[2]Retaliatory tariffs could have affected production in 2018; therefore analyzing how close USDA's choice of production data mirrored actual production is not a perfect comparison.

Table 16: Comparison of 2018 Market Facilitation Program (MFP) Payment Rates Calculated with 2017 Production Data and Rates That Would Have Been Calculated with 2015-2017 Average Production

Commodity	Units	USDA 2018 MFP rate calculated with 2017 production[a]	2018 MFP rate if calculated with 2015-2017 average production[a] (the 2019 MFP Methodology)	Difference
Corn	bushels	0.01	0.01	0
Cotton	pounds	0.06	0.07	+0.01
Sorghum	bushels	0.86	0.65	-0.21
Soybeans	bushels	1.65	1.72	+0.07
Wheat	bushels	0.14	0.12	-0.02
Almonds	pounds	0.03	0.03	0
Sweet Cherries	pounds	0.16	0.20	+0.04
Hogs[a]	head	8.00	8.44	+0.44
Milk	hundredweight	0.12	0.12	0

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

[a]USDA measured hogs by inventory rather than production.

USDA's Change to 3-Year Average Production Data for the 2019 MFP Resulted in Different Commodity Rates for Most Nonspecialty Crops

The change in production data methodology for the 2019 MFP had varying effects on the commodity rates used to calculate county payment rates for nonspecialty crops. We compared (1) the commodity payment rates USDA calculated using 2015-2017 average production data for nonspecialty crops for the 2019 MFP and (2) commodity payment rates if USDA had used 2017 production data, as it did for the 2018 MFP. If USDA had again used 2017 production for the 2019 MFP, it would have calculated higher commodity rates for alfalfa, dried beans, lentils, peas, rice, sorghum, and wheat, and lower commodity rates for chickpeas, cotton, and soybeans (see table 17.)

Table 17: Comparison of 2019 Market Facilitation Program (MFP) Nonspecialty Crop Commodity Payment Rates Calculated with 2015-2017 Average Production Data and Rates Calculated with 2017 Production Data

Commodity	Units	USDA 2019 MFP rate calculated with 2015-2017 average production	Rate if calculated with 2017 production (2018 MFP Methodology)	Difference
Alfalfa	tons	2.81	2.91	+0.10
Chickpeas	hundredweight	1.48	1.05	-0.43
Corn	bushels	0.14	0.14	0
Cotton	pounds	0.26	0.21	-0.05
Dried Beans	hundredweight	8.22	8.28	+0.06
Lentils	hundredweight	3.99	4.54	+0.55
Peanuts	pounds	0.01	0.01	0
Peas	hundredweight	0.85	1.21	+0.36
Rice	hundredweight	0.63	0.70	+0.07
Sorghum	bushels	1.69	2.24	+0.55
Soybeans	bushels	2.05	1.96	-0.09
Wheat	bushels	0.41	0.48	+0.07

Source: GAO analysis of U.S. Department of Agriculture (USDA) data. | GAO-22-468

USDA's Change to Production Data Source for the 2019 MFP Increased the Sweet Cherries Payment Rate

USDA estimated the same amount of trade damage for sweet cherries in 2018 and 2019, but sweet cherries had different payment rates between the 2 years because of the change in the source of production data.[3] In 2019, USDA used NASS Census data for the source of production instead of the NASS Survey data it used in 2018.[4] NASS Census data are more comprehensive than NASS Survey data, because the NASS Census contains data for all farms rather than extrapolating from samples. As a result of the change in production data source, the payment rate for sweet cherries increased from $0.16 to $0.17 per pound, resulting in an increase of the per-acre payment rate from $1,464 to $1,555. For cranberries and grapes, the use of NASS Census data or NASS Survey data for the 2019 MFP would have resulted in the same

[3]In both years, USDA used for its cherry baseline the 2017 value of retaliating country imports from the U.S.—the highest in the 2009-2018 period—and the same estimated decline in trade to calculate cherry trade damages.

[4]NASS Census data for 2017 was unavailable at the time USDA was creating the 2018 MFP. The NASS Census occurs every 5 years, so there was no NASS Census data for 2015-2016 to compare with the 2017 acreage. USDA collects NASS Survey data yearly.

per-unit payment rates. The NASS Survey does not have data for ginseng.[5]

USDA Used a Different Production Data Source for Milk for the 2019 MFP, Resulting in a Higher Payment Rate

For the 2019 MFP, USDA used the same methodology for calculating payment rates for hogs and milk as it used for the 2018 MFP, but USDA changed the source of the milk production data.[6] For the 2019 MFP, USDA used 2017 data from the Margin Protection Program, a voluntary risk-management program that does not include all producers; these data were lower than 2017 NASS milk production data, which USDA used for the 2018 MFP and are an estimate of all U.S. milk production. Dividing the amount of trade damage addressed by the 2019 MFP—$354 million (the USDA trade damage estimate minus the amount of Food Purchase and Distribution Program (FPDP) purchases) by Margin Protection Program data (1,761 million hundredweight) resulted in a payment rate of $0.20 per hundredweight—higher than the $0.16 per hundredweight payment rate that would have been produced if USDA had continued to use NASS production data (2,155 million hundredweight). According to agency officials, USDA based the milk payment rate on Margin Protection Program data because USDA awarded MFP payments based on a dairy operation's production history established under the Dairy Margin Coverage program, which replaced the Margin Protection Program in 2018. However, all U.S. dairy producers who met eligibility rules could apply for the MFP, and those not enrolled in the Dairy Margin Coverage program could establish production history under Dairy Margin Coverage rules. Milk is the only commodity for which USDA did not use an estimate of nationwide production in its payment rate calculation.

[5]Cranberries and grapes were eligible for the 2018 FPDP, but not for the 2018 MFP. Ginseng was not eligible for the 2018 FPDP or 2018 MFP.

[6]To calculate the 2019 MFP payment rate of $11 per head for hogs, USDA divided the 2019 MFP trade damage estimate of $831 million (the trade damage estimate minus the amount of FPDP purchases) by the 74 million total hogs in the March 2019 NASS hogs inventory report.

Appendix VIII: Comments from the Department of Agriculture

United States Department of Agriculture
Office of the Chief Economist
Room 112-A J.L. Whitten Building
1400 Independence Avenue, SW
Washington, D.C. 20250-3810

October 21, 2021

Ms. Kimberly Gianopoulos
Director, International Affairs and Trade
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Gianopoulos:

The U.S. Department of Agriculture (USDA) appreciates the opportunity to respond to the U.S. Government Accountability Office (GAO) Draft Report GAO-21-468 of October 2021 entitled "USDA MARKET FACILITATION PROGRAM: Stronger Adherence to Quality Guidelines Would Improve Future Economic Analyses," which was prepared for the Chairwoman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate.

See comment 1

USDA respectfully disagrees with GAO's recommendations that USDA's Office of the Chief Economist (OCE) revise its internal review process for future economic analyses. OCE's role is to provide objective, data-driven economic analyses to inform policymakers' decision-making. For the Market Facilitation Program (MFP) and other trade mitigation programs, in its role, OCE was asked to provide a range of different analyses, based on alternative assumptions, and estimates of trade damages to inform USDA leadership in their decision making. OCE did not determine program goals, spending levels, payment rates, or other program parameters but provided the analytical support for the policymakers' deliberations, which included performing extensive sensitivity analysis of alternative economic assumptions and different policy options. While different alternatives clearly change the amount of assistance and distribution between different crops or regions, OCE's role was to inform the political leadership of the Department and did not make decisions or establish the rationale for selecting a particular alternative.

See comment 2

However, GAO's draft report omits this context of policy decision-making, and OCE's role in that process, in the development of the program parameters. Therefore, GAO's recommendations are incorrectly directed at OCE's economic analysis and review process. As we discuss below, OCE's analysis was based on a widely accepted trade model and methodology that USDA's Office of Inspector General (OIG) found to be reasonable and applied consistently across a broad

See comment 3

See comment 1

range of commodities for both the 2018 and 2019 trade mitigation packages.[1] The methodology and estimates were reviewed by other USDA and U.S. Government economists as part of the inter-agency rulemaking clearance process, and clearly documented in two publicly available reports that went above and beyond the requirements for rulemaking, and validated by two retrospective academic studies. OCE's approach to provide the highest quality analysis possible based on widely accepted procedures would have been the same no matter what policy decision was made. GAO's concerns about disparities and patterns in the resulting program payments are related not to OCE's analysis or internal review procedures but rather to policy decisions and, due to the change in Administration, USDA does not have insight into the rationale behind which alternatives were selected.

Background

In 2018 and 2019, the President directed the Secretary of Agriculture to provide short-term assistance to U.S. farmers and ranchers to help mitigate the negative impacts of retaliatory tariffs imposed by China and other trading partners on U.S. agricultural and food exports. The Secretary of Agriculture exercised his authority under Section 5 of the Commodity Credit Corporation (CCC) Charter Act to provide this assistance. The Office of the Secretary (OSEC) requested that the Office of the Chief Economist (OCE) analyze the impacts of unprecedented trade retaliation imposed by China and other major trading partners on U.S. agricultural exports.

The purpose of this analysis was to provide USDA policy makers in OSEC with quantitative parameters with which to craft an assistance package as the President directed. OCE provided USDA policymakers with estimates of the level of trade that was lost due to trade retaliation using a widely accepted and publicly available trade model and methodology consistent with similar analyses conducted in World Trade Organization (WTO) dispute settlement procedures. The 2018 USDA trade mitigation/assistance package was announced in July 2018 and implemented in September 2018. The 2019 package was announced in May 2019 and implemented in July 2019. Given the clear impacts of the trade war on the U.S. farm economy during this time, OCE was working within an expedited timeline to provide analysis to policymakers.[2]

USDA policymakers used the trade damage estimates that OCE developed to formulate the levels of assistance provided through three trade mitigation programs that were designed to help farmers and ranchers manage disrupted markets, deal with surplus commodities, and expand and develop new markets at home and abroad: 1) the Market Facilitation Program (MFP), 2) the Food Purchase and Distribution Program (FPDP), and 3) the Agriculture Trade Promotion (ATP) program.

Because MFP was implemented in accordance with Federal rulemaking requirements, USDA was required to include a Cost Benefit Analysis (CBA), which was subject to Office of

[1] See p. 8, Audit Report 50601-0009-31. "USDA's 2018 and 2019 Trade Mitigation Packages," https://www.usda.gov/sites/default/files/audit-reports/50601-0009-31.pdf

[2] For example, in August 2018, ERS forecast declines (12-13 percent) in both net cash income and net farm income for 2018 relative to the February forecast for 2018. When adjusted for inflation, 2018 net cash income was forecast to be the lowest since 2009.

See comment 3

Management and Budget (OMB) official review and clearance procedures. The CBA outlined the trade damage methodology and was reviewed and cleared by USDA and other U.S. Government economists, as well as OMB, prior to its publication. In fact, USDA exceeded the typical documentation efforts by taking the extra step to further enhance transparency through providing two separate reports detailing the trade damage methodology which was published on the OCE website immediately after the 2018 and 2019 programs were implemented.[3]

See comment 2

The USDA Office of the Inspector General (OIG)'s audit of the 2018 and 2019 trade mitigation packages, which included a review of the trade damage methodology, found that USDA's approach for estimating trade damage was supported by a reasonable methodology and was applied consistently across commodities. During the course of the audit, OIG received a Congressional request to determine how USDA structured and implemented its trade mitigation package to assist farmers impacted by tariffs, whether the payments disbursed under the programs benefitted the farmers for who they were intended, and whether there was waste, fraud, and abuse in the trade mitigation package programs. The OIG's audits included work responsive to those specific Congressional concerns.

On January 9, 2020, the Ranking Member of the U.S. Senate Committee on Agriculture, Nutrition, and Forestry ("Requester"), asked GAO to conduct a review to address a series of questions, including the following questions[4] concerning the trade damage estimates and MFP:

1) *Does the USDA model for trade damages in the 2018 and 2019 MFP program accurately reflect all of the trade-related damage felt by specific commodities and actual harm to farmers;*
2) *Were any damages over-looked or over-estimated in the 2018 and 2019 MFP;*
3) *Would another model or adjustments to the models better match particular payments with actual trade damage; and*
4) *What criteria or targeting of payment could be used to make sure that farmers that are the most vulnerable to going out of business due to trade damage are prioritized.*

See comment 1

To respond to these questions, USDA provided GAO with extensive documentation, including the trade models, trade and tariff data, model parameters, and deliberative work products that were requested by, and provided to, USDA policymakers to inform their decision making in formulating the trade mitigation programs, including MFP. USDA also provided other supporting materials, including the USDA OIG audit of the 2018 and 2019 trade mitigation programs and damage estimates, as well as a broad range of retrospective academic assessments of the impacts of trade retaliation on U.S. agricultural exports.

General Comments

Important context necessary to understanding the role of policy formation apart from OCE's work is absent from the GAO draft report, specifically that OCE's role is to provide objective, data-driven economic analysis in order to inform policy makers. OCE does not itself make policy

[3] See https://www.usda.gov/media/press-releases/2018/09/13/usda-details-trade-damage-estimate-calculations and https://www.usda.gov/media/press-releases/2019/08/23/usda-details-trade-damage-estimate-calculations.
[4] The request also included questions concerning MFP payments, which were addressed in the September 2020 report GAO-20-700R *2019 Market Facilitation Program*.

See comment 1

decisions. Many of the criticisms of the 2019 MFP in the draft report, in particular that the damage estimates used to set spending levels for the 2019 program were overstated due to the baseline selection, are incorrectly directed at OCE's economic analysis and review process and do not reflect the role and impact of policy formation. We suggest that the final report present the fuller context of policy decision-making in the development of the program parameters and make clear that OCE's role was to provide economic analysis to USDA policymakers who ultimately determined spending levels and payment rates for MFP and purchase targets for FPDP.

Moreover, OCE's analysis was based on a commonly used and theoretically grounded methodology to estimate the level of exports expected to be "lost" due to retaliation, often referred to as trade damage estimates. Given the broad range of commodities (grains, oilseeds, fruits, vegetables, meat, dairy) affected by retaliatory tariffs, as well as the very short timeframe in which to conduct this analysis, OCE utilized a publicly available and widely used trade model. Similarly, the elasticity parameters used in the model were sourced from publicly available material, as is common practice, and in this case also necessary given the impossibility of econometrically estimating elasticities for almost 100 different commodity models in the timeframe USDA policy makers requested.[5] This approach also ensured that the analysis was transparent and objective.

The trade damage estimates formed the basis for USDA policymakers to expeditiously design the programs and set MFP payment rates and FPDP purchase targets for both the 2018 and 2019 packages. USDA policymakers determined the funding levels, design, and implementation of these programs, and OCE was requested to provide a range of different analyses to inform their decision making. For example, as explained in the OCE methodology report, the 2018 trade damage estimates did not account for indirect or secondary effects of the retaliatory tariffs, such as cross-commodity effects or regional basis effects. For the 2019 analysis, USDA policymakers asked OCE to provide them with different options to address these and other factors, including whether or not the baseline used for the 2018 trade damage estimates was representative for all commodities, *particularly those commodities facing long-term nontariff barriers*. OCE's role was to develop and present this analysis to USDA policymakers, who ultimately decided how it would be utilized, as is their role.

Regarding the specific findings in the draft report, we agree with GAO that USDA addressed the key elements for an economic analysis, as evaluated using GAO's own *Assessment Methodology for Economic Analysis*.[6] Specifically, in the draft report, GAO found that 1) USDA identified the objective and scope of its analysis; 2) USDA used a well-known economic model that allowed it to estimate trade damages for individual commodities; 3) USDA assessed sensitivity of its analysis to alternative assumptions; 4) USDA considered several alternatives for estimating trade damages; and 5) USDA listed data sources in its documentation.

[5]As part of its comprehensive role in supporting the development of state-of-the-art methods for trade analysis, OCE and other economic agencies have already undertaken a substantive investment in updating trade elasticities, using econometric methods, which could be used in future trade analysis. We expect this work to be completed within the next few months, with the data and documentation posted on OCE's and other USDA agency websites. OCE has also funded cooperative work with Virginia Tech's Center for Agricultural Trade (CAT) to develop a bilateral trade model that will enhance our ability to quantify the impacts of tariffs or other trade measures on commodity sectors, including cross-commodity effects, using official USDA baseline forecasts.

[6]See https://www.gao.gov/assets/gao-18-151sp.pdf.

See comment 4

However, we respectfully disagree with the draft report's findings that USDA did not transparently document its selection of elasticity values for the 2018 and 2019 trade damage estimates. USDA's economic analysis was conducted in accordance with the USDA Information Quality Guidelines, as GAO noted in the draft report.[7] These Guidelines require that information disseminated in support of rulemaking activities should ensure transparency of the analysis, *to the extent possible*, by providing transparent documentation of, *inter alia*, data sources, methodology, and assumptions (emphasis added). The two methodology reports include this documentation. The Guidelines do not require publication of every model parameter used in an economic analysis, nor would publishing all of these parameters for almost 100 models have improved the public's understanding of the analysis. The finding that USDA's choice of elasticities was not transparent because USDA did not publish every elasticity used for this analysis is not supported by USDA's Information Quality Guidelines or other established standards for this type of economic analysis, including GAO's own *Economic Assessment Methodology*.[8] It would have been neither feasible nor informative to publish the thousands of different parameters employed in the trade damage models.

See comment 1

The draft report's finding that the 2019 baseline is not representative and increased trade damage estimates does not take into account that the decision on what is the appropriate baseline depends on the policy goals and that there is not one single most representative baseline. OCE provided alternatives that reflected different options based on the direction of senior USDA decision makers under the previous administration and selection of the baseline was part of the program design and not made by OCE.

See comment 1

As explained in the 2019 methodology report, and more extensively in the October 31, 2019 Report to Congress, many of the commodities impacted by retaliatory tariffs were also subject to many longstanding nontariff barriers that suppressed export levels below what would have been expected in the absence of those barriers.[9] This is the main reason why the 2019 analysis utilized a different baseline than the 2018 analysis, as was explained in the Cost Benefit Analysis and the methodology report. Obviously, there are a number of approaches that can be used to develop a representative baseline, and as noted in the draft report, OCE provided USDA policy makers *with different options as part of their deliberative work process*. Based on the options presented to them, USDA policymakers determined that trade damage estimates obtained from using the 2019 baseline approach would be the basis for the 2019 trade mitigation package.

See comment 5

Lastly, we believe the following information and analysis is responsive to the Requester's letter and merits inclusion in the final report.

- The attachment to this letter provides additional information for inclusion in the final report's discussion of recent trade data and academic studies of the impacts of trade

[7] See https://www.usda.gov/oce/information-quality.
[8] See p. 6: "The analysis cites all sources used and documents that it is based on the best available economic information." (emphasis added)
[9] Section 119 of P.L. 116-59 required the Secretary of Agriculture to submit a report to the House and Senate Committees on Appropriations and Agriculture that included an "analysis of trade damage caused by retaliatory tariffs and separately by non-tariff trade barriers, including dumping, on U.S. agricultural producers." See https://www.usda.gov/sites/default/files/documents/MFP-Report-to-Congress-October-2019.pdf

retaliation on U.S. exports. This information responds to the Requester's questions regarding other models or studies that would have more accurately estimated the trade damages. It also contributes to a more complete discussion of how well the USDA trade model estimated actual trade damage levels, which was also part of the Chairwoman's request.

- The draft report provides very little information on USDA's Office of the Inspector General (OIG) audit of the 2018 and 2019 trade mitigation programs, which also examined the USDA trade model and methodology for both 2018 and 2019 programs. There is only one citation to the OIG report in a footnote and the draft GAO report misrepresents OIG's finding that USDA's approach for estimating trade damage was supported by a reasonable methodology and was applied consistently across commodities for both years. Given that OIG also received a Congressional request to review the program and methodology, we believe that a fuller discussion of OIG's audit in the final GAO report is warranted. We provide additional information in the attachment to this letter.

See comment 2

GAO Recommendations

The draft GAO report contains two recommendations:

1) The Secretary of Agriculture should ensure that the Office of the Chief Economist revises its internal review process to help ensure that USDA internal reviews of future economic analyses address the transparency of its documentation of the analyses.

2) The Secretary of Agriculture should ensure that the Office of the Chief Economist revises its internal review process to help ensure that USDA internal reviews assess whether future economic analyses use representative baselines.

USDA Response

USDA always welcomes suggestions on ways to improve the transparency of its economic analysis. However, for the reasons outlined above, GAO's recommendations are incorrectly directed at OCE's economic analysis and review procedures. The internal review process for economic analysis for all USDA agencies and offices, including OCE, has been and will continue to be based on USDA's Information Quality Guidelines and other relevant regulatory and departmental requirements. Economic analysis conducted for regulatory purposes is also subject to Executive Order 12866, which requires review and approval from the Office of Management and Budget (OMB) and other relevant agencies of significant regulatory actions. USDA policy makers rely on OCE to provide them with objective, data-driven analysis to inform their decision-making, but the process reserves for them the authority to make those policy decisions. In this context, it is not feasible to revise OCE review procedures. Therefore, USDA disagrees with GAO's recommendations. The policy decisions to select between a variety of alternatives that GAO has flagged as problematic were made by senior USDA leaders under the previous administration and not OCE.

See comment 1

As part of the Department's response, please also find attached to this letter an additional set of technical comments on the draft report. Thank you again for the opportunity to review and respond to the GAO draft report.

Sincerely,

Dr. Seth Meyer
Chief Economist
U.S. Department of Agriculture

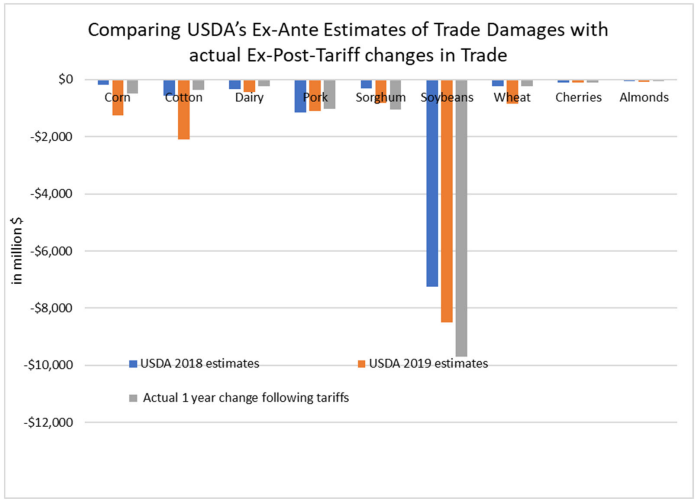
Attachment

Attachment

Additional Information on Academic Studies and U.S. Trade Performance

The draft report includes a discussion of academic studies, as well as trade data before and after retaliation, in the body of the draft report and in more detail in Appendix V. We are providing additional data and information for the final report that will enhance the discussion of this analysis and is responsive to the Requester's questions regarding model performance and alternatives.

First, regarding changes in imports of U.S. products by retaliatory partners following the imposition of tariffs, we provide the following chart that compares USDA trade damages with the change in trade flows one year following the imposition of the tariffs. Instead of using changes in calendar year trade, as was done in the draft report, the trade changes below are calculated to align with the period during which most tariffs were imposed. July 2018 is a reasonable cutoff point given that most of China's retaliatory tariffs were imposed in July 2018, and retaliation by Canada, Mexico, EU, and Turkey was imposed in the month prior — together these tariffs account for the vast majority of retaliatory tariffs. While we recognize that a simple comparison of changes before and after retaliation may be confounded by other factors (e.g. ASF, weather shocks, etc.), these data provide some context for evaluating the model's performance.



Data: TDM and USDA. Trade is the value of imports by retaliatory partners of the targeted U.S. product in mil $. Actual 1-year change following tariffs is the change from July 2018-June 2019 minus July 2017-June 2018.

See comment 5

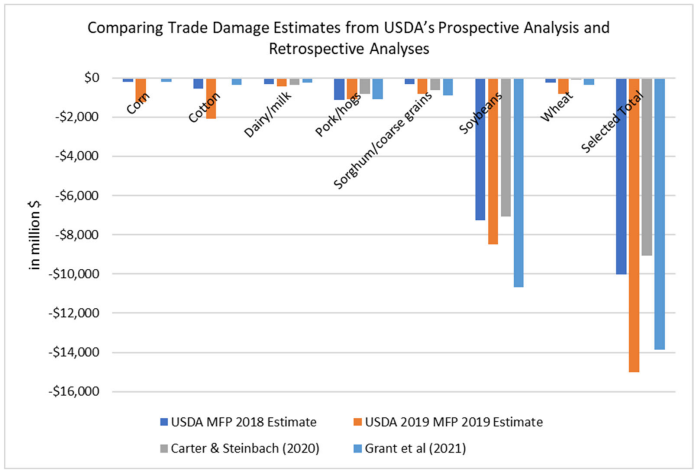
Second, the draft report's presentation of the retrospective academic studies would be strengthened with a fuller discussion of these studies' findings. The models employed in these

See comment 5

studies found trade losses that were quantitatively similar in aggregate, and highly correlated in variation across commodities, to USDA's trade damage estimates.

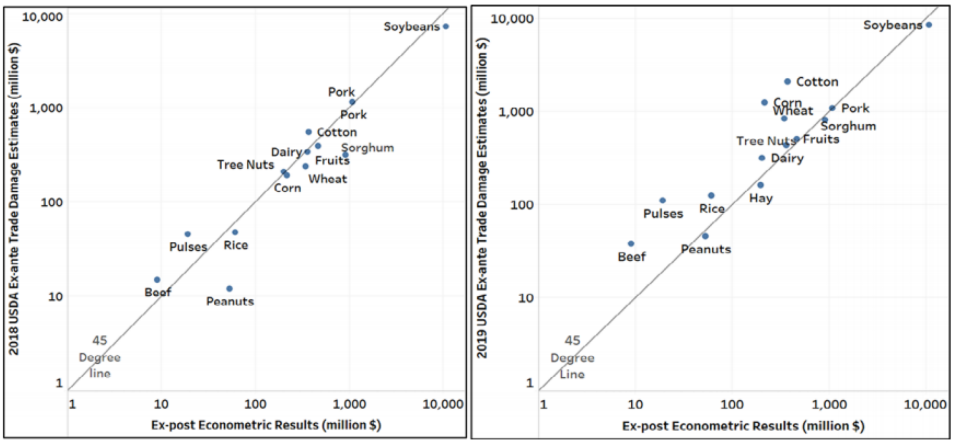
For example:

- The Carter and Steinbach (NBER, 2020) study estimated $15.6 billion of annualized losses.
- Grant et al (AEPP, 2021) estimated annualize losses of $13.5-$18.7 billion.
- Each of the studies are generally within the range of the trade damages estimates for the 2019 MFP (total payments of $14.4 billion) but larger than the trade damage estimates for the 2018 MFP (total payments $8.6 billion).



Sources: USDA, Carter & Steinbach (2020), and Grant et al. (2021). Trade is the value of imports by retaliatory partners of the targeted U.S. product in mil $.

These studies found similar trade losses for other commodities when compared to USDA's estimates. For example, Grant et al. (2021) provided a comprehensive comparison between their econometric estimates with USDA estimates. The variation of ex-post econometrically estimated trade losses across products closely aligned with the USDA trade damage estimates. The trade-weighted average difference between the econometric estimates in this study and USDA's 2018 estimates was −25.9% in 2018 (see the following chart). The USDA trade damage estimates for 2019 were slightly above the 45 line, with a weighted average difference of +10.4% higher than the ex-post econometric estimates. Importantly, the variation of commodity-by- commodity trade damages found by the retrospective econometric estimates were highly correlated to USDA's trade damage estimates—the Pearson's correlation coefficient (a statistical measure of the strength of the correlation) between the two estimates is 0.99 for the 2018, and 0.97 for the 2019 program.



Source: Grant et al. (2021). Counterfactual econometric results versus USDA's 2018 and 2019 trade damage estimates. 45 line denotes a 1:1 correspondence between USDA's ex-ante trade damage estimates and the ex-post econometric estimates. Combinations above (below) the 45 line represent higher (lower) ex-ante USDA damage estimates relative to the ex-post econometric estimates. X and Y axes presented in logarithm scale. Chart available online here: https://onlinelibrary.wiley.com/doi/full/10.1002/aepp.13138

See comment 6

We acknowledge that other academic studies on the impacts of trade retaliation on U.S. agriculture may offer different empirical evidence. For example, Janzen and Hendricks (2020)[10] (study not discussed in the draft report), compared implied MFP commodity rates with various estimates of price and trade impacts related to the retaliatory tariffs. Estimated price impacts of the retaliatory tariffs for the MFP commodities examined in this study (corn, cotton, sorghum, soybeans, and wheat) were found to be lower than the implied MFP commodity rates, in particular for cotton and sorghum. However, the study also analyzed the actual changes in the value of U.S. exports to China after the retaliatory tariffs, a metric more in line with the gross trade damage measure employed by USDA and found the changes to be consistent. Specifically, the authors noted: "Generally, MFP1 and MFP2 payment rates match estimated changes in export value." As discussed in the OCE methodology report, price loss is another metric that could be employed to evaluate the impact of retaliatory tariffs. OCE provided USDA policy makers with different options, including estimates of price loss, to use as a basis for MFP and FPDP program parameters. USDA policy makers chose to use the trade damage estimates as the basis for these programs.

See comment 5

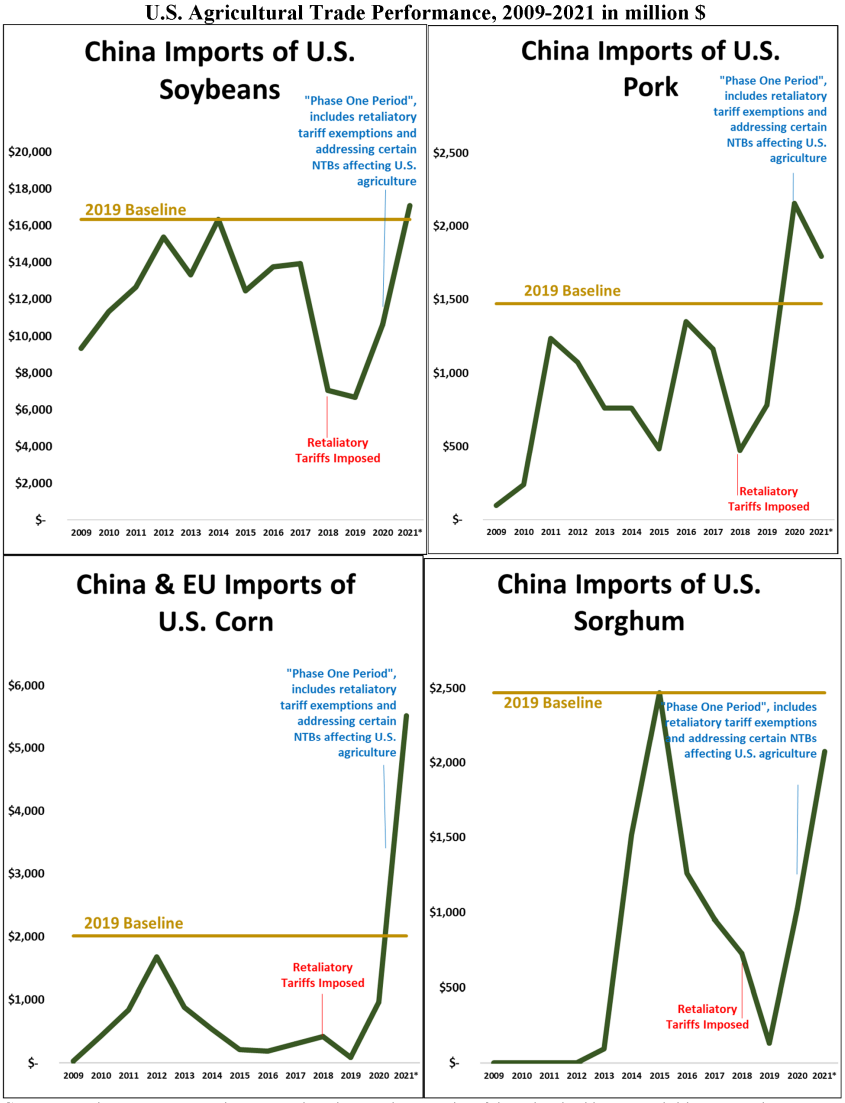
Separately, the report's evaluation of how well USDA's trade damage estimates tracked actual trade loses could be enhanced if the analysis of the 2019 baseline was expanded to include more recent trade data. This data would provide a more complete picture of U.S. trade performance in a period (2020 and 2021 year to date) in which China has largely removed its retaliatory tariffs on U.S. agricultural exports and also addressed some of the longstanding trade barriers. The

[10] https://onlinelibrary.wiley.com/doi/full/10.1002/aepp.13045

inclusion of this data is also relevant given the stated policy decision to utilize a baseline for the 2019 program that would take into account the impact of longstanding nontariff barriers. The charts below present China's imports of top U.S. commodities during calendar years 2009 to 2021. The more recent periods (tariff exemption and Phase One period) in the charts below provide additional data points with which to compare USDA's selected 2019 baseline. Given that the Phase One agreement entered into force in mid-February 2020 and tariff exemptions began in March 2020, we have included the latest 12 months of data available at the time this response was submitted to GAO (October 2020-September 2021). The data behind these charts have been provided to GAO electronically so that they can be incorporated into the charts in the final report.

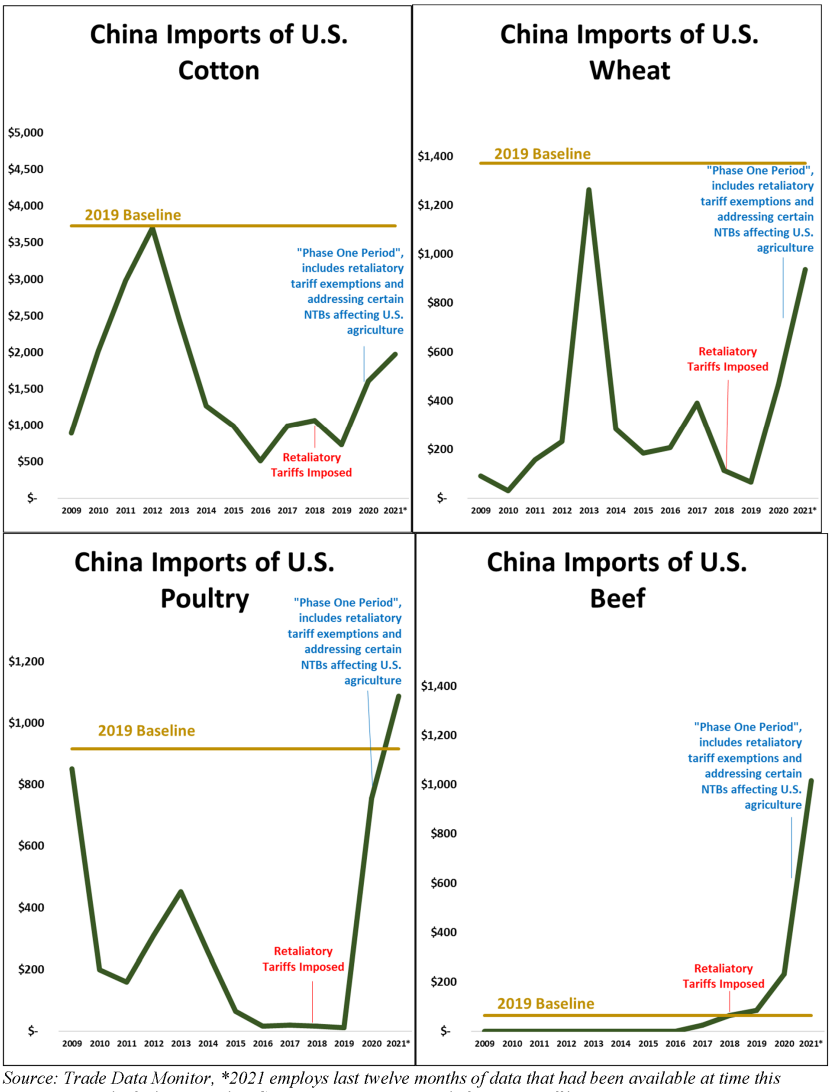
See comment 5

U.S. Agricultural Trade Performance, 2009-2021 in million $



*Source: Trade Data Monitor, *2021 employs last twelve months of data that had been available at time this response was drafted (year ending Sep 30, 2021); NTBs stands for Non-tariff barriers.*

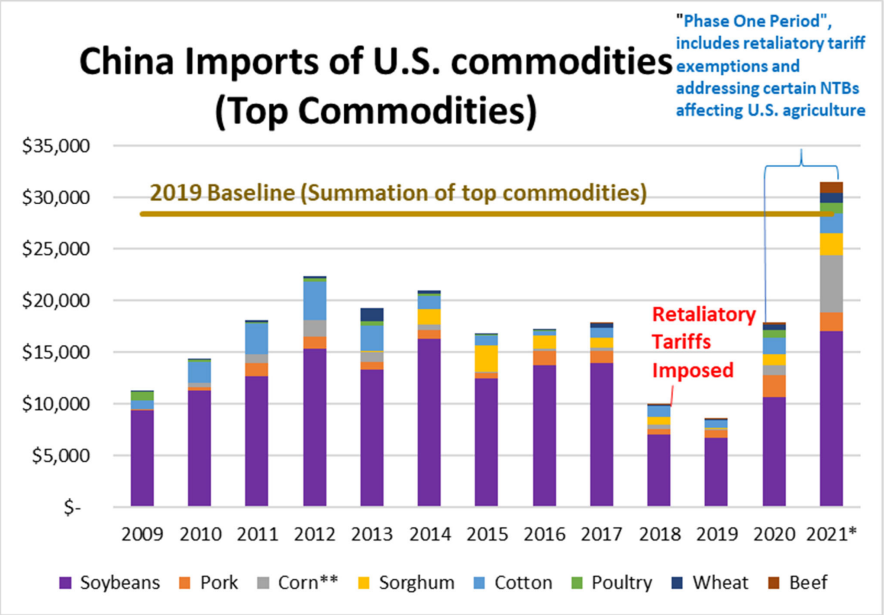
U.S. Agricultural Trade Performance, 2009-2021 in million $



*Source: Trade Data Monitor, *2021 employs last twelve months of data that had been available at time this response was drafted (year ending Sep 30, 2021); NTBs stands for Non-tariff barriers.*

See comment 5

U.S. Agricultural Trade Performance, 2009-2021 in million $



*Source: Trade Data Monitor, *2021 employs last twelve months of data that had been available at time this response was drafted (year ending Sep 30, 2021);**includes imports from EU since corn faced retaliatory tariffs from both China and EU.*

Technical Comments on the Draft Report

Unless otherwise indicated, the page numbers below refer to the document page numbers.

Comments on the "What GAO Found" Section (no page numbers in the draft report)

See comment 7

Under the section entitled "Trade damage estimates," the report narrative in the second paragraph ("For the 2018 MFP…") should be revised to make clear to the reader that while the analysis is presented in terms of lost U.S. exports, the data used in the chart, and in the USDA trade damage analysis, is based on official import data of the retaliating trading partner. This clarification is provided in a different section of the report but is omitted in this section.

See comment 8

The legend to the chart entitled "USDA 2019 MFP Baseline and Nominal Value of Chinese Imports of U.S. Wheat, 2009-2018" is also confusing. Suggest that the labels be made clearer to indicate that the data presented are average annual Chinese imports of U.S. wheat (brown dashed line) and total Chinese imports of U.S. wheat (green line).

See comment 9

See comment 10

See comment 2

See comment 11

Comments on the Background Section (document page numbers)

pp. 3-4: The first paragraph refers to fiscal year 2017 as being "prior to the imposition of retaliatory tariffs." Fiscal year 2017 (October 1, 2016-September 30, 2017) significantly pre-dates the first imposition of retaliatory tariffs in April 2018 and later in June-July 2018. Given that calendar year data is otherwise presented in this section, referencing fiscal year data may be confusing to the reader and seems out of place.

p.7: Please revise footnote 14 as follows: "The Office of the Chief Economist (OCE) is the focal point for economic and policy-related research and analysis for the U.S. Department of Agriculture. OCE aims to inform public and private decision makers by providing unbiased information and data-driven analyses of current and emerging issues impacting agriculture." The source for this statement is the USDA website. https://www.usda.gov/oce

p.11: It is unclear why the discussion of the USDA OIG audit (entitled "USDA's 2018 and 2019 Trade Mitigation Packages") is relegated to a footnote (26). Given the relevance of the audit findings to this report and the Requester's letter, the OIG report should be fully discussed in a factual manner in the main text of the final report. For example, it is misleading to state that OIG reviewed OCE's analysis of trade data for commodities included in the 2018 trade mitigation package, thus implying that OIG did not review the data for the 2019 package. The OIG audit clearly covered both 2018 and 2019 trade damage estimates, as is evidenced by the title of the report, as well as the audit objective (p. 2 of the report). Also, as indicated in the report, OIG performed the following audit procedures:

- Interviewed OCE officials to determine how the trade mitigation packages were designed
- Obtained and reviewed relevant tariff and trade information
- Gained an understanding of the modeling system used to estimate trade damages as the result of retaliatory tariffs
- Reviewed USDA's OCE trade damage analysis

The OIG report states that through the course of the audit, OIG reviewed information and calculations, and gained an understanding of the modeling system used to estimate trade damages used as the basis for both the 2018 and 2019 packages. There is nothing in the OIG report that suggests its finding that USDA's approach for estimating trade damage was supported by a reasonable methodology and was applied consistently across commodities only applies to the 2018 trade damage analysis. OCE provided OIG with the same demonstration of the model, as well as the model output files, including model parameters and outputs, for both the 2018 and 2019 analyses that were provided to GAO.

p.12: Footnote 28 seems to imply that a partial equilibrium modeling framework cannot capture cross-commodity effects. While the partial equilibrium model used for the trade damage estimates used for this analysis does not capture these effects, there are other models, such as the USDA baseline modeling system, which do. See "The ERS Country-Commodity Linked System: Documenting Its international Country and Regional Agricultural Baseline Models," TB-1951 at https://www.ers.usda.gov/webdocs/publications/90892/tb-1951.pdf?v=7227.3

See comment 12

pp. 23-38: As a general note, we are unable to validate the results presented in figures 3, 5, 6, and tables 3 and 4. We requested GAO to provide the data and calculation details for this analysis. While GAO provided an explanation of how certain calculations were made, they did not provide the data or calculation details. Therefore, we are unable to verify GAO's calculations or conclusions related to this analysis.

See comment 13

p. 25-26: While the use of gross trade damage estimates, rather than net trade damage estimates, was a policy decision, we would note that the retrospective studies discussed in Appendix V of the draft report also found relatively low levels of offsetting gains to alternative markets that took place after retaliatory tariffs were imposed. For example, according to the Carter & Steinbach (2020) study (as tabulated in table 13), the level of offsetting gains to alternative markets as percent of trade damages was only 5 percent. Certainly, in the near term, for which MFP assistance was targeted, these results are not surprising given the adjustment costs and time it took to reorient marketing to other channels.

p. 28: Footnote 58 should be revised to include the following sentence at the end of the footnote:

See comment 14

"Once the rulemaking package was cleared through the USDA Departmental Review and Clearance Process, it was transmitted to the Office of Management and Budget (OMB) for clearance, consistent with the procedures outlined in EO 12866."

See comment 15

p. 30: Regarding footnote 60, it remains unclear why WTO disciplines on domestic support are relevant to this report. Moreover, the information presented from the referenced CRS report is also not relevant since the United States has already notified MFP to the WTO. Suggest the footnote be deleted. However, if it is maintained, we suggest that the sentences prior to the last sentence be deleted, and the last sentence be revised as follows:

"On March 29, 2021, the United States submitted the 2018/19 notification on domestic support, which included MFP, to the WTO. The total AMS notified was $13.1 billion, below the U.S. total bound AMS of $19.1 billion."

See comment 16

p. 33: The analysis that attempts to decompose nonspecialty-crop MFP payment rates by crop should be more clearly caveated. First, as the draft report indicates, the analysis is based on hypothetical data. Second, as discussed in the notes to Figure 5, farmers rotate crops, in particular soybeans and corn, but other crops as well, which is not accounted for in the analysis. Third, in 2019 there were significant weather-related planting delays and prevented planting that affected acreage, especially for corn, which the analysis does not appear to have taken into account. The limitations of the analysis should be made clearer in the final report, not just in a note to the table.

GAO Comments

GAO's comments on the U.S. Department of Agriculture (USDA) Office of the Chief Economist (OCE) letter dated October 21, 2021.

1. OCE disagrees with GAO's recommendations that OCE revise its internal review process for future economic analyses. OCE states that its role is to provide objective, data-driven economic analyses to inform policymakers' decision-making. OCE states that, in its role for the Market Facilitation Program (MFP), OCE was asked to provide a range of different analyses and estimates of trade damages to inform USDA leadership in their decision-making, and that it did not determine program goals, spending levels, payment rates, or other program parameters. According to OCE, it provided USDA policymakers with different options as part of their deliberative work process and, based on those options, USDA policymakers determined that trade damage estimates obtained from using the 2019 baseline approach would be the basis for the 2019 trade mitigation package. Therefore, according to OCE, the recommendations are incorrectly directed at OCE's economic analysis and review process and it is not feasible to revise OCE review procedures.

   We disagree with the premise of this comment. Though OCE did not make the policy decision, it provided options to policy makers that directly affected the program spending levels and payment rates, and we found that OCE's analysis did not meet USDA Information Quality Guidelines. It is unclear why it would not be feasible for OCE to modify its internal review of the options it presents to policymakers. As our report notes, USDA Information Quality Guidelines state that, to ensure the objectivity of information disseminated by USDA agencies and offices in conjunction with their rulemaking activities, the agencies and offices will use sound analytical methods in carrying out economic analyses. However, OCE presented an option to policymakers that relied on an unrepresentative baseline for the 2019 MFP. In particular, by adding together the highest annual values of imports from different countries and different years, the selected 2019 MFP baseline against which OCE estimated trade damages equaled or exceeded the highest value that trade with retaliating countries had been in any year from 2009 through 2018. Among the five nonspecialty crops for which USDA estimated the highest amount of trade damage (corn, cotton, sorghum, soybeans, and wheat), USDA's selected baseline ranged from 1.2 to 4.3 times the average value of

retaliating country imports from 2009-2017.[1] We continue to believe that improvements in OCE's internal review process will help ensure that OCE uses representative baselines in the economic analyses it presents to policymakers and that the analyses meet USDA Information Quality Guidelines.

OCE also did not use sound analytical methods in presenting an unrepresentative baseline that did not have a clear relationship to foreign nontariff measures or other barriers. According to USDA officials, the rationale for using the sum of 10-year highs of different components of a commodity was to reflect policy factors such as nontariff measures or other barriers that may have been in place at different points during the 2009 through 2018 period. However, as our report notes, it is unclear how using a baseline that sums the 10-year highs for each HS code relates to the effects of nontariff measures or other barriers. Further, the high trade values with retaliating countries for individual commodities can result from factors other than the absence of tariffs or nontariff barriers. For example, as our report notes, USDA's Foreign Agricultural Service (FAS) told us that Chinese imports of wheat increased in 2013—the high year for Chinese imports of U.S. wheat—due to quality issues with the Chinese domestic crop that year and growing Chinese demand for feed-quality wheat; the high trade value of EU imports of corn in 2018, which USDA selected as the EU baseline, occurred because U.S. competitors for the EU market had poor harvests, not because of the absence of retaliatory tariffs. Further, for commodities where the amount and target of the retaliatory tariffs did not change, USDA used the same estimated percentage decline in trade for the 2019 MFP that it used for the 2018 MFP, but applied it to the redefined 2019 MFP baseline. It is even less clear how applying the same estimated percentage to USDA's redefined 2019 MFP baseline could be justified.

In addition, OCE prepared the August 2019 *Trade Damage Estimation for the 2019 Market Facilitation Program and Food Purchase and Distribution Program,* which, as our report notes, does not transparently describe, to the extent possible, the 2019 MFP baseline methodology or OCE's selection of elasticity values from among the available estimates of the elasticities, as USDA Information Quality Guidelines require. We continue to believe that

[1]Nominal dollars. We excluded the trade values of imports after 2017 from the average because of the potential effect of retaliatory tariffs on imports after 2017. Our value for corn does not include distiller's dried grains with solubles (DDGS) and ethanol. For the 2019 MFP, USDA added the trade damage estimates for DDGS and ethanol to the trade damage estimate for corn before calculating the corn commodity rate. Our value for soybeans does not include soybean oil. For the 2019 MFP, USDA added the trade damage estimate for soybean oil to the trade damage estimate for soybeans before calculating the soybean commodity rate.

improvements in OCE's internal review process will help ensure that OCE's economic analyses are transparently documented.

2. OCE states that USDA's Office of Inspector General (OIG) found OCE's model and methodology to be reasonable and applied consistently across a broad range of commodities for both the 2018 and 2019 trade mitigation packages. OCE states that GAO's draft report provides very little information on the OIG's audit and that a fuller discussion of OIG's audit in the final GAO report is warranted. OCE further states that the OIG audit addressed both the 2018 and 2019 trade damage estimates and that the OIG's audit procedures included interviewing OCE officials, obtaining and reviewing relevant tariff and trade information, gaining an understanding of the modeling system, and reviewing OCE's trade damage analysis. While the OIG's audit procedures included these steps, the resulting report does not state conclusions regarding the 2019 MFP model outputs or documentation, or the assumptions, logic, and inputs used in OCE's trade damage estimates. For example, the OIG report states that the OIG reviewed OCE analysis of trade data for commodities included in the 2018 trade mitigation package but it does not state that they did so for the 2019 MFP, and OIG officials told us that they did not do so. The OIG report also does not state any findings regarding USDA's modeling inputs and OIG officials told us they did not verify the accuracy of these data. We have revised the statement in the report to clarify that we are referring to the stated conclusions of the OIG report, not to the OIG audit procedures and the scope of information USDA provided to the OIG.

3. OCE states that its methodology and estimates were reviewed by other USDA and U.S. government economists as part of the interagency rulemaking clearance process, and clearly documented in two publicly available reports that exceeded typical documentation efforts. However, while USDA provided additional information about its methodology, our report notes that USDA's August 2019 *Trade Damage Estimation for the 2019 Market Facilitation Program and Food Purchase and Distribution Program* does not transparently describe, to the extent possible, the 2019 MFP baseline methodology or OCE's selection of elasticity values from among the available estimates of the elasticities, as USDA Information Quality Guidelines require.

4. OCE also states that it disagrees with the finding that USDA did not transparently document its selection of elasticity values for the 2018 and 2019 trade damage estimates. Further, OCE states that USDA Information Quality Guidelines require that information disseminated in support of rulemaking activities should ensure transparency of the analysis, to the extent possible, by providing transparent documentation of, for example, data sources, methodology, and assumptions. OCE further notes that its two

methodology reports included this documentation. According to OCE, the Guidelines also do not require publication of every model parameter used in an economic analysis, and OCE notes that publishing all of these parameters for almost 100 models would not have improved the public's understanding of the analysis. OCE states that the finding that the choice of elasticities was not transparent because USDA did not publish every elasticity used for this analysis is also not supported by other established standards for this type of economic analysis, including GAO's Economic Assessment Methodology.[2] OCE concludes that it would not have been feasible or informative to publish the thousands of different parameters used in the trade damage models. However, for the substitution and import demand elasticity estimates, our recommendation is focused on addressing the transparency of OCE's documentation since we found that USDA's documentation did not transparently describe its selection of the modeling inputs. We are not suggesting that USDA publish all of the parameter values. Rather we found that the citations USDA provided were insufficient to identify its sources. For example, as our report notes, USDA's 2018 methodology paper cites two sources for the substitution elasticity estimates. However, the two papers present different elasticity values for seven of the nine commodities USDA analyzed for the 2018 MFP, and each paper presents two alternative values. Furthermore, approximately half of the import demand elasticities USDA used in its modeling for both years are not tied clearly to the data included in the source USDA cited. For some retaliating countries, the relevant tariffed commodity was missing from the dataset. For other retaliating countries, the dataset included the tariffed commodity but did not include an elasticity value for that commodity. Finally, USDA's public documentation does not include the values or the source for the model's supply elasticities.

5. OCE states that the additional information it provides on recent trade data and academic studies of the impacts of trade retaliation on U.S. exports is responsive to our requester and contributes to a more complete discussion of how well the USDA trade model estimated actual trade damage levels.

   We disagree with USDA that comparing the recent trade data[3] to historical levels can demonstrate how well the USDA's trade model estimated trade

[2]In its comments, OCE cites GAO's assessment methodology, specifically "the analysis cites all sources used and documents that it is based on the best available economic information." However, this citation is not the correct source for our finding. Our finding stems from the "Transparency" key element, which states, "The economic analysis describes and justifies the analytical choices, assumptions, and data used."

[3]USDA provides an attachment with trade data for 2009 through 2021 (with 2021 defined as October 2020 through September 2021) for eight commodities, six of which were MFP-eligible. Poultry and beef were not MFP-eligible and are therefore not included in our report's analysis of the MFP.

damages. USDA estimated trade damages by comparing baseline trade values to the estimated trade values after the tariffs. However, many factors in addition to tariffs and nontariff barriers have affected recent agricultural exports. Therefore, simply comparing the actual trade levels to the baseline USDA used for 2019 MFP is not a valid method to evaluate USDA's estimates. For example, though the Phase One agreement contained some provisions on tariffs, quotas, and nontariff barriers, it also set targets for increased Chinese purchase of U.S. commodities. In addition, a number of agricultural commodities have experienced price volatility and increases in the past year during the COVID-19 pandemic. For example, October 2021 data from USDA's Foreign Agricultural Service reported that the price of U.S. exports of corn increased from just under $200 per metric ton in September 2020 to more than $325 per metric ton in May 2021 with the price increase correspondingly increasing the value of trade. As of October 2021, the price remained at approximately $275 per metric ton.[4] Other market conditions also played an important role in certain agricultural exports. For example, Chinese domestic production of pork dropped by about one-third between 2018 and 2020, following an outbreak of African Swine Fever. The increase in Chinese imports of pork in 2019 and 2020 may be attributable to the decline in Chinese domestic production, rather than changes in its trade practices.

The trade data charts USDA provided do not demonstrate how well it estimated trade damages, but do demonstrate that the baseline USDA used for the 2019 MFP exceeded the highest historical exports for some commodities in the 2009-18 period. Further, among the six MFP-eligible commodities, the data USDA provided indicate that USDA's 2019 MFP baseline remained higher than 2020 trade values for all but pork, and higher than October 2020 through September 2021 trade values for cotton, sorghum, and wheat.

OCE states that the draft report's presentation of the retrospective academic studies would be strengthened with a fuller discussion of these studies, which found trade losses that were quantitatively similar in aggregate, and highly correlated in variation across commodities, to USDA's trade damage estimates. We reviewed the literature on trade damages, including the studies USDA recommended. Our report includes an appendix that compares USDA's trade damage estimates to the results from two retrospective (ex-post facto) studies. USDA economists co-authored one of the studies. While

[4]The 2021 corn prices are higher than prices in previous years. From September 2019 to August 2020, the price per metric ton ranged between approximately $140 and $180 before climbing further in September. From September 2018 to September 2019, the price ranged between approximately $150 and $210 per metric ton. From September 2017 to September 2018, the price similarly ranged between approximately $150 and $200 per metric ton.

USDA's estimates were close to the estimates from these two studies for some commodities, they differed significantly for other commodities, thus we disagree with OCE's statement that the studies showed that USDA's trade damage estimates aligned with ex post facto trade damage estimates. For example, we found that USDA's 2018 MFP estimated trade damage for soybeans—the commodity for which USDA estimated the highest amount of trade damage—is within 3 percent of one paper's retrospective estimate, but USDA's 2019 MFP estimate was about 20 percent higher than that paper's estimate. For both corn and cotton, estimates from one paper are a fraction of USDA's 2019 MFP estimated damage. USDA's estimated damage for corn in 2019 is more than 5 times higher than the estimate in that paper. Further, our report points out that there are multiple reasons why the results from the retrospective studies may not be directly comparable to USDA's estimates.

6. OCE acknowledges that other academic studies on the impacts of trade retaliation on U.S. agriculture may offer different empirical evidence. OCE notes, for example, that Janzen and Hendricks (2020) compared implied MFP commodity rates with various estimates of price and trade impacts related to the retaliatory tariffs. OCE states that Janzen and Hendricks found that the actual changes in the value of U.S. exports to China after the retaliatory tariffs were consistent with the gross trade damage measure USDA employed.

   We previously identified the Janzen and Hendricks study through our literature search, which found several studies conducting retrospective analysis on the effect of retaliatory tariffs on U.S. agricultural trade. Our appendix focuses on two studies recommended by USDA that explicitly focus on isolating the effects of the retaliatory tariffs on U.S. agricultural exports. The Janzen and Hendricks paper did not independently estimate trade damages and, for this reason, we did not include it in our appendix. Most of the studies cited by Janzen and Hendricks are prospective studies that use equilibrium models rather than retrospective studies. In addition, where the Janzen and Hendricks paper summarizes the cited studies' model results, it does not present the decline in export value—the measure USDA used to estimate trade damages—but presents the estimated percent price decline for cotton, sorghum, corn and wheat and the estimated percent price and quantity decline for soybeans.

   Moreover, Janzen and Hendricks found that the estimated price impacts of the retaliatory tariffs based on multiple studies were lower than the implied MFP commodity rates. This is consistent with our findings that USDA did not account for trade diversion or price effects, which could lead to lower trade damage estimates. Janzen and Hendricks identified four reasons why USDA's estimated decline in trade value may not equal actual damages to U.S. farmers: (1) USDA estimated the decline in trade value before actual

export levels were known; (2) USDA's method does not account for potential trade diversion; (3) USDA's method is sensitive to the definition of the baseline level of exports and redefining the baseline for the 2019 MFP dramatically increased payments; and (4) USDA's methodology is based on a change in quantity (i.e. loss in exports) rather than a change in price. Janzen and Hendricks state that the damages to farmers would be more accurately assessed as the price decrease caused by retaliatory tariffs multiplied by production—or, even better, the decrease in producer surplus. Regarding payments, the Janzen and Hendricks paper also found that the differences in payment rates relative to farmland cash rent are greatest in the South, which is consistent with our findings.

7. OCE states that the highlights page should be revised to make clear to the reader that while the analysis is presented in terms of lost U.S. exports, the data used in the chart, and in the USDA trade damage analysis, is based on official import data of the retaliating trading partner. We have edited the text to clarify the description of the data.

8. OCE states that the legend in the graphic on the draft Highlights page should be clarified to refer to "U.S." wheat. We have made this edit.

9. OCE states that our use of fiscal year data in the background may be confusing to the reader since other data are by calendar year. We explicitly note that the data referred to at this point in the background are fiscal year data. These data, which provide background context for the relative importance of retaliating countries as markets for U.S. agricultural exports worldwide, are USDA Economic Research Service data on U.S. worldwide agricultural exports by fiscal year.

10. OCE asks that we edit the footnote description of OCE. We have edited the footnote in keeping with OCE's comment, with attribution to the USDA website.

11. OCE states that footnote 28 seems to imply that a partial equilibrium modeling framework cannot capture cross-commodity effects and that, while the partial equilibrium model used for the trade damage estimates used for USDA's analysis does not capture these effects, there are other models that do. We have edited the footnote to clarify that partial equilibrium models generally do not capture these kinds of effects.

12. OCE states that it was not able to validate GAO's results presented in figures 3, 5, and 6, and tables 3 and 4 because GAO did not provide USDA with the data or calculation details. The data we analyzed is USDA data that it provided to us, which contained the commodity rates, historical acres, and

historical yields that USDA used to calculate county rates. Regarding the calculation details, in response to USDA's request, we provided a written description of the methodology we used for this analysis. In addition, the draft report we provided for USDA review and comment includes a detailed discussion of the data and methodology we used (see App. I and the notes to the figures and tables mentioned above).

13. OCE states that the use of gross trade damage estimates, rather than net trade damage estimates, was a policy decision. OCE also states that the offsetting gains as a result of sales to alternative markets found in research papers were relatively low. The paper OCE then refers to found that the amount of offsetting gains for different commodities varied. For example, the paper found the gains from alternative markets for soybeans and sorghum were fairly low, but the gains for corn more than offset the loss U.S. producers suffered due to retaliatory tariffs.

14. OCE asks that we add information about Office of Management and Budget review of the rulemaking to a footnote. We have added the additional information to the footnote.

15. OCE states that it is not clear why World Trade Organization (WTO) disciplines on domestic support are relevant to this report and that the information presented from the referenced Congressional Research Service (CRS) report is also not relevant since the United States has already notified MFP to the WTO. We included this footnote to note a possible broader implication of domestic support provided through MFP. In the draft report originally provided to USDA for comment in May 2021, the status of the U.S. WTO notification was current as of February 2021. As the U.S. notification occurred in March, we have edited the footnote to delete the CRS report's reference to future reporting, and have added OCE's suggested information regarding total aggregate measures of support.

16. OCE states that our analysis that attempts to decompose nonspecialty-crop MFP payment rates by crop should be more clearly caveated as it is based on hypothetical data, and does not account for crop rotation or significant weather-related planting delays in 2019. The data we used in our analysis are not hypothetical—they are the same commodity rates, historical acres, and historical yields that USDA used to calculate the county rates for the 2019 MFP. The resulting 2019 MFP total payments we calculated to illustrate the effect of USDA's methodology on payments to individual nonspecialty crops are hypothetical only in that we did not have 2019 planting data to calculate the actual payments for individual crops. Instead, we relied on the same historical acres and yields data USDA used in calculating the 2019 MFP payment rates. We recognize the 2019 MFP payments were not crop-

specific, producers rotate crops, and planted acres vary year to year. Our report also notes that USDA sought to avoid the market and price impacts of using a product-specific payment rate for the 2019 MFP that could influence planting decisions. However, in order to demonstrate the effects of the change in payment methodology of the 2019 MFP from the commodity specific payment rate of the 2018 MFP, including the "de-coupling" effect USDA acknowledged, we assumed that planting in 2019 was similar to the historical averages. We believe this is a reasonable assumption because USDA's rationale behind the 2019 payment methodology was not to distort planting decisions. Our analysis shows that USDA's selected 2019 MFP payment rate methodology based on county rates resulted in total payments to producers of specific crops that are different from USDA's trade damage estimates for those crops, increasing the total payments for some nonspecialty crops and decreasing them for others.

Appendix IX: GAO Contact and Staff Acknowledgments

GAO Contact

Kimberly M. Gianopoulos at (202) 512-8612 or GianopoulosK@gao.gov

Staff Acknowledgments

In addition to the contact named above, Kim Frankena (Assistant Director), Michael Simon (Analyst-in-Charge), Sahar Angadjivand, Josey Ballenger, Lilia Chaidez, Ming Chen, Thomas M. Cook, Eli Dile, Neil Doherty, John Hussey, Grace Lui, Reid Lowe, and Mary Moutsos made key contributions to this report.

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