

Input Data Sourcing and Data Dissemination for Net Farm Income Forecasts

Monday, September 29, 2014

Kevin Patrick
Agricultural Economist
Economic Research Service
United States Department of Agriculture

The views expressed are the author's and do not necessarily represent those of the Economic Research Service or the US Department of Agriculture




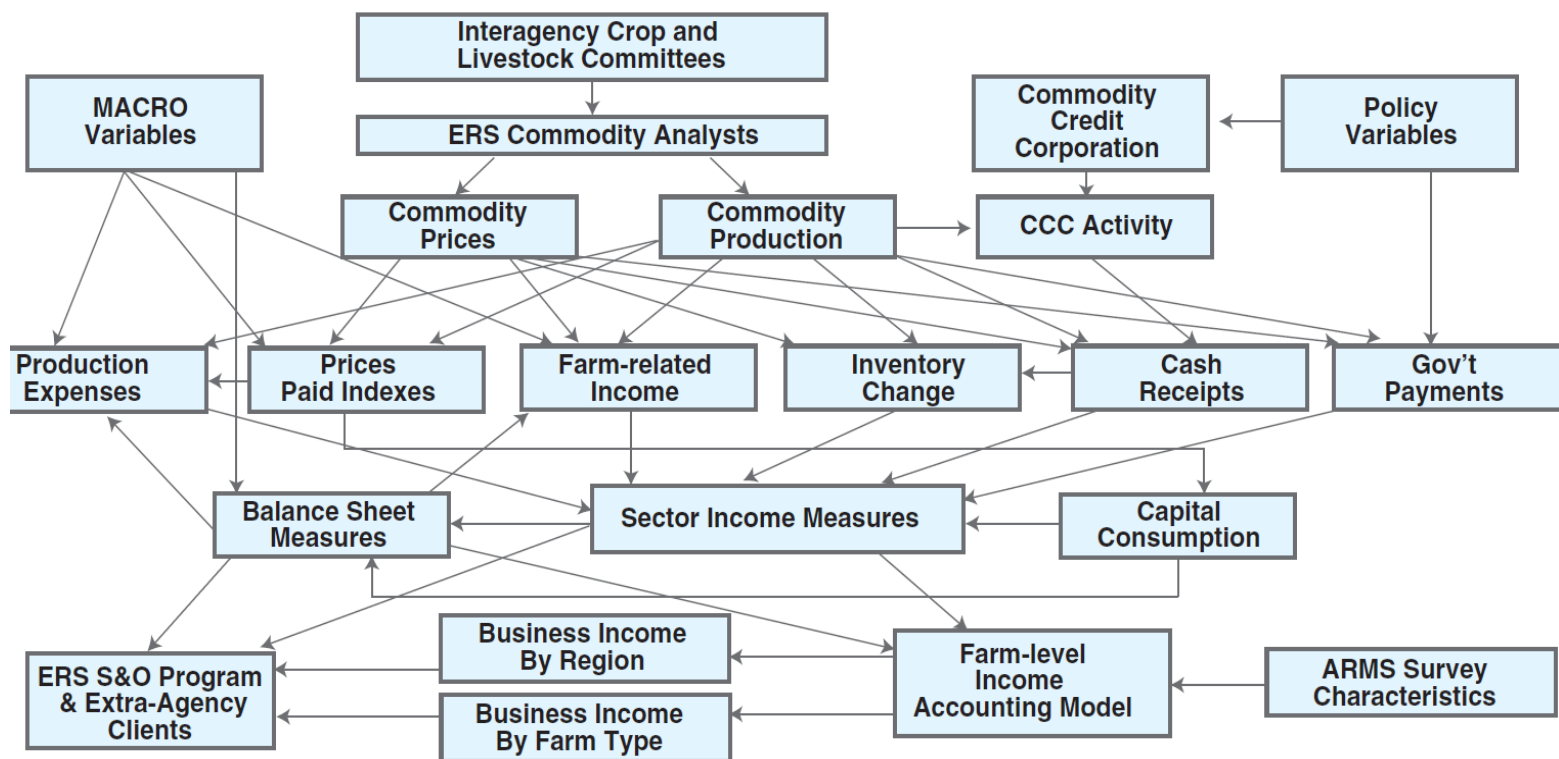
Features of ERS' Farm Income Forecast Model

- The U.S. farm income forecast model is developed to reflect Farm Income estimation concepts. Forecast equations use secondary data from a variety of official USDA sources.
- The economic framework of the model is designed to be consistent with the Aggregate Farm Income Accounts and the U.S. National Income and Product Accounts.
- Forecasts have traditionally been revised 3 times during the year and published on ERS' internet website.
- Farm income measures are used to forecast components of the farm sector balance sheet and vice versa.
- National farm income measures provide the foundation for forecasts of farm business income by region and by farm typology
- Forecasts are used by a variety of clients as a measure of the economic well-being of the U.S. agricultural sector.



Information Flows Used to Develop a Forecast of Value-added and Net Farm Income


World Agricultural Supply and Demand Estimates
 United States Department of Agriculture
 Office of the Chief Economist Agricultural Marketing Service Economic Research Service Foreign Agricultural Service
 WASDE - 611 Approved by the World Agricultural Outlook Board October 11, 2012



The Catalysts

“...making open and machine readable the new default format for government information.”

-Barack Obama, May 09,2013

“We agree to follow a set of principles...for access to, and the release and re-use of, data made available by G8 governments

- *Open data by default*
- *Quality and quantity,*
- *Usable by all...”*

-G8 leaders, June 18, 2013

Implications of the Open Data Policy

The USDA must adhere to open data policies

More data

Easier access to that data

Using improved technology

Opportunity to take advantage of newly available data

Application Programming Interfaces or API's

Bulk transfer of data

Data Dissemination: Old Method

Created over 100 Microsoft Excel tables by hand
Income statement by state and United States
Balance sheet statements, United States
Component tables

Very time intensive
team of eight analysts and months of work

Routinely find errors

Difficult to keep consistent with source data

Data Dissemination: New Method

Choose:

Decade: Nominal/real dollars:

[Link](#)

1 of 51 Find | Next

Document Map

- VA_State_US
 - United States
 - Alabama
 - Alaska
 - Arizona
 - Arkansas
 - California
 - Colorado
 - Connecticut
 - Delaware
 - Florida
 - Georgia
 - Hawaii
 - Idaho
 - Illinois
 - Indiana
 - Iowa
 - Kansas
 - Kentucky
 - Louisiana
 - Maine
 - Maryland
 - Massachusetts
 - Michigan
 - Minnesota
 - Mississippi
 - Missouri
 - Montana
 - Nebraska
 - Nevada

Value added to the U.S. economy by the agricultural sector via the production of goods and services, 2010-2014F
Nominal (current dollars)

	2010	2011	2012	2013F	2014F
	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
United States					
Value of crop production	172,764,367	206,904,644	216,935,528	231,361,537	206,876,893
Crop cash receipts	179,539,399	202,030,947	223,484,520	216,086,693	200,917,320
Cotton	7,561,267	7,424,668	8,585,192	6,031,510	6,611,940
Feed crops	54,812,758	72,063,337	79,109,016	72,534,736	60,176,684
Food grains	14,104,297	16,815,243	18,178,068	16,213,400	15,671,337
Fruits and nuts	21,712,170	24,416,942	26,134,407	27,581,493	25,317,390
Oil crops	36,509,755	35,597,197	44,282,608	42,818,982	40,452,975
Tobacco	1,246,341	1,056,050	1,496,602	1,553,694	1,731,675
Vegetables and melons	20,224,762	20,739,046	20,588,841	22,954,304	22,682,409
All other crops	23,368,049	23,918,464	25,109,786	26,398,573	28,272,908
Home consumption	94,670	78,060	114,287	121,887	108,988
Inventory adjustment	-6,869,702	4,795,637	-6,663,279	15,152,957	5,850,585
Value of livestock production	140,833,189	164,604,025	170,424,575	180,775,944	207,592,387
Livestock and products cash receipts	141,448,417	165,908,845	171,584,157	181,824,317	209,597,557
Dairy products, Milk	31,367,282	39,513,587	37,003,818	40,127,261	48,535,211
Meat animals	69,459,115	84,710,812	90,142,874	92,077,178	107,227,260
Miscellaneous livestock	5,129,136	5,466,762	5,415,718	5,911,506	6,537,362
Poultry and eggs	35,492,884	36,217,684	39,021,747	43,708,373	47,297,724
Home consumption	300,554	295,032	276,553	293,350	336,866
Inventory adjustment	-915,782	-1,599,852	-1,436,135	-1,341,723	-2,342,036
Revenues from services and forestry	39,500,706	48,565,565	56,890,933	62,455,125	59,335,476
Forest products sold	649,213	644,542	653,196	668,126	680,631
Gross imputed rental value of farm dwellings	21,224,551	22,444,423	23,293,268	25,319,115	26,057,441
Machine hire and customwork	3,539,551	3,839,844	3,832,784	3,977,791	4,417,054



Benefits to the User

Customizable data

Time period

Inflation

Choose:

Decade Nominal/real dollars

[Link](#)

1 of 51 Find | Next

Document Map Value added to the U.S. economy by the agricultural sector via the production of goods and services, 2010-2014F
Nominal (current dollars)

	2010	2011	2012	2013F	2014F
	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
United States					
Alabama					
Alaska					
Arizona	Value of crop production	172,764,367	206,904,644	216,935,528	231,361,537
Arkansas	Crop cash receipts	179,539,399	202,030,947	223,484,520	216,086,693
California	Cotton	7,561,267	7,424,668	8,585,192	6,031,510
Colorado	Feed crops	54,812,758	72,063,337	79,109,016	72,534,736
Connecticut	Food grains	14,104,297	16,815,243	18,178,068	16,213,400
Delaware	Fruits and nuts	21,712,170	24,416,942	26,134,407	27,581,493
Florida	Oil crops	36,509,755	35,597,197	44,282,608	42,818,982
Georgia	Tobacco	1,246,341	1,056,050	1,496,602	1,553,694
Hawaii	Vegetables and melons	20,224,762	20,739,046	20,588,841	22,954,304
Idaho	All other crops	23,368,049	23,918,464	25,109,786	26,398,573
Illinois	Home consumption	94,670	78,060	114,287	121,887
Indiana	Inventory adjustment	-6,869,702	4,795,637	-6,663,279	15,152,957
Iowa					
Kansas	Value of livestock production	140,833,189	164,604,025	170,424,575	180,775,944
Kentucky	Livestock and products cash receipts	141,448,417	165,908,845	171,584,157	181,824,317
Louisiana	Dairy products, Milk	31,367,282	39,513,587	37,003,818	40,127,261
Maine	Meat animals	69,459,115	84,710,812	90,142,874	92,077,178
Maryland	Miscellaneous livestock	5,129,136	5,466,762	5,415,718	5,911,506
Massachusetts	Poultry and eggs	35,492,884	36,217,684	39,021,747	43,708,373
Michigan	Home consumption	300,554	295,032	276,553	293,350
Minnesota	Inventory adjustment	-915,782	-1,599,852	-1,436,135	-1,341,723
Mississippi					
Missouri	Revenues from services and forestry	39,500,706	48,565,565	56,890,933	62,455,125
Montana	Forest products sold	649,213	644,542	653,196	668,126
Nebraska	Gross imputed rental value of farm dwellings	21,224,551	22,444,423	23,293,268	25,319,115
Nevada	Machine hire and customwork	3,539,551	3,839,844	3,832,784	3,977,791

Geography



Benefits to the User

Better download formats

Choose:

Decade Nominal/real dollars

[Link](#)

1 of 51 Find | Text

Document Map

- VA_State_US
 - United States
 - Alabama
 - Alaska
 - Arizona
 - Arkansas
 - California
 - Colorado
 - Connecticut
 - Delaware
 - Florida
 - Georgia
 - Hawaii
 - Idaho
 - Illinois
 - Indiana
 - Iowa
 - Kansas
 - Kentucky
 - Louisiana
 - Maine
 - Maryland
 - Massachusetts
 - Michigan
 - Minnesota
 - Mississippi

Value added to the U.S. economy by the agricultural, forestry, and services, 2010-2014F
Nominal (current dollars)

United States	2010	2011	2012	2013F	2014F
United States	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Value of crop production	172,764,367	206,904,644	216,935,528	231,361,537	206,876,893
Crop cash receipts	179,539,399	202,030,947	223,484,520	216,086,693	200,917,320
Cotton	7,561,267	7,424,668	8,585,192	6,031,510	6,611,940
Feed crops	54,812,758	72,063,337	79,109,016	72,534,736	60,176,684
Food grains	14,104,297	16,815,243	18,178,068	16,213,400	15,671,337
Fruits and nuts	21,712,170	24,416,942	26,134,407	27,581,493	25,317,390
Oil crops	36,509,755	35,597,197	44,282,608	42,818,982	40,452,975
Tobacco	1,246,341	1,056,050	1,496,602	1,553,694	1,731,675
Vegetables and melons	20,224,762	20,739,046	20,588,841	22,954,304	22,682,409
All other crops	23,368,049	23,918,464	25,109,786	26,398,573	28,272,908
Home consumption	94,670	78,060	114,287	121,887	108,988
Inventory adjustment	-6,869,702	4,795,637	-6,663,279	15,152,957	5,850,585
Value of livestock production	140,833,189	164,604,025	170,424,575	180,775,944	207,592,387
Livestock and products cash receipts	141,448,417	165,908,845	171,584,157	181,824,317	209,597,557
Dairy products, Milk	31,367,282	39,513,587	37,003,818	40,127,261	48,535,211
Meat animals	69,459,115	84,710,812	90,142,874	92,077,178	107,227,260
Miscellaneous livestock	5,129,136	5,466,762	5,415,718	5,911,506	6,537,362
Poultry and eggs	35,492,884	36,217,684	39,021,747	43,708,373	47,297,724
Home consumption	300,554	295,032	276,553	293,350	336,866
Inventory adjustment	-915,782	-1,599,852	-1,436,135	-1,341,723	-2,342,036

Download options: CSV (comma delimited), Excel



Behind the Scenes

Web reports link directly to SQL server database

Displayed data is always consistent with source data

No hand-made tables

Everything from footnotes to variable names controlled programmatically

Errors can be fixed and implemented immediately

User metrics

What are the most downloaded tables?

Info on broad user groups

How much time did they spend looking at the table?

Sourcing Input Data

Support at all levels to accomplish this goal

Wealth of knowledge easily available

Web based learning

Code Academy

StackExchange

SAS e-learning classes

Federal Training

AgLearn (USDA training tool)



Web use of Application Programming Interface (API) for Data Acquisition

Query a data product and retrieve a useable dataset

Examples used in forecast model

U.S. Federal Reserve economic data API

- over 236,000 time series data products
- Consumer Price Index
- Interest rates

U.S. Energy Information Administration

- Electricity prices

Bulk Data Transfer

Communication with different agencies within USDA

Daily transfer of relational database which contains
commodity prices, quantities, and marketing patterns
Prices paid and prices received indexes

Query the data in a programmatic way instead of downloading data.



Macro and Commodity Variable Forecasts

Collaborated with different groups elsewhere in the USDA

Commodity Analysts input forecast recommendations

Quantity and price forecasts for 18 major crops and livestock

Automatically converted to a format that can be used in the forecast model



Agricultural Resource Management Survey

Sponsored jointly by ERS and the National Agricultural Statistics Service

ARMS is the only national survey that provides observations of:

- (1) field-level farm practices
- (2) the economics of the farm businesses operating the field
(or dairy herd, greenhouse, nursery, poultry house, etc.)
- (3) the characteristics of farm operators and their households
(age, education, occupation, farm and off-farm work, types of employment, family living expenses, etc.)

**all collected in a representative sample.*

ARMS is a flexible data collection tool with several phases, versions, and uses including:

- Gather information about the relationships among agricultural production, resources, and the environment
- Determine the costs to produce various crop and livestock commodities, and the relative importance of various production expense items
- Determine farmers'/ranchers' net farm income and provide data on the financial situation of farm/ranch businesses, including debt levels
- Determine farm/ranch operators' and their households' characteristics and financial situations including information on management strategies and off-farm income

<http://www.ers.usda.gov/data-products/arms-farm-financial-and-crop-production-practices/documentation.aspx>



Questions?

Kevin Patrick

ktpatrick@ers.usda.gov

