Commodity markets and trade to 2025:

What is driving these changes?

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Abstract

The paper provides an overview of the factors contributing to the decline in agricultural commodity prices and prospects to 2025 with a particular focus on supply, demand and policy factors. Agricultural and other commodity markets continue to be depressed, causing concern among farmers and their organizations as well as among policy makers concerned about the well-being of farmers. Factors contributing to these market changes are the excellent crops in recent years and growing stocks, the massive decline in petroleum prices that reduce production cost and slow biofuel demand growth, slowing economic growth in major importing countries like China, and changing exchange rate dynamics. We will use the FAPRI outlook update from August 2016 to assess the factors that are driving those results. Then we will offer commentary on what changes in market conditions or policies could alter the projected outcomes. Recent developments in trade disputes and regional trade agreements will also be assessed based on recent studies of these developments.

Keywords

Agricultural markets, commodity prices, trade, exchange rates, agricultural policy

Introduction

The paper provides an overview of the factors contributing to the decline in agricultural commodity markets and prospects to 2025 with a particular focus on supply, demand and policy factors. Agricultural and other commodity markets continue to be depressed, causing concern among farmers and their organizations as well as among policy makers concerned about the well-being of farmers. This is quite a change in policy concern compared to only a few years ago when high and volatile prices were the growing issue. Is this likely to be a temporary or persistent market condition? Factors contributing to these market changes are the excellent crops in recent years and growing stocks, the massive decline in petroleum prices that reduce production cost and slow biofuel demand growth, slowing economic growth in major importing countries like China, and changing exchange rate dynamics. Changing domestic and trade policies, floundering WTO negotiations, trade disruptions arising from trade disputes and sanctions, and perhaps even El Niño, serve as added factors. Furthermore, rhere is broader trade disarray in the Europe and Central Asia (ECA) region even while efforts are ongoing to expand the Eurasian Economic Union (EAEU), the regional agreements such as the Deep and Comprehensive Free Trade Agreements (DCFTAs) of the EU, the recent Trans-Pacific Partnership (TPP) agreement and the Transatlantic Trade and Investment Partnership (TTIP). Reducing trade barriers is usually expected to improve market performance and increase trade, but regional trade agreements are also known to create trade diversion, so the results are not always clear.

Big picture on prices and grain trade

The last ten years have seen high and volatile prices, at least when compared with the previous 20 years. Ever since the price surges of 2007/08, there has been an ongoing discussion among analysts on whether price levels and price volatility will continue to be different in the future than in the last decade or so before this price surge. After the late 2008 plunge of commodity prices, market prices have been higher and more volatile compared with pre-2005 behaviors (figure 1). Lately we have seen a large decline in oil prices and also in agriculture and food prices but not as low as pre-2005 prices. Since the middle of 2014, energy prices have fallen much faster than food and agricultural prices, and the lows are still below the lows of 2008 and have persisted longer.

It is instructive first to look at the causes of the sharp grain price increase in the 2012-13 crop year and the price decline in the next marketing year. The primary cause of the increase in prices in 2012/13 was a historically deep drought in the Midwest that saw average U.S. corn yields fall by 16 percent. This contributed to a large decline in global grain supplies (table 1), at a time when global stocks were already very low. Stock levels were low in part as a result of the fact that the 2012 was the third consecutive year of low corn yields in the U.S.

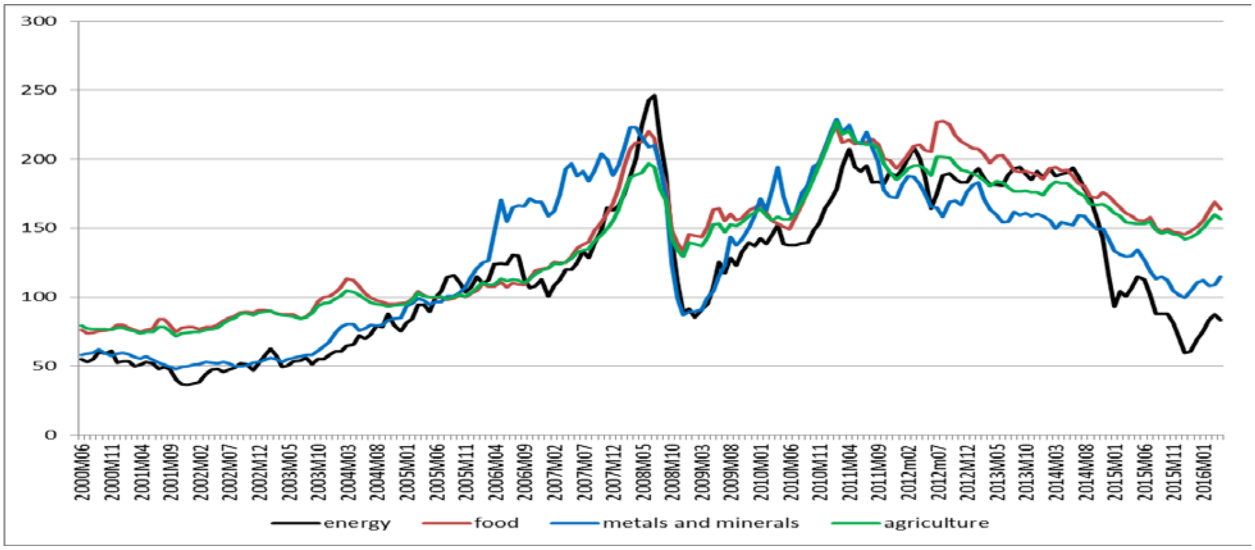

Figure 1. World Bank food, energy, metals price indices, 1/00 to 7/16, 2005=100
Source: Food, energy, metals and minerals price indices, pink data (World Bank, 2016)

In the next crop year (2013/14) grain production had the largest increase in recent memory, led by the recovery of corn production in the U.S. In response, grain prices declined dramatically. It is clear that much of the price gyration was caused by simple supply and demand factors driven by weather shocks. After a small decline in the two previous years, there was again a record harvest in the northern hemisphere this fall, especially in the USA (table 2)

Table 1. Grain production decline and rise in 2011/12-2013/14, million metric tons (mt)

	2011/12	2012/13	absolute change	2012/13	2013/14	absolute change
Coarse Grains						
World	1154.0	1136.3	-17.7	1136.3	1281.1	144.8
USA	323.7	286.0	-37.7	286.0	367.1	81.1
FSU[1]-12	78.7	69.2	-9.5	69.2	87.6	18.4
EU 27	150.0	145.8	-4.2	145.8	159.0	13.2
Wheat						
World	697.2	656.5	-40.7	656.5	715.1	58.6
FSU-12	115.0	77.4	-37.6	77.4	103.9	26.5
EU 27 and Australia	168.0	156.3	-11.7	156.3	170.1	13.8
USA	54.4	61.7	7.3	61.7	58.0	-3.7

Source: USDA WASDE (Oct 10, 2014 and Aug 12, 2016)

[1] Former Soviet Union

Table 2. Grain production decline and rise in 2013/14-2016/17e, million mt

	2013/14	2015/16	absolute change	2015/16	2016/17e	absolute change
Coarse Grains						
World	1281.1	1248.2	-42.9	1248.2	1322.6	80.2
USA	367.1	366.9	-0.2	366.9	402.5	35.6
FSU-12	87.6	82.8	-6.6	82.8	90.3	7.5
EU 27	159.0	152.4	6.6	152.4	156.8	4.4
Wheat						
World	715.1	734.8	19.7	734.8	743.4	8.6
FSU-12	103.9	117.7	13.8	117.7	129.9	12.2
EU 27 and Australia	170.1	184.5	14.4	184.5	174.0	-10.5
USA	58.1	55.8	-2.3	55.8	63.2	7.4

Source: USDA WASDE (Aug 12, 2016)

While the recent price spikes have generated discussion among analysts on whether the long run pattern of decline real food prices will be reversed, the last price spikes pale in comparison to those of the mid 1970s (figure 2). The jury is still out on the future real price path, given longer run issues with climate change, water availability and the rate of technological change; but at least in the medium term the response to price spikes has been increased production and falling real prices as in the past.

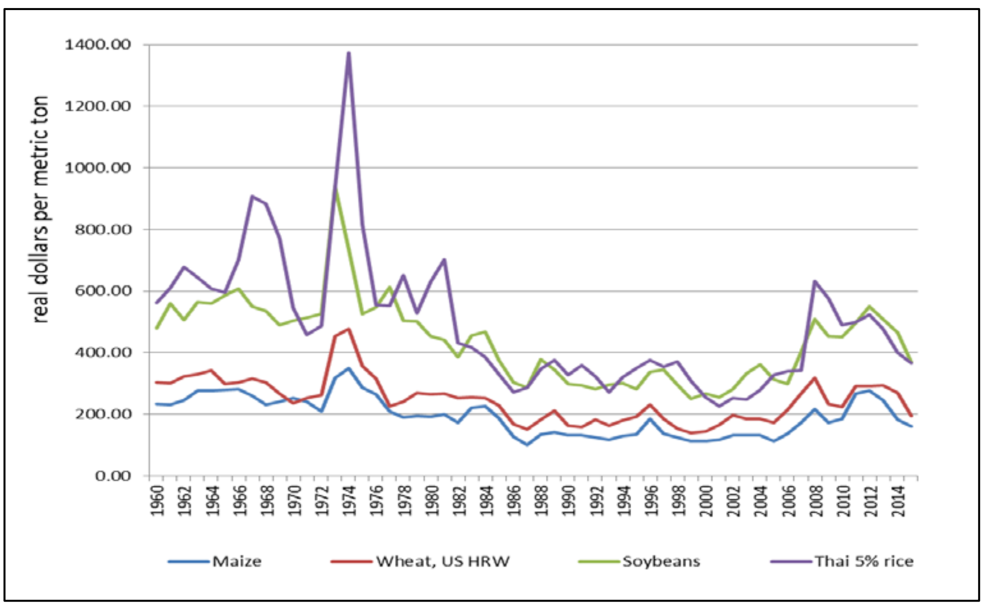

Figure 2. Real prices of grains in 1960-2015
Source: Real prices of commodities, annual, pink sheet (World Bank, 2016)

Given the market fluctuations and uncertainties, policymakers and a wide range of stakeholders in the food and agricultural sector need timely, reliable, and research-based analysis to support improved policy decision making. The approach taken by the FAPRI-MU to modeling and delivery of objective analytical results grew out of this information need. The FAPRI-MU approach to such analysis and dissemination of results has evolved in a number of ways during the last 32 years, including the application and further development of the analytic approach in a wide variety of countries and organizations and within FAPRI-MU itself (Meyers *et al.*, 2010). The analysis conducted by FAPRI-MU evaluates the fundamental factors driving demand, supply and prices in the future but also provides an estimate of possible variances of these results.

The FAPRI-MU approach is very pragmatic. Statistical and econometric methods are used where possible, but in many emerging market countries the data is not sufficiently complete or available for enough years to do sophisticated econometric estimations. In these cases FAPRI approach relies more on theory and research results in other countries to determine behavioral parameters. One of the approach's strengths is that it is flexible enough to address regional differences or the alternate policy objectives that clients might have for the model. Partners have different requirements in terms of commodity coverage, exposure to world markets, regional disaggregation or scale of model.

What is important is the capacity to correctly link commodity markets and policies so that any impact of policy or external factor, such a yield change or a world market shock can be traced though the different commodity markets and through time to see the effects on all main markets, not just on the one where the shock occurred. Once the analytical system is operational various analyses and scenarios can be conducted. These follow a consistent procedure.

FAPRI-MU outlook analysis

The FAPRI-MU (2016) average wheat and corn price projections for the next decade, as an example, recover somewhat from current lows and hover around levels that are about 75 percent higher than they were before the 2007/08 price spike but also about $100/mt lower than in 2012/13 crop year (figure 3). The pattern is somewhat similar for oilseed prices, where medium term price projections are about $150/mt above the 2004/05 levels and $150/mt below the 2012/13 levels (figure 4).

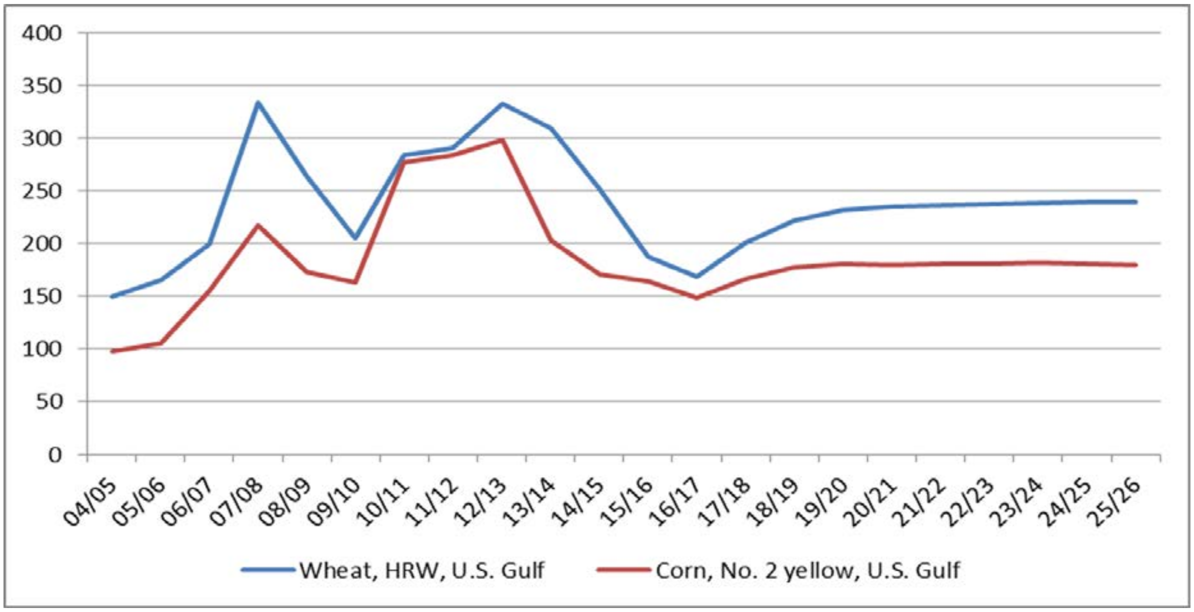

Figure 3. FAPRI projections of US FOB maize and wheat prices, US $/mt
Source: FAPRI-MU August 2016 baseline update

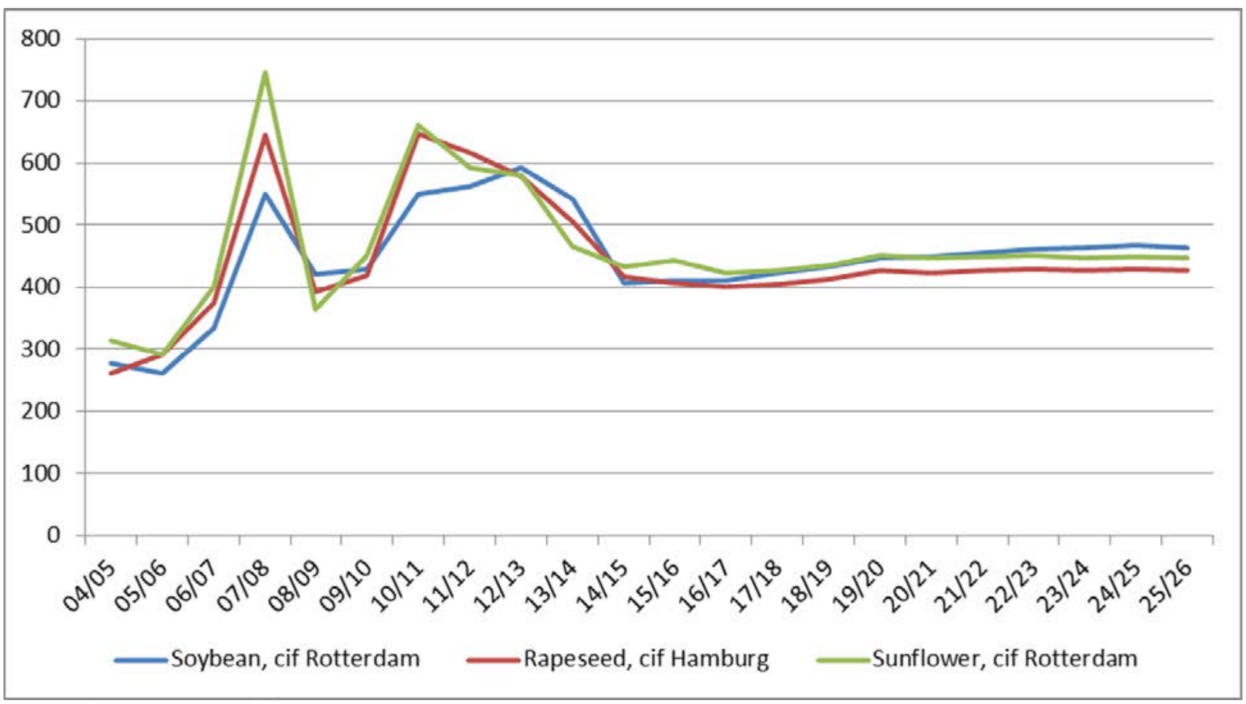

Figure 4. FAPRI projections of average oilseeds prices, US $/mt
Source: FAPRI-MU August 2016 baseline update

FAPRI analyzes possible shocks by doing stochastic analysis that allows a number of important factors to randomly vary from their means, and in this case generate prices that are sometimes much higher or lower than seen in the smooth average[2] price projections (Meyer *et al.*, 2010). This is illustrated by using FAPRI projection of US corn prices. Picking two of the 500 draws shows they can deviate substantially from the average based on yield or other exogenous variables that impact price. Two examples of stochastic draws and the results are shown as an example (figure 5). When all 500 draws are assessed, there is a distribution of possible outcomes illustrated for US farm price of corn in figure 6, where the price is expected to be between the higher and lower bounds 80 percent of the time.

This is not the time or place to do a detailed market outlook discussion, but the fact is that FAPRI-MU, USDA (Westcott and Hansen, 2016), and OECD-FAO (2016) all concur that we should expect prices below recent highs but still above pre-2006 levels.

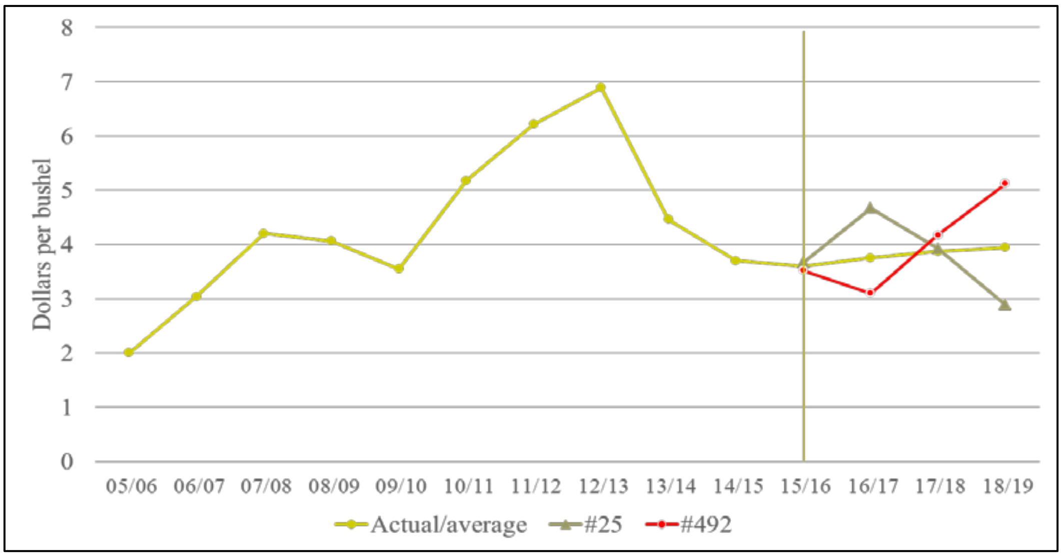

Figure 5. FAPRI projection of US corn farm price in 2 of the 500 outcomes
Source: Calculations based on FAPRI-MU projections from March 2016 stochastic baseline

These assessments also agree that the growth of biofuel use of grains and oilseeds has slowed now that it is a more mature industry; but grain and oilseed prices are still linked to the price of energy, though the strength of this linkage depends on price levels. Another dampening factor is the slowing economic growth in emerging economics, and especially China, which has been a major factor in demand growth during the last decade. Putting the projected average prices from these distributions into historical context, we can see how they tend to continue the

[2] The reported average projected price is the average of the 500 stochastic runs.

path of flat or declining real prices (figure 7). As always there are uncertainties in the outlook. Production the last three years has been good and stocks have been rebuilt, but droughts can always be expected in any year. The El Nino effects have severely impacted white maize but that market is isolated from main grain markets and its effects are very localized, especially in southern Africa.

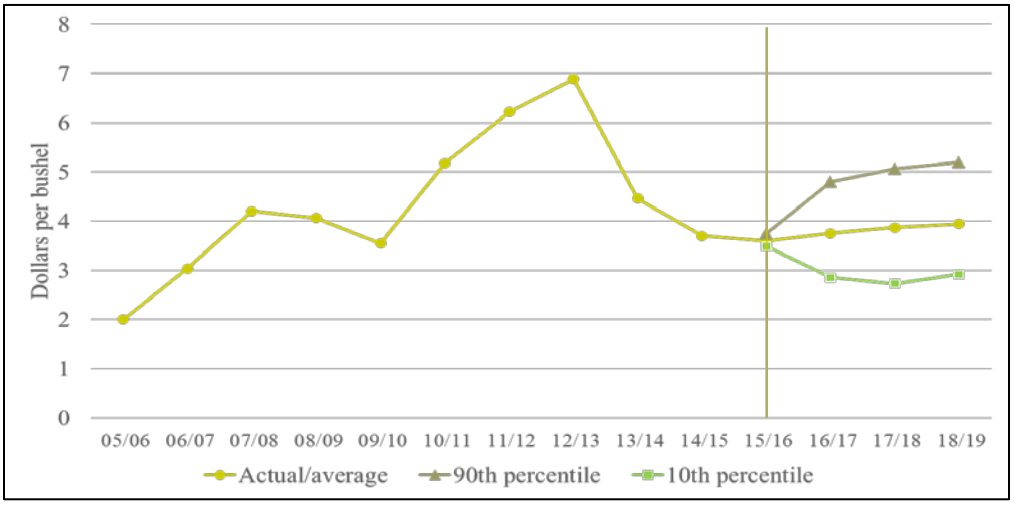

Figure 6. Range of stochastic outcomes for US farm price of corn
Source: Calculations based on FAPRI-MU projections from March 2016 stochastic baseline

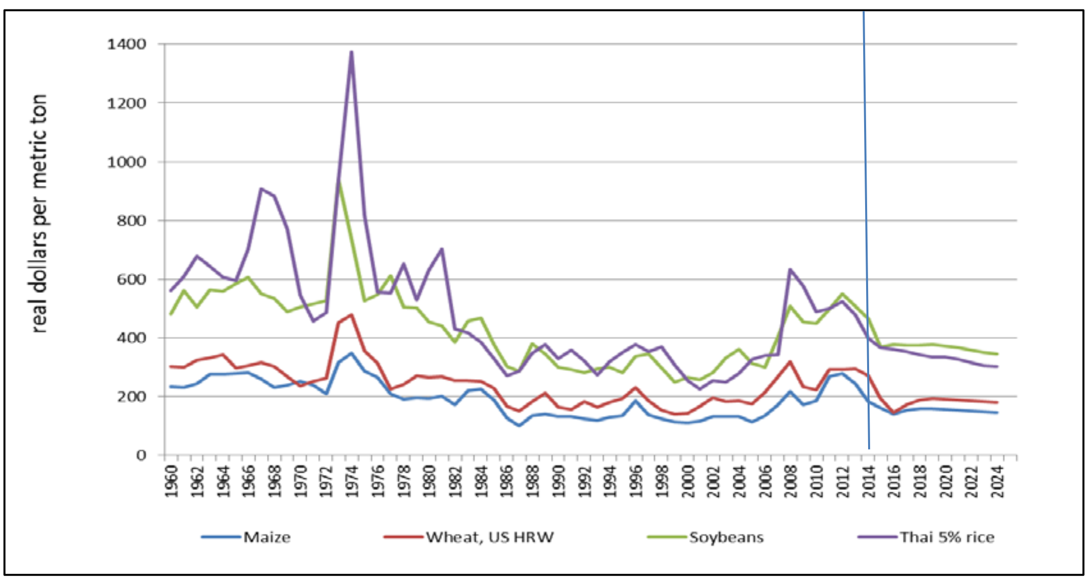

Figure 7. Real prices of grains in 1960-2015
Source: Annual pink sheet (World Bank, 2016) and projections calculated from FAPRI August 2016 projections

One might ask if these projections are reliable or useful when compared to other sources of price expectations. This has been analyzed recently in comparison with two other sources (Irwin and Good, February 4, 2015, and Westhoff, February 12, 2015). They found that the mean absolute percentage errors of the last 18 baselines from USDA and FAPRI-MU when looking 1 to 5 years ahead are not much higher or lower than futures markets estimates for the same periods. So the main advantage of doing this analysis with structural models is the ability to also estimate shocks and policy impacts in the context of the baseline. This has, in fact, recently been done by Gerlt et al (2016), estimating the costs of the 2014 US farm bill compared to the previous 2008 programs that it replaced. Another good example is the analysis of Glauber and Westhoff (2015) looking at the US WTO commitments and implications of the new policy measures of the 2104 Farm Bill, which could exceed AMS commitments of the United States under some market conditions.

Uncertainties in the outlook

The usual uncertainties are always present. In the near term, these are weather shocks, exchange rates, petroleum prices, the US Federal Reserve decision on interest rates, and unanticipated policy shifts, such as BREXIT, Argentina's reduction and removal of export taxes, and the (temporary) Russian food import ban that began in 2014 and has just be extended to the end of 2017. It is not clear how these or similar changes may evolve over the next decade but they can impact the market outlook. In the medium term there is also the question of the slowing investment and economic growth rates in many emerging countries and whether that is a temporary or longer term phenomenon. Much of this slowdown has been driven by the weak commodity prices. Similarly, macroeconomic forecasts have usually included oil prices rising again, but the timing of those rising prices keeps being extended further into the future.

Both trade and domestic policies of major market players have been changing. Aside from new EU and new US agricultural policies, there are still floundering or dormant WTO negotiations, and trade sanctions and counter-sanctions in Europe. Efforts are ongoing in Russia and Central Asia to expand the Eurasian Economic Union to increase trade and policy harmonization within member countries. Regional agreements of the EU such as the Deep and Comprehensive Free Trade Agreements with Ukraine, Moldova and Georgia as well as continuing the accession processes with selected Southern European countries are all expected to open more trade opportunities for those countries (FAO 2016).

It is unlikely that these regional trade agreements will have a major impact on global markets but are more likely to influence within-region trade flows and have increased geopolitical tensions. There could also be "within region" tensions, such as when EAEU members were not consulted prior to the food import ban that can also have impacts on them (Shagaida et al, 2014). Though countries like Belarus may not complain about the additional export business, its consumers may complain about spillover effects in higher prices and reduced product availability.

The recent TPP agreement is still to be ratified by the USA and other partners, and the TTIP is far from realization and seems highly unlikely. Reducing trade barriers is usually expected to improve market performance and increase trade, but regional trade agreements are also known to create trade diversion, so the results are not always clear.

An important impact on trade in the near term has been the relatively large depreciations of currencies in Europe and Central Asia as well as Brazil relative to the US dollar, and that has supported the continued rise of Brazil, Russia and Ukraine as a share of total grain exports (figure 8). Of course, this shift has also been accelerated by the large shift of US grains to domestic biofuel production.

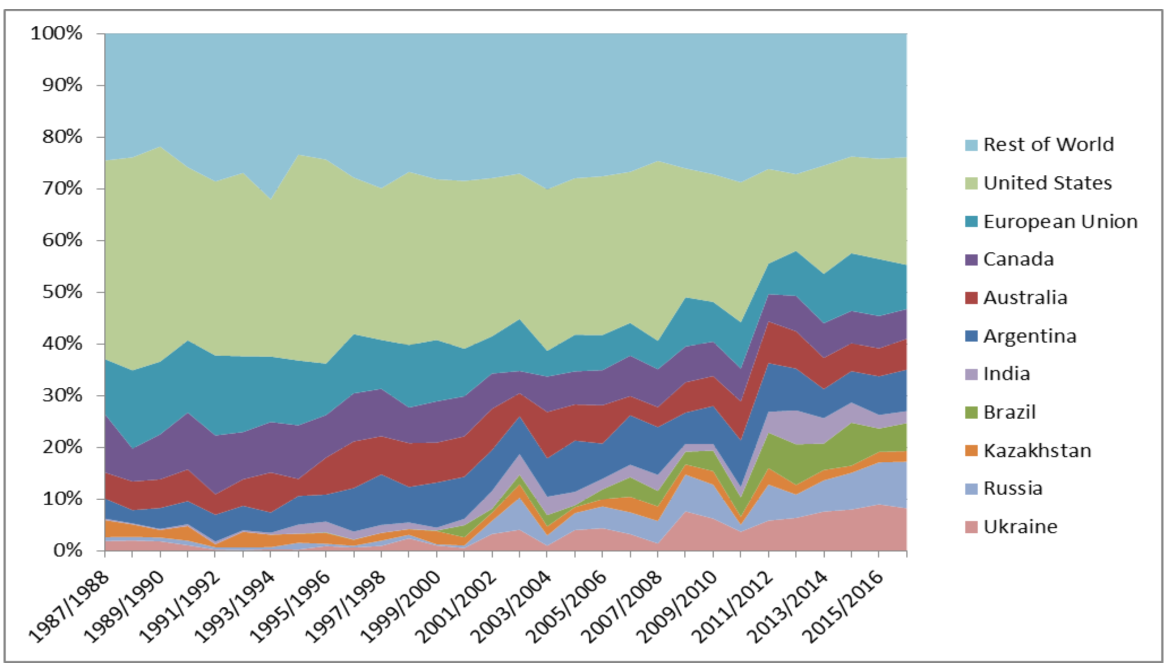

Figure 8. Share of grain exports1980-81to 2016-17e.
Source: USDA PSD, accessed August 29, 2016

The principal short term issue in agricultural trade in Europe and Central Asia, of course, is the Russian partial ban on food imports from selected countries. Resolution 830 of the Government of the Russian Federation dated 08/20/2014 introduced an import embargo for certain agricultural products originating from the United States, the EU, Canada, Australia and Norway. Meat, dairy products, fruits and vegetables were the main targeted categories (out of HS chapters 02, 04, 07, 08 and 16). There have been some revisions to the ban, and the latest extension by Russia was on 29 June which extended the ban to the end of 2017. Furthermore a ban was also introduced to imports of these products from other countries: Iceland, Liechtenstein, Albania and Montenegro. Compared to the equivalent period one year before, EU agri-food exports to Russia decreased between August 2014 and June 2015 from € 10.2 billion to € 5.8 billion (€ -4.4 billion; -43 %). This was the result of an almost complete disappearance of exports within the banned product categories and a slight decrease for products not subject to the ban.

The EU total value of agricultural and food exports was actually higher in 2015 than in any recent year, since higher exports to other destinations exceeded losses of exports to Russia. However, the incidence of impacts has varied greatly across EU member states and in EU neighborhood countries. In the EU Lithuania, for example, had the highest share of banned products relative to all agri-food exports. Other EU countries where this share was also relatively high were Poland, Finland and Estonia (Mo, 2016; Dillen, 2015). Also there is a kind of trade disarray in this region with strong diversion in views/orientation towards trade and integration, with some countries looking towards the EU and some towards Russia. Russian import restrictions on Western products and reorientation of its import sources generated hopes in Eurasia that this would attract imports from the region but that did not materialize to any great extent, and was undercut by the massive fall of the Russian ruble relative to other currencies in the region.

We have not attempted to analyze the impacts of the Russian policy, though many others have been doing that with differing approaches (Golub and Gopalakrishnan, 2015; FAO, 2014; Mo, 2016; Dillen, 2015) There clearly were greater and smaller impacts on exporters, depending on their dependence on the Russian market, so countries like Ukraine, Moldova, Lithuania, Poland and Finland were more negatively affected and Belarus clearly gained market share. However, it does not appear that countries in the EAEU saw a significant gain from trade diversion, partly because of exchange rate movements and partly because the products were not sufficiently available for export. For those who have been looking at the impacts on the Russian producers and consumers there is the added complexity of sorting out the impacts of the import bans (including the earlier one on pork from EU in January 2014 based on Swine fever concerns) from what would have happened in any case because of the large depreciation of the Ruble and loss of purchasing power of consumers and the gain in Ruble prices that producers could realize. It is also difficult to disentangle the effect of the import ban from the ongoing policy of promoting domestic production and self-sufficiency in Russia, but clearly the short term effects have been felt by consumers (Shagaida et al, 2014; Wengle, 2016). Alternative sources of meat, dairy, fruit and vegetables are available but not in sufficient quantity to avoid consumer loses, especially in the short run. Some sectors, like poultry and pork, can increase production faster than others (Wengle, 2016), and on the dairy side Belarus was able to increase exports of many products but not so much for butter and cheese, where EU had a much larger share of the markets (Shagaida et al. 2014). Cheese quality has also been highly compromised with palm oil and arbitrage is suspected in a number of food categories.

It is not very satisfying to raise more questions than answers, but it does open much room for more analysis on these questions. It does seem clear and most analysts agree that if and when the Russian trade ban is lifted, trade patterns will not be restored to their previous state very soon if at all, and that too will be an interesting subject for further research.

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