

**Why have food prices in the
USA increased over the past 10
years?**

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Introduction

Food prices worldwide have been on the rise in the past decade, and for the most part, the last hundred years. The Consumer Price Index (CPI) has tracked data on food price increases since 1913.¹ For example, in 1913, potatoes cost 2.5 cents per pound, and flour cost 3.3 cents per pound. In 1947, comparable potatoes were already 5 cents per pound and flour was 4.8 cents per pound. This shows a 100% increase in potato price per pound and a 45% increase in flour per pound in those 34 years. In 1987, potatoes were 24.7 cents per pound. Currently in 2017, the average price for potatoes per pound is \$1.03.² From 1913 to 2017, the price of potatoes increased 4,020%. There have been many factors that have contributed to this spike in food cost in the past ten years. In the past one hundred years, price changes can be attributed to World War 1 and World War 2, The Great Depression, and other economic events such as financial policy in the US. In the past 10 years, the food price increase can be attributed to increased demand for food worldwide, fluctuation in oil prices, weather events, and food commodity trading.

Demand and Supply

In the 1940s and 50s, food was produced locally and the path of getting the food from farm to the table was very short. Nowadays, the food supply chain has become international. Food prices, in general, are dependent on supply and demand. More specifically, if the demand is increasing for food commodity, then the prices also increase. And alternatively, if the demand is decreasing, prices decrease accordingly³. It is possible to artificially create a demand for food commodities. For example, the US government gives subsidies to farmers for growing crops – which produce ethanol such as corn – which reduces the land available for other crops, since corn growing land increases with ethanol production.

¹ U.S. Bureau of Labor Statistics “One Hundred Years of Price Change: the Consumer Price Index and the American Inflation Experience: Monthly Labor Review.”. www.bls.gov/opub/mlr/2014/article/one-hundred-years-of-price-change-the-consumer-price-index-and-the-american-inflation-experience.htm. Accessed 21 November 2017

² 8“*National Retail Report – Specialty Crops*.” <https://www.ams.usda.gov/mnreports/fvwretail.pdf>. Accessed 21 November 2017

³Odland, Steve. “Why Are Food Prices So High?” *Forbes*, Forbes Magazine, 15 May 2012, www.forbes.com/sites/steveodland/2012/03/15/why-are-food-prices-so-high/#7fa12b146962. Accessed 21 November 2017

Due to changes in consumer demand for food, governments can adapt different food policies⁴. Demand for food is not only dependent on food consumption, but a combination of food export, animal feed, and other uses for food. Trends in diets can also change demand for certain food products. For example, the US Department of Agriculture has estimated that if the US population were to follow “Healthy People 2010”⁵ guidelines set by Surgeon General – increasing population with normal weight and decreasing the overweight population – it would result in about 6% decrease in food consumption and decrease in demand for food.⁶ With a decrease in demand for food, food prices will likely go down. For example, the CPI for fruits and vegetables rose and food index for dairy and meats fell by December 2010⁷ which is consistent with timing of USDA guidelines of “Healthy People 2010”. Agricultural producers would also suffer losses. Although the USDA recommends healthy eating by issuing Dietary Guidelines for Americans emphasizing balanced consumption of fruits, vegetables, proteins, etc; they are not properly followed. For example, many Americans lack vegetables, fruits, dairy, and oils in their diets, while over-consuming recommended daily amounts of sugar.⁸ US government subsidies focus on such crops as corn and soybeans that decrease the price of processed and unhealthy foods.⁹

In its outlook for 2017 food prices, the USDA has indicated the following: In 2017, supermarket prices are expected to change between -0.25 and 0.75 percent. Despite declining prices in 2016,

⁴ U.S. Department of Agriculture, Office of Chief Economist. *World Agricultural Supply and Demand Estimates*. 9 November 2017. <https://www.usda.gov/oce/commodity/wasde/latest.pdf>. Accessed 21 November 2017

⁵ U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion <https://www.healthypeople.gov>. Accessed 21 November 2017

⁶ U.S. Department of Agriculture Economic Research Service. *Food Consumption and Demand. Implications for U.S agriculture*. 4 October 2017. <https://www.ers.usda.gov/topics/food-choices-health/food-consumption-demand/agricultural-sector/>. Accessed 21 November 2017

⁷ U.S. Department of Labor, Bureau of Labor Statistics, “*Consumer Price Index – December 2010*”, https://www.bls.gov/news.release/archives/cpi_01142011.pdf Accessed: 15 November 2017

⁸ U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, Dietary Guidelines 2015-2010, Chapter 2, Shifts Needed to Align with Healthy Eating Patterns. Current Eating Patterns in the United States. <https://health.gov/dietaryguidelines/2015/guidelines/chapter-2/current-eating-patterns-in-the-united-states/>. Accessed 21 November 2017

⁹ Union of Concerned Scientists. Unhealthy Food Policy. How government subsidizes the wrong foods – and creates obstacles for healthy farms. <http://www.ucsusa.org/our-work/food-agriculture/our-failing-food-system/unhealthy-food-policy#.WhR0MtSyUl>. Accessed 21 November 2017.

poultry, fish and seafood, and dairy prices are expected to rise in 2017. These forecasts are based on the assumption of normal weather conditions throughout the remainder of the year; however, severe weather or other unforeseen events could potentially drive up food prices beyond the current forecasts. In particular, drought or flood conditions throughout the U.S. could have large and lasting effects on fruit, vegetable, dairy, and egg prices. Also, a stronger U.S. dollar could continue to make the sale of domestic food products overseas more difficult. This would likely increase the supply of foods on the domestic market, placing downward pressure on retail food prices.

As seen from the USDA forecast, the most uncertainty in food prices can be attributed due to draughts and other weather events. Even with increase in commodity prices, food prices have not increased substantially, except in some food groups such as fresh fruits and vegetables – where prices have been increasing¹⁰. The CPI category “Other foods,” which includes processed and packaged foods, has the most stable prices. The stability of these foods is ensured by long-term contracts with brand name manufacturers (for example Kellogg’s, Nestle).

The exceptions to the traditional factors that impact food supply such as crop failure or limited crop supply – have happened more recently, particularly in 2007-2008. During that time, prices increased due to increased demand in developing countries (all the global food markets are interconnected), energy prices increased, adverse weather conditions, an excess of corn being grown for the biofuel industry, and the concurrent fall in the US dollar exchange rate against other currencies.¹¹ The strong dollar makes food exports more expensive, which increases domestic supply and puts downward pressure on food prices. In 2007-2008, there was a food price crisis caused by rapid increase in demand for food, allocation of lands to biofuel production, high energy prices and many other global factors – such as restrictions by several

¹⁰ The National Academy of Sciences, Engineering, Medicine. *Sustainable Diets: Food for Healthy People and a Healthy Planet: Workshop Summary*, 2014, <https://www.ncbi.nlm.nih.gov/books/NBK189804/>. Accessed 21 November 2017.

¹¹ May Peters, Suchada Langley, Paul Westcott, U.S. Department of Agriculture, Economic Research Service, *Agricultural Commodity Price Spikes in the 1970s and 1990s: Valuable Lessons for Today*, <https://www.ers.usda.gov/amber-waves/2009/march/agricultural-commodity-price-spikes-in-the-1970s-and-1990s-valuable-lessons-for-today/>. Accessed 21 November 2017.

major exporters – which limited the supply of grains. Although supply and demand play a role in food price increases, there are many other interconnected factors that contribute to food price volatility.

Energy prices

Oil prices have risen along with the food prices in the last 10 years, although food prices have been less volatile than oil prices¹². Biofuel production has created a new link of food commodity price increases to oil price increases, mainly due to the use of biofuels. For example, ethanol in the US is produced from crops such as corn, barley, wheat, sugar cane, and sugar beetroot; the same crops are used in human food consumption.¹³ In addition, the US energy Policy (US Energy Policy Act of 2005)¹⁴ has since mandated the use of ethanol and biofuels as a component of gasoline.¹⁵ This is also contributor to increased food costs. The main ingredients in gasoline are corn and ethanol – and corn is replacing oil as gasoline component. Corn is also component in animal food. According to economic researchers, there is not a significant correlation between changing oil prices and rising food prices.¹⁶ One explanation for the lack of correlation is that the US government provides subsidies to corn as biofuel that keeps the price of biofuel corn stable, but increases food-supply corn prices as supply is then limited due to biofuel cost manipulation.

Increase of biofuel production

¹² United States Department of Agriculture, “Food prices less volatile than fuel prices”, 10 April 2017 <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=58358>. Accessed 21 November 2017

¹³ Mohcine Bakhat, Klaas Wurzburg, “*Price Relationships of Crude Oil and Food Commodities*”, Working Paper FA06/2013, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&ved=0ahUKEwiHnfa2yL_XAhWJZCYKHUrZCS8QFghgMAs&url=https%3A%2F%2Feforenergy.org%2Fdocpublicaciones%2Fdocumentos-de-trabajo%2FWPFA06-2013.pdf&usg=AOvVaw2AxTEHA5a-NU3x4HO-h4m9. Accessed 21 November 2017.

¹⁴ Energy Policy Act of 2005. <https://www.ferc.gov/enforcement/enforce-res/EPAct2005.pdf>. Accessed 21 November 2017

¹⁵ Michael T. Owyang, Hannah G. Shell, Federal Reserve Bank of St. Louis, “Do Rises in Oil Prices Mean Rises in Food Prices?”, 24 November 2016, <https://www.stlouisfed.org/on-the-economy/2016/november/rises-oil-prices-mean-rises-food-prices>. Accessed 21 November 2017.

¹⁶ Michael T. Owyang, Hannah G. Shell, Federal Reserve Bank of St. Louis, “Do Rises in Oil Prices Mean Rises in Food Prices?”, 24 November 2016, <https://www.stlouisfed.org/on-the-economy/2016/november/rises-oil-prices-mean-rises-food-prices>. Accessed 21 November 2017.

Growing global demand for cars has fueled the increase of biofuel production. According to the United States Department of Agriculture, in 2016, around 40% of the US corn supply was used in biofuels.¹⁷ The requirement to add biofuels (ethanol) to gasoline started in 2005, when the US passed a first ever mandate requiring biofuels to be mixed with traditional gasoline. Starting in 2006, large subsidies and tax breaks were given to farmers producing corn for ethanol.¹⁸ According to this mandate, the US has committed to producing 36 billion gallons of renewable biofuels by 2022.¹⁹ According to the research from Purdue University in 2007, \$130 (with more expected in future) per household were added to food cost due to the 2005 ethanol mandate.²⁰

As a consequence of the increased use of corn in biofuels, there was less corn supply available for livestock feed, which led to lower beef supplies in 2007 and very high cattle prices. The price of beef had increased on average 3.5% a year, but in 2007 it increased 4.7%²¹. Therefore, an increase in biofuel production could completely distort the global demand and supply for corn. For example, in 2000, about 90% of corn in the US was used for human and livestock consumption, including countries labeled ‘emerging markets.’ But, starting in 2013, 40% of said corn was used for ethanol production.²²

¹⁷ U.S. Department of Agriculture, Economic Research Service, “U.S. Bioenergy Statistics”, 8 November 2017, <https://www.ers.usda.gov/data-products/us-bioenergy-statistics/>. Accessed 21 November 2017

¹⁸ Lieberman, Ben. “*Time for Second Thoughts on the Ethanol Mandate.*” The Heritage Foundation, 2 April 2008, [.http://www.heritage.org/environment/report/time-second-thoughts-the-ethanol-mandate](http://www.heritage.org/environment/report/time-second-thoughts-the-ethanol-mandate). Accessed 21 November 2017.

¹⁹ Lieberman, Ben. “*Time for Second Thoughts on the Ethanol Mandate.*” The Heritage Foundation,, 2 April 2008 <http://www.heritage.org/environment/report/time-second-thoughts-the-ethanol-mandate>. Accessed: 21 November 2017.

²⁰ Lieberman, Ben. “*Time for Second Thoughts on the Ethanol Mandate.*” The Heritage Foundation, 2 April 2008, <http://www.heritage.org/environment/report/time-second-thoughts-the-ethanol-mandate>. Accessed: 21 November 2017.

United States Department of Labor. <https://data.bls.gov/timeseries/APU0000708111>. Accessed: 21 November 2017.

²² James Conca, “*It’s Final – Corn Ethanol Is Of No Use*”, Forbes, 20 April 2014, <https://www.forbes.com/sites/jamesconca/2014/04/20/its-final-corn-ethanol-is-of-no-use/#534dafa367d3>. Accessed: 10 November 2017.

According to the US Energy Information Administration, a biofuel is a transportation fuel; similar to ethanol and biodiesel (all produced from sugars found in grains, such as corn and other biomass materials).²³ Corn is also widely used as feed for livestock in farms, and also in many processed foods, such as corn syrup and the dairy industry. Since food prices are impacted by supply and demand, the increased demand for biofuels has served as a contributing factor to increased prices for corn and other biomasses (such as beets, soybeans, and others). With incentive to earn more, farmers are increasing their acreage for corn, which theoretically results in less land available for other food crops.²⁴ As a result, the price increase in bio energy crops has led to price increases in other crops that could have been grown on the land used to harvest corn. Also, due to increased ethanol production, the rent of lands has increased as well, accompanied by not only increases in fertilizer use, but also over usage of water supplies.

Since the US produces 40% of the whole world's supply of corn – the US energy policy requiring the addition of corn ethanol to gasoline could potentially disrupt the global corn supply market. One could feed one person for the entire year using the same grain that is used to fill a 25-gallon gas tank for a car. The increased price of corn has an impact on prices of other agricultural commodities – such as meat and dairy products that depend on corn for livestock feed.²⁵ In the last ten years, price of corn has increased from \$75 per ton, to \$333 per ton.²⁶ While since 2003, land used for corn has increased by 12% and the land used for other products has decreased. One such example, wheat – acreage decreased 14%, barley acreage decreased 46%, oats acreage decreased 32%.

Consumers might see the increased prices on grocery store shelves as a result of increased corn prices. For instance, when corn prices increased in 2006, the chicken industry reduced its

²³ U.S. Energy Information Administration, Independent Statistics & Analysis, “*Biofuels: Ethanol and Biofuels Explained*”, https://www.eia.gov/energyexplained/index.cfm?page=biofuel_home. Accessed: 10 November 2017.

²⁴ Corinne Alexander, Chris Hurt, “Biofuels and their Impact on Food Prices” Purdue University, <https://www.extension.purdue.edu/extmedia/id/id-346-w.pdf>. Accessed: 10 November 2017

²⁵ David Blackmon, “*Corn Ethanol: Poster Child For Crony Environmentalism*”, Forbes, 13 November 2013, <https://www.forbes.com/sites/davidblackmon/2013/11/13/corn-ethanol-poster-child-for-crony-environmentalism/#28db79cc391a>. Accessed: 2 November 2017.

²⁶ Tim McMahon, “*What Is the Inflation Adjusted Price of Corn?*”, 19 August 2015, https://inflationdata.com/Inflation/Inflation_Articles/Corn_Inflation.asp. Accessed: 21 November 2017.

production, which resulted in increased chicken and egg prices. Likewise, increased corn prices could also have an indirect influence on the prices of other products. For example, if farmers switch from growing soybeans to growing corn – the price of soybeans will go up as well, including all products containing soybeans.

The American Automobile Association has estimated that ethanol has added 20-30% per gallon to the price of gasoline. And this increase comes after government subsidies (paid by taxpayers) and a tax credit of 51 cents per gallon.²⁷ As a result, customers pay more for food because of the increased prices of corn and ethanol production. At the same time, also pay more for gasoline, not considering all the other costs such as environmental pollution.

Agricultural commodity derivative trading

In the US, there are two main food derivative exchanges: the Chicago Board of Trade (CBOT) for standard reference prices of soybeans, corn and soft wheat; and Kansas City Board of Trade (KCBT) for hard wheat, which together form the Chicago Mercantile Exchange Group (CME). Although these exchanges are regulated by Commodities Futures and Trade Commission (CFTC), most private contracts are concluded and traded off-exchange. The off-exchange deals or Over-The-Counter (OTC) transactions constitute about 85% of derivatives traded. The OTC trades do not require disclosure regarding details of the transactions like price or parties involved – therefore there is very little transparency and information available to the general public, thus increasing risk and uncertainty. As there is not much public data available on OTC transactions, this issue has even been addressed in G20 summit (June 2011)²⁸.

The prices of various commodities in the past ten years have been linked: oil prices, energy prices and food prices are interlinked as they affect the cost of transportation and food processing. Moreover, the biofuel industry is introducing new markets for food products and

²⁷ Lieberman, Ben. “*Time for Second Thoughts on the Ethanol Mandate.*” The Heritage Foundation, 2 April 2008, <http://www.heritage.org/environment/report/time-second-thoughts-the-ethanol-mandate>. Accessed: 21 November 2017.

²⁸ Ministerial Declaration: “*Action Plan on Food Price Volatility and Agriculture*”, Meeting of G20 Agriculture Ministers, Paris 22 and 23 June, 2011, <https://www.bmel.de/SharedDocs/Downloads/Landwirtschaft/Welternahrung/G20Actionplan110623.html>, Accessed: 18 November 2017

artificially changing the demand for food. Volatility in the energy commodity market can affect the volatility in food commodity markets as well.

The trading of food commodity derivatives in financial markets does not affect the farmers – as farmers are generally concerned about the USDA – now forecasting a prolonged period of depressed prices, with serious implications for producers accessing credit, negative farm budgets, depressed markets, tests to the safety net, and increased demand for mediation services regarding credit.²⁹

The importance of regulation of OTC derivative markets to stabilize food prices has been addressed by governments of G-20 countries (Group of 20 countries)³⁰. In the meeting of the G20 Agriculture Ministers in Paris in 2011, the Action Plan on Food Price Volatility and Agriculture was passed. The plan included a passage on improving transparency in agricultural financial markets by establishing an Agriculture Market Information System. In addition, the Action Plan supports the initiatives of the International Organization of Securities Commissions (IOSCO), in improving function of OTC derivatives markets and preventing speculation and market abuses.³¹

Food producers always face uncertainty and unpredictability in the chain from production to distribution, such as adverse weather conditions, changes in transportation costs, and the price of fertilizer. Due to the commodity price risks, food producers have to take special measures to secure supplies of crops to the market and food commodity end users (for example Nestle,

²⁹ *Focus on the Farm Economy*, Hearing before the Subcommittee on General Farm Commodities and Risk Management and the Subcommittee on Commodity Exchanges, Energy and Credit and the Subcommittee on Biotechnology, Horticulture and Research and the Subcommittee on Nutrition and the Subcommittee on Conservation and Forestry and the Subcommittee on Livestock and Foreign Agriculture of the Committee on Agriculture House of Representatives, April-May, 2016, https://agriculture.house.gov/uploadedfiles/114-49_-_99853.pdf. Accessed: 18 November 2017

³⁰ The Group of Twenty is comprised of 19 countries plus the European Union. The countries are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom and the United States of America. https://www.g20.org/Webs/G20/EN/G20/Participants/participants_node.html. Accessed: 21 November 2017

³¹ Ministerial Declaration: “*Action Plan on Food Price Volatility and Agriculture*”, Meeting of G20 Agriculture Ministers, Paris 22 and 23 June, 2011, <https://www.bmel.de/SharedDocs/Downloads/Landwirtschaft/Welternahrung/G20Actionplan110623.html>, Accessed: 18 November 2017

Domino Sugar, and others). These measures include the use of commodity derivatives, which serve to hedge or insure their products against price fluctuations. With the help of derivatives, businesses – such as bakeries – can lock in flour prices to ensure stable prices for their baked goods. Restaurant chains can also use derivatives to lock in meat prices in order for the ultimate end user (customer) not to feel the impact of the food price volatility.³²

Since 1887, grain growers have used financial instruments such as future contracts (a legal agreement to sell a particular commodity or financial instrument at a predetermined price in the future)³³ to lock in the present price in the future, therefore avoiding the risk of oil price fluctuations or other factors.³⁴ These grain growers and traders had vested interest to insure their crop prices with futures contracts.

In 1991, Goldman Sachs (an investment bank) bankers, under leadership of Gary Cohn (present economic advisor appointed by President Trump), introduced a new type of investment instrument which tracked 24 raw materials, including some precious metals, coffee, cattle, corn, soy, and wheat. The investment value of each element was weighted, and blended and transformed the parts into mathematical sums and reduced real world commodities into a mathematical formula, known as the Goldman Sachs Commodity Index (GSCI)³⁵. The Index Fund managers had no connection to the wheat or other agricultural products that they were virtually trading.

After futures markets were deregulated in 2000 by Commodity Futures Modernization Act³⁶ influenced by finance lobby such as International Swaps and Derivatives association³⁷, traders

³² “Why and how are commodity producers using derivatives markets?” International Swaps and Derivatives Association, <http://www.commodityfact.org/faqs/>. Accessed: 18 November 2017

³³ Futures Contract, <http://www.investopedia.com/terms/f/futurescontract.asp>. Accessed: 18 November 2017.

³⁴ Debbie Carlson, “*How Grain Futures Contracts Revolutionized Finance*”, CME Group, 12 January 2017, <http://openmarkets.cmegroup.com/11931/grain-futures-contracts-revolutionized-finance>. Accessed: 20 November 2017.

³⁵ Frederick Kaufman, “*How Goldman Sachs Created the Food Crisis*”, Foreign Policy, 27 April 2011, <https://www.google.com/amp/foreignpolicy.com/2011/04/27/how-goldman-sachs-created-the-food-crisis/amp/>. Accessed: 20 October 2017.

³⁶ Paul Blumenthal, “How Congress Rushed a Bill that Helped Bring the Economy to its Knees”, The Huffington Post, 25 May 2011, https://www.huffingtonpost.com/paul-blumenthal/how-congress-rushed-a-bil_b_181926.html. Accessed: 21 November 2017.

started making short term profits through speculative trading (trading for quick profits with high risk transactions). These traders did not have real interest in commodities they were trading; only in profits they were gaining. With no actual interest in agricultural markets, large investors such as hedge funds, pension funds, and investment banks started the trading of derivatives. For instance, investment banks such as Goldman Sachs, J.P. Morgan and Morgan Stanley are the biggest investment companies that trade agricultural commodity derivatives without real interest in actual agricultural products. In addition, pension funds with large amount of capital are also investing in speculative commodity derivative markets.³⁸ As such, the speculative trader would not produce or consume the commodity in their own interest. Grain, feed, and livestock commodity trading through financial derivatives by investment bankers has caused increased prices on grain futures. Virtual wheat and other commodities also determine the price of the physical wheat. Currently, there are more commodity speculators in the market than actual bona-fide (with theoretical good intentions) hedgers (traders in futures markets who attempt to offset the volatility of a commodity)³⁹ at a ratio of four to one.⁴⁰ For example, between 2005 and 2008, there was a sharp price spike of 83% in most agricultural commodities such as; wheat prices (increased by 127%) and rice (increased by 170%). There are assumptions that the price spikes were caused by excessive speculation of food commodity derivatives, by way of creating a vicious circle of continuously increasing prices.⁴¹

Climate Change

³⁷ Oxfam, “Not a Game: Speculation vs Food Security, Regulating Financial Markets to Grow a Better Future, Oxfam Issue Briefing, 3 October 2011, <https://www.oxfam.org/en/research/not-game-speculation-vs-food-security>. Accessed: 21 November 2017.

³⁸ Oxfam, “Not a Game: Speculation vs Food Security, Regulating Financial Markets to Grow a Better Future, Oxfam Issue Briefing, 3 October 2011, <https://www.oxfam.org/en/research/not-game-speculation-vs-food-security>. Accessed: 21 November 2017.

³⁹ Nicola Sargeant, “What is the difference between hedging and speculation?”, Investopedia, <http://www.investopedia.com/ask/answers/06/hedgingversusspeculation.asp>. Accessed: 1 November 2017.

⁴⁰ Frederick Kaufman, “*How Goldman Sachs Created the Food Crisis*”, Foreign Policy, 27 April 2011, <https://www.google.com/amp/foreignpolicy.com/2011/04/27/how-goldman-sachs-created-the-food-crisis/amp/>. Accessed: 20 October 2017.

⁴¹ Olivier De Schutter, “Food Commodities Speculation and Food Price Crises”, Office of the United Nations High Commissioner for Human Rights, September 2010, http://www2.ohchr.org/english/issues/food/docs/Briefing_Note_02_September_2010_EN.pdf. Accessed: 10 November 2017.

Globally, weather conditions can adversely impact food prices. However, the recent six-year drought in California kept food prices stable due to other factors influencing food prices; for example, low fuel prices, strong US Dollar, and availability of food imports. During the drought (2015-2016), the California CPI for food had decreased by 1.2%.⁴²

In the US, weather events taking place in one region can affect food price in the short term, but would not stop the supply because of the balance in distribution of food suppliers.

Impact of regulations

There are many existing and new regulations that are adding additional costs to agricultural products and eventually food production.

Although the Waters of the US law (WOTUS) has still yet to take effect, it could have far-reaching consequences for farmers. The WOTUS law would trigger enforcement of antipollution laws if the farmer builds a pond for livestock or if a cow crosses a stream without a proper permit.⁴³ Farmers would have to apply for permits for activities on their own land, and these costs would be passed down to the customers. An illustrative example is Wyoming Rancher Mr. Andy Johnson, who planned to build a pond for his small herd of livestock on his own property. Since Mr. Johnson did not obtain the permits to build the pond, he was fined \$37,000 each day (currently facing \$16 million in fines) by the Environmental Protection Agency for violating the federal Clean Water Act.⁴⁴ Even President Trump mentioned Andy Johnson in his speech (Remarks on WOTUS executive order)⁴⁵ and has described the EPA's "Waters of the United States" rule as one of the worst examples of federal regulation since it prohibits farmers to do what they are supposed to be doing.⁴⁶

⁴² "Impact of the California Drought on Fresh Produce Prices", 27 January 2017, The Produce Marketing Association, <https://www.pma.com/Content/Articles/2017/01/The-impact-of-the-California-drought-on-prices>, Accessed: 10 November 2017

⁴³ Jenny Hopkinson, "Obama's Water War", 27 May 2017, Politico, <http://www.politico.com/story/2015/05/epa-waterways-wetlands-rule-118319>. Accessed: 10 November 2017.

⁴⁴ Sean Hackbarth, "A Wyoming Rancher's Case Shows Why So Many Businesses Are Worried About EPA's Water Rule", 1 September 2015, U.S. Chamber of Commerce, <https://www.uschamber.com/above-the-fold/wyoming-rancher-s-case-shows-why-so-many-businesses-are-worried-about-epa-s-water>. Accessed: 10 November 2017.

⁴⁵ Remarks by President Trump at Signing of Waters of the United States (WOTUS) Executive Order, The White House, Office of the Press Secretary, 28 February 2017, <https://www.whitehouse.gov/the-press-office/2017/02/28/remarks-president-trump-signing-waters-united-states-wotus-executive>. Accessed: 10 November 2017

Complying with EPA's Spill Prevention and Control (SPCC) requirements will add another layer of costs for farmers. Farmers will have to ensure that oils are stored properly, thus more paperwork will be involved per transaction and penalties applied if farmers fail to comply. The Spill Prevention rule is also connected with WOTUS if implemented.⁴⁷ The EPA rule would require farmers to employ certified professional engineers to design a Spill Prevention, Control and Countermeasure Plan – similarly as for large oil refineries that the initially SPCC was adapted for.⁴⁸ Farmers would also have to purchase additional equipment in order to comply with the rule. For example, they would have to acquire containment tanks on farm machinery and fuel storage units which overall would add to increased costs of agriculture products and food production.⁴⁹

The Food Safety Modernization Act (FSMA) is perhaps the most important regulation in the last 70 years, as it places new costs on the food supply chain – from farm to consumer, particularly considering that farmers already operate on very thin profit margins. The FSMA was enacted on January 4, 2011, with the goal to improve the safety of the food supply.⁵⁰ The act contains many rules and some of the FDA rules are almost 300 pages long. As such, it is up to food retail stores

⁴⁶ Remarks by President Trump at Signing of Waters of the United States (WOTUS) Executive Order, The White House, Office of the Press Secretary, 28 February 2017

⁴⁷ *Focus on the Farm Economy*, Hearing before the Subcommittee on General Farm Commodities and Risk Management and the Subcommittee on Commodity Exchanges, Energy and Credit and the Subcommittee on Biotechnology, Horticulture and Research and the Subcommittee on Nutrition and the Subcommittee on Conservation and Forestry and the Subcommittee on Livestock and Foreign Agriculture of the Committee on Agriculture House of Representatives, April-May, 2016, https://agriculture.house.gov/uploadedfiles/114-49_-_99853.pdf. Accessed: 18 November 2017.

⁴⁸ U.S. Senate Committee on Environment and Public Works, Inhofe and Pryor Introduce Bill to Exempt Farmers from SPCC Rule, 20 September 2012, <https://www.epw.senate.gov/public/index.cfm/press-releases-republican?ID=E42F4B17-9B51-B9F8-0CDB-618407EC3939>. Accessed: 21 November 2017

⁴⁹ U.S. Senate Committee on Environment and Public Works, Inhofe and Pryor Introduce Bill to Exempt Farmers from SPCC Rule, 20 September 2012, <https://www.epw.senate.gov/public/index.cfm/press-releases-republican?ID=E42F4B17-9B51-B9F8-0CDB-618407EC3939>. Accessed: 21 November 2017.

⁵⁰ U.S Food and Drug Administration, FDA Food Safety Modernization Act (FSMA), <https://www.fda.gov/Food/GuidanceRegulation/FSMA/>, Accessed: 10 November 2017

and wholesalers to interpret the rules correctly and implement them.⁵¹ Part of the FSMA rule includes chain restaurant menu labeling rules that in turn influence retailers “buy local” initiatives, as well as rules regarding food waste. Food retailers would have to move from local sourcing to standardized food sourcing just like restaurants.⁵² The FSMA provides some exemptions for the rules for smaller farms averaging less than \$ 500,000 per year, therefore perhaps more small farms will replace industrial farm production.

FSMA rules can be interpreted in different ways and farmers have to comply with rules to avoid penalties. For example, there is confusion with some terminology and definitions. That is, farmers markets are defined as “retail food establishments” and are not subjected to the Preventive Controls Rule, but the FDA has not clarified this issue and farmers markets could fall under the same regulations as industrial food facilities.⁵³ In addition, rules still do not clarify when a farm can be considered a facility which would require additional regulations – if farmers pack and hold produce at an alternate location they could be subjected to the same regulations as large-scale industrial facilities.⁵⁴ The FDA has concluded its own analysis that small farms (\$ 25,000-\$250,000 in annual sales) would be spending about 6% of their annual sales on testing and purchasing new equipment and other activities to comply with the rules. USDA (US Department of Agriculture) estimates that small farms could spend up to 60% of their profits to comply with the FSMA rules and some of the farmers eventually would go out of business.⁵⁵

Farmers are faced with increased costs of compliance with various government regulations. For example, the Food Safety Modernization Act (Modernization Act) passed by Congress in 2010, has implications for farm operations in the specialty crop sector. This act holds food producers

⁵¹ *Focus on the Farm Economy* (Senate Hearing, Page 312)

⁵² *Focus on the Farm Economy* (Senate Hearing, Page 312)

⁵³ Farmers Market Coalition, “*Food Safety Modernization Act*”, <https://farmersmarketcoalition.org/advocacy/fsma/>. Accessed 15 November 2017.

⁵⁴ Farmers Market Coalition, “*Food Safety Modernization Act*”, <https://farmersmarketcoalition.org/advocacy/fsma/>. Accessed 15 November 2017.

⁵⁵ Farmers Market Coalition, “*Food Safety Modernization Act*”, <https://farmersmarketcoalition.org/advocacy/fsma/>. Accessed 15 November 2017.

accountable at each step in the food production process, for controlling hazards which cause food born illnesses.⁵⁶

Conclusion

Rising food prices in the US can be attributed to many factors including supply, demand, government policy, financial markets and quest for profits by farmers due to rising costs of biofuels. As such, the US government should reduce the amount of regulations – allowing farmers to lower the cost of food production commodities. However, food commodity financial markets should be regulated more to reduce financial speculation. Agricultural commodity trading markets have been deregulated for many years and there have been several price spikes – notably in 2007-2008 and in 2010 -2011. Although the US had passed the Dodd-Frank Bill, putting stricter regulations on financial markets in 2011, it is now under risk of being rejected by the current US administration. For example, The European Union (EU) has implemented regulations in food commodity derivative trading, but the United States is on the path of deregulating the financial sector. The EU has passed the European Market Infrastructure Regulation (EMIR) that regulates and makes OTC derivative trading more transparent. Apparently, financial lobby groups have greater success than agricultural lobby groups in persuading governments regarding passing or repelling laws.

Governments should also change their priorities and policies to subsidize healthier foods such as fruits and vegetables. Currently, subsidies only go to farmers growing select crops such as wheat, corn, soybeans and rice. Mostly large industrial farms receive government subsidies, thus helping with price volatility. Subsidies can cost US taxpayers a lot of money and can push down the prices of certain foods and subsequently create incentive for more subsidies. The development of a small farm agriculture industry should be encouraged and supported by subsidies to avoid the situation where only 15% of farmers receive 85% of all farm subsidies.⁵⁷ Subsidies can cause unpredictable consequences to the overall farm industry; as overproduction

⁵⁶ Kelly M. Gay, “Hunger, Food Prices, and the Food Safety Modernization Act: Balancing Physical Safety and Food Security”, July 2013, Florida Law Review, Volume 65, Issue 4, <http://scholarship.law.ufl.edu/cgi/viewcontent.cgi?article=1154&context=flr>. Accessed: 31 October 2017.

⁵⁷ Chris Edwards, “Agricultural Subsidies”, Cato Institute, 7 October 2016, <https://www.downsizinggovernment.org/agriculture/subsidies>. Accessed: 15 November 2017.

of agricultural products, distorted use of soil, wrong choice of crops, and speculative land prices all contribute to volatile food prices. The US government should also change its ethanol mandate, requiring that a certain percentage of gasoline contain ethanol. There are other fuel alternatives being developed – such as electricity – that would possibly change the amount of ethanol required as demand for ethanol falls.