A Monsanto-Bayer Merger
Will Raise Agricultural Input Prices, Increase Farm Debt, Threaten the Solvency of Community Banks and Undermine the Success of America’s Small Businesses
History demonstrates that consolidation of the seed development and agrochemical markets is almost certain to raise input prices and can do so rather quickly.
The U.S. Department of Justice (DOJ) and the European Commission are currently reviewing the proposed merger of U.S.-based agricultural megacorporation Monsanto and German pharmaceutical giant Bayer. The resulting merged entity would integrate the global seed and global agrochemical markets and comprise the largest producer of agricultural inputs in the world.

The merger of Monsanto and Bayer is expected to increase what farmers must spend for agricultural inputs like seeds, herbicide and insecticide, either by raising the price of inputs or by foreclosing more affordable options. Given the range of challenges U.S. farmers and community banks now face, these cost increases could come at a particularly vulnerable time where their potential economic impacts cannot be easily contained.

U.S. farmers increasingly depend on land-backed production loans to provide the necessary operating capital to harvest future crops. Increasing the cost of agricultural inputs will require farmers to assume greater debt while diminishing net cash flows essential to making timely debt repayments.

Under normal circumstances, increased debt and tightened cash margins might not pose an unacceptable level of additional risk for most farmers. Because their operating loans typically are collateralized with crop land, which almost always appreciates in value, farmers are often able to survive on credit during market downturns.
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But several years of consistently depressed prices for critical cash crops have already increased the aggregate debt-to-income ratio of U.S. farmers, while undermining confidence in the long-term value of crop land, particularly questionable in bread basket states where farmers are most likely to be impacted by depressed cash crop prices. Should farmers in these states start to experience delinquencies, it could trigger a runaway devaluation of land in the Midwest and turn loans backed by inaccurately appraised land on their head, plunging previously secure farm operations into deep debt.

A dramatic decrease in the price of cropland in the Midwest would have a reverberating effect on local financial institutions. Land-backed agricultural production loans are overwhelmingly financed by community banks, which are also irreplaceable sources of small business investment capital. Since the 2008 financial crisis, however, community banks have lost nearly half their deposit share to larger banks and could be more vulnerable to land devaluations, especially if clusters of cropland in a banks service area are all devalued simultaneously.

While the precise pace and extent of price increases induced by the merger of Monsanto and Bayer is unknown, history demonstrates that consolidation of the seed development and agrochemical markets is almost certain to raise input prices and can do so rather quickly.

**BY THE NUMBERS**

- **$236B+**: Expected farm debt by the end of 2017
- **75%**: Percent of all U.S. farms that now operate on unsustainable margins
- **18%**: Estimated increase in cottonseed prices that would result from the proposed merger
- **180%**: Increase in the number of Iowa farm loans that are 30 days or more past due since 2011
- **16M**: Number of people in small towns and rural areas who rely on community banks for banking services
- **50%**: Decrease in U.S. farmers’ net income since 2013
- **27%**: Estimated debt-to-service ratio in 2017, the highest recorded in 15 years
Should U.S. farmers be subject to these price increases during a prolonged period of depressed commodity prices, making cropland vulnerable to swift and severe devaluations, rural agricultural economies could plunge into a sustained period of economic stagnation.

THE MERGER WILL INCREASE AGRICULTURAL INPUT PRICES

Over the last two decades, severe consolidation in the seed and agrochemical markets has coincided with dramatic increases in agricultural input costs. Between 1994 and 2009, the market share of the top four seed producers increased from 21% to 54% of all sales. As the market has consolidated, seed prices for farmers have more than doubled relative to the prices they are receiving for crops. For example, increased concentration in the market for corn seeds corresponds with a persistent increase in the cost of corn seed as a percent of total corn revenue.

As the markets for seeds, seed traits and agrochemicals further integrate, farmers will witness continued increases in the price of agricultural inputs, particularly for three of the largest cash crops—corn, soybeans and cotton.

Historically, farmers spent roughly 4% to 11% of their total crop earnings to purchase seeds for the following harvest. By 2009, corn and soybean farmers were spending closer to 18% of crop receipts on seeds. The situation is even worse for cotton, where seed prices have risen eightfold between 1997 and 2017.

One analysis determined that the Monsanto-Bayer merger would further increase the aggregate price of all seeds by roughly 5.5%. The price impacts vary widely, however, among specific crops. One model developed by Texas A&M’s Agricultural and Food Policy Center determined that the proposed merger would raise corn seed prices by 2.3%, soybean seed prices by 1.9% and cottonseed prices by roughly 18.2%.

For farmers currently planting Monsanto’s brands of cottonseed, the Texas A&M model predicts that prices would rise by 19.23% on average, while those currently planting Bayer’s brands of cottonseed would likely pay price increases of 17.41% on average. The model also predicts a 75% probability that the merged company’s cottonseeds would likely be priced almost 14% higher on average than pre-merger prices, and a 24% probability that they would be priced more than 20% higher on average.

The further consolidation also means farmers will likely pay higher prices for genetic seed traits. As much as 74% of the price of corn, soybean, cotton and sugar beet seeds is attributed to the added genetic traits that
permit the seeds to thrive in various environments even if the plants become saturated with specific herbicides or pesticides. A seed with a genetically-designed tolerance to Monsanto’s Roundup herbicide, for example, is designed to be cultivated using Monsanto’s agrochemicals, which may kill other plants.

By combining or “stacking” proprietary traits with those of a competitor, an agrochemical company can reduce its seed production costs and pocket a hefty cross-licensing fee. For farmers, however, this stacking strategy often forces them to pay higher prices for genetic seed traits that they do not want and cannot use. In fact, one study found that the price of stacked seeds increased substantially when they are stacked with three or more traits in the same seed. Stacking could also lock farmers into purchasing higher-priced herbicides and pesticides designed for use only with seeds containing the specific trait for tolerance, even if these chemical solutions are more aggressive than is required in their particular region.

Those in favor of further consolidation of the agricultural industry claim that the resulting innovations in genetically modified crops generate larger yields for farmers that more than make up for the higher seed prices. But, if that claim were true, the overall value of agricultural outputs should exceed the cost of inputs. Generally, however, agricultural input prices have advanced faster than the price of outputs, which ends up costing farmers while simultaneously compelling them to anticipate cost-savings that may never materialize.

Among analysts opposed to the merger, there is a consensus that a combined Monsanto-Bayer would likely further restrict available choices for farmers and force them to pay higher prices for the most widely available seeds and agrochemicals.

As the merger of Monsanto and Bayer further integrates the agricultural input market, the number of market competitors would also diminish, creating greater incentives for the remaining players to collude (either directly or tacitly) in an anti-competitive effort to set prices higher than they would have been otherwise.

While no one knows precisely how much the merger would increase agricultural input prices (or how quickly the increases would take effect), historically, significant market consolidation has induced price increases that are both relatively swift and comparatively severe. Multiple mergers in the global seed market between 1990 and 2010 concentrated control in the hands six major market players and coincided with a more than doubling of seed prices over the same twenty-year period.
THE MERGER COULD TRIGGER
A WIDESPREAD DEBT CRISIS AMONG
U.S. FARMERS

Usually, when farmers experience low commodity prices or struggle to
squeeze greater profits from their crops, they rely on credit—typically backed
by the value of cropland—to stay afloat until commodity prices rebound.

Sustained years of low commodity prices, however, have pushed U.S.
farmers to the brink of major financial distress. By increasing agricultural
input prices, the merger of Monsanto and Bayer could force farmers to
take on greater debt at a time for agricultural financing when relatively
moderate delinquencies could risk widespread debt defaults and trigger a
wave of farm bankruptcies not seen since the mid-1980s.

Many U.S. farmers are facing a fourth straight year of depressed commodity
prices and reduced income. Since crop prices peaked in 2011, the value of
U.S. cash crops—like corn, soybean and cotton—has steadily decreased.22
Although farmers saw a slight uptick in income this year, it was largely the
result of improved non-farm earnings.23 Even with the slight rebound, U.S.
farmers have seen their net income slashed nearly in half since 2013.24

Increased Reliance on Land-Backed Operating Loans

Farm debt is expected to surpass $236 billion by the end of 2017, an
historic high largely attributed to the increasing use of farm real estate as
collateral to secure non-real estate borrowing.25

Most farmers function on a seasonal boom-and-bust cycle and depend
entirely on access to affordable credit. Growing crops is highly capital
intensive, so farmers typically take out production loans in the spring in
order to have operating funds on hand for growing their next crop. In the fall, they sell the crop and hope to earn enough to repay the loans so they can begin the borrowing process again.26

The prolonged depression of commodity prices, however, has forced U.S. farmers to take out more and larger production loans to cover seasonal operating expenses.27 Between 2005 and 2009, the percent of agricultural loans to support current farm operating expenses grew from 45% to more than 60%, driven largely by increases in the costs of agricultural inputs.28

The size of operating loans to farms has increased as well. Over the past five years, for example, Iowa farmers have increased the size of their production loans by almost $8.5 billion, or nearly 40%.29 Moreover, the number of these loans that are 30 days or more past due has increased by 180% since 2011.30

Hidden Factors Indicating Farm Debt Has Reached a Critical Tipping Point

Typically, farmers do not assume unacceptable risk by incurring this operating debt because it is leveraged off the value of cropland, which tends to appreciate. But, while aggregate value of cropland in the US has continued to rise, evidence suggests that national land value statistics may
be obscuring the fact that cropland values have stopped appreciating in the key agricultural regions most likely to be impacted by a sharp increase in the price of agricultural inputs.31

Investment analyst John Abbink discovered that the continued appreciation of farmland in just four states—California, Wisconsin, Texas and Florida—were disguising a decline in land values in the core states of the American heartland, where farmers largely cultivate cash crops like corn and soybeans.32

County level data on Iowa farmland values compiled by Iowa State University’s Center for Agricultural and Rural Development, for example, demonstrated that, even while national farmland values appreciated between 2014 and 2015, some Iowa countries saw their farmland devalued by well over 8 percent.33

Abbink’s estimations have also been borne out by the latest USDA land value report, which indicate that the five corn belt states of Illinois, Indiana, Iowa, Missouri and Ohio collectively reported a per acre decline in cropland prices between 2016 and 2017.34

As farmers have increased their production loans, moreover, their debt-to-income ratios have reached the highest levels since a wave of farm
foreclosures hit the U.S. heartland in the 1980’s.\textsuperscript{35} Data from the U.S. Department of Agriculture (USDA) suggests that the ratio of total farm debt to total farm incomes is 6.15:1, slightly more than the 6:1 ratio that ushered in the 1980’s farm crisis.\textsuperscript{36}

In addition to farm debt-to-income ratios, the USDA calculates a farm debt-to-service ratio, which measures the amount of farm production required to service farm debt payments. From 2009 to 2016, this debt-to-service ratio indicated that farm debt consumed on average 23\% of U.S. farm production.\textsuperscript{37} The USDA, however, is forecasting the debt-to-service ratio to jump to 27\% in 2017, the highest recorded in 15 years.\textsuperscript{38} Equally concerning, the farm sector’s ability to meet interest payments out of current net farm income is at its lowest in 15 years, according to the USDA.

In October 2017, the \textit{Farm Journal} warned that the record debt-to-income ratio was a key indicator that farm debt is at a critical tipping point and further reductions in farm income could lead land values to collapse and trigger a widespread financial crisis among U.S. farmers.\textsuperscript{39}

\textbf{Impacts Spread Beyond Troubled Farms}

Low interest rates and high land values have combined to inflate the credit-worthiness of many U.S. farms and obscured the looming risk of widespread farm loan defaults.\textsuperscript{40} One official from the Federal Reserve Bank of Kansas City predicts that increases in farm debt could plunge the U.S. agricultural sector into truly distressing circumstances as early as 2020, if interest rates increase and land values collapse.\textsuperscript{41}

An increase in agricultural input expenses would introduce another element of risk to an already precarious situation. Should a number of farmers begin to default on their loans, the fallout might not be limited to the most vulnerable farming operations. While the most heavily leveraged farms are the most likely to default initially, \textit{should enough vulnerable farms go bankrupt, they could rapidly devalue the cropland} that is serving as collateral for the operating loans of most farms, which would jeopardize the solvency of farms that previously were considered financially sound.\textsuperscript{42}

Further, land devaluations that cause more U.S. farms than expected to face bankruptcy could quickly spill into the non-farming sector and put local economies at risk.\textsuperscript{43} The growing linkages between farm production and non-farm income in the agricultural sector, for example, suggests that farm loan delinquencies could contribute to the overall unemployment rate, according to one economist at the USDA’s Economic Research Service.\textsuperscript{44}
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A FARM DEBT CRISIS WOULD THREATEN THE SOLVENCY OF COMMUNITY BANKS

The Monsanto-Bayer merger likely will raise the price of agricultural inputs and increase the risk that U.S. farms with the lowest operating margins are forced into delinquency, or even become insolvent.\textsuperscript{45} Nearly 75% of all U.S. farms now operate on margins of less than 10%, levels which the U.S. Department of Agriculture (USDA) regards as unsustainable.\textsuperscript{46} But, small farms are particularly vulnerable to spikes in operating costs, since they lack the purchasing power and economies of scale of large farming operations.\textsuperscript{47}

Small farms also face challenges accessing credit to cover increased operating expenses. To reduce their risk exposure after the 2008 financial crisis, larger lending institutions demanded more collateral.\textsuperscript{48} The requirements not only led more farmers to leverage non-real estate loans off the value of their cropland, it also induced more farmers to obtain financing from community banks with looser lending requirements.

Consolidation in the U.S. banking industry has reduced the number of smaller community banks while also concentrating their loan portfolio into investment opportunities where community banks remain dominant, like agricultural and small business financing.\textsuperscript{49} By mid-2014, in fact, more than three out of every four agricultural loans and more than half of all small business loans issued in the U.S. were originated by a community bank.\textsuperscript{50}

Unfortunately, community bank assets and deposits have not kept pace with their expanding loan portfolios. While community banks account for the majority of small business and agricultural loans, they hold less than one-quarter of all U.S. bank-owned assets.\textsuperscript{51} In the past 14 years, moreover, local banks have lost nearly half of their deposits to larger banks.\textsuperscript{52}

The declining deposit market share of local banks could be a key indicator that their ability to survive a major financial crisis is deteriorating.\textsuperscript{53} Consequently, some community banks may be assuming greater risk even while making agricultural investments under terms that were previously considered sufficiently risk-averse. Community banks in aggregate may have weaker asset and deposit positions that they had during the farm foreclosure crisis of the mid-1980s. But, their current lending positions are similar enough to the lending positions of community banks during the 1980s crisis to be disconcerting. Then, as now, many banks relied too heavily on land values as collateral and mistakenly assumed that real estate values could not quickly deteriorate.\textsuperscript{54} Then, as now, banks relied on cash flow from future crop sales to finance the production loans that provide operating capital to cultivate subsequent harvests.\textsuperscript{55}
When farmers prior to the 1980’s farm crisis, as farmers after the Monsanto-Bayer merger, experience rising costs for agricultural inputs, banks will face difficulties obtaining debt payments from borrowers whose cash-flow has become subject to sudden and severe price fluctuations.56

Additionally, because community banks generally have lending portfolios that are less geographically diverse, they may be particularly vulnerable to the local economic impacts from multiple farm failures that hit a particular area. One study examining the failure of community banks following the 2007 financial crisis, found that they are especially vulnerable to unemployment in the local economy, which has a substantial negative effect on the banks’ risk-adjusted performance.57

As more farm loans become delinquent and community banks face mounting losses, moreover, agricultural loans become riskier investments and community banks may be tempted to further restrict farm lending.58 If a growing number of farms experience financial distress, community banks could react by significantly contracting their agricultural financing just as at-risk farmers desperately seek credit to expand production and increase their income so they can make timely debt repayments. A game of “hot potato” may ensue, whereby each actor tries to avoid risk by forcing the other assume it. The ultimate result may be to compound rather than alleviate the financial pressures confronting the entire sector.59

**Devastating Impacts to Small Businesses and Rural Economies**

Community banks are the financial pillars of small town America and are a significant source of investment capital for America’s small businesses. They are critical to small business growth and, consequently, to rural employment.60 The risk that community banks could fail as a result of abrupt and permanent increases in agricultural input prices should bring pause to regulators considering the microeconomic consequences of the proposed merger.

Community banks finance roughly 43% of all U.S. farms and U.S. farmland. Or, to put it another way, two out of every five dollars of credit used to produce America’s agricultural output depend on the financial health of community banks.61 When large banks and other traditional lenders issue farm loans, they incur higher monitoring costs per dollar of earned interest. Consequently, large banks have retreated almost entirely from the agricultural lending market and there is little evidence that they would provide agricultural financing in the absence of community banks.62

Community banks also comprise more than 70% of banking offices in rural areas and are three times more likely than non-community banks to locate their headquarters in non-metro areas.63 For an estimated 16.3 million people in small towns and rural areas, community banks provide
access to banking services these citizens would simply not have if their community bank closed.64,65

Community banks issue nearly half of all small business loans administered by U.S. banks.66 Since small businesses are estimated to generate almost half of U.S. GDP, it is not an exaggeration to claim that community banks are essential to at least a quarter of the entire U.S. economy.67

In late October, Martin Gruenberg, Chairman of the Federal Deposit Insurance Corporation (FDIC) addressed an audience of bankers and bank regulators to reaffirm how important community banks are to America’s small businesses. According to Gruenberg, amid all of the institutional and technological changes the finance sector has experienced in the past 30 years, community banks remained, “the single most important source of credit for small businesses…and no single competitor has emerged that can replicate or replace the mix of services that community banks provide.”68

If Gruenberg is correct, and community banks are irreplaceable sources of small business financing, a farm debt crisis that ravaged community banks would significantly restrain small business growth. Over 90% of identified access to capital as their top concern and the majority continue to struggle
CONCLUSION

Given the uniquely vulnerable position of U.S. cash crop farmers and the local and regional lenders that are so heavily invested in them, there is a very real chance that increased agricultural input prices induced by the merger of Monsanto and Bayer could trigger a new wave of farm failures, render many of the community banks that finance these farms insolvent and impact the financial stability of local economies.

The loss of community banks, moreover, could make it far more difficult for small businesses to overcome the short-term cash flow issues that determine the success or failure of over 80% of U.S. businesses. Ultimately, if the merger of Monsanto and Bayer were to substantially inflate the cost of agricultural inputs before the farmers and financial institutions of America’s heartland are on more secure footing, the Main Street engines of U.S. economic growth could become instead the impetus for widespread economic stagnation in America’s rural communities.
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ENDNOTES


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