Federal crop insurance and agricultural credit use

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Abstract

Access to credit is critical for the survival of U.S. farm businesses. Federal crop insurance is often reported to increase access to loans by U.S. farms; however, establishing a robust, causal relationship between crop insurance and lending is challenging. In this study we consider the causal impact of federal crop insurance on credit use by U.S. farms. We also examine whether this relationship has implications for the overall financial health of the U.S. farm sector or for bank regulation. We find higher operating loan use with a variety of measures in response to crop insurance participation and insurance premiums paid but no robust relationship with long-term credit or leverage. When we stratify our sample and analysis by farm size and operator age, we find evidence that these sub-groups are all able to increase operating credit use through crop insurance. However, farms that are more indebted on average do not increase operating credit use. We find no evidence that crop insurance lowers interest rates, or decreases the cost of credit. Overall, crop insurance participation facilitates access to operating credit, with no evidence of augmented financial regulatory risks related to crop insurance and credit use.

1 Introduction

Over the past two decades, crop insurance has become the cornerstone of the federal farm safety net and is central in farm policy debates (Glauber, 2013). Crop insurance participation influences nearly all aspects of farm management, including financial decisions, as it affects total farm income as well as farm income variability. Empirical studies have found, at a minimum, a strong correlation between U.S. crop insurance enrollment and an increase in farm short term debt use (Ifft et al., 2015), which provides evidence that crop insurance may increase use of and access to credit. Uzea et al. (2014) find a similar relationship between risk-reducing government support policies and farm financial risk in Canada, but this finding is not consistent across farm types. de Mey et al. (2014) similarly find evidence of risk balancing in the European Union, but not consistently across all farms types and countries.

Several aspects of the relationship between the federal crop insurance program and debt use are still not well understood. No empirical research has been undertaken on whether loan characteristics are influenced by crop insurance use, or whether crop insurance lowers the cost of using credit. It is unknown if the relationship is driven by crop insurance participation or coverage levels. Further, if this relationship does not affect all farms equally, it is important

to consider if farm financial status plays a role, as there are potentially serious implications for bank regulation if higher risk farms are increasing leverage in response to crop insurance.

There are several mechanisms through which credit and crop insurance may be related which have been discussed extensively elsewhere. Theoretical models of risk balancing predict that a decrease in production risk might be accompanied by an increase in financial risk (Gabriel and Baker, 1980). Featherstone et al. (1988) show that policies that decrease production risk could increase financial risk to the point of causing equity losses. We may be observing risk-balancing behavior if farms keep aggregate risk levels constant by increasing leverage in response to the revenue guarantee provided by crop insurance.

Crop insurance may also serve to help some farms overcome credit constraints (Liang, 2014). On the other hand, the relationship may be driven by bankers, who require crop insurance as collateral for operating loans, instead of farmers. Further, lenders' perceptions of farmers' credit-worthiness may affect crop insurance participation decisions. To some degree, all these mechanisms may be at play. Regardless of the underlying economic drivers of this relationship, additional lending increases financial risk in the farm sector as a whole, and hence is of concern to policymakers and bank regulators.

If crop insurance leads to higher levels of lending for already-highly indebted farms, the relationship between crop insurance and lending may be a concern for financial regulation. Likewise, if small and midsize or beginning farmers are found to *not* have increased access to credit through crop insurance participation, there may be implications for federal programs and policies that support these farms. A better understanding of how crop insurance influences loan terms and loan access, in addition to quantity of credit used, across different farm and operator characteristics could help inform regulatory and policymaker concerns as well as informing the underlying mechanism driving the observed relationship between crop insurance and operating loans. To the best of our knowledge, no previous research has considered farm-level evidence for regulatory risks related to this relationship.

This study makes three major contributions. First, we apply recent advances to establish a causal relationship between crop insurance use and operating loan volume. Second, we

evaluate the relationship between crop insurance and operating loan terms, such as interest rate and lender choice, among others. Third, we conduct an exhaustive analysis of the relationship between crop insurance and operating loan use by different types of farms, including operator characteristics, farm size, and farm financial status. Our study is therefore able to comprehensively characterize how farm operators have changed their financial management decisions in response to increasing federal crop insurance coverage. We are also able to identify whether these relationships are uniform across U.S. crop farms and explore evidence of any financial risks to the farm sector related to higher levels of credit use. Farm and loan-level data from the Agricultural Resource Management Survey (ARMS) are the basis for our analysis.

2 Data and methods

Empirical research on the impacts of increasing crop insurance, especially studies focused on financial outcomes, has struggled with how to plausibly identify causal outcomes. These studies have not been able to claim causality due to the simultaneity between crop insurance take-up and farm-level production decisions. Many of the instrumental variables used in previous research struggle with credibility related to the exclusion restriction. In other words, it is difficult to find a measure that is truly unrelated to any particular farm-level production decision but still related to crop insurance participation. Further, most farm-level data sets are cross-sectional, which limits researchers' ability to control for unobserved farm-level characteristics that drive both financial and production decisions. The Agricultural Resource Management Survey (ARMS), the most detailed nation-wide farm level survey that is commonly used in agricultural economics research, is cross-sectional. Our analysis will begin with a cross-sectional analysis that takes advantage of the full richness of the ARMS data. We will then impose increasingly restrictive limits on our sample of farms that allow us to more robustly identify the relationship between crop insurance and credit decisions, taking advantage of advances for ARMS data use developed by Weber et al. (2016), including linking repeated ARMS observations over time and a more plausible instrumental

variable for crop insurance use.

As a lack of comprehensive farm-level panel data is a major barrier to crop insurance research, for part of our analysis we create and use an unbalanced panel of ARMS data. It is possible to link farms over time thanks to an oversampling of larger farms, which increases the likelihood of a farm appearing in the ARMS data multiple times. The procedure to link ARMS observations across time was first described by Weber et al. (2016), who also highlight the differences between "repeat" and "non-repeat" farms. Farms sampled more than once are larger and have higher values of production than the typical respondent farm. Despite these differences, the sample of repeat farms from ARMS may be more appropriate for studying the impact of crop insurance than a sample representative of the USDA definition of a farm, which includes very small farm enterprises that are extremely unlikely to be participants in any federal crop insurance programs. Most smaller farm operations in the U.S. are not operated as businesses: the median U.S. farm typically has negative returns to farming activities (Economic Research Service, 2016). The repeat farms are much more likely, therefore, to be representative of operations that use crop insurance. Further, we will take advantage of the rigorous instrumental variables approach introduced in Weber et al. (2016), with both the ARMS cross section and the ARMS unbalanced panel.

2.1 Data

We begin with ARMS data from 2000 to 2014, which had a total of 286,370 observations (table A1). We keep only the operations whose value of production from crops that have widespread crop insurance availability is at least $10,000.[1] This restriction decreases the number of respondent farms in our analysis to 123,122. We refer to this as the 'restricted' ARMS cross section. Summary statistics for the entire ARMS cross section and the restricted cross section are provided in table A1.

The financial situations of the farm operations in our samples are complex, and the

[1]These crops include: barley, canola, corn (for grain or silage), cotton, oats, sorghum, soybeans, and wheat. According to the RMA, in 2014 these crops together made up about 80% of all federal crop insurance program liabilities.

decisions they make with regards to credit access and debt are enumerated in a many ways in the ARMS survey instrument. As such, we use several farm-level measures of debt use, based on survey questions that measure credit use at farm-level. These include seasonal production loans taken out and repaid in a given year [repaid]; end-of-year short term debt held [dshort]; and the total amount of short term debt currently held as well as all loans taken out and repaid within the year [dshort + repaid = totalshort]. Other farm-level measures include the ratio of total short term debt to total variable expenses plus rental expenses [financed], which captures the share of farm expenses that are financed by debt, and the debt-to-asset ratio [leverage]. These measures allow us to measure the relative importance of operating credit in addition to absolute measures. Although we focus on operating or short-term credit based on the results of previous research, for robustness we also use an aggregate measure of non-real estate long-term debt [dnreale] and an aggregate measure of real estate long-term debt [dreale].

We compare various characteristics of farms with and without crop insurance use reported in our restricted cross section in table 1. We find that farms that participate in crop insurance are systematically different than those that do not, by almost every variable considered. There are only 2 variables for which participants and non-participants are not statistically different: rice production and ratio of operating loan volume to variable expenses plus rental expenses ([financed]). Farms that use crop insurance have higher levels of all types of debt; operate more acres; rent a higher share of acres operated; have operators with higher education levels; have higher sales volume; are more likely to produce field crops; are less likely to produce specialty crops and livestock; and are more likely to have farming as a the primary occupation of the principal operator.

2.1.1 ARMS panel

The ARMS panel is a sub-sample of the ARMS cross section and an artifact of the oversampling of larger farms, as discussed above. The differences between these repeat farms and those that appear only once are covered in detail by Weber et al. (2016). There are

92,272 farm-year observations in the full panel for the years we consider; most of these are farms that appear only twice, although there are farms that appear anywhere from three to eight times. Similar to Weber et al. (2016), for our panel analysis we further restrict the sample of repeat farms to those that have at least one observed year of crop insurance participation and meet the same value of production requirement as the restricted cross section. Both restrictions provide us with unbalanced panel of farms that are typical of crop insurance users, who differ markedly from the nationally-representative farm using the USDA definition or even from the typical non-participant or non-repeat ARMS sampled farm. These sample restrictions, while necessarily limiting, make it is less likely that our results are driven by comparing those operations for which crop insurance is available to those for which it is not. Summary statistics for these farms, presented in table A2, confirm that these are large operations with high levels of production and large loans: the average farm in our sample operates more than 2,500 acres, and the average annual operating loan volume is nearly $500,000. For simplicity, we will refer to our restricted data set of repeated ARMS observations as the "restricted panel". In the restricted panel, 65% of operations had positive expenditure on insurance premiums, with an average premium payment of $7.35 per acre. Further, the operations in the ARMS panel are not marginal participants in crop insurance programs: the average number of acres enrolled, per operation and across all years, is about 1,390.

We also compare farms from the restricted panel with and without any reported crop insurance (neither acres nor expenses) in table 2. We first note that a similar share of farms in the panel had some crop insurance as in the cross section. We also note that farms with and without crop insurance are statistically different for nearly every measure considered in our analysis. Farms with crop insurance have higher debt levels for almost every measure, are slightly younger, operate more acres, and have higher levels of corn, soybean and wheat production.

To confirm that the differences between farms with and without crop insurance participation are systematic and persist over time, we do the same comparison between participants

and non-participants in 2004 and then again in 2013. These are reported in tables A3 and A4 for the restricted cross section and in tables A5 and A6 for the restricted panel. The differences between crop insurance participants and non-participants that we observe in 2004 still remain almost a decade later in 2013: there is no evidence that the two groups are becoming more similar over time. In the panel, we do see a larger operated acre differential in 2013 relative to 2004, but this is likely due to year-to-year idiosyncratic changes in the ARMS sample: for example, more hog farms were sampled in 2004. These farm-specific factors are controlled for in our panel analysis, and, to some degree, by the relevance and spread of the control variables used in our cross section. For the cross section, we largely see similar differences in farm characteristics by crop insurance status over time, with some exceptions: for example, the differential between long-term real estate and non-real estate debt did increase over time. However, there is no evidence that the two groups were more similar in 2003 and then diverged, or that they have grown more similar over time.

2.1.2 Loan-level data

Each year, the ARMS survey asks farmers about the details of at least four loans, including information on the terms of the loan, its age, interest rate, and the lender.[2] For the purposes of our study, we restrict our analysis to the loans that were designated operating loans, either through a question that asked the "type" of the loan, or, in years when that was unavailable, using questions that asked for the "purpose" of the loan. With this information, we are able to construct a dataset of observations at the farm year-loan level, rather than at the farm level alone. We therefore include as outcomes various measures of loan quality or the 'cost of credit', including interest rates and loan terms, to better understand how crop insurance enrollment changed both the credit-worthiness of farmers and the type and costs of credit available to them. We also create an indicator for whether farms had an operating loan from one of 3 major farm lenders: the Farm Service Agency (FSA), Farm Credit System lenders (FCS), and commercial banks. Summary statistics for operating loans from all farms in the

[2]In recent years this question was included for all farms in ARMS Phase III, while before 2013 it was only included for a subset of sampled farms that completed the Cost and Returns Report (CRR). This limitation precludes us from constructing a panel using data from the loan table.

restricted cross section that provided loan-level data are reported in table 3.

2.2 Model

2.2.1 Cross section models

Our farm-level cross section model describes the relationship between crop insurance participation and the measures of debt use and acquisition (y_{it}) described above. We use two measures of crop insurance, coverage and participation, as our key variable of interest, P_{it}. The first is the natural log of the insurance premiums paid per acre. This is a measure of crop insurance expenditure that reflects crop insurance coverage levels, as well as other factors such as the value of the crop being insured. A higher level of crop insurance premiums will generally correspond to higher coverage levels, or a larger share of production that is protected from yield or revenue loss. This measure is available from 2000-2014, but was not on all versions of ARMS surveys for all years, yielding a total of 88,867 observations in the restricted ARMS cross section and 30,957 in the restricted ARMS panel.

The second measure is a dummy variable that equals one if the operation had acres enrolled in federal crop insurance for a given year, and so only captures the decision to participate in crop insurance at any level. This measure allows to compare participation versus non-participation in crop insurance. This measure also has the advantage of being asked on more versions of the ARMS survey over time, allowing for a larger sample: 91,171 observations in our restricted cross section.[3]

Our base model for farm i in year t, therefore, takes the following functional form:

$$y_{it} = \beta_0 + \beta_1 P_{it} + \boldsymbol{\beta F_{it}} + \tau_t + \gamma_s + \epsilon_{it} \tag{1}$$

Above, $\boldsymbol{F_{it}}$ is a vector of farm and operator characteristics, including operator's education, age, total off-farm income, occupation, retirement status, gender, and race. Additional farm characteristics included in $\boldsymbol{F_{it}}$ are: acres operated, farm sales class, share of acres owned,

[3]Due to changes in the ARMS survey instrument, the "acres enrolled" dummy is only available for 2002-2013, excluding 2012.

share of cropland operated, and farm specialization. Farm specialization covers multiple crop and livestock specializations based on USDA definitions, as well as categories for 'other crops' and 'other livestock' The model also includes year fixed effects (τ_t) and state fixed effects (γ_s).

Similarly, the loan-level model captures the relationship between the same two measures of crop insurance activity and characteristics of individual operating loans in each year. These characteristics include: the loan's interest rate, its term, the lender (specifically, if the loan was from Farm Credit Services (FCS), the Farm Service Agency (FSA), or a commercial bank), and whether it was fixed or variable rate. We limit our analysis to loans that are designated as operating or production loans to avoid picking up the inherent differences between loans taken out for farm operations and loans taken out for real estate or other long-term investments. With that in mind, the final specification of the loan-level model is:

$$y_{ijt} = \alpha_0 + \alpha_1 P_{it} + \hat{\boldsymbol{\alpha}} \boldsymbol{F_{it}} + \tilde{\boldsymbol{\alpha}} \boldsymbol{L_{ijt}} + \tau_t + \gamma_s + \epsilon_{ijt} \tag{2}$$

In this model, y_{ijt} are the characteristics of loan j taken out by farm i in year t; P_{it} and $\boldsymbol{F_{it}}$ are defined as above. The loan characteristics vector, $\boldsymbol{L_{it}}$, includes controls for the lender (only for the non-lender-related outcomes) and the age of the loan.

We are unable to estimate the precise impacts of coverage levels on credit use decisions, as ARMS did not collect this data in most years. While premium paid per acre captures coverage levels, it also reflects production history, insurance product and features selected, projected prices, and other factors. In 2014, ARMS included a question on coverage levels, yield or revenue policy use, and unit structure for several major commodities. We estimate equation 1 with coverage rate as our key independent variable for 2014 using this unique data. We are able to add share of acres under a revenue policy and commodity insured as additional control variables, as well as another 2014-specific variable: self-reported risk tolerance. Risk preferences are unobserved in all other years and may have a strong relationship with both credit and insurance decisions. We estimate this model with our key dependent variables: totalshort, financed, dshort, repaid, leverage, and operating loan interest rate.

Given the unique data available in 2014, we are able to include 3 additional dependent variables that explicitly measure credit constraints. The first variable, denied, measures whether the respondent reported being denied credit or not receiving all of the credit requested. The second variable, deterfromcredit, measures if the respondent did not apply for credit due to fear or rejection, high cost of application, or risk associated with debt. The third variable, creditprob, is a indicator variable that is 1 if either denied or deterfromcredit have a value of 1. In addition to providing a robustness check for the equivalence of results with an actual measure of coverage levels relative to premium paid, this specification gives us insight into the relationship between crop insurance and credit constraints.

2.2.2 Panel models

The models described above are run using all of the ARMS observations in the restricted cross section. In order to robustly examine the causal relationship between FCI and debt use, we also make use of the ARMS panel. While this approach is somewhat restrictive, it allows for estimation on repeated ARMS observations with farm fixed effects in order to to address some identification issues present in previous studies and control for farm-specific characteristics that are difficult or even impossible to observe. For example, farms that use crop insurance may have better financial management skills and also be more likely to use credit. With this smaller, panel data set our model is as follows:

$$y_{it} = \beta_0 + \beta_1 P_{it} + \boldsymbol{\beta G_{it}} + \tau_t + \gamma_i + \epsilon_{it} \tag{3}$$

where γ_i are farm-fixed effects and $\boldsymbol{\beta G_{it}}$ are time variant farm characteristics, including the number of acres operated, the operator's age, operator age squared, and the share of soybean, corn and wheat acres out of the total acres operated. We do not estimate this model at the loan level due the limited number of repeat observations with operating loan data from the loan table.

2.2.3 Instrumental variable

Even with farm-level fixed effects, we may not be able to fully address the simultaneity between the operator's decision to enroll acres in crop insurance (i.e., P_{it}) and the operator's financial decisions, such as whether or not to take on debt. Not only are the two decisions made based on the same factors, we cannot prove that these determinants are time invariant, even at the farm level. For example, farms' preferences may evolve over time, or there may be regional, time variant factors that influence credit or insurance markets. Such issues likely affect specific coverage level decisions, as opposed to affecting the decision whether or not to participate in crop insurance.

To overcome these potential issues for our measure of crop insurance coverage, we apply the instrumental variable approach developed by Weber et al. (2016), which uses crop insurance program coverage limits that affect some farmers more than others in a way that is plausibly exogenous to current financial decision-making and farm-level financial outcomes. The instrument exploits the maximum coverage levels that are codified in the federal crop insurance program. Because of the maximums, those farmers whose initial premiums are close to the maximum are constrained in their ability to increase coverage over time. There is, therefore, a negative, non-linear relationship between the ratio of the initial premium and the maximum premium and the ratio of the later premiums (i.e. in period 2 and after) and the initial premium. Weber et al. (2016) define this relationship in the following way:

$$ln(PA_{i,t=2}) - ln(PA_{i,t=1}) = \theta ln(\frac{PA_{i,t=1}}{MaxPA_{i,t=1}}) \tag{4}$$

Thus, the log of the ratio of the initial premium per acre ($PA_{i,t=1}$) and the maximum possible premium per acre ($MaxPA_{i,t=1}$) serves as an instrument, denoted Z_{it} for the difference in premiums per acre between any two years.

Using this instrument, the farm model takes the following form:

$$y_{it} = \beta_0 + \beta_1 \underbrace{P_{it}}_{=Z_{it}} + \boldsymbol{\beta F_{it}} + \tau_t + \gamma_i \tag{5}$$

where $= Z_{it} = ln(\frac{PA_{i,t=1}}{MaxPA_{i,t=1}})$. In these models, P_{it} is defined only as the log of the insurance premium paid per acre.

Standard econometric tests from the first stage confirm that this is a strong instrument, with a F-stat well above the accepted level of 10. We apply this approach to all of our specifications using crop insurance premium paid, starting with our cross section models.

2.3 Stratified sample analysis

In order to examine how the relationship between crop insurance and credit use differs across different types of farms, we use a selection of the above models on sub-samples of the restricted cross section and restricted panel. These sub-samples are chosen so that we can better understand what types of farms may be accessing more credit through crop insurance, or whether different kinds of farms are systematically affected differently by crop insurance. To examine the effects of size, we split the sample at the median value of gross cash farm income as well as acres operated. Gross cash farm income represents farm sales or revenues and is a more accurate measure of size, as a farm could have a large quantity of unproductive land that generates relatively low sales. However, gross cash farm income might reflect differences in commodity prices, so acres operated is a useful comparison. *A priori* it is uncertain which group would benefit more. While larger farms might have more risk management options, banks might consider larger farms to be less risky due to their higher collateral. If both smaller and larger farms are able to capitalize on the benefits of crop insurance in order to secure more loans, this would suggest that crop insurance is influencing access to credit for a wide variety of farms.

Another stratification we make is on operator age, defining the "young" sample as farms with an operator younger than 45, and the "old" sample as operators 45 and older. Older operators may have stronger network connections with insurance agents or bankers, or may be more familiar with the crop insurance programs. On the other hand, younger operators may be more financially literate, having completed their education more recently. Further, studies have shown that younger operators are more likely to be credit constrained, and hence

crop insurance could play an especially important role in their access to credit (Briggeman et al., 2009). To examine whether there is evidence that farmers who operate a higher share of rented acres access more credit or higher levels of financing, potentially related to issues of collateral, we also split the sample at the median of share of acres rented.

Our final stratification compares farms by financial status: those that are more indebted to those that have less financial risk, using two measures of indebtedness. We first use standard measure of solvency or of leverage: the ratio of total debt to total assets. We also use 'debt capacity utilization', which estimates the ability of the farm to make debt payments from current income. A lower ratio would signify low levels of debt relative to income, and is especially useful given that the current farm sector downturn has been characterized by low liquidity or working capital as opposed solvency issues (Zhang, 2017). The sample is split at the median of these ratios. The nature of this relationship is uncertain. Less indebted farms may be more attractive to banks, but high debt use could also suggest financial sophistication of farms that are using debt to grow their operation. However, more generally, if crop insurance is more important for highly indebted farms to access credit, this suggests a potential financial risk to the farm sector that would merit further exploration.

3 Results

In the tables below, we report results for our variables of interest across several models. Coefficients (β_1) estimated from two cross-sectional farm-level models specified in equation 1 are shown in table 4. Coefficients β_1 from the two farm-level panel models specified in equation 3 are reported in table 5. Finally, estimated coefficients α_1 from the two loan-specific models (equation 2) are reported in table 7. Full, detailed results for each specification with coefficients reported for all control variables and farm characteristics are reported in Appendix B tables B1 to B7. Rather than discussing the results model by model, we examine the results for each outcome across all the models. The joint results provide conclusive evidence about the importance of crop insurance to different measures of credit access and credit characteristics, as well as the robustness of these relationships.

3.1 Quantity of short term debt

Our most consistent finding is that there is a strong relationship between the quantity of short term debt [totalshort or dshort or repaid] and both crop insurance participation and coverage. The results from table 4 suggest an increase in the total quantity of short term debt; the magnitude of the increase ranges from about 10 to 20% of the average operation's quantity of short term debt. For our panel analysis with crop insurance participation reported in table 5, we find that participation leads to an additional $92,000 in annual operating loan use [totalshort]. A one percent increase in premium paid per acre leads to a $800 increase in operating loan use, or alternatively, a doubling of premium paid per acre leads to $80,000 in additional operating credit. These overall results are consistent with previous empirical work on the relationship between crop insurance and credit access and with theoretical models of risk balancing.

This finding is consistent across the various models, with the exception of the premium paid cross-section model. However, given the statistically significant coefficients on totalshort and dshort in our most restrictive panel model with farm fixed effects and the instrumental variable, taken together, our results point towards the strength of this relationship. We also note that our results have higher levels of statistical significance as well as a larger magnitude when using the 'acres dummy,' or a measure of crop insurance participation, as opposed to premium expenditure. Generally, participation has a stronger, more consistent relationship with credit use than our measure of coverage. There are three factors likely driving this result. First, bankers might not differentiate between relatively minor differences in crop insurance coverage levels: the difference between, for example 70% coverage versus 75% is unlikely to be salient to them. Second, there is likely more variation in the participation variable because it has a larger number of observations during the years when it was collected: it might simply be easier to measure this effect. Third, the underlying data may play a role: premium paid per acre reflects factors other than coverage levels. Even with these qualifications, in many specifications we do see a statistically significant relationship between the premium paid per acre variable and different measures credit use.

3.2 Importance of short term debt

While less consistent across models than the absolute measures of debt use described above, farms may have been financing a higher share of variable expenses following insurance take-up or increased coverage. Using the cross section, we find that for a 100% increase in coverage, farm operations increase the share of expenses financed by short-term debt by about 1.4%. When using the ARMS panel models, the coverage effect goes away, but the impact of participation remains. Farms with acres enrolled in crop insurance finance 4% more of their variable expenses using short-term debt than those without acres enrolled. Given that the average farm in the restricted ARMS panel has nearly $1,000,000 in variable expenses each year, these increases are likely to play a substantial role in financial decisions. Given the restrictiveness of the panel coverage model, this set of findings indicate that crop insurance affects financing decisions in both absolute and relative terms.

3.3 Long term debt and leverage

The measures of debt use previously discussed are short-term; their intended use is for operating expenses of farm operations, and they are taken out with the intention of being repaid relatively quickly, generally within a year or less. The ARMS survey also asks about farms' long-term debt use. In our cross sectional specifications, long-term debt (dnreale and dreale) appears to be related crop insurance. However, these relationships are no longer statistically significant in the panel model after controlling for time-invariant farm characteristics with fixed effects. This is consistent with previous findings and indicates that although there is a correlation between crop insurance use and long-term debt, there is no causal relationship.

Theories of farm risk balancing predict that operators will increase financial risk enough to see an impact on leverage; however, we find no relationship between crop insurance and leverage, or the debt to asset ratio. This finding is also consistent with the stated purpose of crop insurance programs– to protect against annual production and market risk– and also suggests crop insurance does not pose a regulatory risk in terms of farmland or machinery investment or overall risk of equity loss in the farm sector. Further, any 'risk

balancing' response driving this effect is temporary at most: to the degree that short term debt increases, it is repaid quickly enough so as to not affect farm solvency. This suggests that any risk balancing behavior on the part of farms is limited by lenders or that lenders requiring crop insurance as collateral for operating loans is a primary driver of our main results.

3.4 2014 coverage level results

The 2014 ARMS-equivalent survey, TOTAL (Tenure, Ownership, and Transition of Agricultural Land) asks operators to report their actual average coverage level under revenue and yield policies for the primary insurable crops. As a robustness check to our main results, which use the reported premium paid per acre, we run the model described by equation 1 using the acre-weighted average coverage level of the six crops included in the survey. This check accounts for the imperfect correspondence between coverage level and premium paid. The expanded survey in 2014 also provides some additional controls: attitude towards risk, the share of acres covered under a revenue policy, and a fixed effect for the insured commodity. The survey also asks operators about whether they encountered difficulties in accessing credit, or whether they were deterred from seeking credit due to either external or internal forces. These responses are included as outcomes for this model. The results, shown in table 6, are consistent with the main results: the amount of short term debt used by farms increases with coverage level in both absolute and relative terms.

Although this is a single year cross section, we are able to control for a broad set of factors likely to impact financial decisions and crop insurance participation, including the operator's attitude toward risk, an often omitted or unobserved driver of both. Coefficients on this self-reported measure are as we would expect and significant: farmers who are more risk-seeking take out more loans, finance a greater share of variable expenses with loans, are more likely to have their credit applications denied, and are less likely to be deterred from credit. Conditional on participating in crop insurance, coverage levels have no statistically significant impact on any of our self-reported measures of credit constraints. This finding

suggests that the primary driver of the relationship between crop insurance and short term credit access is likely not alleviation of credit constraints. Further, coverage levels have no statistically significant impact on operating loan interest rates in 2014, likely reflecting the overall low interest rate environment in 2014 as well as the higher levels of operating credit use observed. All else held equal, interest rates should not be go down when the quantity of credit increases, as marginal increases in credit increase financial risk.

3.5 Loan level results

The results of our loan-level analysis are reported in table 7, as well as in detail in Appendix B, tables B5 and B6. We generally find no or a very weak relationship between loan characteristics and crop insurance. While we do not implement our panel analysis on these loan outcomes due to the low number of recorded operating loans from farms in the ARMS panel, we are able to control for detailed farm-level characteristics and use our IV for the crop insurance premium paid variable on the loan-level cross-section. These results provide important insights into whether crop insurance may be affecting operating loan terms, which need to interpreted in conjunction with our well-established result of higher operating loan levels. One of our more consistent results related to loan level characteristics is that higher crop insurance premium levels or coverage lead to higher interest rates. While statistically significant, the magnitude of the effect is very small: participating in crop insurance is correlated with a 0.13 percentage point increase in operating loan interest rates, and a doubling of premium paid per acre is associated with a 0.04 percentage point increase in interest rates.

At face value, this result may seem counter-intuitive, as one might think that crop insurance increases the likelihood of loan repayment and, if anything, should lower the cost of credit. This relationship may be driven by unobserved farm characteristics not controlled for in our cross section models. Further, this result must be interpreted in the context of the full range of changes in credit use in response to crop insurance. Specifically, we have strong evidence that crop insurance leads to increases in operating loan use. This additional credit may be costly, hence the finding of higher interest rates. Further, farm interest rates in

general over the study period were historically low, so lenders may have had little flexibility to lower rates. By any means, this finding should be reassuring to regulators, as it suggests that although lenders might be extending additional operating credit in response to crop insurance use, the additional financial risk does come at a lower cost. The other operating loan characteristics that we look at, use of fixed rate interest rates and loan term, do not have a statistically significant relationship with crop insurance use.

Another loan characteristic we have considered is lender choice: that is, whether or not an operation has an operating loan from one the three major sources of farm loans: Farm Credit System lenders [fcsloan], the Farm Service Agency (FSA) [fsaloan] and commercial banks [bankloan]. The relationship between lender choice and premium paid is not statistically significant, although crop insurance participation is correlated with increased likelihood of an FSA or Farm Credit loan in the acres dummy cross section. This is likely driven by program requirements and other stipulations or recommendations from these lenders: for example, the crop insurance participation requirement of many FSA loans, which does not appear to extend to coverage decisions. However, given the low magnitude of this correlation (crop insurance participation is associated with being 3.6 percentage points more likely to have a Farm Credit loan) as well as the inconsistency across models, we find little compelling evidence of a systematic relationship between lender choice and crop insurance.

3.6 Stratified sample results

We consider how crop insurance affects credit decisions and use across different farm types. We first look at two measures of farm size: revenue (gross cash farm income), a more accurate measure of size given productivity differences, and acreage (table 8). Overall, both large and small farms have higher short term credit use in response to crop insurance. Using the ARMS panel, for below-median revenue farms, we find that crop insurance participation has a statistically significant relationship with operating credit use [totalshort] and intensity [financed]. Above-median revenue farms only have a statistically significant relationship between crop insurance participation and operating credit intensity. However, when mea-

suring size by acreage, the larger farms use more operating credit at a higher intensity with crop insurance participation. There is no statistically significant relationship for smaller farms. Although results vary somewhat by model and measure of size, this analysis strongly suggests that crop insurance is important for credit access for all sizes of farms, including relatively smaller farms. We do not find a systematic difference in the quality of the loans (interest rate or fixed rate) received by the two groups across specifications.

We next estimate whether two operator characteristics, age and rental status, are related to the relationship between crop insurance and credit use (table 9. For younger operators, crop insurance expenditure has a positive and statistically significant relationship with credit use and intensity. A one percent increase in crop insurance expenditure increases operating credit use by over $1,1000 annually on average and financing also increases by 1.5 percentage points. However, with the more restrictive ARMS panel model, this relationship does not hold. For older operators, crop insurance participation leads to higher operating credit use and intensity, but a higher premium paid only leads to higher intensity. While we cannot fully explain the difference between these specifications, jointly these results suggest that crop insurance in some respect is playing a role for both younger and older operators to access operating credit.

Splitting our sample by rental status (above and below-median acreage), does not yield any systematic findings on how crop insurance use relates to credit access to farms that are more dependent on rented acreage. While we expected that higher use of rented land would make crop insurance more important in respect to credit access, our analysis does not support this hypothesis. There is also no evidence that age or rental status affects the level or type (fixed or variable) of interest rates these operations receive for their operating loans.

Finally, we estimate whether financial status is related to the relationship between crop insurance and credit use (table 10). If the relationship was stronger or more robust for higher leveraged farms or farms with higher debt capacity utilization, the financial risk being 'added' through crop insurance would be more likely to lead to equity loss. We find no compelling evidence that there is any relationship between crop insurance and credit use for the farms

who have more financial risk in our sample. Instead, it is the less-indebted farms driving the relationship we observe, both in the panel and cross section models. Debt capacity utilization is used as a measure of a farm's financial stress and quantifies an operation's debt obligations relative to its repayment capacity. When the samples are split at the median of debt capacity utilization, it is the operations with lower debt capacity utilization, and thus higher debt repayment capacity, driving the effect on both absolute and relative debt use. The results from the sample split at the median of leverage also show that it is farms which are less leveraged that are increasing their short-term debt use in response to crop insurance.

Additionally, results from the stratified loan-level cross-section indicate that the loans received do differ by financial status: although the magnitude is small, lenders charge more-indebted farms with higher crop insurance expenditure higher interest rates than less-leveraged farms. While this result does not imply causality, it suggests that credit provided to higher-risk farms comes at a higher cost. Our general finding of very small increases in interest rates across most cross sectional loan-level models may simply reflect that additional financial risk may be accounted for by lenders.

4 Conclusion

As the mainstay of U.S. farm policy, crop insurance facilitates access to and use of short term credit. We use the most comprehensive, national farm survey data available (ARMS) to test this relationship. We find that both crop insurance participation and coverage increase various measures of short term debt use, even under restrictive but more robust specifications. This relationship may be driven by crop insurance requirements by lenders as well as risk balancing behavior on the part of farm operators. However, short term debt increases are not large enough to increase farm leverage, a key prediction of risk balancing theory. This may be because farms were able to repay short term loans at a consistent rate during our study, and points to lenders as playing a large role in shaping the relationship between crop insurance and farm lending.

While crop insurance leads to higher short term debt use than if it were not available, and

hence higher financial risk in the farm sector, we do not find evidence that crop insurance generates regulatory risk. The average likelihood of default or bankruptcy is lower for farms that are able to increase financial risk through crop insurance. The more indebted farms in our sample, as measured by leverage or debt capacity utilization, generally do not have higher levels of operating credit use in response to crop insurance participation or coverage levels. This suggests that although lenders may allow an increase in operating credit use for some operators through crop insurance participation, lending standards are tighter for riskier borrowers. We also do not find a robust relationship between crop insurance and access to real estate, machinery, or other types of long-term credit or even leverage. The finding of no increase in leverage to some degree may be driven by capitalization of crop insurance into asset values, although this relationship has proven to be difficult to measure. One study did find levels of capitalization for pasture insurance to be similar to that of other government programs (Ifft et al., 2014). This is an interesting direction for further research.

Our analysis finds no evidence that crop insurance is being used to overcome credit constraints and on aggregate our results suggest that this is not the primary mechanism that drives the relationship between crop insurance and operating credit. Both large and small operations as well as young and old operators appear to be able to use crop insurance to increase operating credit use. While credit constraints are likely not a general issue for U.S. farms overall, the impact of credit constraints and the influence of crop insurance on younger operators and other more vulnerable groups is an important topic for future research.

We also find no evidence that crop insurance lowers the cost of credit. This finding may be due to limitations of using data from the ARMS loan table, which has a lower number of responses that precludes construction of a panel. Concerns have also been raised that loan-specific data from ARMS may be subject to some recall error (Ahrendsen et al., 2016). Further, our approach may limited by the the relationship of crop insurance with higher levels of credit use and the low interest rate environment during much of our study period. Future research with bank data could provide useful insights into how crop insurance affects the cost of credit to the farm sector.

Crop insurance plays an important role in the provision of credit to meet production expenses of the farm operation. This can help farms stay in operation during back-to-back years of low revenue or periods of increasing expenses, which typifies our study period. Generally, higher operating loan use may have a number of long-term benefits for U.S. farms operations. These include farm household income support, productivity enhancing investments, and farm expansion. While this is beyond the scope of this study, it is another interesting direction for further study. Given the important role of lenders in the causal relationship between crop insurance and short term credit use implied by our study, future research using bank data would advance knowledge of the importance of crop insurance to farm lending and lead to more precise quantification of impacts.

5 Tables

Table 1: Summary statistics: Cross section

	Any Insurance			No Insurance			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at:**
Insurance acres dummy	64,991	0.954	0.210	26,180	-	-	
FCI premium paid per acre ($)	64,145	10.03	17.56	24,722	-	-	
Outcomes							
totalshort	86,989	$ 301,813.20	$ 936,834.50	36,133	$ 181,107.20	$ 1,035,899.00	***
financed	86,976	0.562	0.837	35,884	0.541	28.98	
dshort	86,989	$ 103,916.10	$ 480,045.50	36,133	$ 74,375.34	$ 544,592.50	***
repaid	86,989	$ 197,897.10	$ 673,003.30	36,133	$ 106,731.80	$ 782,117.70	***
dreale	86,989	$ 211,898.70	$ 841,170.00	36,133	$ 194,386.40	$ 1,013,182.00	***
dnreale	86,989	$ 87,799.53	$ 376,065.30	36,133	$ 77,372.48	$ 622,253.00	***
Operator characteristics							
Operator age	86,989	54.34	11.85	36,133	56.75	12.46	***
Operator retired from farming	84,211	6.76%	25.97%	35,297	10.09%	30.18%	***
Principle operator is female	85,023	1.51%	12.19%	35,662	3.53%	18.45%	***
Principal operator is Hispanic or non-white	84,323	2.08%	14.26%	34,252	3.31%	17.90%	***
Total off-farm income	83,094	$ 51,218.25	$ 144,638.60	34,055	$ 57,936.95	$ 138,757.00	***
Operation characteristics							
Acres operated	86,989	1906.01	3642.47	36,133	1140.45	5436.16	***
Share of acres owned	86,989	0.444	0.719	36,133	0.808	2.992	***
Share of cropland operated	86,961	0.885	2.133	36,111	0.718	1.902	***
Operators' education is:							
Some high school	86,989	3.72%	18.93%	36,133	8.62%	28.06%	***
High school diploma	86,989	39.88%	48.97%	36,133	45.49%	49.80%	***
Some college	86,989	31.52%	46.46%	36,133	24.64%	43.09%	***
4-year college graduate and beyond	86,989	24.05%	42.74%	36,133	20.66%	40.49%	***
Other	86,989	0.83%	9.06%	36,133	0.59%	7.64%	***
Sales class							
$500,000+	86,989	45.21%	49.77%	3.61E+04	34.90%	47.67%	***
$250,000-$499,000	86,989	20.62%	40.45%	36,133	13.60%	34.28%	***

$100,000-$249,000	86,989	19.05%	39.27%	36,133	17.07%	37.63%	***
$40,000-$99,999	86,989	10.01%	30.01%	36,133	13.68%	34.36%	***
$20,000-$39,000	86,989	3.18%	17.54%	36,133	7.81%	26.84%	***
$10,000-$19,000	86,989	1.27%	11.21%	36,133	5.13%	22.05%	***
$9,999 or less	86,989	0.67%	8.15%	36,133	7.80%	26.82%	***
Specalization							
General cash grain	86,989	17.54%	38.03%	36,133	9.77%	29.69%	***
Wheat	86,989	8.10%	27.29%	36,133	2.87%	16.69%	***
Corn	86,989	25.25%	43.45%	36,133	14.41%	35.12%	***
Soybeans	86,989	10.39%	30.51%	36,133	9.69%	29.59%	***
Sorghum	86,989	0.56%	7.45%	36,133	0.22%	4.73%	***
Rice	86,989	1.75%	13.12%	36,133	1.67%	12.82%	
Tobacco	86,989	1.55%	12.35%	36,133	0.43%	6.58%	***
Cotton	86,989	5.86%	23.48%	36,133	1.77%	13.18%	***
Peanut	86,989	0.77%	8.75%	36,133	0.28%	5.28%	***
Other crops	86,989	6.73%	25.05%	36,133	9.04%	28.67%	***
Fruit	86,989	2.04%	14.14%	36,133	2.95%	16.93%	***
Vegetable	86,989	1.62%	12.62%	36,133	2.42%	15.36%	***
Nursery	86,989	0.29%	5.40%	36,133	2.80%	16.51%	***
Cattle	86,989	7.04%	25.58%	36,133	13.90%	34.60%	***
Hogs	86,989	3.31%	17.90%	36,133	4.25%	20.16%	***
Poultry	86,989	1.14%	10.63%	36,133	7.70%	26.66%	***
Dairy	86,989	4.77%	21.32%	36,133	12.61%	33.20%	***
Other livestock	86,989	1.29%	11.27%	36,133	3.22%	17.64%	***
Operator occupation							
Work on farm	86,989	89.12%	31.14%	36,133	78.68%	40.96%	***
Off-farm employment	86,989	7.08%	25.66%	36,133	13.37%	34.03%	***
Not in workforce	86,989	3.17%	17.51%	36,133	6.81%	25.19%	***
Other occupation	86,989	0.63%	7.90%	36,133	1.14%	10.63%	***

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Summary statistics: Panel

	FCI Panel: Insurance			FCI Panel: No Insurance			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at:**
Insurance acres dummy	16,780	0.9359356	0.2448749	5,591	-	-	
FCI premium paid per acre ($)	21,177	$ 9.69	$ 15.69	6,744	-	-	
Outcomes							
totalshort	23,137	$ 483,616.30	$ 1,462,872.00	7,820	$ 382,918.70	$ 1,673,101.00	***
financed	23,135	0.570	0.791	7,795	0.346	1.040	***
dshort	23,137	$ 157,104.40	$ 763,784.40	7,820	$ 157,115.70	$ 789,984.00	
repaid	23,137	$ 326,511.90	$ 1,063,437.00	7,820	$ 225,803.00	$ 1,331,468.00	***
dreale	23,137	$ 313,314.50	$ 1,152,952.00	7,820	$ 378,051.10	$ 1,762,606.00	***
dnreale	23,137	$ 133,104.60	$ 506,455.10	7,820	$ 158,151.10	$ 892,930.30	***
Operator characteristics							
Operator age	23,137	54.27	10.92	7,820	55.60	11.53	***
Acres operated	23,137	2772.20	5311.63	7,820	1744.10	8277.43	***
Soybeans share	23,137	23.61%	23.92%	7,820	11.95%	20.28%	***
Corn share	23,137	20.31%	22.11%	7,820	10.75%	18.22%	***
Wheat share	23,137	11.11%	17.81%	7,820	5.06%	12.60%	***

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Summary statistics: Restricted ARMS sample operating loans

	Obs.	**Mean**	**Std. Dev.**
Balance ($)	29,536	423,690.20	1,442,970.00
Interest rate (%)	29,536	5.52	2.24
Percent of fixed rate vs. variable rate loans	20,820	49%	50%
Age of loan (years)	27,804	3.60	6.75
Percent of loans that are from:			
Farm Credit System (FCS):	29,401	27%	45%
Farm Service Agency (FSA):	29,401	3%	18%
Commercial Banks	29,401	41%	49%
Number of loans per farm	30,957	0.95	1.41
Number of operating loans per farm	30,957	0.19	0.49
Percent of farms that:			
Applied for a new loan	30,957	20%	40%
Applied for a new operating loan	30,957	8%	27%
Have at least one loan from Farm Credit Services (FCS)	30,957	16%	37%
Have at least one loan from Farm Service Agency (FSA)	30,957	3%	17%
Have at least one loan from a commercial bank	30,957	25%	43%

Table 4: Farm cross section results: 2000-2014

	ln Prem Paid IV			Acres dummy RF		
	Coefficient (β_1)	Std. Error	Obs.	Coefficient (β_1)	Std. Error	Obs.
totalshort	1,287	(2,648)	62,814	60,282***	(6,156)	84,717
dshort	484.1	(1,823)	62,814	21,810***	(3,751)	84,717
repaid	802.6	(1,666)	62,814	38,472***	(3,914)	84,717
financed	0.0139***	(0.00239)	62,709	0.0514	(0.0511)	84,588
leverage	-0.302	(0.291)	62,802	0.0928	(0.0989)	84,717
dreale	11,035***	(1,686)	62,814	23,378***	(6,056)	84,717
dnreale	4,370***	(926.4)	62,814	14,704***	(3,252)	84,717

***,**,*Significant at 1%, 5%, and 10%, respectively; robust standard errors in parenthesis
All regressions include controls for farm-level characteristics, state fixed effects, and year fixed effects.

Table 5: Farm panel results: 2000-2014

	ln Prem Paid IV			Acres Dummy RF		
	Coefficient (β_1)	Std. Error	Obs.	Coefficient (β_1)	Std. Error	Obs.
totalshort	79,540*	(45,803)	7,857	92,126***	(35,385)	11,888
dshort	59,290*	(30,458)	7,857	39,934*	(22,626)	11,888
repaid	20,250	(33,947)	7,857	52,193**	(21,831)	11,888
financed	0.00303	(0.0395)	7,857	0.0400**	(0.0190)	11,884
leverage	0.00987	(0.0572)	7,857	0.0248	(0.0698)	11,888
dreale	43,084	(40,108)	7,857	17,290	(37,343)	11,888
dnreale	-3,048	(41,324)	7,857	-399.5	(17,353)	11,888

***,**,*Significant at 1%, 5%, and 10%, respectively; robust standard errors in parenthesis
All regressions include controls for farm-level characteristics, farm fixed effects, and year fixed effects

Table 6: Coverage rate results: 2014 cross section

	(1) totalshort	(2) financed	(3) dshort	(4) repaid	(5) leverage	(6) denied	(7) deterfromcredit	(8) creditprob	(9) avgopintrate
Coverage level	4,255***	0.00672***	2,037**	2,218**	0.00171	0.00108	3.54e-06	0.00107	-0.00796
	(1,439)	(0.00249)	(883.1)	(1,003)	(0.00131)	(0.000924)	(0.000497)	(0.000953)	(0.00614)
Attitude toward risk	20,343***	0.0203***	7,631***	12,712***	-0.000417	0.0217***	-0.00459**	0.0176***	-0.0180
	(3,979)	(0.00775)	(2,803)	(2,432)	(0.00420)	(0.00280)	(0.00178)	(0.00299)	(0.0183)
Share acres under RP	2,056	-0.0336	-3,927	5,984	0.0425*	0.0148	-0.00290	0.0124	0.0644
	(23,835)	(0.0453)	(16,983)	(16,153)	(0.0244)	(0.0171)	(0.0109)	(0.0184)	(0.127)
Insured Commodity FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-394,113**	0.757**	-146,318	-247,795**	0.408***	0.471***	0.168***	0.629***	5.105***
	(167,170)	(0.311)	(96,582)	(123,559)	(0.111)	(0.113)	(0.0604)	(0.115)	(0.701)
Observations	5,063	5,057	5,063	5,063	5,061	5,063	4,608	5,063	1,681
R-squared	0.227	0.049	0.099	0.215	0.037	0.088	0.037	0.078	0.123

Robust standard errors in parentheses
Includes controls for farm and operator characteristics
*** p¡0.01, ** p¡0.05, * p¡0.1

Table 7: Operating loan cross section results: 2000-2014

	ln Prem Paid IV			Acres dummy RF		
	Coefficient (α_1)	Std. Error	Obs.	Coefficient (α_1)	Std. Error	Obs.
interestrate$^+$	0.0409***	(0.0152)	11,330	0.138**	(0.0596)	13,244
interestrate	0.0392**	(0.0161)	11,400	0.114*	(0.0618)	13,322
term$^+$	-0.730	(0.484)	10,222	0.0288	(2.029)	12,099
fcsloan	0.00246	(0.00393)	11,400	0.0367***	(0.0140)	13,322
fsaloan	0.00347	(0.00239)	11,400	0.0227***	(0.00798)	13,322
bankloan	-0.00545	(0.00368)	11,400	0.0190	(0.0136)	13,322
fixedrate$^+$	0.00335	(0.00452)	10,078	0.0223	(0.0159)	11,955

***,**,*Significant at 1%, 5%, and 10%, respectively; robust standard errors in parenthesis
All regressions include controls for farm-level characteristics, state fixed effects, and year fixed effects
$^+$ indicates lender controls included

Table 8: Stratified sample analysis: Farm size

	GCFI <median			GCFI ≥ median			Acres operated <median			Acres operated ≥ median		
	Coef.	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**
	FCI Panel: Insurance acres dummy											
totalshort	10,044***	(2,868)	7,200	100,435**	(41,552)	6,320	-8,990	(27,926)	6,562	154,931**	(71,526)	6,093
financed	0.122***	(0.0401)	7,194	0.00212	(0.0284)	6,319	0.0233	(0.0234)	6,558	0.0554*	(0.0331)	6,092
	FCI Cross section: Premium paid IV											
totalshort	2,658***	(432.0)	30,799	145.2	(5,519)	32,015	3,293***	(941.8)	30,615	-2,836	(6,456)	32,165
financed	0.0154***	(0.00326)	30,695	0.0147***	(0.00360)	32,014	0.0123***	(0.00267)	30,518	0.0173***	(0.00449)	32,157
	Loan Cross section: Premium paid IV											
interestrate	0.0405*	(0.0220)	4,164	0.0444**	(0.0205)	7,780	0.0480***	(0.0170)	4,700	0.0278	(0.0248)	7,235
fixedrateop	-0.000217	(0.00811)	3,023	0.00718	(0.00975)	5,120	0.00824	(0.00663)	3,298	-0.00373	(0.0119)	4,840

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Stratified sample analysis: Operator characteristics

	Operator age <45			Operator age ≥ 45			Share acres rented <median			Share acres rented ≥ median		
	Coef.	**SE**	**Obs.**	**Coef.**	**Std. Error**	**Obs.**	**Coef.**	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**
	FCI Panel: Insurance acres dummy											
totalshort	-11,204	(78,014)	2,793	110,016**	(43,308)	9,991	116,351*	(68,329)	6,668	15,230	(30,437)	6,588
financed	-0.0713	(0.0632)	2,793	0.0512**	(0.0220)	9,986	0.0633**	(0.0318)	6,662	-0.000305	(0.0243)	6,588
	FCI Cross section: Premium paid IV											
totalshort	11,702***	(3,691)	11,695	-1,695	(3,310)	49,820	1,460	(2,329)	30,812	2,026	(4,810)	32,002
financed	0.0153***	(0.00526)	11,691	0.0141***	(0.00273)	49,720	0.0173***	(0.00325)	30,712	0.0114***	(0.00361)	31,997
	Loan Cross section: Premium paid IV											
interestrate	0.0387	(0.0269)	2,657	0.0332*	(0.0181)	9,022	0.0487**	(0.0195)	4,602	0.0213	(0.0219)	7,342
fixedrateop	0.0148	(0.0127)	1,874	0.000372	(0.00755)	6,075	0.00419	(0.0104)	1,521	-0.0692***	(0.0167)	2,280

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Stratified sample analysis: Financial status

	Leverage <median			Leverage ≥ median			DRCU <median			DRCU ≥ median		
	Coef.	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**	**Coef.**	**SE**	**Obs.**
	FCI Panel: Insurance acres dummy											
totalshort	66,106***	(22,856)	7,240	129,162	(100,267)	5,415	72,905**	(31,992)	7,480	143,833	(89,265)	7,524
financed	0.0366*	(0.0223)	7,234	0.0327	(0.0339)	5,416	0.0317	(0.0253)	7,474	0.0428	(0.0323)	7,523
	FCI Cross section: Premium paid IV											
totalshort	-2,715	(2,165)	31,680	-2,618	(4,775)	29,835	5,071	(3,342)	15,141	-2,988	(3,427)	47,673
financed	0.0115***	(0.00234)	31,577	0.00278	(0.00401)	29,834	0.00772**	(0.00309)	15,126	0.00940***	(0.00315)	47,583
	Loan Cross section: Premium paid IV											
interestrate	0.0354	(0.0364)	2,270	0.0369**	(0.0163)	9,674	-0.0517	(0.0440)	1,158	0.0493***	(0.0155)	10,786
fixedrateop	0.00517	(0.00731)	1,519	0.00112	(0.00770)	6,624	-0.0226	(0.0181)	783	0.00584	(0.00705)	7,360

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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6 Appendix A: Summary statistics

Table A1: Full ARMS cross section and FCI cross section

	Full ARMS Crossection			FCI crosssection		
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**
Insurance acres dummy	216,100	0.364	0.481	91,171	0.6797337	0.4665814
FCI premium paid per acre ($)	197,452	5.424	77.71	88,867	$ 7.24	$ 15.58
Outcomes						
totalshort	286,370	$ 157,378.00	$ 852,557.30	123,122	$ 266,389.20	$ 968,516.80
financed2	281,672	0.482	17.87	122,860	0.556	15.68
dshort	286,370	$ 61,394.06	$ 507,707.80	123,122	$ 95,246.66	500031.9
repaid	286,370	$ 95,983.94	$ 578,071.10	123,122	$ 171,142.50	707988.9
dreale	286,370	$ 158,077.00	$ 829,087.90	123,122	$ 206,759.30	$ 895,115.90
dnreale	286,370	$ 59,108.42	$ 716,008.30	123,122	$ 84,739.47	$ 462,139.70
Operator characteristics						
Operator age	286,370	56.32	12.49	123,122	55.05	12.08
Retired from farming	277,802	12.90%	33.72%	119,508	7.75%	27.33%
Female	282,228	5.74%	23.26%	120,685	2.11%	14.36%
Hispanic or non-white	275,372	4.06%	19.73%	118,575	2.43%	15.41%
Total off-farm income	272,331	$ 64,831.96	$ 185,222.10	117,149	$ 53,171.37	$ 142,985.80
Operation characteristics						
Acres operated	286,370	1224.16	6525.16	123,122	1681.34	4262.38
Share of acres owned	286,370	0.868	17.97	123,122	0.551	1.738
Share of cropland operated	286,032	0.663	2.301	123,071	0.835	2.050
Operators' education is:						
Some high school	286,370	7.28%	25.98%	123,122	5.16%	22.12%
High school diploma	286,370	41.54%	49.28%	123,122	41.53%	49.28%
Some college	286,370	26.99%	44.39%	123,122	29.50%	45.61%
4-year college graduate and beyond	286,370	22.82%	41.97%	123,122	23.05%	42.12%
Other	286,370	1.37%	11.62%	123,122	0.76%	8.67%
Sales class						
$500,000+	286,370	29.03%	45.39%	123,122	42.18%	49.39%
$250,000-$499,000	286,370	12.53%	33.11%	123,122	18.56%	38.88%

$100,000-$249,000	286,370	14.13%	34.84%	123,122	18.47%	38.81%
$40,000-$99,999	286,370	10.74%	30.97%	123,122	11.08%	31.39%
$20,000-$39,000	286,370	6.82%	25.21%	123,122	4.54%	20.81%
$10,000-$19,000	286,370	6.24%	24.19%	123,122	2.40%	15.32%
$9,999 or less	286,370	20.51%	40.38%	123,122	2.76%	16.39%
Specalization						
General cash grain	286,370	6.75%	25.09%	123,122	15.26%	35.96%
Wheat	286,370	3.02%	17.12%	123,122	6.57%	24.77%
Corn	286,370	9.82%	29.76%	123,122	22.07%	41.47%
Soybeans	286,370	4.87%	21.53%	123,122	10.19%	30.25%
Sorghum	286,370	0.22%	4.73%	123,122	0.46%	6.76%
Rice	286,370	1.09%	10.39%	123,122	1.73%	13.03%
Tobacco	286,370	1.01%	9.98%	123,122	1.22%	10.98%
Cotton	286,370	2.07%	14.25%	123,122	4.66%	21.07%
Peanut	286,370	0.38%	6.19%	123,122	0.63%	7.89%
Other crops	286,370	12.62%	33.21%	123,122	7.41%	26.19%
Fruit	286,370	5.91%	23.59%	123,122	2.31%	15.02%
Vegetable	286,370	2.02%	14.08%	123,122	1.85%	13.49%
Nursery	286,370	3.86%	19.27%	123,122	1.03%	10.09%
Cattle	286,370	22.65%	41.86%	123,122	9.05%	28.69%
Hogs	286,370	2.69%	16.19%	123,122	3.59%	18.60%
Poultry	286,370	6.57%	24.77%	123,122	3.07%	17.24%
Dairy	286,370	8.47%	27.85%	123,122	7.07%	25.64%
Other livestock	286,370	5.95%	23.66%	123,122	1.85%	13.48%
Operator occupation						
Work on farm	286,370	70.32%	45.69%	123,122	86.06%	34.64%
Off-farm employment	286,370	15.67%	36.35%	123,122	8.93%	28.52%
Not in workforce	286,370	11.32%	31.68%	123,122	4.24%	20.14%
Other occupation	286,370	2.70%	16.20%	123,122	0.78%	8.80%

Table A2: Full ARMS panel and FCI panel

	Full ARMS Panel			FCI Panel		
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**
Insurance acres dummy	72,121	0.447	0.497	22,371	0.702	0.457
FCI premium paid per acre ($)	64,086	$ 6.92	$ 55.54	27,921	$ 7.35	$ 14.28
Outcomes						
totalshort	92,272	$ 277,829.30	$ 1,159,404.00	30,957	$ 458,179.20	$ 1,519,330.00
financed	91,830	0.570	26.504	30,930	0.514	0.866
dshort	92,272	$ 104,963.70	$ 628,396.20	30,957	$ 157,107.20	$ 770,473.90
repaid	92,272	$ 172,865.60	$ 819,848.40	30,957	$ 301,072.00	$ 1,137,942.00
dreale	92,272	$ 263,620.90	$ 1,136,467.00	30,957	$ 329,667.50	$ 1,333,795.00
dnreale	92,272	$ 100,947.90	$ 745,795.90	30,957	$ 139,431.60	$ 627,065.80
Operator characteristics						
Operator age	92,272	55.51	11.60	30,957	54.60	11.09
Acres operated	92,272	1799.23	7980.11	30,957	2512.49	6212.23
Soybeans share	92,271	11.68%	20.28%	30,957	20.66%	23.60%
Corn share	92,271	11.39%	19.60%	30,957	17.89%	21.60%
Wheat share	92,271	4.89%	12.91%	30,957	9.58%	16.85%

Table A3: Crosssection summary stats and insurance status: 2004

	Insurance: 2004			No Insurance: 2004			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at**
Insurance acres dummy	5,265	0.939	0.239	1,930	-	-	***
FCI premium paid per acre ($)	3,445	$ 5.39	$ 14.67	1,054	-	-	***
Outcomes							
totalshort	5,265	$ 205,681.10	$ 439,885.80	1,930	$ 114,516.80	$ 446,543.50	***
financed	5,265	0.632	0.889	1,928	0.367	1.345	***
dshort	5,265	$ 69,443.68	$ 228,785.80	1,930	$ 44,400.13	$ 211,619.40	***
repaid	5,265	$ 136,237.40	$ 303,400.80	1,930	$ 70,116.70	$ 279,588.20	***
dreale	5,265	$ 156,439.50	$ 485,934.50	1,930	$ 136,634.00	$ 440,978.70	
dnreale	5,265	$ 68,680.93	$ 293,015.50	1,930	$ 55,395.97	$ 337,157.60	
Operator characteristics							
Operator age	5,265	52.53	11.46	1,930	54.02	12.61	***
Operator retired from farming	4,925	17.95%	38.38%	1,737	20.78%	40.59%	***
Principle operator is female	5,265	1.39%	11.69%	1,930	2.49%	15.58%	***
Principal operator is Hispanic or non-white	5,265	1.67%	12.82%	1,930	1.81%	13.35%	
Total off-farm income	5,098	$ 42,382.42	$ 84,686.21	1,839	$ 50,866.14	$ 116,238.00	***
Operation characteristics							
Acres operated	5,265	1774.88	2429.66	1,930	1191.02	8039.86	***
Share of acres owned	5,265	39.70%	34.29%	1,930	56.00%	37.67%	***
Share of cropland operated	5,265	85.41%	19.88%	1,930	76.32%	29.22%	***
Operators' education is:							
Some high school	5,265	4.54%	20.82%	1,930	8.60%	28.05%	***
High school diploma	5,265	37.74%	48.48%	1,930	43.42%	49.58%	***
Some college	5,265	32.90%	46.99%	1,930	26.17%	43.97%	***
4-year college graduate and beyond	5,265	20.99%	40.73%	1,930	17.98%	38.41%	***
Other	5,265	3.84%	19.21%	1,930	3.83%	19.21%	
Sales class							
$500,000+	5,265	31.95%	46.63%	1,930	28.86%	45.32%	**
$250,000-$499,000	5,265	25.17%	43.40%	1,930	19.38%	39.54%	***

$100,000-$249,000	5,265	26.02%	43.88%	1,930	20.62%	40.47%	***
$40,000-$99,999	5,265	10.86%	31.12%	1,930	12.80%	33.42%	**
$20,000-$39,000	5,265	3.65%	18.75%	1,930	7.25%	25.94%	***
$10,000-$19,000	5,265	1.65%	12.75%	1,930	4.72%	21.20%	***
$9,999 or less	5,265	0.70%	8.35%	1,930	6.37%	24.43%	***
Specalization							
General cash grain	5,265	16.77%	37.36%	1,930	11.19%	31.53%	***
Wheat	5,265	11.60%	32.03%	1,930	3.99%	19.58%	***
Corn	5,265	23.23%	42.23%	1,930	19.95%	39.97%	***
Soybeans	5,265	8.83%	28.38%	1,930	9.69%	29.59%	
Sorghum	5,265	0.38%	6.15%	1,930	0.21%	4.55%	
Rice	5,265	1.52%	12.23%	1,930	2.80%	16.50%	***
Tobacco	5,265	1.46%	12.01%	1,930	0.98%	9.88%	
Cotton	5,265	6.23%	24.17%	1,930	2.12%	14.42%	***
Peanut	5,265	1.92%	13.72%	1,930	0.47%	6.81%	***
Other crops	5,265	6.69%	24.98%	1,930	8.29%	27.58%	**
Fruit	5,265	0.93%	9.60%	1,930	1.30%	11.31%	
Vegetable	5,265	1.60%	12.53%	1,930	2.28%	14.93%	*
Nursery	5,265	0.09%	3.08%	1,930	1.30%	11.31%	***
Cattle	5,265	6.86%	25.27%	1,930	10.62%	30.82%	***
Hogs	5,265	5.83%	23.44%	1,930	5.85%	23.48%	
Poultry	5,265	1.03%	10.08%	1,930	5.18%	22.17%	***
Dairy	5,265	3.19%	17.58%	1,930	10.62%	30.82%	***
Other livestock	5,265	1.84%	13.45%	1,930	3.16%	17.50%	***
Operator occupation							
Work on farm	5,265	87.86%	32.66%	1,930	76.11%	42.65%	***
Off-farm employment	5,265	0.84%	9.10%	1,930	1.40%	11.75%	**
Not in workforce	5,265	8.07%	27.24%	1,930	15.44%	36.14%	***
Other occupation	5,265	3.23%	17.68%	1,930	7.05%	25.60%	***

*** p¡0.01, ** p¡0.05, * p¡0.1

Table A4: Crosssection summary stats and insurance status: 2013

	Insurance: 2013			No Insurance: 2013			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at**
Insurance acres dummy	5,522	0.926	0.262	2,262	-	-	***
FCI premium paid per acre ($)	6,208	$ 13.91	$ 26.89	2,360	-	-	***
Outcomes							
totalshort	6,208	$ 320,276.40	$ 813,685.80	2,360	$ 142,711.00	$ 772,391.80	***
financed2	6,206	0.466	0.750	2,319	0.317	1.840	***
dshort	6,208	$ 110,944.40	$ 483,156.40	2,360	$ 61,239.11	$ 404,751.40	***
repaid	6,208	$ 209,332.10	$ 575,542.50	2,360	$ 81,471.93	$ 636,310.40	***
dreale	6,208	$ 239,089.80	$ 938,392.00	2,360	$ 187,112.80	$ 891,878.20	**
dnreale	6,208	$ 113,497.20	$ 347,710.30	2,360	$ 79,763.30	$ 829,324.80	***
Operator characteristics							
Operator age	6,208	56.39	11.95	2,360	59.05	12.30	***
Operator retired from farming	6,208	3.88%	19.32%	2,360	8.31%	27.60%	***
Principle operator is female	6,208	1.79%	13.25%	2,360	4.70%	21.18%	***
Principal operator is Hispanic or non-white	5,706	4.42%	20.55%	2,080	6.92%	25.39%	***
Total off-farm income	5,914	$ 66,920.54	$ 216,749.70	2,207	$ 74,888.93	$ 167,810.60	
Operation characteristics							
Acres operated	6,208	1601.04	2690.11	2,360	922.15	3886.29	***
Share of acres owned	6,208	0.506	1.573	2,360	0.950	3.157	***
Share of cropland operated	6,208	0.852	0.210	2,360	0.599	0.375	***
Operators' education is:							
Some high school	6,208	2.30%	15.00%	2,360	7.12%	25.72%	***
High school diploma	6,208	38.56%	48.68%	2,360	43.14%	49.54%	***
Some college	6,208	31.38%	46.41%	2,360	25.25%	43.46%	***
4-year college graduate and beyond	6,208	27.75%	44.78%	2,360	24.49%	43.01%	***
Other	6,208	0.00%	0.00%	2,360	0.00%	0.00%	-
Sales class							
$500,000+	6,208	53.98%	49.85%	2,360	33.56%	47.23%	***
$250,000-$499,000	6,208	17.24%	37.77%	2,360	10.30%	30.40%	***

$100,000-$249,000	6,208	15.45%	36.14%	2,360	15.04%	35.76%	
$40,000-$99,999	6,208	8.83%	28.37%	2,360	12.42%	32.98%	***
$20,000-$39,000	6,208	2.56%	15.80%	2,360	9.11%	28.78%	***
$10,000-$19,000	6,208	1.16%	10.71%	2,360	5.97%	23.71%	***
$9,999 or less	6,208	0.79%	8.85%	2,360	13.60%	34.29%	***
Specalization							
General cash grain	6,208	14.11%	34.82%	2,360	6.06%	23.86%	***
Wheat	6,208	4.45%	20.61%	2,360	2.16%	14.54%	***
Corn	6,208	34.31%	47.48%	2,360	14.92%	35.63%	***
Soybeans	6,208	9.49%	29.31%	2,360	9.32%	29.08%	
Sorghum	6,208	0.79%	8.85%	2,360	0.55%	7.40%	
Rice	6,208	5.33%	22.47%	2,360	3.26%	17.77%	***
Tobacco	6,208	0.98%	9.86%	2,360	0.25%	5.04%	***
Cotton	6,208	4.14%	19.92%	2,360	0.64%	7.95%	***
Peanut	6,208	2.06%	14.21%	2,360	0.47%	6.81%	***
Other crops	6,208	6.91%	25.37%	2,360	10.89%	31.16%	***
Fruit	6,208	2.96%	16.96%	2,360	4.58%	20.90%	***
Vegetable	6,208	0.71%	8.39%	2,360	2.03%	14.12%	***
Nursery	6,208	0.19%	4.39%	2,360	3.14%	17.43%	***
Cattle	6,208	5.61%	23.00%	2,360	17.88%	38.33%	***
Hogs	6,208	1.88%	13.60%	2,360	2.25%	14.82%	
Poultry	6,208	0.89%	9.37%	2,360	8.14%	27.34%	***
Dairy	6,208	4.32%	20.33%	2,360	9.66%	29.55%	***
Other livestock	6,208	0.87%	9.29%	2,360	3.81%	19.16%	***
Operator occupation							
Work on farm	6,208	87.64%	32.91%	2,360	72.80%	44.51%	***
Off-farm employment	6,208	11.07%	31.37%	2,360	21.40%	41.02%	***
Not in workforce	6,208	1.29%	11.28%	2,360	5.81%	23.39%	***
Other occupation	6,208	0.00%	0.00%	2,360	0.00%	0.00%	-

*** p¡0.01, ** p¡0.05, * p¡0.1

Table A5: Panel variables: 2004 insurance status

	Insurance: 2004			No Insurance: 2004			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at**
Insurance acres dummy	1,276	0.901	0.298	405	-	-	***
FCI premium paid per acre ($)	1,152	$ 5.50	$ 6.11	325	-	-	***
Outcomes							
totalshort	1,276	$ 301,092.80	$ 601,463.20	405	$ 216,770.10	$ 829,916.30	**
financed2	1,276	0.636	0.794	403	0.346	0.600	***
dshort	1,276	$ 99,217.43	$ 369,072.00	405	$ 83,152.85	$ 385,275.20	
repaid	1,276	$ 201,875.40	$ 381,406.00	405	$ 133,617.20	$ 512,412.10	***
dreale	1,276	$ 205,298.40	$ 493,907.30	405	$ 231,057.90	$ 574,637.20	
dnreale	1,276	$ 112,247.50	$ 509,708.90	405	$ 84,549.69	$ 294,102.60	
Operator characteristics							
Operator age	1,276	51.80	10.32	405	52.24	11.37	
Acres operated	1,276	2524.46	3387.27	405	2427.90	17238.97	
Soybeans share	1,276	23.75%	23.32%	405	13.74%	20.55%	***
Corn share	1,276	19.37%	21.30%	405	13.66%	20.49%	***
Wheat share	1,276	12.49%	19.00%	405	7.54%	15.79%	***

*** p¡0.01, ** p¡0.05, * p¡0.1

Table A6: Panel variables: 2013 insurance status

	Insurance: 2013			No Insurance: 2013			Difference
	Obs	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**significant at**
Insurance acres dummy	1,402	0.923	0.267	446	-	-	***
FCI premium paid per acre ($)	1,720	$ 13.22	$ 15.95	487	-	-	***
Outcomes							
totalshort	1,720	$ 527,323.40	$ 1,146,400.00	487	$ 260,543.60	$ 858,653.30	***
financed2	1,720	0.493	0.744	481	0.341	1.435	***
dshort	1,720	$ 162,459.70	$ 737,960.50	487	$ 143,961.80	$ 733,415.50	
repaid	1,720	$ 364,863.70	$ 831,502.30	487	$ 116,581.80	$ 434,392.00	***
dreale	1,720	$ 321,416.70	$ 1,269,756.00	487	$ 396,462.30	$ 1,556,267.00	
dnreale	1,720	$ 159,495.60	$ 486,030.80	487	$ 125,085.80	$ 657,773.10	
Operator characteristics							
Operator age	1,720	57.64	10.70	487	58.46	11.27	
Acres operated	1,720	2500.51	3703.80	487	1616.11	7307.54	***
Soybeans share	1,720	26.52%	25.79%	487	10.66%	20.05%	***
Corn share	1,720	20.04%	21.93%	487	8.19%	16.68%	***
Wheat share	1,720	8.91%	15.59%	487	3.56%	11.26%	***

*** p¡0.01, ** p¡0.05, * p¡0.1

7 Appendix B: Full output tables

Table B1: Full Results with Insurance Acres Dummy, Farm cross section

	(1) totalshort	(2) dshort	(3) repaid	(4) financed	(5) leverage	(6) dreale	(7) dnreale
Crop insurance participation	60,282***	21,810***	38,472***	0.0514	0.0928	23,378***	14,704***
	(6156)	(3,751)	(3,914)	(0.0511)	(0.0989)	(6,056)	(3,252)
High school graduate	-1,833	1,017	-2,850	0.0175	0.148	5,815	5,529
	(8,346)	(6,006)	(4,665)	(0.0301)	(0.113)	(8,716)	(4,385)
Some college	941.0	351.3	589.8	0.130	0.021	15,038	8,165*
	(9,127)	(6,540)	(5,132)	(0.102)	(0.0861)	(9,301)	(4,480)
College graduate	45,930***	18,568**	27,362***	0.0359	0.00295	44,714***	21,180***
	(11,066)	(7,319)	(6,585)	(0.0294)	(0.0499)	(11,963)	(4,893)
Operator education other	39,425	14,212	25,212	0.130*	-0.235	55,163***	12,518
	(28,917)	(14,197)	(18,677)	(0.0739)	(0.213)	(18,624)	(8,869)
Sales $250,000-499,000	-301,223***	-103,896***	-197,327***	-0.0373**	-0.0369	-190,815***	-89,145***
	(8,019)	(4,103)	(5,061)	(0.0146)	(0.101)	(6,770)	(2,677)
Sales $100,000-249,000	-344,310***	-118,785***	-225,526***	-0.115***	-0.0897*	-216,496***	-102,770***
	(10,978)	(5,649)	(6,642)	(0.0329)	(0.0498)	(8,066)	(2,906)
Sales $40,000-99,000	-351,726***	-120,257***	-231,469***	-0.229***	0.0337	-221,693***	-104,105***
	(13,806)	(7,087)	(8,238)	(0.0641)	(0.101)	(9,758)	(3,276)
Sales $20,000-39,000	-338,117***	-115,038***	-223,078***	-0.272***	-0.00649	-223,378***	-101,327***
	(15,024)	(7,825)	(8,891)	(0.0915)	(0.0450)	(10,966)	(3,549)
Sales $10,000-19,000	-331,036***	-111,753***	-219,283***	0.482	-0.0679	-222,270***	-101,175***
	(15,595)	(8,180)	(9,216)	(0.754)	(0.0478)	(11,479)	(3,776)
Sales $9,999 or less	-320,286***	-109,863***	-210,423***	-0.384**	0.00988	-235,367***	-102,152***
	(18,230)	(9,998)	(10,120)	(0.159)	(0.0928)	(12,579)	(4,612)
Acres operated	35.64***	13.91***	21.73***	3.77e-06***	2.32e-05	20.96***	5.726***
	(5.707)	(2.987)	(3.316)	(1.37e-06)	(2.46e-05)	(3.429)	(1.158)
Share acres owned	-214.6	1,061	-1,275	0.00149	-0.0521***	12,805***	1,313*
	(1,530)	(1,256)	(962.3)	(0.00252)	(0.0196)	(3,906)	(703.7)
Total off-farm income	0.0610	0.0240	0.0370	-1.67e-07	9.80e-08	0.0288	0.0233
	(0.0470)	(0.0195)	(0.0310)	(1.43e-07)	(6.23e-08)	(0.0226)	(0.0231)
Percent cropland	12.20	0.917	11.28**	-5.12e-05**	-0.000607	69.22*	7.199
	(9.350)	(5.620)	(5.007)	(2.01e-05)	(0.000552)	(41.70)	(8.347)

Operator age	-1,780***	-477.9***	-1,302***	-0.00471***	-0.00846	-955.4***	-578.5***
	(194.8)	(98.56)	(137.2)	(0.000317)	(0.00590)	(207.9)	(91.78)
Wheat	-112,256***	-43,247***	-69,009***	-0.0627	0.0712	-59,100***	-24,609***
	(12,088)	(6,475)	(7,583)	(0.0461)	(0.0487)	(8,267)	(3,882)
Corn	33,095***	18,281***	14,814***	0.0840***	0.0796	25,968***	4,345**
	(5,961)	(2,942)	(4,261)	(0.0184)	(0.0496)	(5,118)	(1,973)
Soybean	-5,931	1,496	-7,426	-0.0324	-0.101	7,659	-846.2
	(5,795)	(2,439)	(4,567)	(0.0479)	(0.0669)	(4,963)	(2,086)
Sorghum	-46,049***	-15,034**	-31,014***	-0.121	0.233	-32,032***	-12,326
	(13,103)	(6,429)	(9,045)	(0.0870)	(0.229)	(10,980)	(7,957)
Rice	78,721***	15,056*	63,665***	0.218***	-0.756	-35,825**	-11,974*
	(24,601)	(8,325)	(21,576)	(0.0459)	(0.645)	(16,512)	(7,097)
Tobacco	56,713***	4,446	52,267***	0.120	0.120	23,844**	8,382
	(14,346)	(6,813)	(10,034)	(0.119)	(0.119)	(9,875)	(5,777)
Cotton	41,062***	-10,614	51,676***	0.192***	1.320	-57,392***	-19,565***
	(13,300)	(8,457)	(8,823)	(0.0688)	(1.068)	(9,420)	(6,137)
Peanut	43,825***	-5,046	48,871***	0.201	0.328	-27,361	-8,285
	(16,783)	(7,669)	(12,556)	(0.131)	(0.252)	(20,777)	(8,531)
Other crops	31,349***	3,421	27,928***	0.387	0.124	-13,263	-6,321
	(10,453)	(5,597)	(6,937)	(0.348)	(0.112)	(8,992)	(4,400)
Fruit	-10,023	11,457	-21,480	0.0177	0.167	93,268*	-33,443**
	(31,075)	(20,157)	(18,310)	(0.0970)	(0.157)	(50,257)	(13,605)
Vegetable	389,827***	155,619***	234,209***	0.0147	0.189	47,741*	38,969**
	(71,639)	(52,857)	(33,443)	(0.0746)	(0.117)	(27,103)	(15,487)
Nursery	6,383	17,216	-10,834	-0.217***	0.369*	91,580**	70,217*
	(27,415)	(13,617)	(18,712)	(0.0212)	(0.215)	(46,467)	(40,016)
Cattle	72,624***	50,617***	22,007**	0.0511	0.0817	2,588	8,056
	(13,136)	(6,662)	(8,924)	(0.0385)	(0.0665)	(14,648)	(5,467)
Hogs	-93,441***	-1,556	-91,884***	0.00566	0.0714*	73,055***	-8,638*
	(13,691)	(8,908)	(7,678)	(0.0538)	(0.0411)	(11,380)	(4,836)
Poultry	-177,957***	-32,708***	-145,250***	0.0112	0.202*	81,978***	-31,779***
	(16,135)	(11,087)	(8,785)	(0.0575)	(0.108)	(17,535)	(5,502)
Dairy	-10,163	44,080***	-54,243***	-0.216***	0.289	316,568***	145,722***
	(15,139)	(8,749)	(10,254)	(0.0683)	(0.177)	(18,921)	(10,742)

Other livestock	-23,698**	5,287	-28,985***	-0.0390	0.0285	37,341**	6,596
	(11,311)	(5,349)	(8,081)	(0.0538)	(0.0540)	(16,360)	(5,540)
Operator nonfarm employment	-49,207***	-14,080***	-35,127***	0.254	0.0531	-7,669	-12,386***
	(6,399)	(4,218)	(3,675)	(0.236)	(0.0623)	(4,754)	(2,916)
Operator not in workforce	-14,895***	-1,630	-13,265***	-0.107	-0.163	8,486	557.6
	(5,448)	(3,410)	(3,177)	(0.0734)	(0.146)	(5,180)	(2,573)
Operator occupation other	19,563*	8,986*	10,576	-0.222	-0.589	1,836	12,733**
	(10,312)	(4,944)	(6,517)	(0.174)	(0.457)	(8,275)	(5,480)
Operator retired from farming	-360.7	-2,560	2,199	0.234	0.626	-8,637	3,360
	(5,938)	(2,946)	(4,205)	(0.263)	(0.636)	(5,838)	(3,244)
Operator female	-39,556***	-10,299	-29,257***	-0.120*	-0.0474	-36,273***	-10,333*
	(14,774)	(12,853)	(6,100)	(0.0698)	(0.0546)	(9,755)	(5,711)
Operator nonwhite or hispanic	-6,548	8,703	-15,251	0.0625	-0.0772	29,651	-1,350
	(23,537)	(11,680)	(16,668)	(0.0721)	(0.0758)	(22,093)	(6,771)
Year FE	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES
Constant	431,154***	118,274***	312,880***	0.831***	0.0358	407,087***	107,512***
	(34,989)	(22,522)	(24,219)	(0.0471)	(0.289)	(45,472)	(14,018)
Observations	84,717	84,717	84,717	84,588	84,717	84,717	84,717
R-squared	0.127	0.057	0.120	0.071	0.001	0.069	0.055

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

Table B2: Full Results with Premium Paid IV, Farm cross section

	(1) totalshort	(2) dshort	(3) repaid	(4) financed	(5) leverage	(6) dreale	(7) dnreale
Log premium paid per acre	1,287	484.1	802.6	0.0139***	-0.302	11,035***	4,370***
	(2,648)	(1,823)	(1,666)	(0.00239)	(0.291)	(1,686)	(926.4)
High school graduate	22,571**	14,642***	7,929	-0.0330	0.549	1,376	2,254
	(9,813)	(4,692)	(7,401)	(0.0205)	(0.500)	(10,288)	(5,915)
Some college	23,150**	16,111***	7,040	-0.0113	0.397	7,021	3,763
	(10,290)	(5,626)	(7,050)	(0.0210)	(0.403)	(11,082)	(5,921)
College graduate	62,494***	31,310***	31,185***	-0.0318	0.387	35,226**	16,681**
	(13,128)	(7,709)	(8,463)	(0.0217)	(0.364)	(14,185)	(6,494)
Operator education other	58,155	20,359	37,797	-0.0369	0.303	13,191	8,943
	(43,647)	(19,200)	(28,030)	(0.0487)	(0.331)	(23,359)	(14,758)
Sales $250,000-499,000	-296,483***	-102,022***	-194,461***	-0.0210**	-0.269	-184,574***	-80,825***
	(12,323)	(6,223)	(7,663)	(0.00966)	(0.338)	(8,968)	(4,131)
Sales $100,000-249,000	-327,840***	-114,041***	-213,799***	-0.0605***	-0.641	-205,066***	-89,610***
	(17,799)	(8,744)	(11,101)	(0.0111)	(0.575)	(11,789)	(5,832)
Sales $40,000-99,000	-332,277***	-115,981***	-216,296***	-0.107***	-0.972	-207,976***	-87,900***
	(22,573)	(11,247)	(14,172)	(0.0205)	(0.904)	(14,959)	(7,457)
Sales $20,000-39,000	-321,766***	-113,697***	-208,069***	-0.178***	-1.479	-198,607***	-79,212***
	(25,600)	(13,289)	(16,186)	(0.0273)	(1.408)	(17,592)	(8,716)
Sales $10,000-19,000	-319,589***	-113,183***	-206,406***	-0.224***	-1.913	-187,941***	-76,153***
	(27,652)	(14,862)	(17,497)	(0.0297)	(1.771)	(20,403)	(9,472)
Sales $9,999 or less	-324,831***	-116,094***	-208,737***	-0.123**	-2.080	-195,423***	-73,602***
	(28,729)	(15,708)	(18,354)	(0.0551)	(2.043)	(23,844)	(10,061)
Acres operated	45.75***	17.50***	28.26***	2.19e-06*	2.35e-05	23.30***	12.64***
	(8.726)	(4.249)	(5.454)	(1.27e-06)	(2.88e-05)	(4.631)	(3.028)
Share acres owned	-7,075*	-1,918	-5,157*	0.00261	-0.196	47,356**	77.77
	(4,100)	(1,816)	(3,041)	(0.00446)	(0.157)	(18,427)	(1,315)
Total off-farm income	0.0248	0.00377	0.0210	-6.97e-09	1.75e-07*	-0.01000	0.00688
	(0.0293)	(0.00989)	(0.0236)	(1.57e-08)	(1.03e-07)	(0.0156)	(0.0133)
Percent cropland	-1,424***	-580.7**	-842.9***	3.15e-05	-0.00294	-605.6***	-331.2**
	(529.2)	(232.0)	(312.3)	(0.000138)	(0.00334)	(171.5)	(155.2)

Operator age	-2,385***	-704.3***	-1,681***	-0.00570***	-0.0166	-1,870***	-746.2***
	(227.2)	(113.2)	(166.5)	(0.000377)	(0.0139)	(325.2)	(118.4)
Wheat	-118,670***	-44,107***	-74,562***	-0.0627***	0.467	-68,752***	-30,990***
	(13,450)	(7,353)	(9,146)	(0.0206)	(0.401)	(10,394)	(6,271)
Corn	29,109***	17,269***	11,840**	0.0414***	0.210	23,032***	2,529
	(8,497)	(4,580)	(5,910)	(0.0112)	(0.157)	(7,158)	(3,819)
Soybean	-15,018**	-3,139	-11,879**	0.0186	-0.00321	5,422	-2,925
	(7,599)	(3,723)	(5,758)	(0.0121)	(0.0477)	(6,473)	(4,146)
Sorghum	-64,844***	-25,864***	-38,981***	-0.0510	0.519	-25,310	2,937
	(17,074)	(9,814)	(12,277)	(0.0545)	(0.497)	(17,348)	(10,256)
Rice	39,815	15,642	24,173	0.201***	-1.794	-29,860	-8,895
	(25,259)	(11,761)	(20,812)	(0.0398)	(1.605)	(20,968)	(10,374)
Tobacco	53,733**	-2,978	56,712***	-0.00448	0.872	-19,000	1,500
	(22,063)	(10,795)	(15,949)	(0.0301)	(0.866)	(12,942)	(9,593)
Cotton	29,759*	-9,455	39,214***	0.142***	2.275	-56,617***	-11,811**
	(16,240)	(11,107)	(10,253)	(0.0171)	(1.886)	(10,887)	(5,641)
Peanut	52,587***	-3,731	56,317***	0.187***	0.849	-44,359*	1,031
	(20,308)	(10,219)	(16,801)	(0.0388)	(0.728)	(25,282)	(9,129)
Other crops	32,563**	4,957	27,606***	0.0653***	-0.211	-1,761	5,692
	(13,476)	(7,956)	(9,117)	(0.0209)	(0.218)	(11,902)	(6,326)
Fruit	-102,620*	3,315	-105,935***	0.0931	-0.960	54,734	-22,524
	(58,141)	(39,201)	(37,852)	(0.114)	(0.911)	(85,408)	(25,930)
Vegetable	364,420***	148,610**	215,809***	-0.0390*	-0.310	82,865**	81,108***
	(74,489)	(62,098)	(35,249)	(0.0236)	(0.358)	(36,371)	(23,946)
Nursery	31,505	20,766	10,738	-0.0909**	-2.018	132,776***	35,393**
	(52,681)	(26,870)	(34,263)	(0.0356)	(2.013)	(43,909)	(16,231)
Cattle	57,254***	46,265***	10,989	0.105***	-0.835	41,336*	10,751
	(17,880)	(11,019)	(11,547)	(0.0185)	(0.825)	(21,278)	(7,153)
Hogs	-89,092***	-1,186	-87,906***	-0.0285	-0.751	100,105***	10,589
	(21,018)	(13,877)	(12,031)	(0.0271)	(0.773)	(17,176)	(8,738)
Poultry	-176,161***	-29,746	-146,415***	0.0612	-1.802	136,757***	1,609
	(29,833)	(20,425)	(17,150)	(0.0458)	(1.830)	(27,341)	(10,776)
Dairy	12,032	55,210***	-43,178*	-0.228***	-1.431	369,333***	150,284***
	(29,306)	(14,851)	(22,755)	(0.0186)	(1.419)	(28,013)	(15,517)

Other livestock	-11,639	5,398	-17,036	-0.0746**	-0.813	71,387***	21,514**
	(20,178)	(9,683)	(15,041)	(0.0294)	(0.766)	(25,212)	(9,377)
Operator nonfarm employment	-47,282***	-12,022**	-35,259***	0.0342*	-0.0865	-11,063*	-9,128*
	(7,126)	(5,409)	(3,964)	(0.0184)	(0.0825)	(6,050)	(4,884)
Operator not in workforce	-12,680**	-462.6	-12,218***	-0.00825	-0.401	3,745	5,729
	(6,078)	(3,167)	(4,155)	(0.0347)	(0.429)	(7,208)	(3,606)
Operator occupation other	28,331**	21,419***	6,912	-0.0137	-0.689	30,395**	31,325***
	(13,800)	(7,616)	(9,608)	(0.0639)	(0.624)	(15,494)	(11,213)
Operator retired from farming	-8,585	-7,129**	-1,456	-0.0289*	0.946	-18,365***	1,763
	(7,292)	(3,428)	(5,642)	(0.0154)	(0.968)	(6,545)	(3,100)
Operator female	-36,119*	-5,535	-30,584***	-0.0776***	-0.200	-34,183***	-2,899
	(20,234)	(17,134)	(8,367)	(0.0289)	(0.220)	(11,558)	(6,960)
Operator nonwhite or hispanic	-19,089	11,182	-30,271**	0.0307	-0.127	20,890	1,464
	(20,931)	(15,181)	(12,449)	(0.0324)	(0.120)	(23,441)	(13,577)
Year FE	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES
Constant	429,620***	115,712***	313,908***	0.826***	0.181	422,498***	105,361***
	(40,724)	(28,639)	(25,852)	(0.0484)	(0.366)	(46,704)	(16,080)
Observations	62,814	62,814	62,814	62,814	62,802	62,814	62,814
R-squared	0.121	0.050	0.114	0.072	-0.006	0.064	0.055

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

Table B3: Full Results with Insurance Acres Dummy, Farm Panel

	(1) totalshort	(2) dshort	(3) repaid	(4) financed	(5) leverage	(6) dreale	(7) dnreale
Crop insurance	92,126***	39,934*	52,193**	0.0400**	0.0248	17,290	-399.5
	(35,385)	(22,626)	(21,831)	(0.0190)	(0.0698)	(37,343)	(17,353)
Acres operated	29.17	14.31	14.86	-3.77e-06	1.22e-05	-109.4	11.94***
	(28.98)	(16.77)	(14.72)	(8.39e-06)	(8.98e-06)	(99.07)	(3.688)
Operator age	-1,680	-333.3	-1,346	-0.00218	-0.0212	-10,448	5,979
	(14,163)	(9,313)	(11,829)	(0.00665)	(0.0287)	(25,109)	(6,839)
Operator age squared	4.704	12.12	-7.412	1.71e-05	0.000184	86.35	-55.07
	(121.4)	(79.22)	(98.16)	(5.78e-05)	(0.000253)	(212.8)	(60.39)
Soybean share	-118,294*	-108,186**	-10,108	0.0125	-0.199	-26,888	-20,973
	(69,830)	(51,116)	(44,099)	(0.0576)	(0.124)	(55,367)	(33,157)
Corn share	183,182	111,081*	72,101	-0.104	-0.0289	-50,504	19,409
	(140,565)	(59,165)	(125,405)	(0.0709)	(0.0987)	(111,470)	(48,737)
Wheat share	186,901	137,943	48,958	-0.0515	0.346	-136,364	1,889
	(219,834)	(159,445)	(107,806)	(0.0788)	(0.481)	(125,690)	(84,840)
Year FE	YES	YES	YES	YES	YES	YES	YES
Constant	188,160	32,513	155,647	0.640***	1.151	915,046	-121,107
	(394,548)	(249,290)	(337,925)	(0.191)	(0.774)	(658,401)	(189,457)
Observations	22,371	22,371	22,371	22,353	22,369	22,371	22,371
R-squared	0.010	0.003	0.010	0.006	0.004	0.030	0.007
Number of id_state	11,888	11,888	11,888	11,884	11,888	11,888	11,888

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

Table B4: Full Results with Premium Paid IV, Farm Panel

	(1) totalshort	(2) dshort	(3) repaid	(4) financed	(5) leverage	(6) dreale	(7) dnreale
Log premium paid per acre	79,540*	59,290*	20,250	0.00303	0.00987	43,084	-3,048
	(45,803)	(30,458)	(33,947)	(0.0395)	(0.0572)	(40,108)	(41,324)
Acres operated	63.99***	20.39**	43.60***	3.36e-06	3.65e-06	41.53***	14.19**
	(17.42)	(8.425)	(12.02)	(5.02e-06)	(5.27e-06)	(15.86)	(6.747)
Operator age	21,527*	15,355**	6,173	0.00213	0.00727	15,349*	-65.71
	(11,062)	(6,879)	(12,285)	(0.00821)	(0.00797)	(8,404)	(6,126)
Operator age squared	-194.7**	-121.1**	-73.59	-3.05e-05	-6.28e-05	-138.6**	-18.72
	(91.92)	(49.82)	(95.00)	(7.27e-05)	(7.88e-05)	(70.69)	(48.10)
Soybeans share	-186,637***	-158,534***	-28,103	-0.0627	-0.275***	-105,193**	-50,633*
	(65,818)	(48,640)	(43,903)	(0.0571)	(0.0995)	(43,976)	(29,239)
Corn share	149,215*	66,573	82,643	-0.108	-0.0248	-69,999	-15,385
	(89,892)	(55,772)	(67,978)	(0.0727)	(0.0858)	(62,855)	(39,344)
Wheat share	81,182	128,433	-47,251	-0.0926	-0.0283	-36,372	-34,629
	(139,567)	(135,356)	(53,133)	(0.0828)	(0.0751)	(56,584)	(45,020)
Year FE	YES	YES	YES	YES	YES	YES	YES
Constant	-394,362	-368,454*	-25,908	0.608***	0.0869	-267,409	97,094
	(315,956)	(206,065)	(361,116)	(0.230)	(0.227)	(236,870)	(182,945)
Observations	16,504	16,504	16,504	16,503	16,504	16,504	16,504
Number of farms	7,857	7,857	7,857	7,857	7,857	7,857	7,857

Robust standard errors in parentheses
*** p¡0.01, ** p¡0.05, * p¡0.1

Table B5: Full Results with Insurance Acres Dummy, Loan Cross Section

	(1) term	(2) interestrate	(3) numoploans	(4) interestrate	(5) fcsloan	(6) fsaloan	(7) bankloan
Crop insurance	0.0288	0.138**	0.0126	0.114*	0.0367***	0.0227***	0.0190
	(2.029)	(0.0596)	(0.0219)	(0.0618)	(0.0140)	(0.00798)	(0.0136)
High school grad	6.901***	0.0842	0.0134	0.0828	0.0411*	0.00387	-0.0148
	(2.052)	(0.0974)	(0.0306)	(0.0998)	(0.0214)	(0.0125)	(0.0201)
Some college	7.331***	0.00553	-0.000966	0.0103	0.0571***	0.0115	-0.0331
	(2.284)	(0.0976)	(0.0303)	(0.100)	(0.0216)	(0.0126)	(0.0203)
College graduate	7.104***	-0.0966	0.0522*	-0.0858	0.0670***	0.0167	-0.0435**
	(2.181)	(0.0980)	(0.0312)	(0.101)	(0.0221)	(0.0129)	(0.0208)
Education other	10.81***	0.0552	0.231*	0.114	0.119*	0.189***	0.0444
	(4.032)	(0.271)	(0.127)	(0.299)	(0.0699)	(0.0606)	(0.0613)
Sales $250,000-499,000	2.046	0.316***	-0.0598***	0.347***	-0.0445***	0.0197***	0.0169
	(1.613)	(0.0445)	(0.0152)	(0.0475)	(0.0116)	(0.00722)	(0.0107)
Sales $100,000-249,000	0.683	0.374***	-0.0325*	0.393***	-0.0669***	0.0129	0.0149
	(1.086)	(0.0527)	(0.0183)	(0.0544)	(0.0132)	(0.00800)	(0.0123)
Sales $40,000-99,000	-0.597	0.562***	-0.0733***	0.635***	-0.108***	0.0192*	0.0261
	(1.007)	(0.0800)	(0.0220)	(0.0867)	(0.0183)	(0.0112)	(0.0171)
Sales $20,000-39,000	-0.309	0.510***	-0.0798**	0.564***	-0.0917***	0.00618	0.0239
	(1.472)	(0.145)	(0.0350)	(0.156)	(0.0312)	(0.0189)	(0.0299)
Sales $10,000-19,000	1.150	0.831***	-0.00547	0.948***	-0.0395	-0.0255	0.0569
	(1.442)	(0.304)	(0.0611)	(0.310)	(0.0545)	(0.0280)	(0.0467)
Sales $9,999 or less	-0.836	0.936***	-0.0468	0.937***	-0.0882	0.00664	-0.0602
	(1.890)	(0.318)	(0.0632)	(0.344)	(0.0539)	(0.0316)	(0.0582)
Acres operated	-4.82e-05	-1.95e-05***	6.87e-06***	-1.91e-05***	2.45e-06	-3.49e-06***	1.59e-06
	(0.000123)	(5.73e-06)	(2.59e-06)	(6.25e-06)	(1.82e-06)	(6.39e-07)	(1.30e-06)
Share acres owned	-0.810	-0.116***	-0.0222**	-0.103**	0.0461***	-0.0119*	-0.0158
	(0.818)	(0.0368)	(0.0109)	(0.0409)	(0.0152)	(0.00639)	(0.00979)
Total off-farm income	7.71e-07	-5.93e-08	-1.26e-08	-7.11e-08	4.94e-08***	-1.43e-08***	-3.20e-09
	(7.62e-07)	(4.99e-08)	(1.24e-08)	(5.36e-08)	(1.56e-08)	(5.52e-09)	(1.93e-08)
Percent cropland	0.0492	-0.000268	-0.00184**	-0.000163	0.000248	-0.000437	-0.000119

	(0.0556)	(0.00436)	(0.000920)	(0.00432)	(0.00102)	(0.000373)	(0.000807)
Operator age	-0.00138	-0.000412	-0.000418	0.000618	0.000599	-0.00164***	0.000143
	(0.0438)	(0.00152)	(0.000550)	(0.00159)	(0.000398)	(0.000250)	(0.000367)
Wheat	-2.068	0.0699	-0.0237	0.0238	-0.00725	0.0132	-0.00699
	(1.763)	(0.0809)	(0.0292)	(0.0842)	(0.0224)	(0.0142)	(0.0210)
Corn	-2.045	-0.165***	-0.00290	-0.197***	0.0342**	0.0147*	-0.0253**
	(1.600)	(0.0481)	(0.0186)	(0.0501)	(0.0138)	(0.00821)	(0.0127)
Soybean	-1.061	-0.154**	-0.0414*	-0.175**	0.0102	0.00864	-0.0128
	(1.310)	(0.0651)	(0.0231)	(0.0681)	(0.0177)	(0.0101)	(0.0165)
Sorghum	-1.424	0.390	-0.0533	0.332	-0.0799	0.134**	0.0382
	(2.340)	(0.451)	(0.103)	(0.455)	(0.0646)	(0.0604)	(0.0585)
Rice	2.775	0.155	-0.111**	0.158	-0.0298	-0.0181	-0.00150
	(3.228)	(0.127)	(0.0522)	(0.129)	(0.0346)	(0.0187)	(0.0358)
Tobacco	-6.584	-0.494	0.0304	-0.425	0.0756	-0.0402	0.0154
	(4.453)	(0.307)	(0.0989)	(0.312)	(0.0603)	(0.0347)	(0.0636)
Cotton	-0.450	0.122	-0.0782*	0.117	-0.0350	0.00522	-0.00971
	(2.440)	(0.104)	(0.0401)	(0.107)	(0.0271)	(0.0165)	(0.0262)
Peanut	1.388	-0.127	-0.0136	-0.163	0.0944	-0.00183	0.00576
	(2.273)	(0.317)	(0.0891)	(0.322)	(0.0645)	(0.0453)	(0.0584)
Other crops	-0.396	-0.0769	0.0211	-0.0686	0.0269	-0.000891	-0.00347
	(2.413)	(0.0835)	(0.0281)	(0.0870)	(0.0203)	(0.0119)	(0.0189)
Fruit	-3.775	-0.134	-0.0416	-0.143	0.000148	0.00115	0.0439
	(3.566)	(0.156)	(0.0460)	(0.174)	(0.0387)	(0.0201)	(0.0375)
Vegetable	-8.454***	0.114	-0.0646*	0.0965	0.0258	-0.000240	-0.0275
	(2.927)	(0.149)	(0.0380)	(0.154)	(0.0326)	(0.0188)	(0.0311)
Nursery	3.120	-0.391*	0.139*	-0.189	-0.206***	-0.0567***	0.193***
	(5.549)	(0.225)	(0.0775)	(0.246)	(0.0426)	(0.0194)	(0.0388)
Cattle	-0.738	-0.0880	0.0775***	-0.0844	0.0150	0.0258**	0.0161
	(1.959)	(0.0596)	(0.0236)	(0.0613)	(0.0173)	(0.0106)	(0.0152)
Hogs	-0.276	-0.179**	0.0408	-0.212**	0.0623**	0.0217	-0.0570**
	(4.673)	(0.0903)	(0.0389)	(0.0919)	(0.0278)	(0.0173)	(0.0259)
Poultry	10.75	0.142	0.0119	0.128	0.0123	-0.0133	-0.00141
	(7.667)	(0.146)	(0.0549)	(0.147)	(0.0386)	(0.0183)	(0.0377)
Dairy	3.386	-0.0249	0.0798**	-0.00284	0.0786***	-0.0232*	-0.0666***

	(3.173)	(0.0876)	(0.0351)	(0.0942)	(0.0214)	(0.0128)	(0.0205)
Other livestock	8.754	-0.0151	0.100*	-0.118	0.0188	0.0590**	-0.0471
	(8.964)	(0.160)	(0.0600)	(0.163)	(0.0374)	(0.0285)	(0.0365)
Nonfarm employment	0.966	0.120*	-0.0123	0.102	0.0223	-0.0177*	-0.0260*
	(2.164)	(0.0688)	(0.0186)	(0.0714)	(0.0164)	(0.00971)	(0.0156)
Not in workforce	0.806	0.0973	-0.0983**	0.0888	0.000970	0.000796	-0.0406
	(1.008)	(0.143)	(0.0441)	(0.154)	(0.0345)	(0.0230)	(0.0343)
Operator occupation other	5.310	-0.0707	-0.192	-0.221	0.0777	-0.0164	-0.0700
	(3.441)	(0.265)	(0.138)	(0.248)	(0.0986)	(0.0632)	(0.0952)
Retired from farming	-3.380**	0.0637	-0.0337	0.0442	0.0170	-0.00356	-0.0165
	(1.572)	(0.0639)	(0.0240)	(0.0670)	(0.0200)	(0.00964)	(0.0198)
Female	-4.354**	-0.0684	0.0572	-0.140	-0.00969	0.0524**	-0.0149
	(1.837)	(0.150)	(0.0429)	(0.162)	(0.0341)	(0.0246)	(0.0306)
Nonwhite or Hispanic	7.633*	-0.153	-0.000360	-0.0881	-0.0116	0.00832	-0.0273
	(4.558)	(0.119)	(0.0338)	(0.120)	(0.0268)	(0.0157)	(0.0258)
Age of loan (years)	0.242***	0.00660	0.00615***	0.000667	0.00633***	0.00121	-0.00454***
	(0.0648)	(0.00495)	(0.00223)	(0.00506)	(0.00137)	(0.000940)	(0.00129)
Lender Controls	YES	YES	YES	NO	NO	NO	NO
State FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Constant	24.20	5.251***	1.664***	5.583***	0.324***	0.178***	0.771***
	(20.97)	(0.407)	(0.134)	(0.327)	(0.0770)	(0.0558)	(0.0716)
Observations	12,099	13,244	13,244	13,322	13,322	13,322	13,322
R^2	0.305	0.255	0.100	0.191	0.067	0.026	0.057

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B6: Full Results with Premium Paid IV, Loan cross section

	(1) term	(2) interestrate	(3) numoploans	(4) interestrate	(5) fcsloan	(6) fsaloan	(7) bankloan
Log(premium per acre)	-0.730	0.0409***	-0.00906	0.0392**	0.00246	0.00347	-0.00545
	(0.484)	(0.0152)	(0.00615)	(0.0161)	(0.00393)	(0.00239)	(0.00368)
High school grad	8.046***	0.0866	0.0264	0.0905	0.0334	-0.00831	-0.0153
	(2.546)	(0.108)	(0.0349)	(0.111)	(0.0236)	(0.0140)	(0.0221)
Some college	9.270***	-0.0114	0.00656	0.00247	0.0465*	-0.00285	-0.0298
	(3.049)	(0.110)	(0.0354)	(0.113)	(0.0244)	(0.0145)	(0.0228)
College grad	9.218***	-0.113	0.0603*	-0.0998	0.0600**	0.00716	-0.0468**
	(2.802)	(0.110)	(0.0364)	(0.113)	(0.0248)	(0.0146)	(0.0232)
Education other	10.73***	0.0456	0.274**	0.113	0.116	0.165***	0.0522
	(4.005)	(0.280)	(0.131)	(0.308)	(0.0712)	(0.0613)	(0.0632)
Sales $250,000-499,000	2.087	0.342***	-0.0511***	0.380***	-0.0464***	0.0215***	0.0164
	(1.791)	(0.0484)	(0.0168)	(0.0520)	(0.0125)	(0.00774)	(0.0115)
Sales $100,000-249,000	-0.386	0.461***	-0.0611***	0.485***	-0.0743***	0.0212**	0.00619
	(1.186)	(0.0579)	(0.0199)	(0.0600)	(0.0148)	(0.00909)	(0.0137)
Sales $40,000-99,000	-2.188*	0.681***	-0.103***	0.747***	-0.0992***	0.0303**	0.00535
	(1.310)	(0.0877)	(0.0258)	(0.0957)	(0.0206)	(0.0126)	(0.0191)
Sales $20,000-39,000	-4.105*	0.716***	-0.113**	0.762***	-0.0794**	0.0239	-0.000880
	(2.398)	(0.169)	(0.0450)	(0.181)	(0.0372)	(0.0228)	(0.0355)
Sales $10,000-19,000	-3.252	1.119***	-0.0227	1.257***	-0.0635	-0.0194	0.0528
	(2.569)	(0.345)	(0.0721)	(0.351)	(0.0597)	(0.0303)	(0.0500)
Sales $9,999 or less	-6.178*	1.335***	-0.0564	1.361***	-0.0527	0.0110	-0.0800
	(3.434)	(0.387)	(0.0793)	(0.422)	(0.0652)	(0.0360)	(0.0672)
Acres operated	-0.000115	-1.85e-05***	7.84e-06***	-1.81e-05**	3.16e-06	-3.36e-06***	1.17e-06
	(0.000125)	(6.48e-06)	(2.99e-06)	(7.15e-06)	(2.06e-06)	(6.56e-07)	(1.44e-06)
Share acres owned	-1.308	-0.111**	-0.0329**	-0.103**	0.0478***	-0.0101	-0.0173
	(0.932)	(0.0436)	(0.0139)	(0.0484)	(0.0178)	(0.00720)	(0.0114)
Total off-farm income	7.80e-07	-4.61e-08	-1.05e-08	-6.03e-08	4.76e-08***	-1.36e-08**	4.91e-09
	(5.36e-07)	(5.19e-08)	(1.14e-08)	(5.62e-08)	(1.51e-08)	(5.67e-09)	(1.83e-08)
Percent cropland	-0.0286	0.00302	-0.00347***	0.00296	-0.000111	8.95e-05	-0.000708

	(0.0804)	(0.00533)	(0.00123)	(0.00530)	(0.00111)	(0.000478)	(0.00100)
Operator age	-0.0112	0.000726	-0.000767	0.00226	0.000484	-0.00153***	0.000121
	(0.0469)	(0.00165)	(0.000590)	(0.00172)	(0.000428)	(0.000264)	(0.000392)
Wheat	-2.030	0.0499	0.00209	-0.00277	-0.00788	0.00318	-0.00505
	(1.870)	(0.0886)	(0.0328)	(0.0921)	(0.0245)	(0.0154)	(0.0232)
Corn	-2.523	-0.169***	0.00935	-0.203***	0.0345**	0.0118	-0.0190
	(1.678)	(0.0530)	(0.0200)	(0.0552)	(0.0147)	(0.00887)	(0.0136)
Soybean	-1.184	-0.177**	-0.0289	-0.200***	0.00620	0.0111	-0.0115
	(1.381)	(0.0709)	(0.0251)	(0.0744)	(0.0186)	(0.0110)	(0.0176)
Sorghum	-2.172	1.190**	-0.217***	1.180**	-0.0570	-0.000131	0.0527
	(2.582)	(0.469)	(0.0569)	(0.477)	(0.0838)	(0.0474)	(0.0686)
Rice	4.499	0.136	-0.239***	0.137	-0.0333	-0.0258	-0.0424
	(4.971)	(0.166)	(0.0549)	(0.170)	(0.0431)	(0.0234)	(0.0454)
Tobacco	-7.373	-0.493	0.0864	-0.389	0.0989	-0.0451	0.00133
	(5.210)	(0.356)	(0.114)	(0.358)	(0.0656)	(0.0376)	(0.0703)
Cotton	0.463	0.0237	-0.118***	0.0521	-0.0541*	-0.0175	0.0100
	(2.743)	(0.112)	(0.0419)	(0.116)	(0.0290)	(0.0171)	(0.0281)
Peanut	2.556	-0.363	-0.114	-0.393	0.125*	-0.00834	0.0172
	(2.414)	(0.286)	(0.0865)	(0.289)	(0.0728)	(0.0507)	(0.0609)
Other crops	-2.345	-0.0526	0.0157	-0.0355	0.0183	-0.00512	-0.00854
	(2.632)	(0.0916)	(0.0308)	(0.0962)	(0.0220)	(0.0128)	(0.0205)
Fruit	-6.460	0.250	-0.167***	0.290	0.0569	0.0229	-0.0327
	(5.584)	(0.288)	(0.0595)	(0.344)	(0.0590)	(0.0347)	(0.0593)
Vegetable	-8.417***	0.187	-0.0432	0.152	0.0378	-0.0103	-0.0584*
	(2.950)	(0.169)	(0.0418)	(0.176)	(0.0357)	(0.0202)	(0.0341)
Nursery	-2.989	-0.0503	-0.0269	0.147	-0.178***	-0.0244	0.106*
	(8.518)	(0.303)	(0.0960)	(0.329)	(0.0588)	(0.0315)	(0.0542)
Cattle	-2.633	0.0280	0.0640**	0.0260	0.0174	0.0252**	0.00206
	(2.628)	(0.0732)	(0.0293)	(0.0762)	(0.0209)	(0.0126)	(0.0187)
Hogs	-0.783	-0.144	0.0469	-0.185*	0.0656**	0.0314*	-0.0689**
	(5.305)	(0.0978)	(0.0434)	(0.0997)	(0.0297)	(0.0188)	(0.0277)
Poultry	6.910	0.489***	-0.0871	0.457***	0.0226	0.0113	-0.0936**
	(9.467)	(0.172)	(0.0641)	(0.177)	(0.0470)	(0.0241)	(0.0453)
Dairy	-2.120	0.183	0.0673	0.183	0.0876***	-0.0202	-0.110***

	(3.992)	(0.116)	(0.0490)	(0.123)	(0.0298)	(0.0180)	(0.0282)
Other livestock	8.061	0.0575	0.0819	-0.0541	0.0439	0.0626**	-0.0753*
	(9.791)	(0.179)	(0.0653)	(0.181)	(0.0406)	(0.0299)	(0.0397)
Nonfarm employment	1.883	0.123*	-0.0287	0.0975	0.0293*	-0.0127	-0.0343**
	(2.430)	(0.0741)	(0.0193)	(0.0769)	(0.0175)	(0.0108)	(0.0166)
Not in workforce	0.298	0.102	-0.134***	0.105	-0.0189	-0.000606	-0.0478
	(1.297)	(0.156)	(0.0445)	(0.167)	(0.0361)	(0.0241)	(0.0366)
Occupation other	1.385	-0.197	-0.391***	-0.387	0.0961	0.00601	-0.0714
	(6.577)	(0.322)	(0.104)	(0.265)	(0.116)	(0.0810)	(0.112)
Retired from farming	-2.623	0.0109	-0.0289	-0.00692			
	(1.641)	(0.0631)	(0.0252)	(0.0674)	(0.0204)	(0.00981)	(0.0190)
Female	-4.939**	-0.114	0.0323	-0.168	-0.0277	0.0329	-0.0247
	(2.095)	(0.168)	(0.0431)	(0.183)	(0.0367)	(0.0252)	(0.0335)
Nonwhite or Hispanic	9.573*	-0.118	0.0251	-0.0345	0.0255	-0.00290	-0.0613**
	(5.432)	(0.135)	(0.0379)	(0.135)	(0.0300)	(0.0164)	(0.0289)
Age of loan (years)	0.198**	0.00763	0.00694***	0.00138	0.00645***	0.00132	-0.00504***
	(0.0788)	(0.00526)	(0.00243)	(0.00534)	(0.00146)	(0.00101)	(0.00138)
Lender Controls	YES	YES	YES	NO	NO	NO	NO
State FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Constant	30.98	5.251***	1.799***	5.620***	0.362***	0.222***	0.824***
	(24.37)	(0.452)	(0.142)	(0.345)	(0.0793)	(0.0572)	(0.0738)
Observations	10,222	11,330	11,330	11,400	11,400	11,400	11,400
R^2	0.319	0.254	0.103	0.190	0.069	0.025	0.058

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B7: Full results: coverage rate with 2014 cross section

	(1) totalshort	(2) financed	(3) dshort	(4) repaid	(5) leverage	(6) denied	(7) deterfromcredit	(8) creditprob	(9) avgopinterestrate
Coverage level	4,255***	0.00672***	2,037**	2,218**	0.00171	0.00108	3.54e-06	0.00107	-0.00796
	(1,439)	(0.00249)	(883.1)	(1,003)	(0.00131)	(0.000924)	(0.000497)	(0.000953)	(0.00614)
Attitude toward risk	20,343***	0.0203***	7,631***	12,712***	-0.000417	0.0217***	-0.00459**	0.0176***	-0.0180
	(3,979)	(0.00775)	(2,803)	(2,432)	(0.00420)	(0.00280)	(0.00178)	(0.00299)	(0.0183)
Share acres under RP	2,056	-0.0336	-3,927	5,984	0.0425*	0.0148	-0.00290	0.0124	0.0644
	(23,835)	(0.0453)	(16,983)	(16,153)	(0.0244)	(0.0171)	(0.0109)	(0.0184)	(0.127)
Insured: Soybeans	189,683*	-0.0359	137,889	51,795	-0.0435	0.0311	-0.0689***	-0.0320	-0.425
	(110,943)	(0.0849)	(102,588)	(41,993)	(0.0270)	(0.0485)	(0.0171)	(0.0492)	(0.342)
Insured: Wheat	-1,924	-0.00386	870.0	-2,794	-0.0261	-0.0147	-0.0242	-0.0390	0.127
	(34,023)	(0.0663)	(23,882)	(17,888)	(0.0270)	(0.0250)	(0.0147)	(0.0264)	(0.172)
Insured: Cotton/Generic	-10,079	0.00393	5,099	-15,177	-0.0275	0.0163	-0.0194	-0.00170	0.142
	(45,991)	(0.0727)	(29,473)	(26,506)	(0.0318)	(0.0294)	(0.0163)	(0.0307)	(0.194)
Insured: Rice	21,171	-0.0537	-56,006	77,176	0.0681	0.145***	-0.0138	0.128**	0.170
	(94,772)	(0.115)	(42,243)	(79,912)	(0.0845)	(0.0526)	(0.0295)	(0.0538)	(0.343)
Insured: All other	34,197	0.0667	-153,332**	187,528*	0.364	0.0969	-0.0744***	0.0230	-0.362
	(122,590)	(0.116)	(67,154)	(102,741)	(0.384)	(0.0817)	(0.0228)	(0.0833)	(0.418)
High school grad	-15,370	0.0511	35,582*	-50,952	-0.00257	-0.153***	-0.0154	-0.168***	0.194
	(62,991)	(0.0714)	(20,926)	(54,849)	(0.0276)	(0.0429)	(0.0255)	(0.0426)	(0.252)
Some college	-27,014	0.0201	24,657	-51,671	-0.0267	-0.136***	-0.00513	-0.140***	0.0469
	(62,796)	(0.0718)	(20,432)	(54,781)	(0.0274)	(0.0432)	(0.0258)	(0.0429)	(0.250)
College grad	-23,707	0.0339	39,747*	-63,453	-0.00183	-0.164***	-0.0180	-0.180***	0.0633
	(65,807)	(0.0752)	(23,855)	(56,460)	(0.0294)	(0.0436)	(0.0259)	(0.0433)	(0.251)
Sales $250,000-$499,999	-243,417***	-0.00389	-116,381***	-127,035***	-0.00531	-0.0285	0.00418	-0.0237	0.386***
	(36,870)	(0.0377)	(17,934)	(25,897)	(0.0211)	(0.0197)	(0.00935)	(0.0200)	(0.110)
Sales $100,000-$249,999	-235,358***	0.0318	-127,693***	-107,665***	-0.0257	-0.0807***	0.0228**	-0.0595***	0.273**
	(47,004)	(0.0485)	(21,305)	(34,218)	(0.0325)	(0.0212)	(0.0112)	(0.0217)	(0.136)
Sales $40,000-$99,999	-236,041***	0.0212	-133,709***	-102,331**	-0.0307	-0.108***	0.0371**	-0.0755***	0.702***
	(55,360)	(0.0728)	(24,762)	(40,299)	(0.0644)	(0.0250)	(0.0148)	(0.0262)	(0.183)
Sales $20,000-$39,999	-228,372***	-0.0807	-135,005***	-93,367**	-0.0908**	-0.202***	0.0251	-0.181***	0.993***
	(61,144)	(0.123)	(27,300)	(44,150)	(0.0365)	(0.0342)	(0.0219)	(0.0370)	(0.323)
Sales $10,000-$19,999	-189,757***	-0.102	-126,797***	-62,960	-0.150***	-0.220***	0.0713*	-0.155***	-0.137
	(63,386)	(0.146)	(27,787)	(47,928)	(0.0318)	(0.0410)	(0.0396)	(0.0489)	(0.473)
Sales $9,999 or less	-236,878***	0.0670	-148,920***	-87,958*	-0.194***	-0.234***	0.103**	-0.146***	0.437
	(69,461)	(0.357)	(32,148)	(51,393)	(0.0331)	(0.0416)	(0.0458)	(0.0505)	(0.325)

Acres operated	90.15***	-6.46e-06	28.47***	61.68***	-3.27e-06	2.02e-06	7.86e-07	2.74e-06	-3.11e-05*
	(26.62)	(5.43e-06)	(10.73)	(18.96)	(2.82e-06)	(3.51e-06)	(1.27e-06)	(3.40e-06)	(1.82e-05)
Share acres owned	401.5	0.0192***	405.2	-3.695	-0.00347	-0.00188*	0.00360***	0.00172	-0.0115***
	(830.7)	(0.00193)	(486.8)	(532.3)	(0.00299)	(0.00103)	(0.000388)	(0.00130)	(0.00272)
Total off-farm income	0.233	2.18e-08	0.0942	0.139	-3.08e-08**	-7.06e-08***	5.51e-08**	-1.74e-08	1.31e-07
	(0.173)	(5.83e-08)	(0.0712)	(0.133)	(1.31e-08)	(2.10e-08)	(2.73e-08)	(4.08e-08)	(1.60e-07)
Percent cropland	348,698***	-0.203	146,074***	202,624***	0.133***	0.0268	-0.0172	0.0132	-0.245
	(79,861)	(0.124)	(50,838)	(54,295)	(0.0414)	(0.0385)	(0.0221)	(0.0401)	(0.248)
Operator age	-2,509***	-0.00987***	-1,142**	-1,368**	-0.00583***	-0.00436***	-0.00119***	-0.00548***	0.00569*
	(799.1)	(0.00164)	(552.9)	(537.9)	(0.000758)	(0.000577)	(0.000291)	(0.000587)	(0.00344)
Wheat	-163,434***	-0.0978	-59,211*	-104,223***	0.0129	-0.0719**	-0.0179	-0.0911**	0.0171
	(49,669)	(0.0799)	(34,241)	(29,868)	(0.0293)	(0.0344)	(0.0184)	(0.0354)	(0.250)
Corn	29,374	0.0440	16,686	12,688	0.0372	-0.0152	0.0114	-0.00439	-0.166
	(27,649)	(0.0445)	(17,190)	(19,263)	(0.0318)	(0.0222)	(0.0110)	(0.0227)	(0.128)
Soybeans	4,245	0.0788	-1,300	5,546	0.0204	-0.0191	0.00390	-0.0161	0.0173
	(23,252)	(0.0550)	(15,285)	(16,255)	(0.0272)	(0.0226)	(0.0116)	(0.0233)	(0.150)
Sorghum	-142,574	0.191	-62,261	-80,313	-0.0561	0.127	0.0546	0.177**	0.863***
	(97,165)	(0.220)	(55,215)	(71,993)	(0.0596)	(0.0885)	(0.0636)	(0.0860)	(0.278)
Rice	-402,735**	0.0133	14,430	-417,164***	-0.116	-0.260**	0.0750	-0.193*	1.206**
	(189,123)	(0.143)	(109,017)	(148,531)	(0.331)	(0.106)	(0.0528)	(0.111)	(0.576)
Tobacco	284,559	-0.0352	59,901	224,658	0.0480	0.0167	0.0112	0.0287	-0.985
	(226,017)	(0.130)	(80,972)	(200,154)	(0.0670)	(0.0941)	(0.0567)	(0.0992)	(0.659)
Cotton	-44,082	0.179	30,049	-74,132	-0.109	0.00371	0.0118	0.0180	0.137
	(100,585)	(0.119)	(44,211)	(95,154)	(0.0794)	(0.0568)	(0.0320)	(0.0571)	(0.347)
Peanut	-65,109	-0.113	-21,017	-44,093	-0.106	-0.0981	-0.0105	-0.113	1.933
	(83,609)	(0.146)	(43,111)	(72,817)	(0.0835)	(0.0965)	(0.0417)	(0.0999)	(1.276)
Other crops	23,241	0.0642	47,227	-23,986	-0.0368	0.0140	0.00410	0.0196	-0.0691
	(53,223)	(0.0774)	(41,173)	(32,655)	(0.0299)	(0.0351)	(0.0193)	(0.0363)	(0.255)
Fruit	-296,304	-0.311***	-124,375	-171,928*	-0.401**	-0.215*	-0.0513**	-0.259**	1.815*
	(181,985)	(0.112)	(121,540)	(104,053)	(0.162)	(0.118)	(0.0222)	(0.119)	(1.012)
Vegetable	825,256***	0.638	227,744**	597,512**	-0.0113	0.111	-0.0199	0.0960	0.221
	(289,050)	(0.513)	(99,899)	(259,530)	(0.0439)	(0.0956)	(0.0517)	(0.0912)	(1.000)
Nursery	-103,246	-0.346***	-18,976	-84,270	0.0400	0.240	-0.0658***	0.181	-2.169**
	(204,272)	(0.133)	(131,507)	(96,742)	(0.0629)	(0.291)	(0.0240)	(0.294)	(0.952)
Cattle	186,391***	0.00964	109,009***	77,382**	0.0254	0.0206	-0.0234*	-0.000501	-0.0188
	(59,322)	(0.0628)	(39,319)	(34,383)	(0.0218)	(0.0298)	(0.0130)	(0.0305)	(0.137)
Hogs	-66,367	-0.0183	-56,902*	-9,465	0.0107	-0.0311	0.00414	-0.0258	-0.438*
	(57,258)	(0.152)	(33,108)	(40,222)	(0.0318)	(0.0515)	(0.0246)	(0.0525)	(0.254)
Poultry	-67,483	-0.0951	-49,255	-18,228	0.103*	-0.000337	0.0101	0.0101	-0.479

	(71,614)	(0.120)	(46,133)	(45,172)	(0.0604)	(0.0731)	(0.0399)	(0.0762)	(0.583)
Dairy	4,619	-0.299***	36,378	-31,759	0.0357	0.0485	-0.00590	0.0440	0.181
	(66,863)	(0.0558)	(55,505)	(30,690)	(0.0394)	(0.0376)	(0.0190)	(0.0386)	(0.379)
Other livestock	123,866	0.0163	-11,376	135,242	0.0140	-0.0365	-0.0347	-0.0659	-0.948**
	(130,487)	(0.144)	(59,939)	(119,475)	(0.0610)	(0.0704)	(0.0275)	(0.0709)	(0.452)
Non-farm employment	-28,717	0.0400	148.8	-28,866**	0.0934*	-0.00118	-0.0182	-0.0151	-0.107
	(22,060)	(0.0603)	(16,513)	(12,629)	(0.0493)	(0.0209)	(0.0119)	(0.0219)	(0.132)
Not in workforce	20,265	0.166	3,222	17,044	-0.0244	-0.0488	-0.0750***	-0.115***	-0.0837
	(37,496)	(0.228)	(18,392)	(30,556)	(0.0243)	(0.0424)	(0.0207)	(0.0444)	(0.432)
Number of operators	40,106*	-0.0266*	23,330**	16,776	-0.00234	0.00562	0.00501	0.0104	-0.0880*
	(20,521)	(0.0154)	(11,450)	(15,945)	(0.0101)	(0.00795)	(0.00634)	(0.00797)	(0.0453)
Retired from farming	-25,338	-0.117	-32,847**	7,509	-0.0245	-0.0148	0.0285	0.00946	0.259
	(31,627)	(0.0976)	(14,620)	(27,172)	(0.0246)	(0.0349)	(0.0255)	(0.0398)	(0.306)
Female	-90,731	-0.0377	-37,998	-52,732	0.00583	-0.0508	-0.0246	-0.0726*	0.390*
	(64,197)	(0.115)	(35,033)	(39,177)	(0.0442)	(0.0414)	(0.0212)	(0.0432)	(0.224)
Nonwhite or Hispanic	-83,807	-0.152	-39,879	-43,928	-0.0514	-0.0369	0.0420	0.00819	1.584**
	(56,825)	(0.0953)	(31,983)	(37,393)	(0.0493)	(0.0639)	(0.0422)	(0.0663)	(0.742)
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	-394,113**	0.757**	-146,318	-247,795**	0.408***	0.471***	0.168***	0.629***	5.105***
	(167,170)	(0.311)	(96,582)	(123,559)	(0.111)	(0.113)	(0.0604)	(0.115)	(0.701)
Observations	5,063	5,057	5,063	5,063	5,061	5,063	4,608	5,063	1,681
R-squared	0.227	0.049	0.099	0.215	0.037	0.088	0.037	0.078	0.123

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1