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## **An Economic Analysis of Nontraditional Lending in Chapter 12 Bankruptcy Cases**

**Adam N. Rabinowitz<sup>1</sup> and Will Secor<sup>2</sup>**

<sup>1</sup>Department of Agricultural Economics and Rural Sociology, Auburn University, [adam.rabinowitz@auburn.edu](mailto:adam.rabinowitz@auburn.edu); <sup>2</sup>Department of Agricultural and Applied Economics, University of Georgia, [wsecor@uga.edu](mailto:wsecor@uga.edu); Alphabetical Authorship.

*Selected Paper prepared for presentation at the 2021 Agricultural & Applied Economics Association Annual Meeting, Austin, TX, August 1 – August 3*

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### **Abstract**

Nontraditional lenders are important credit providers for farmers. However, previous research has found farmers that use nontraditional lenders are riskier lending opportunities. Using a unique dataset of chapter 12 bankruptcy cases, we analyze the share of payment that is made or allowed by the courts on debt owed to traditional and nontraditional lenders. We find that traditional lenders with secured debt receive a greater repayment than nontraditional lenders. Meanwhile, there are more than twice the number of nontraditional lenders that are owed debt in these bankruptcy claims. While this raises concern for nontraditional lenders, that is mitigated some by the level of debt that is on average about one-sixth the size of the average debt of traditional lenders. Finally, we show there are numerous opportunities for future research in this area using case level bankruptcy data.

### **Introduction**

Agricultural producers require significant credit to finance their operations. This includes financing to fund capital purchases (e.g., land or equipment) and operational needs (e.g., seed or feed). Farmers obtain this financing from a variety of institutions. These include traditional lenders, such as commercial banks and Farm Credit, and nontraditional lenders, such as input suppliers and implement dealers. Nontraditional lenders are playing an increasingly important role in providing credit to farmers. Kuethe, Ifft, and Patrick (2018), estimate that implement dealers provided 27% of the long-term non-real estate debt to the agricultural sector in 2016. Meanwhile, as nontraditional lenders have grown in importance as credit providers for farmers, there is evidence that farmers who use more nontraditional lenders are more leveraged and are thus riskier lending opportunities (Brewer, Bergtold, Featherstone, and Wilson 2019). In addition, the rise in Chapter 12 bankruptcies adds risk for all agricultural lenders. According to the American Farm Bureau Federation, Chapter 12 bankruptcies in the U.S. are at their highest overall rate in a decade (American Farm Bureau Federation 2019). Dinterman and Katchova (2021) also document a steady rise in debt levels for Chapter 12 bankruptcy filers and an increase in bankruptcy completion times since 2007.

While there are national trends of increasing debt with nontraditional lenders, this varies across the country, ranging from 18 percent in Wisconsin to 49 percent in Georgia (Ifft, Kuethe, and Patrick 2018). This is not unexpected given the specialized and costly equipment needed for peanut and cotton farming that is prominent in the Southeast. Meanwhile, Georgia had the second highest number of Chapter 12 bankruptcy filings of any state during 2009-2018 (American Farm Bureau Federation 2019). This suggests that Georgia is a fruitful area to research the interaction between nontraditional lenders and the Chapter 12 bankruptcy process.

All of this raises concern of the financial state of agriculture and the lending institutions providing credit to this sector. However, there is no literature focused on the position of lender types in farm bankruptcy cases.

This study uses a unique dataset of individual-level bankruptcy cases to analyze the position of nontraditional lenders in Chapter 12 bankruptcy cases in the state of Georgia. We use the Federal Judicial Center's Integrated Database of bankruptcy cases beginning in 2007, supplemented with data from

individual bankruptcy case records. This provides us with a novel dataset and the unique ability to analyze the use of nontraditional lending by farmers who have filed for bankruptcy in Georgia.

We find that the average number of nontraditional creditors in a bankruptcy case is almost double the average number of traditional creditors. However, the average debt of nontraditional creditors is only 16.5% of the average debt of traditional creditors. Thus, while more nontraditional creditors have debt involved in farm bankruptcy cases, they are smaller claims. Moreover, our model estimates show that traditional lenders of secured debt are either paid or are expected to be paid about 10 percent more than nontraditional lenders.

### **Nontraditional lending**

Nontraditional lenders include input suppliers, equipment manufacturers and dealers, contractors, and others. Nontraditional lenders have been on the radar of researchers since the early 1990s (e.g., Duncan and Taylor 1993). Sherrick, Sonka, and Monke (1994, p. 342) define nontraditional lenders as "... those whose primary contacts with producers historically have been for goods and services other than credit..." In contrast, traditional lenders are "... those whose traditional (historic) contact with the producers [farmers] was primarily to provide credit..." (Sherrick, Sonka, and Monke 1994, p. 342). Traditional lenders include the Farm Credit System, commercial banks, and insurance companies. Fiechter and Ifft (2020-a) refine this definition by recognizing and incorporating not just the primary transaction relationship, but also the credit delivery model. Nontraditional lenders deliver their credit in a unique way in comparison to traditional lenders that typically include a loan officer and a local branch.

Three categories of lenders exist in the Fiechter and Ifft (2020-a) refinement: high-volume lenders, vendors, and collateral-based lenders. High-volume lenders represent financial institutions or divisions within these firms that specialize in providing farmers with credit but do not have a physical presence in the areas that they are providing the credit. Examples include Metlife and Rabo Agrifinance (Fiechter and Ifft 2020-a).

The vendors category aligns closely with the definition in Sherrick, Sonka, and Monke (1994): firms that provide goods/services as their primary business with credit being the way to facilitate those sales. These vendors may extend credit in different ways. Some may have internal financial capabilities that look like a miniature financial institution (e.g., John Deere financing a combine). Others may provide credit implicitly, such as an interest-free payment plan over several months for an input (e.g., seed). Examples of these types of lenders include John Deere Financial and Nutrien Ag Solutions (Fiechter and Ifft 2020-a).

Fiechter and Ifft (2020-a) describe collateral-based lenders as "... nonbank institutions that make lending decisions primarily based on the value of collateral, although other factors are typically taken into account." The type of collateral backing the financing (e.g., land vs equipment) can vary by lender and farmer. Examples of collateral-based lenders include FarmOp and AgAmerica Lending (Fiechter and Ifft 2020-a).

Getting a good estimate of nontraditional lending's size and market share is difficult. These estimates have varied across time and vary across geography. Sherrick, Sonka, and Monke (1994) suggest that nontraditional lenders accounted for around 20 percent of the market at the time. However, the authors state that this number was more of a trade guess than official estimate. At the time, the USDA was not collecting information on farmer lending sources (Sherrick, Sonka, and Monke 1994).

USDA ERS/NASS Agricultural Resource Management Survey (ARMS) regularly collects data on farmers' debt levels and the sources of debt. Kuethe, Ifft, and Patrick (2018) report that the percent of long-term, non-real estate farm debt linked to nontraditional lenders increased from 11 percent in 2003 to around 27 percent in 2016. Real estate debt was dominated by traditional lenders with the Farm Credit System and commercial banks alone accounting for more than 85 percent of loan volume in 2016. Fiechter and Ifft (2020-b) provide updated statistics from USDA ARMS finding that farmers obtained around 10-15 percent of all farm debt in 2019 from nontraditional lenders. However, there is significant variation across geographic areas. Nontraditional lenders account for the smallest shares of this debt type in the West Coast, the Mountain States, and the Northeast in 2012-2015. The Midwest and Southeast have some of the largest shares, except for Wisconsin (Ifft, Patrick, and Kuethe 2018)

Three studies analyze the link between nontraditional lenders and farmer characteristics. In particular, a concerted effort is made to determine if farmers using nontraditional lenders are riskier as indicated by weaker financial performance or in a poor financial position. Patrick, Kuethe, and Ifft (2018) study USDA ARMS data from 2012-2015 to determine if farm financial variables, such as the debt-to-asset ratio, total debt, and debt coverage ratio, affect a farmer's likelihood for having debt with a nontraditional lender. They find that these variables have no significant effect on the likelihood that a farmer uses a nontraditional lender.

The data from the USDA ARMS are valuable because the USDA ARMS creates a national-level dataset linking individual/farm debt and farm characteristics. However, it does have several limitations that may be relevant when analyzing nontraditional credit and chapter 12 bankruptcies.

First, debt levels and sources are reported as of December 31 of a given year. As a result, debt paid off during the previous year is not accounted for. This may be of particular concern for nontraditional lending with respect to short-term trade credit from a vendor. If this is paid off by year-end, it will not be captured by the survey.

Second, only five lenders may be listed in the survey response. If nontraditional lenders are used at the margin, they may be underreported by farmers that do not perceive them as a top-five credit provider. Additionally, farmers in chapter 12 bankruptcy often have more than five lenders implying that this five-lender maximum would impose a significant limitation of the refinement researchers can see for farmers in chapter 12 bankruptcy or extreme financial positions.

Third, the loan amount and lender type is self-reported by the respondent. This creates potential reporting error for all loans. However, this structure may result in nontraditional lending being under-reported. For example, if farmers do not view accounts payable as credit, they are unlikely to report it, even though it remains a debt obligation for the farmer.

The fourth and final limitation related to the current study is that non-farm loans are excluded even if the debt is secured by assets associated with the farm (ARMS 2020, p. 15). This is a troublesome aspect as it relates to farmers in chapter 12 bankruptcy or potentially extreme financial positions. In addition to an income test, farmers are eligible for chapter 12 bankruptcy protection if more than 50 percent of the filer's debt is related to their farm operation. That implies that filers may have up to (but not including) 50 percent of their debt linked to another business or to their personal affairs. This debt would normally be left out of the USDA ARMS data, but it plays an important role in analyzing the financial situation of

farmers in chapter 12 bankruptcy. Additionally, non-farm loans may disproportionately originate from nontraditional lenders. There is a need to obtain more detailed, whole-entity financial information.

The second study analyzing the link between nontraditional lending and farmer characteristics uses both an original survey of feed manufacturers and annual survey data from a farm management association to investigate nontraditional lending in the New York dairy industry (Fiechter and Ifft 2020-c). Fiechter and Ifft (2020-c) find that around 10 percent of trade credit at the surveyed feed manufacturers was past due. They estimate this represents around \$100 million of credit being extended to farmers. Using the farm management association data, Fiechter and Ifft (2020-c) draw a link between negative margins for the dairy industry and increases in trade credit past due at feed manufacturers. This data also suggests that farmers with more debt maintain higher accounts payable and the accounts payable trend appears to follow the past due trade credit trend in feed manufacturers (Fiechter and Ifft 2020-c).

The third study, Brewer et al. (2019), uses Kansas Farm Management Association data from 2002-2012 to examine the connection between farm characteristics and financial institution choice. Their findings consistently point to more leveraged farmers being more likely to use commercial banks and nontraditional lenders (Brewer et al. 2019). Interestingly, Brewer et al. (2019) emphasize that the lending decision is a joint decision. A farmer seeks out credit from potential lenders. Both the farmer and the lender must agree to the terms of the credit agreement. These include the interest rate, the repayment length, collateral, and other factors.

As it relates to the current study, this literature points to two things. First, a refined dataset is needed to explore particular issues in the nontraditional lending space. Official datasets can help estimate the size of nontraditional lending and trends over time, but many specific research questions connecting farms and nontraditional lenders require more detailed data. The current study overcomes this limitation in existing datasets by obtaining detailed financial information from court records that includes information on farm-related and personal debt.

Second, the research on nontraditional finance in agriculture remains an emerging area of research. Several questions remain unanswered. This study contributes to this literature in two ways. First, it directly connects issues between farmers in extreme financial positions with nontraditional lenders. Much of the previous literature has sought to identify the types of farms using nontraditional lenders. By flipping this, we are able to say how prevalent nontraditional lenders are in the creditor mix for a type of farm – those in chapter 12 bankruptcy. Second, this paper documents how nontraditional lender debt is treated in the chapter 12 bankruptcy process in Georgia. This fills a significant gap in analyzing nontraditional lending from the perspective of the lender.

### **Chapter 12 bankruptcy**

Over the past decade and a half, the agricultural economy has seen (and continues to see) significant volatility in financial outcomes. 2004 and 2005 saw the highest net farm income levels in real dollars since the 1970s. Net farm income then dropped to levels closer to average in 2006-2009. Then, net farm incomes hit records in nominal dollars in 2011 and 2013, while in real terms they were the third and second highest net farm income levels seen after WWII. After 2014, net farm income plummeted, hitting a low of \$68 billion (2021 dollars) in 2016. Net farm incomes rebounded in 2020, estimated to hit \$123 billion (2021 dollars), largely driven by significant increases in government payments.

Along this roller coaster ride of incomes, farm debt marched higher. Between 2005 and 2020, farm debt rose from \$276.5 billion (2021 dollars) to \$440.1 billion (2021 dollars) – a 59 percent increase. The combination of volatile income and rising debt created an environment that led to higher chapter 12 bankruptcy filings.

Chapter 12 bankruptcy provides farmers and fishing operations with legal protection and the opportunity to restructure their financial position. In order for an individual or business entity to qualify for chapter 12 bankruptcy, that entity must receive at least 50 percent of their income from farming and at least 50 percent of the debt must be associated with the farming operation (Walker, Suri, and Goeringer, 2020). This implies that up to 50 percent of income and debt may be unrelated to farming, a potentially key element that relates to nontraditional lending in agriculture.

Chapter 12 bankruptcy is a reorganization chapter as opposed to a liquidation chapter such as chapter 7 (Walker, Suri, and Goeringer, 2020). A farmer's debt is restructured, changing the repayment period, interest rate, payment schedule, and other elements of the particular debt. These debts are often set to be repaid over 3-5 years, but larger debt obligations may have a repayment period beyond 5 years. For example, a home mortgage may be restructured to be paid back over the next 30 years.

Upon successful completion of the bankruptcy plan – the court-approved document outlining all of the restructured debt and the payment schedule – a farmer is discharged. All remaining, unpaid, eligible debt is no longer a financial obligation for the debtor. Those creditors that have not been paid at that time may no longer seek to collect that debt. However, debt with longer repayment terms, as outlined in the plan, must continue to be repaid.

An alternative outcome to discharge is when a farmer fails to keep up with the bankruptcy plan. In this situation, the case may be dismissed by the court. At that time, the farmer no longer has bankruptcy protection, and creditors may seize collateral or seek to collect unpaid debt. A variation to dismissal occurs when the farmer requests the court dismiss the case. This occurs if the farmer negotiates new terms outside of the court or believes the benefit of the bankruptcy process are no longer needed.

In chapter 12 bankruptcies, a distinction is made between three types of debt: secured debt; priority unsecured debt; and, nonpriority unsecured debt (Walker, Suri, and Goeringer, 2020). Secured debt is debt that has some sort of collateral backing the debt. An example of this is a mortgage on farmland or a loan for a tractor. Priority unsecured debt (herein referred to as priority debt) is unsecured debt that is a result of a legal judgement or a tax obligation. Nonpriority unsecured debt (herein referred to as unsecured debt) is debt that has no collateral backing the debt. An example of this debt is credit card debt. Much of the debt in this category that is unpaid when a farmer in bankruptcy is discharged.

One important aspect of nontraditional lender debt's treatment during bankruptcy is the type of debt it is. Nontraditional lender debt may be secured or unsecured. For example, a farmer may have a tractor that was financed by John Deere Financial. That financing was likely secured with the tractor being used as collateral. If the farmer does not make the payments on the tractor then John Deere Financial may take possession of the tractor.

For a contrasting example, suppose that same farmer receives trade credit from their local feed mill for feed being used on their operation. Often the feed cannot be used as collateral for that type of debt because it is used up; there is nothing to re-possess. In that case, the farmer's debt with the feed mill that

has no underlying collateral associated with it is unsecured debt. It is only considered priority if the feed mill pursues a legal judgment to obtain payment prior to the bankruptcy filing. If this legal judgement is not obtained then the debt is unsecured.

Continuing this example, suppose the farmer files for chapter 12 bankruptcy. In the chapter 12 plan the farmer will need to restructure the debt with John Deere Financial. However, the debt that is unsecured may be paid with any residual income after paying all the restructured secured and priority claims. In many cases, residual income is small or nonexistent, and as a result, much of the unsecured debt is not paid and discharged at the conclusion of the bankruptcy case.

Existing chapter 12 research has largely focused on the drivers of state-level filing rates. Stam, Dixon, and Rule (2003) describe the evolution of farm bankruptcy policy, farm bankruptcy filings, and hypothesize about farm bankruptcy drivers. Farmland values, farm income, interest rates, and various policy changes were suggested as important factors affecting filing rates over time. Additionally, the authors discuss the availability of off-farm employment and farm size potentially reducing filing rates in the Northeast and Appalachian regions (Stam, Dixon, and Rule 2003).

Dixon et al. (2003) provide one of the first econometric analyses of state-level filings using data from 1986-2002. The paper finds that state-level farm financial variables (including debt-to-asset ratio and net farm income), non-farm financial variables (i.e., the state's unemployment rate), farm structure, and policy variables (e.g., the share of net farm income coming from government payments) affect chapter 12 bankruptcy filings (Dixon et al. 2004).

More recently, Dinterman, Katchova, and Harris (2018) focus on financial stress variables' impacts on chapter 12 filing rates and how those impacts vary before and after a major bankruptcy reform in 2005.<sup>1</sup> Using a fixed effects model, the authors find that broader macroeconomic variables (e.g., interest rates and unemployment rates) and agricultural land values are major drivers of chapter 12 filing rates. Other state-level agricultural finance variables (e.g., working capital or net farm income) were not significant (Dinterman, Katchova, and Harris 2018).

State-level data presents several limitations. First, they are data that reflect broad state averages or totals, but ignores particularities of the actual filer. The drivers of a single bankruptcy are not just related to state-level variables, but with the specifics of the particular filer. Second, in linking state-level filings with state-level independent variables, one misses the within state variation that would be reflected in a filer-level dataset. For example, a filer-level dataset can link economic conditions of the county's predominant agricultural activity, compared to the state's predominant agricultural activity (e.g., poultry vs row crop production) that can impact the farms profitability. Third, state-level data reflects filings, but not actual cases. In a given year, many chapter 12 bankruptcies will be filed but some will be moved to another bankruptcy chapter, while others may be dismissed. Moreover, some of these cases will be refiled after dismissal or they may be related to the same farm operation (e.g., an individual filing concurrently with a separate business entity owned by the individual). This bankruptcy situation will be double-counted, inflating a particular state's filing number for a given year. As a result of these limitations, a filing-level dataset is preferable.

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<sup>1</sup> See Harl (2006) and O'Neill (2006) for descriptions of these policy reforms and its potential impacts.



Little research has analyzed filing-level data in the chapter 12 literature. Dinterman and Katchova (2021) is a recent exception. This research analyzes how long chapter 12 bankruptcies are in the court system and the determinants for this length using publicly available filing-level data. The authors suggest that higher debt levels contribute to a longer time in court. While this is not unique to chapter 12 filers, chapter 12 filings have seen debt levels increase over time, making it an important issue (Dinterman and Katchova 2021).

While able to use some filing-level data and finding it beneficial, Dinterman and Katchova (2021) also describe some of its limitations. This includes not having land transaction information and its tax implications (Dinterman and Katchova 2021). In addition to these limitations, the public database does not contain any specific creditor information, chapter 12 plan information, or specific payment outcomes by creditor. This is especially problematic when trying to analyze the treatment of nontraditional lenders in chapter 12 bankruptcy proceedings. Tracking their claim throughout the process is essential to performing this analysis, and the public database does not contain that information.

The current study contributes to the chapter 12 literature in two ways. First, it contributes to a limited literature on debt treatment in chapter 12 bankruptcies. Chapter 12 bankruptcy literature has largely focused on the farmer filer. In the current research, we focus on outcomes for the (nontraditional) lenders by looking at how their debt is treated during the chapter 12 bankruptcy process.

Second, this study addresses the current data constraints in existing, public bankruptcy databases by obtaining case-level court documents. This allows us to track traditional and nontraditional debt, its restructuring, and its repayment. This is something that is not possible with existing datasets.

### **Data description**

Data for bankruptcy cases is primarily obtained from individual court records through the Public Access to Court Electronic Records (PACER) tool and Case Management/Electronic Case Files (CM/ECF) systems. This system is maintained by the bankruptcy court and contains all case-specific documents. Case records are available dating back to 2003, however, we find that more consistent filing information for empirical analysis is available beginning in fiscal year 2008 (October 1, 2007) when the Federal Judicial Center provided public access to an Integrated Database (IDB) of filings for bankruptcy cases. Thus, we restrict our dataset to cases filed beginning on October 1, 2007. We also limit our dataset to cases that were subsequently discharged from the court so that we can assess the amount paid through the bankruptcy process or the amount that is expected to be paid for claims that last longer than the case is with the court.

From the CM/ECF system we obtained court documents for each discharged chapter 12 bankruptcy case throughout the three bankruptcy court districts in Georgia. Court documents obtained include the Voluntary Petition, Schedules A through J, the Statement of Financial Affairs, the Plan, and the Trustee Final Report. Individual creditor data and case level data are manually collected from these documents to create a unique dataset of creditor level claims for each discharged bankruptcy case since October 1, 2007. We then supplement these data using the IDB data to verify case level variables and fill in missing data where necessary.

Each case contains information about individual creditor claims that are secured, priority, and unsecured. We consider each of these designations as the claim classification. Using the name of the creditor and

subsequent internet searches as necessary, we also classified each lender type as either traditional or nontraditional. Similar to previous research, we define traditional creditors as commercial banks, Farm Credit, and the USDA Farm Service Agency. Nontraditional creditors are all other debt holders, including implement dealers such as John Deere and Kubota, input dealers such as feed, seed, and chemical companies, and an assortment of private debt that includes department stores, medical service providers, and county, state, and federal government obligations. It is important to note that because we only observe the creditor during the bankruptcy case, it is possible that this is not the original creditor. One such common example is the presence of a collection agency or attorney collecting on a debt. These are also classified as nontraditional, thus our analysis more accurately reflects the debt held by farmers in chapter 12 bankruptcy rather than the debt obtained by farmers prior to filing bankruptcy.<sup>2</sup>

In addition to case level data, we also collect county-level data for real GDP, total employment and farm government payments from the U.S. Bureau of Economic Analysis. Estimates of total land, including land in crops and pasture are obtained from the United States Department of Agriculture (USDA) Census of Agriculture. The USDA National Agricultural Statistics Service (NASS) was also used to obtain data on state level property values.

We aggregate individual creditor claims for each case by the three claim classifications (secured, priority, and unsecured) and two lender types (traditional and nontraditional). This results in a final dataset of 405 observations across 99 cases that were filed and discharged in Georgia since October 1, 2007.<sup>3</sup> Table 1a presents case-claim classification level summary statistics.

Cases have on average 4.82 unique claims with a range from 1 to 42. Traditional lenders account for 42 percent of our case-claim classification data, thus nontraditional lenders account for the majority of the bankruptcy claims. Focusing on claim classification, secured claims account for 41 percent of the data, while priority claims make up 17 percent and unsecured account for 42 percent.

With respect to claim outcome or plan, there are three variables of interest. First, ten percent of the claims classifications contained divested assets. This means the asset was either sold or repossessed to satisfy the financial obligation to the creditor. Second, claims are sometimes paid by individuals other than the debtor. This occurs in four percent of the claim classifications. Third, the average percent of the claimed amount per case allowed or paid is 37 percent.<sup>4</sup> Note, the percent of the claimed amount allowed or paid *per case or per debt-lender category* is equivalent to the weighted average of the percent of *a claim* that is allowed or paid *in the case or debt-lender category*. The weight in the weighted average calculation is the underlying claim amount for each claim. This alternative, weighted average interpretation will be used in the remainder of the paper as the percent of a claim allowed or paid.

Case-level summary statistics are presented in Table 1b. Individuals are the predominant filer type with 87 percent of the cases being filed by individuals. On average, cases have \$0.962 million of assets and \$1.403 million of liabilities in 2019-dollars. Approximately 66 percent of the assets are real property and

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<sup>2</sup> Note that this is not an issue at the aggregated, traditional-nontraditional lender distinction if a lender sells its debt to another lender/debt holder in its own category (e.g., traditional lender sells to traditional lender). This issue only arises if the debt is sold across categories (e.g., traditional lender to nontraditional lender).

<sup>3</sup> We dropped four cases that contained over 50 claims as extreme outliers.

<sup>4</sup> The first two variables describe how claims are fulfilled. However, they do not estimate the degree to which they are satisfied. The third variable, the percent of the claim amount per case allowed or paid, assesses this characteristic of claim outcome, regardless of how that is fulfilled.

81 percent of the total case level debt is secured by collateral. The average debt-to-asset ratio is 1.88, indicating extreme financial distress for these farmers. The debt-to-asset ratio ranged from 0.24 to 5.81.

The average GDP and employment change at the county-level at the time of filing for cases in the dataset is 0.3 percent and 0.03 percent, respectively. The average value of agricultural-related government payments at the county-level is \$3.85 million. The average value per acre of farmland at the state-level is \$3,596. Cases come from counties with, on average, 45 percent and 16 percent of their land in cropland and pastureland, respectively. A plurality of cases come from South Georgia. A total of 27 percent of cases, 26 percent of cases, and 46 percent of cases come from North, Middle, and South Georgia, respectively.

Table 2 contains a disaggregation of case-level debt and creditor statistics into traditional and nontraditional lenders by debt type. An average case has approximately eight to nine creditors, \$417,467 of debt, and \$158,790 of debt per creditor. On average, creditors with secured, priority, and/or unsecured debt hold approximately \$335,653, \$9,482, and \$35,469, respectively, per case. Approximately 41 percent of debt per creditor is paid or allowed. On average, creditors receive 82 percent of a secured claim, 46 percent of a priority claim, and just seven percent of an unsecured claim. On average, 37 percent of all debt is allowed or repaid per case.

The average number of traditional creditors with cases that have traditional creditors is 3.24. The average debt per traditional creditor is \$337,479. On average, a traditional creditor with secured, priority, and/or unsecured debt holds \$496,520, \$7,790, and \$25,738, respectively, per case. Approximately 59 percent of debt per creditor is paid for debt held by traditional lenders. On average, traditional lenders receive 83 percent of a secured claim, 56 percent of a priority claim, and 11 percent of an unsecured claim. The average debt held by traditional lenders per case is \$730,370. On average, just over 43 percent of all debt held by traditional lenders is allowed or repaid per case.

The average number of nontraditional creditors with cases that have nontraditional creditors is 6.19. The average debt per nontraditional creditor is \$55,838. On average, a nontraditional creditor with secured, priority, and/or unsecured debt holds \$112,583, \$9,541, and \$38,463, respectively, per case. Approximately 30 percent of debt per creditor is paid or allowed for debt held by nontraditional lenders. On average, nontraditional lenders receive 80 percent of a secured claim, 45 percent of a priority claim, and just 6 percent of an unsecured claim. The average debt held by nontraditional lenders per case is \$193,396. On average, 32 percent of all debt held by nontraditional lenders is allowed or repaid per case.

### **Empirical model**

We specify a Tobit model following Tobin (1958) to evaluate the impact of lender type and claim classification on the percent of debt paid or allowed. The use of a Tobit model is because the dependent variable is left censored at zero and ordinary least squared would result in inconsistent and biased parameter estimates. Conceptually, this takes the form of the following equation:

$$Y_{itj} = \alpha + \beta X_{itj} + \delta Lender_{itj} + \gamma Class_{itj} + \delta(Lender * Class)_{itj} + \varepsilon_{itj}$$

Where  $Y_{itj}$  is the percent of the claim that is allowed for secured cases or paid for priority and unsecured cases, for each  $i$  case, during time  $t$ , and class-lender type combination as denoted by  $j$ . Class-lender types are the six combinations of traditional-secured, traditional-priority, traditional-unsecured, nontraditional-secured, nontraditional-priority, and nontraditional-unsecured. Explanatory variables in

the model include a vector of  $X$  filer characteristics, case financials, and macroeconomic variables. The lender type is specified as *Lender*, while the claim classification is denoted *Class*.

We also interact the claim classification with the lender type, (*Lender \* Class*), as we hypothesize that different types of lenders may have differing effects on the amount they will be paid given the type of debt associated with their claim. The model's error term is denoted as  $\varepsilon_i$ . We present estimate results in the form of maximum likelihood parameter estimates and partial derivatives of the expected value with respect to the individual characteristics. Marginal effects are estimated by claim classification and lender type with respect to being a traditional lender to identify the effects of lender type across claim classifications (i.e., secured, priority, and unsecured debt) on the percent paid or allowed.

## Results

Table 3 presents coefficient estimates and average marginal effects from the Tobit model regression. Marginal effects are interpreted as the average percentage point change in the share of a claim that is allowed or paid.<sup>5</sup> At least one variable in each set of factors is significant when determining the share of claims allowed or repaid, with one exception. The type of filer (individual versus business) is not a significant factor in determining the share of claims allowed or repaid.

Three case-level financial variables are significant: total assets, the share of assets that are real property, and the number of creditors. If a filer has more assets, the share of a claim allowed or repaid is higher. In contrast, if more of a filer's assets are real property, the share of a claim allowed or repaid is lower. This is not very surprising since more assets would indicate more ability to repay debt, however, when those assets are primarily in real property then it is likely that the property is used to secure specific debts. Finally, if a filer has more creditors, the lower the share of the amount of a claim is allowed or repaid. In other words, when there are more creditors for a particular case it spreads potential payments across a larger pool, resulting in a lower share.

In the macroeconomic category, one broad economic health measure was found to be significant, employment change in the county. If employment in the county increases, the share of a claim allowed or repaid decreases. The farmland property value variable is significant and positive. This suggests that if farmland values in the state are higher, the percent of a claim allowed or repaid is higher. This aligns with expectations. If farmland values are higher, the underlying collateral will not be re-valued at a lower level which would reduce the amount paid. Finally, the variable measuring the share of land in a county in pastureland is significant and positive.

Controls for region within the state of Georgia are significant and negative. This suggests that a lower share of the claimed value in the Northern and Central part of Georgia is allowed or repaid as compared to South Georgia. Additionally, year fixed effects are significant, suggesting that there may be significant, industry-wide changes relative to 2008 that are affecting the percent of a claim allowed or repaid.

### *Lender Type*

On average, the type of lender (traditional versus nontraditional) does not play a significant role in determining the share of a claim allowed or repaid. However, the type of claim is important. The results

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<sup>5</sup> See the discussion at the end of the data section on interpreting the dependent variable as the share of a claim in the category vs the share of the category.

indicate that priority claims and unsecured claims have a lower share that is allowed or repaid. This makes sense because these types of debt are not backed by collateral, and those creditors (i.e., priority and unsecured) are of lower priority than secured creditors in the eyes of the court.

Lender type *does* matter when analyzing claim treatment by the category of the debt. Table 4 presents average marginal effects of being a traditional lender across claim types. The average marginal effect of the creditor being a traditional lender for a secured claim relative to nontraditional lenders of any claim type is significant and positive. This marginal effect estimate suggests that traditional lenders are allowed slightly over 10 percent more on a secured claim than nontraditional lenders. The effect of being a traditional lender in the other debt categories is insignificant.

## **Conclusion**

In this paper we use a Tobit model to analyze how creditor type (traditional/nontraditional) and debt classification (secured, priority, and unsecured) affects the proportion of the claim that lenders receive or are expected to receive when a farm bankruptcy case is discharged. We achieve this using a unique dataset of discharged bankruptcy cases in Georgia since October 1, 2007. Included in this dataset are filer characteristics, case financials, and creditor claims, supplemented with county level macroeconomic controls.

Summary statistics indicate that more than twice the average number of nontraditional creditors are owed debt in chapter 12 bankruptcy cases compared to traditional creditors. However, that debt is often much smaller. Regardless of the size of the debt, this is interesting because our Tobit estimates show that a case with more creditors ends up with a lower percentage of the debt being paid. Furthermore, traditional lenders with secured debt are repaid about 10 percent more than nontraditional lenders. These findings have important implications for lenders, especially nontraditional lenders, as they consider the risk of providing financing to farmers.

We recognize a few opportunities in this research for future work. The first is that we limited the dataset to only bankruptcy cases that have been discharged. While the focus of this subset of farmers is important, there may be important differences with cases that do not achieve that outcome. Thus, additional work on dismissed cases would be valuable to compare to the current analysis. A second opportunity is that we aggregated the creditor level data to a creditor type and debt classification level for each case. One could analyze these data at the creditor level, although that would require additional data to control for creditor specific characteristics. The third opportunity for future research worth mentioning is with respect to the definition of traditional and nontraditional creditors. While we followed existing literature, one could expand the definition of these creditor types when working with bankruptcy data to differentiate between personal and farm level debt. Unfortunately, this might be challenging in some cases as the original credit provider is not always known, thus making this analysis relevant with respect to the current debt owner.

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Table 1a. Case-Claim Classification Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Percent Allowed or Paid	0.37	0.41	0	1.21
Divested Asset (1 if asset is sold or repossessed)	0.10	0.30	0	1
Number of Unique Creditor Claims	4.82	4.99	1	42
Paid by Others (1 if claim is paid by someone other than debtor)	0.04	0.19	0	1
Traditional Lenders (1 if lender type is traditional)	0.42	0.49	0	1
Secured Claims (1 if claims are secured)	0.41	0.49	0	1
Priority Claims (1 if claims are priority)	0.17	0.38	0	1
Unsecured Claims (1 if claims are unsecured)	0.42	0.49	0	1
Number of Observations		405		

Table 1b. Case-Level Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Total Assets	961,816	887,829	84,905	5,397,878
Total Liabilities	1,403,073	966,025	127,089	4,044,850
Real Property Share	0.66	0.28	0	0.99
Secured Liability Share	0.81	0.19	0.13	1
Individual	0.87	0.34	0	1
Pct Change in Real GDP	0.0027	0.05	-0.12	0.15
Pct Change in Total Employment	0.0003	0.03	-0.09	0.12
Debt-to-Asset Ratio	1.88	1.17	0.24	5.81
Government Payments (in thousands)	3,854	3,457	30	15,908
Property Value	3,596	327	3,260	4,300
Cropland Share	0.45	0.16	0.17	0.69
Pastureland Share	0.16	0.14	0.03	0.46
Northern Georgia	0.27	0.45	0	1
Central Georgia	0.26	0.44	0	1
Southern Georgia	0.46	0.50	0	1
Case filed in 2008	0.07	0.26	0	1
Case filed in 2009	0.12	0.33	0	1
Case filed in 2010	0.18	0.39	0	1
Case filed in 2011	0.18	0.39	0	1
Case filed in 2012	0.09	0.29	0	1
Case filed in 2013	0.12	0.33	0	1
Case filed in 2014	0.12	0.33	0	1
Case filed in 2015	0.12	0.33	0	1
Case filed in 2016	0.01	0.10	0	1
Number of Cases		99		



Table 2. Claim, Lender, and Debt Mix per Discharged Chapter 12 Case

Lender Type	Claim Type	Average Number of Creditors per Case	Average Debt per Creditor per case	Average Percent of Debt Paid or Allowed per Creditor	Average Debt per Case	Average Percent of Debt Paid or Allowed per Case	Total Number of Cases
Traditional	Secured	2.29	496,520	0.83	1,271,098	0.73	91
	Priority	1.00	7,790	0.56	9,877	0.34	2
	Unsecured	2.48	25,748	0.11	151,664	0.10	42
	All	3.24	337,479	0.59	730,370	0.43	97
Nontraditional	Secured	2.24	112,583	0.80	275,003	0.63	67
	Priority	1.54	9,541	0.45	21,625	0.27	37
	Unsecured	5.93	38,463	0.06	245,326	0.11	57
	All	6.19	55,838	0.30	193,396	0.32	88
All	Secured	3.77	335,653	0.82	806,254	0.68	95
	Priority	1.59	9,482	0.46	20,786	0.28	37
	Unsecured	7.02	35,469	0.07	203,454	0.11	63
	All	8.68	158,790	0.41	417,467	0.37	99

Source: Secured data obtained from case plans. Priority and unsecured data obtained from schedules e and f, respectively.

Table 3. Parameter Estimates and Average Marginal Effects of the Percent of a Class-Lender Type Claim that is Paid or Allowed

Variable	Coef.	Std. Err.	dy/dx	Std. Err.
Divested Asset	0.0203	(0.072)	0.012	(0.041)
Number of Unique Creditor Claims	-0.009*	(0.005)	-0.005*	(0.003)
Paid by Others	0.0672	(0.105)	0.038	(0.059)
Total Assets	1.05E-07**	(4.44E-08)	5.91E-08**	(2.50E-08)
Total Liabilities	-4.11E-08	(3.89E-08)	-2.32E-08	(2.20E-08)
Real Property Share	-0.00179*	(0.001)	-0.001*	(0.001)
Secured Liability Share	0.000443	(0.001)	2.52E-04	(0.001)
Individual	0.0799	(0.081)	0.045	(0.046)
Pct Change in Real GDP	0.25	(0.531)	0.141	(0.300)
Pct Change in Total Employment	-1.729*	(0.902)	-0.977*	(0.510)
Debt-to-Asset Ratio	-0.0258	(0.028)	-0.015	(0.016)
Government Payments	-9.55E-06	(9.27E-06)	-5.39E-06	(0.000)
Property Value	0.00327**	(0.001)	0.002**	(0.001)
Cropland Share	0.211	(0.274)	0.119	(0.155)
Pastureland Share	0.786*	(0.423)	0.444*	(0.239)
Northern Georgia	-0.334***	(0.116)	-0.189***	(0.066)
Central Georgia	-0.157**	(0.062)	-0.0885**	(0.035)
Case filed in 2009	0.829**	(0.365)	0.101***	(0.024)
Case filed in 2010	1.793**	(0.704)	0.355***	(0.088)
Case filed in 2011	2.343**	(0.930)	0.593***	(0.176)
Case filed in 2012	3.500**	(1.356)	1.348***	(0.442)
Case filed in 2013	3.498***	(1.333)	1.347***	(0.423)
Case filed in 2014	3.600***	(1.337)	1.430***	(0.427)
Case filed in 2015	3.468**	(1.363)	1.323***	(0.447)
Case filed in 2016	2.766**	(1.187)	0.828**	(0.334)
Traditional Lenders	0.125**	(0.059)	0.026	(0.026)
Priority Claims	-0.446***	(0.067)	-0.340***	(0.044)
Unsecured Claims	-0.603***	(0.070)	-0.398***	(0.030)
Traditional*Priority	-0.216	(0.201)		
Traditional*Unsecured	-0.192**	(0.093)		
Constant	-13.58**	(5.679)		
Sigma	.138**	(0.012)		
McFadden Pseudo R-squared	0.384			
Log likelihood	-207.278			
Likelihood ratio chi-squared	257.94***			
Number of Observations	405			

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Table 4. Average Marginal Effects with respect to Traditional Creditor at Case Level

Variable	dy/dx wrt Traditional	Std. Err.
Traditional Secured	0.103**	-0.0487
Traditional Priority	-0.0399	-0.0784
Traditional Unsecured	-0.0233	-0.0245

Base variable is nontraditional lender of all creditor classifications..

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01