Factors Influencing the Adoption of Flexible Lease Arrangements in Iowa




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Abstract

The number of cash lease agreements in Iowa has steadily increased over the past few decades, with fixed cash leases being the dominant form. However, flexible leases, particularly those tied to both crop price and yield, saw increased adoption post-2002 and have maintained a steady market share since 2012. Using the Iowa Farmland Ownership and Tenure Survey (2002-2022), this study explores factors correlating with the adoption of flexible lease arrangement. Findings indicate that flexible leases are more prevalent in long-term, trust-based arrangements. Key factors include landowner age, farm visit frequency, and soil productivity, with variations observed based on landowners' operating status, ownership structure, and geographic location.

INTRODUCTION

The rising values of farmland and cash leases in Iowa have attracted national attention in recent years. In 2022, farmland in Iowa sold for a record $30,000 per acre, with additional sales reaching $29,000 per acre in 2024 (Bausch, 2024). According to the USDA, Iowa's farmland reached an all-time high average value of $9,420 per acre in 2024, driving up cash leases to their highest level at $276 per acre. This surge benefits landowners, but it poses challenges for farm tenants facing increased leasing costs, declining commodity prices, and rising farm operating loan interest rates (Chandio, 2024; Iowa Farm Bureau, 2022).

Previous studies indicate a continuing shift toward fixed cash lease agreements as the preferred method for leasing U.S. farmland (Paulson and Schnitkey, 2013; Bigelow, Allison, and Todd, 2016; Burns et al., 2018). Excluding farmland under custom farming arrangements and government conservation programs, the share of cash leased farmland in Iowa has steadily risen from 40% in 2002 to 56% in 2022, while crop share leasing has declined from 18% to 8% (Tong and Zhang, 2023). This shift aligns closely with the broader national trend, indicating a sustained preference for cash lease agreements over time. In 2022, 72% of leased farmland acres were leased under fixed cash lease agreements, while flexible cash lease agreements accounted for approximately 13% of leased acres (Tong and Zhang, 2023). Although fixed cash lease remains the dominant choice, flexible cash lease agreements have established themselves as a persistent alternative due to their ability to share risks and rewards between landowners and tenants (Figure 1).

Using the state-representative data from the Iowa Farmland Ownership and Tenure Survey, this study

examines the increasing trend of flexible cash leases in Iowa from 2002 to 2022. We analyze flexible cash lease use by crop price, yield, or both, identifying trends and regional patterns while exploring farmland and owner attributes that may increase the likelihood of parties choosing the flexible cash lease arrangement.

BACKGROUND

Flexible cash lease agreements have become an established alternative to traditional fixed cash lease agreements. Unlike the fixed cash lease, which imposes a predetermined rental rate per acre, flexible cash lease agreements adjust based on specific factors such as commodity prices, yields, or production costs (Plastina, Edwards, & Johanns, 2024). This flexibility allows both parties to share risks and rewards, making it an appealing option in volatile agricultural markets. For instance, the lease payment may be calculated as a percentage (typically 25%-40%) of the gross revenue generated per acre, with prices determined using futures contracts or local elevator prices and yields based on actual production or regional averages. Similarly, yield-based agreements may rely on local averages or actual yields measured through weigh tickets or precision agriculture tools. Some agreements combine both price and yield factors, ensuring a comprehensive reflection of farming outcomes.

Flexible cash lease agreements allow for risk-sharing by aligning rent with actual farm performance, providing tenants with downside protection during low-yield years while offering landowners upside potential during high-price or high-yield periods. They also incentivize landowners to stay informed about agricultural market conditions and field productivity. For tenants, these agreements offer a financial cushion during unfavorable market conditions, potentially improving their long-term sustainability (Schnitkey, 2015). By mitigating financial distress for tenants during downturns, these agreements promote long-term tenant solvency and reduce the likelihood of costly lease turnover for landowners. However, flexible cash lease agreements come with drawbacks. They can be complex to draft and require careful consideration of the price determinant variables. Landowners accustomed to fixed payments may find flexible arrangements challenging to manage, especially in short-term leases. Additionally, Iowa Code Section 562.6 stipulates automatic lease renewal unless terminated in writing by September 1, which could result in unintended lease extensions under unfavorable terms. Nevertheless, for landowners willing to navigate these complexities, flexible leases offer a mutual exchange: they benefit landowners by ensuring tenant solvency and minimizing costly lease turnover, while also offering the potential for higher rental income in profitable years and keeping owners informed about their land productivity .

The reasons for the predominance of fixed cash lease contracts have been widely studied in the literature. First, sharecropping contracts offer weaker tenant incentives due to the inherent structure of risk and reward sharing (Marshall, 2013). Second, rising expected net returns per acre and decreasing relative variance of returns on cash leased land have further incentivized this contract choice (Allen and Lueck, 1999; Prendergast, 2002; Fukunaga and Huffman, 2009; Lee et al., 2023). Moreover, advancements in farm management practices, crop insurance systems, enforceable contracts, and USDA support programs have mitigated production and price risks, reducing the necessity for shared-risk arrangements such as crop share contracts (Styan, Boerngen, & Barrowclough, 2021).

Existing literature has extensively analyzed the risk-return trade-offs between flexible and fixed cash lease arrangements. Langemeier and Liu (2020) found that flexible cash leases are optimal for risk-neutral landowners seeking high returns, whereas risk-averse landowners tend to prefer fixed cash lease agreements. Edwards and Hart (2013) highlighted that fixed cash leases can become problematic for tenants during periods of market volatility, as the fixed obligation remains high even when revenue falls. Flexible leases help mitigate tenants' solvency risk by adjusting the rent based on actual outcomes. Their analysis showed that yield-based flexible leases transfer the least risk from tenant to landowners, whereas revenue-based leases shift the most. Hybrid leases, which incorporate both price and yield factors, then shift a moderate amount of risk.

Flexible leases offer a dual advantage, allowing landowners to benefit from higher rent revenue while safeguarding tenants during market downturns. However, empirical evidence quantifying the magnitude of these profitability differences remains limited. More recently, Lin (2024) revisited the topic, suggesting that crop-sharing leases minimize tenant risk, while flexible cash leases provide a balanced approach by mitigating risk and enhancing expected returns.

DATA AND MODEL

This study utilizes data from the Iowa Farmland Ownership and Tenure Survey, conducted every

five years via telephone as mandated by Iowa law. The survey uses a random areal sampling design, ensuring geographic representation across the state. Specifically, the 1988 baseline survey sampled 705 farmland parcels, employing proportional allocation within Iowa's seven crop-reporting regions. Each region was divided into sections, from which 40-acre units were randomly selected, creating a sample statistically representative of all farmland and owners in Iowa and allowing for robust generalizations about the land acres and population.

To address potential biases, particularly non-response bias, the survey incorporates sample weights. These weights adjust the estimates to match the totals reported in the Census of Agriculture, ensuring alignment with broader agricultural statistics. For instance, the acre weights in the 2022 survey were explicitly designed to adjust for non-response bias, ensuring that the weighted sum equaled the total land area in farms as reported in the 2022 Census . This adjustment enhances the accuracy and reliability of state- and district-level estimates derived from the survey.

For this study, we combine farmland ownership and tenure information from surveys conducted over 2002 to 2022. This results in a dataset of 3,691 observations, providing a longitudinal view of farmland ownership dynamics over 21 years. The data reflects significant changes in ownership patterns over time. A single farm may have one or multiple owners, and the composition of ownership often changes due to life events such as divorce, death, or intergenerational transfers. Over the years, some farms experienced a decrease in owners as a result of these events, while others saw ownership transferred to the next generation, usually younger family members.

To maintain consistency and avoid duplication in ownership records, we retained only the primary farmland owner in cases of multiple ownership. Table 1 presents the summary statistics for the variables of interest in this study. We focus on farms that have opted for flexible cash lease arrangements at least once over the past 21 years, which represents approximately 25% of the surveyed farms. These farms form the basis of our analysis.

To understand the likelihood of adopting flexible cash lease agreements, we include variables related to lease characteristics, landowner demographics, and farm-specific attributes. As an overview of the data and its characteristics, among all the leases, 38% of the arrangements are written contracts, while the remaining 62% are verbal agreements. When examining the relationship between the tenant and landowner, 31% of landowners lease their farmland to relatives. The lease length for the farms who have leases ranges from 1 to 11 years, with an average duration of five years, providing insight into the stability and terms of these agreements.

Regarding landowner demographics, the ages of the surveyed landowners range from 25 to 97 years, with an average age of 67, reflecting the relatively senior age profile of farmland owners. Education levels vary, with 6% having less than a high school degree, 66% of landowners having a high school or post-high school degree, 28% holding a college or graduate degree.

To capture landowner engagement with their farmland, we define a variable, "rarely visiting site" that applies to landowners who visit their farms once or twice a year or not at all. This group constitutes 26% of the sample. Furthermore, 87% of the landowners are Iowa residents, indicating strong ties to the local agricultural community.

In addition to these variables, we include the corn suitability rating 2 (CSR2) to measure the productivity of the soil for each farm parcel. CSR2 is widely used in agricultural studies to assess soil quality and its potential impact on lease arrangements and land use decisions.

To investigate the factors influencing the adoption of a flexible cash lease, we employ a logistic regression model. This model estimates the likelihood of choosing the flexible cash lease as a function of the aforementioned attributes. We control the district fixed effect across Iowa's Crop Reporting Districts (CRDs) to make sure to make sure that regional differences, such as soil quality, climate conditions, and local market dynamics, do not confound the estimated relationships. The CRDs, established by the National Agricultural Statistics Service (NASS), are groupings of counties defined by geography, climate, and agricultural practices, including soil type, elevation, mean temperature, annual precipitation, and growing season length (NASS, 2018).

In logistic regression, the p-value represents the probability of observing the correlations while there was actually no real correlation in the population. A smaller p-value indicates stronger evidence against the null hypothesis, suggesting that the corresponding variable has a statistically significant relationship with the likelihood of adopting a flexible cash lease. We report significance at the 10%, 5%, and 1% levels, respectively. After removing missing values, 495

farmland owners were retained in the final sample for regression analysis.

RESULTS

Figure 1 illustrates the shares of different cash lease types in Iowa over the years, focusing on the key categories relevant to this study: the fixed cash lease, and flexible cash leases based on crop price, crop yield, or both. Fixed cash lease experienced a decline from 2002 to 2012, after which its utilization remained stable. By 2022, it constituted 72% of all leased acres and 82% of the cash lease acres. Meanwhile, the share of flexible leases based on both crop price and yield increased from 2007 and plateaued after 2012, potentially reflecting landowners' preference for risk diversification by using multiple metrics to determine rent. In 2022, flexible lease agreements constituted approximately 13% of all leased acres and 18% of the cash lease acres.

Although the shares of flexible lease tied solely to crop yield or price remain relatively low (1% of cash lease acres were subject to formula based upon yield and 3% based upon price), notable trends emerge. Flexible leases based on crop price show a steady rise from 2007, peaking in 2017. This trend likely correlates with rising crop prices starting around 2005, driven by the implementation of the Renewable Fuel Standard (RFS), which increased demand for corn as a feedstock for ethanol production (Lark et al., 2022). The resulting surge in corn prices likely made crop price-based flexible leases more attractive.

The severe 2012 drought in the U.S. Midwest triggered a significant supply shock, leading to a sharp surge in crop prices that year. The peak in flexible price-based leases around 2017 may reflect a delayed response to these events, as landowners adjusted to evolving market conditions. Alternatively, it could indicate the stabilization of markets over time. The 2012 supply shock could have discouraged yield-based flexible leases due to heightened concerns over production variability during extreme weather events.

Figure 2 illustrates the average shares of fixed cash rent leases, flexible cash rent leases, and crop share leases across different categories of landowners. Building on the study by Bigelow, Allison, and Todd (2016), which examined lease type distribution based on landowners' operating status and ownership type at the national level using the 2014 Tenure, Ownership, and Transition of Agricultural Land (TOTAL) survey, we analyze similar patterns across Iowa over the 21 years.

First, we compare the leasing preferences of operating landowners (OLs), who actively farm at least part of their land, and non-operating landowners (NOLs), who lease out all their land without engaging in farming. OLs tend to favor cash leases—particularly a fixed cash rent lease—potentially due to its predictable income stream and lower administrative complexity. In contrast, NOLs are more inclined to adopt crop share agreements, which allow them to share in both the risks and rewards of agricultural production. This preference aligns with national patterns, where NOLs often choose crop share leases to mitigate market fluctuations while capitalizing on potential gains during high-yield or high-price years.

The divergence in rental preferences between OLs and NOLs reflects their differing levels of involvement and expertise in farming operations. OLs, being directly engaged in production, possess a deeper understanding of market conditions and production risks. This may allow them to manage their operations more efficiently without the need for shared-risk contracts. On the other hand, NOLs, who lack direct involvement in day-to-day operations, may view crop share leases to align their interests with those of their tenants, leveraging the tenant's expertise to maximize productivity while sharing financial outcomes.

Previous research suggests that tenants with multiple landowners are less likely to choose crop share agreements because managing shared responsibilities can be complicated, and it is often easier to secure land through straightforward cash bids (Fukunaga and Huffman, 2009; Harwood et al., 1999). Flexible cash lease agreements offer similar risk-sharing benefits to crop share agreements but give tenants more control over management and marketing, much like fixed cash leases (Paulson, 2012). However, these agreements tend to have more complex contract terms, requiring landowners to have a better understanding of the price determinants. Our results show that corporations, which often have multiple stakeholders and prioritize financial stability, seem to favor fixed cash lease agreements over flexible cash leases. This aligns with that larger ownership groups may be less willing to engage in flexible lease terms.

Figure 3a presents a national map illustrating the share of flexible cash leases relative to total fixed cash rent acres, based on data from the 2014 TOTAL survey (Bigelow, Allison, and Todd, 2016). On average, the Midwest region had approximately 10% of leased acres under flexible cash lease arrangements in 2014. Our survey data covering the period from 2002 to 2022 indicates that Iowa exhibits a relatively higher

share of flexible cash leases, averaging 15% within the Midwest.

Figure 3b presents the average share of acres subject to a flexible cash lease (including both crop yield- and price-based flexible lease) among cash leased acres across CRDs. The data shows that northeast, northwest, and central-east Iowa generally have a higher share of acres rented under flexible cash leases, the total acres exceeding 20%. In contrast, southern Iowa exhibits relatively lower shares. This variation may be partly attributed to differences in soil quality across Iowa, as northern and central regions have more fertile soil conducive to crop planting (Chandio, 2024). The higher crop yields in these regions likely make flexible cash lease more attractive to landowners seeking to share in the benefits of strong yields.

Interestingly, central-west Iowa has the lowest share of flexible cash leases, a trend that is not readily explained by soil quality alone. Other factors may contribute to this anomaly and warrant further investigation. We also acknowledge that our small sample size may not fully capture the actual cash lease conditions in this region.

Using our sample of 495 landowners, we compare the attributes of farmland acres for the groups of fixed and flexible cash leases in Table 2. Surprisingly, the arguably more complicated flexible cash lease arrangements are more likely to be verbal as compared to a fixed cash lease agreement. One might surmise that the flexible lease agreement, which contains a formula, would be more likely to be written. However, the fact that more flexible leases are verbal might be a logical conclusion since the leases are more likely to be entered with a relative as opposed to a fixed cash lease agreement.

Interesting results arise when relationships between the landowner and tenant are studied. Relatives are more likely to lease farmland from an owner under a flexible cash lease agreement as opposed to a neighbor or someone else. This result may arise because the owner is more likely to engage in risk sharing with a relative as opposed to others. However, it is noteworthy that the flexible cash lease also shows a higher share with tenants categorized as “someone else” compared to fixed cash lease, which may require further explanation as one might expect landowner to be more likely to contract with “someone else” under a fixed cash lease agreement. Based on these expectations, lease arrangements with relatives are likely to have longer durations. It is notable that the flexible cash lease agreement would have a longer duration than the fixed cash lease agreement if the flexible cash lease agreement is a tool used to combat volatility. The answer may lie in the fact that relatives constituted a large share of the flexible lease population.

Age and education can be used as a proxy for farming experience and knowledge, which can influence lease preferences. Education as a category saw a higher level of college-educated landowners who were also older in age on average. Greater experience and education levels may make landowners more likely to opt for flexible cash lease, as they may feel more confident in predicting crop prices and yields to maximize potential benefits. Greater experience and education may also lead landowners to be more sympathetic toward the plight of the tenant. However, experienced landowners might also prefer simpler arrangements, such as a fixed cash lease, to avoid the complexities and risks associated with flexible cash lease. As a result, the relationship between age and flexible lease adoption remains ambiguous, and there is no clear expectation for this variable. The data tends to align with the former hypothesis: more educated landowners are more likely to adopt flexible leases.

Flexible cash lease ties payments to farm performance, creating an incentive for landowners to monitor operations more closely. Hence, one may assume that local residency can facilitate better tenant relationships and oversight, especially for those who value active engagement and the land’s productivity. Contrary to the assumption that performance-based leases require more physical oversight, our data indicates that flexible cash lease arrangements are actually associated with lower frequencies of farm visits. From Table 2, 33.6% of landowners with flexible leases visit their property “never” or only “once or twice a year,” compared to 23.3% of those with fixed leases. This suggests that flexible leases allow landowners to substitute informational monitoring for physical presence. This may result in fewer farm visits and appeal to absentee owners who view farmland as an investment rather than a personal legacy. These owners often rely on tenants or technology, making proximity less necessary. However, the results do not portray much difference in state residency.

We expect the flexible cash lease to correlate with higher CSR2, which can be related to Figure 3. It may also correlate with higher average lease prices per acre in these districts. The lion’s share of flexible lease

agreements is based upon a mixture of yield and price, the higher CSR2 is expected to a higher yield and increased revenue.

Table 3 presents the average marginal effects of each factor on the likelihood of choosing flexible cash leases from the logistic model, with the first column showing the results for the full sample. The regression results of all the coefficients can be found in Table A1 from the Appendix. The statistically significant correlations of verbal arrangements, longer lease durations, and an insignificant, but positive correlation, with the share of leasing to relatives with the likelihood of choosing flexible lease suggests that the flexible cash lease is more commonly used in settings requiring trust as well as in more stable, long-term leasing relationships.

Education shows a positive but statistically insignificant correlation with the choice of a flexible cash lease. However, the significantly positive correlation between age and flexible cash leases may suggest that more senior and experienced landowners are better equipped to manage the risks and complexities associated with flexible leasing arrangements, potentially due to their confidence in understanding crop prices, yields, and tenant relationships.

Our data confirms that landowners visiting the farmland less frequently are more likely to use flexible cash leases. Landowners may feel less compelled to monitor day-to-day activities through physical visits, instead relying on remote assessment of outcomes or trusting tenants to manage the land effectively. However, local residency often reflects long-term ties to the community, family heritage, or social connections, which are unnecessarily related to lease type. Even if landowners visit less, they may choose to stay nearby for personal reasons rather than farm management needs. In addition, soil productivity plays a significant role in the adoption of a flexible cash lease, with higher corn suitability rates associated with a higher likelihood of choosing this arrangement.

We also tested the model in the subsamples of OLs vs. NOLs. We have 79% of the owners actively operating their farmland. Among the OLs, 25% use flexible cash leases, while for NOLs, 24% adopt this type of lease arrangement. For OLs, the results align closely with the full sample, except for the frequency of visiting farmland. This finding is intuitive, as OLs tend to visit their land more frequently to oversee operations and ensure proper management.

In the case of NOLs, we do not observe a significant relationship between verbal contracts and the likelihood of choosing flexible cash leases. However, there is a stronger relationship between infrequent farmland visits and the probability of adopting flexible cash leases. This trend is driven by the hands-off approach of NOLs, who may prefer to rely on trusted tenants to manage operations. Moreover, the need for remote management among NOLs is often accompanied by more formal contract structures, as opposed to verbal agreements. In addition, NOLs who lease land to relatives and have a college education or higher are more likely to opt for flexible cash leases.

Following Figure 2, we further examine the differences between landowners with various ownership types. Sole ownership, joint tenancy, tenancy in common, partnership, and estates are categorized as traditional ownership. In contrast, corporations and trusts—entities with more complex ownership structures that often involve multiple stakeholders in decision-making—are classified as institutional ownership. We segment the sample into institutional farms and traditional farms, with institutional farms accounting for 27% of the total owners. Among institutional farms, 31% of the owners use a flexible cash lease, compared to 22% in traditional farms.

Landowners with traditional ownership exhibit attributes that closely align with those observed among OLs in relation to the likelihood of adopting a flexible cash lease. Conversely, institutional ownership does not show significant relationships with these attributes, except for the lease length and the corn suitability rating. This suggests that institutional owners represent a highly complex demographic that cannot simply be considered equivalent to NOLs. Their decision-making processes and motivations may differ substantially, necessitating further research to fully understand their unique characteristics and management preferences.

To further investigate the regional patterns influencing the probability of using flexible cash leases, we divide the sample into two main regions: the crop-intensive region, which includes northern and central Iowa (the first six CRDs), and the non-crop-intensive region, comprising southern Iowa (the last three CRDs) . In the crop-intensive region, 20% of landowners use flexible leases, whereas in the non-crop-intensive region, this proportion is higher at 26%.

Key variables correlating with lease choices vary by region. In crop-intensive areas, lease length plays a

crucial role, likely reflecting a preference for long-term stability. In non-crop-intensive regions, verbal agreements and owners living in Iowa are more influential, potentially suggesting the importance of informal relationships and local presence.

CRD fixed effects further reveal regional patterns. Aligning with Figure 3, landowners in east central Iowa are less likely to use flexible cash leases compared to other districts. While OLs follow overall regional trends, NOLs in east central, south central, and southeast Iowa also exhibit a lower probability of using flexible cash leases. Landowners with traditional farms in northeast Iowa have a higher probability of using flexible cash leases, whereas those with institutional farms have a lower probability in west central, central, east central, and southeast Iowa. These results highlight the varying likelihood of flexible cash lease use across regions, suggesting that lease preferences can vary systematically across operating status, ownership type, and local conditions.

CONCLUSION

This study provides valuable insights into the evolving landscape of cash lease agreements in Iowa, with a particular focus on the adoption of flexible cash lease arrangements. Over the past two decades, the fixed cash lease has remained the dominant leasing type, though flexible cash lease—especially those incorporating both crop price and yield metrics—has gained traction in 2000s and preserved a steady portion after 2012. The findings suggest that flexible lease agreements appeal to landowners seeking to balance risk and reward, with their adoption associated with factors such as market volatility, production risks, and evolving landowner-tenant relationships.

The analysis highlights key differences in leasing preferences among different types of landowners. OLs, who are actively engaged in farming, predominantly utilize the fixed cash lease. This pattern is consistent with a preference for its predictable income and lower administrative complexity. NOLs, on the other hand, show a higher propensity for crop share leases and, to a lesser extent, flexible cash leases, aligning with their interest in shared financial outcomes without direct management involvement. Institutional ownership structures, such as corporations and trusts, demonstrate a greater inclination toward fixed cash lease agreements, likely due to their preference for financial stability and streamlined operations.

Various factors are associated with the likelihood of using flexible cash leases across different landowner and farm groups. In general, senior landowners and those who prefer longer lease terms are more likely to use flexible cash leases. Verbal leases, compared to written agreements, are associated with a significantly higher probability of flexible cash lease use, except among NOLs and institutional farm owners. NOLs who lease to relatives, have a college degree or higher, and visit their farmland less frequently are more likely to use flexible cash leases. While professional farm management services could theoretically explain this reduced oversight, such services cover less than 5% of leased acres in Iowa (Tong and Zhang, 2023) and were not present in our sample. Thus, this pattern is more likely to reflect a specific reliance on tenant integrity to manage production risks. Residency in Iowa is correlated with a higher adoption likelihood of the flexible cash lease in the non-crop-intensive region. Additionally, higher soil productivity, as measured by corn suitability ratings, is associated with a higher probability of using flexible cash leases, suggesting that landowners are more willing to share the benefits of higher yields.

Despite the increasing prevalence of flexible cash leases, its complexity compared to fixed cash lease arrangements poses challenges. While older and more experienced landowners may feel confident in managing the risks associated with flexible cash leases, the lack of formal agreements and longer leasing contacts in many cases may suggest that landowners rely on trust and longstanding relationships with tenants. The study's findings underscore the importance of considering landowner demographics, lease structures, and regional factors when assessing lease preferences and market dynamics.

While our results identify significant associations between landowner characteristics and lease choices, establishing direct causality requires further longitudinal data and econometric techniques. Therefore, while this study offers valuable insights, it remains unclear whether factors such as market volatility, rising production costs, increasing leases, and higher land values are the key drivers of the shift toward flexible cash lease agreements. Future research should examine how these external economic pressures interact with landowner preferences to drive the shift toward flexible arrangements.

Our findings offer actionable insights for multiple stakeholders. For landowners, this study helps them better understand the pros and cons of different types of contracts and offers a peer benchmark, showing the demographic profile of the landowners who opt for flexible cash lease. Encouraging flexible

leasing options could help landowners enhance risk management and financial resilience in an increasingly volatile agricultural sector. For policymakers and extension professionals, these results underscore the need for targeted decision-support tools that help landowners navigate the complexity of flexible leases. To facilitate this, we have compiled a summary of resources and decision tools in Table A2 (Appendix), offering practical guidance for lease structuring and net return analysis between alternative leases.

FOOTNOTES

1 Tong and Zhang (2023) include the details about the sampling design of the 2022 survey questionnaire. Surveys of other years follow the same weight construction.

2 This information is not reported in Table 1, since the descriptive statistics reported in the table includes the farms that did not lease land out.

3 The shares in Figure 1-3 are weighted by survey acre weights in each year, representing the statistics at the state level. The info in Table 1-3 are the results from the sample of 495 landowners and do not represent the state-level facts.

4 The division is according to the 2020 Iowa Agricultural Statistics from USDA 2020-Iowa-Annual-Bulletin.pdf. For the medium level of crop production in East Central Iowa, the results look similar if we categorize it to the non-crop-intensive region.

5 According to Tong and Zhang (2023), the proportion of landowners using farm managers is also very small. Among OLs, about 2% employed farm managers; among NOLs, about 6% employed farm managers.

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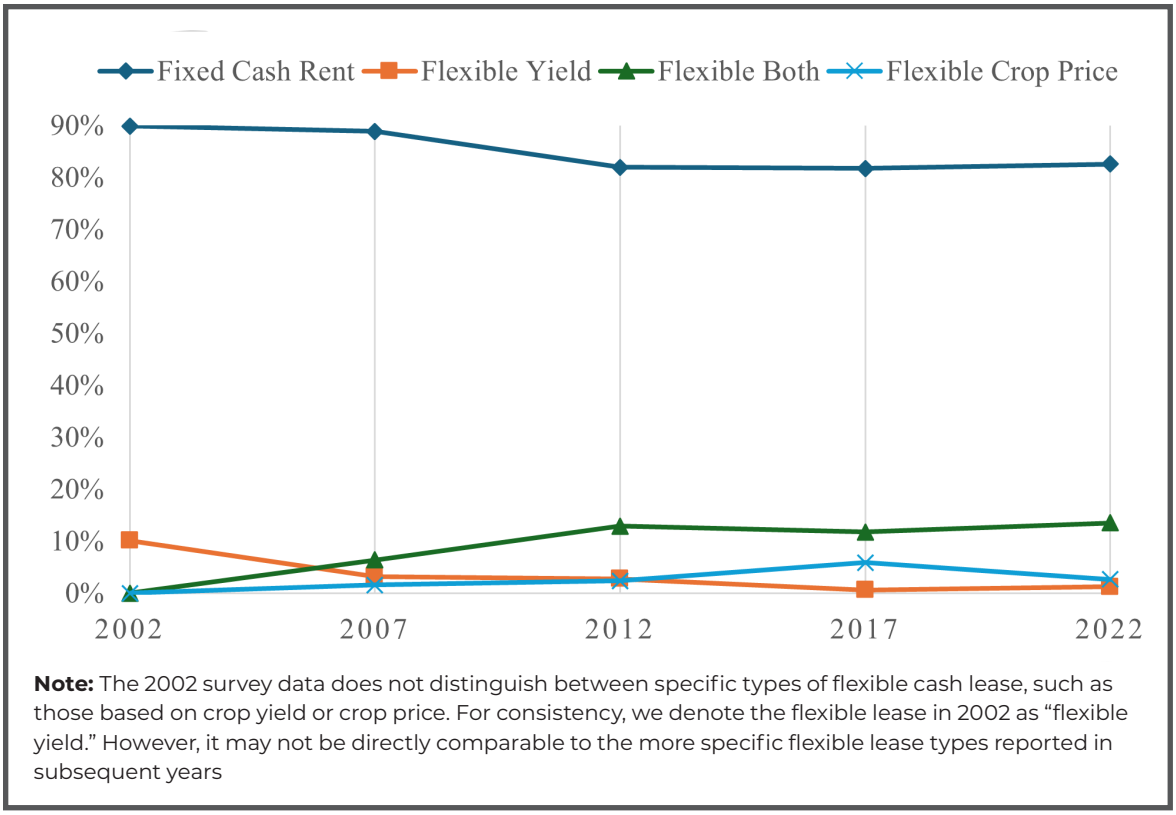

Note: The 2002 survey data does not distinguish between specific types of flexible cash lease, such as those based on crop yield or crop price. For consistency, we denote the flexible lease in 2002 as "flexible yield." However, it may not be directly comparable to the more specific flexible lease types reported in subsequent years

Figure 1. Share of Iowa farmland cash lease types from 2002 to 2022

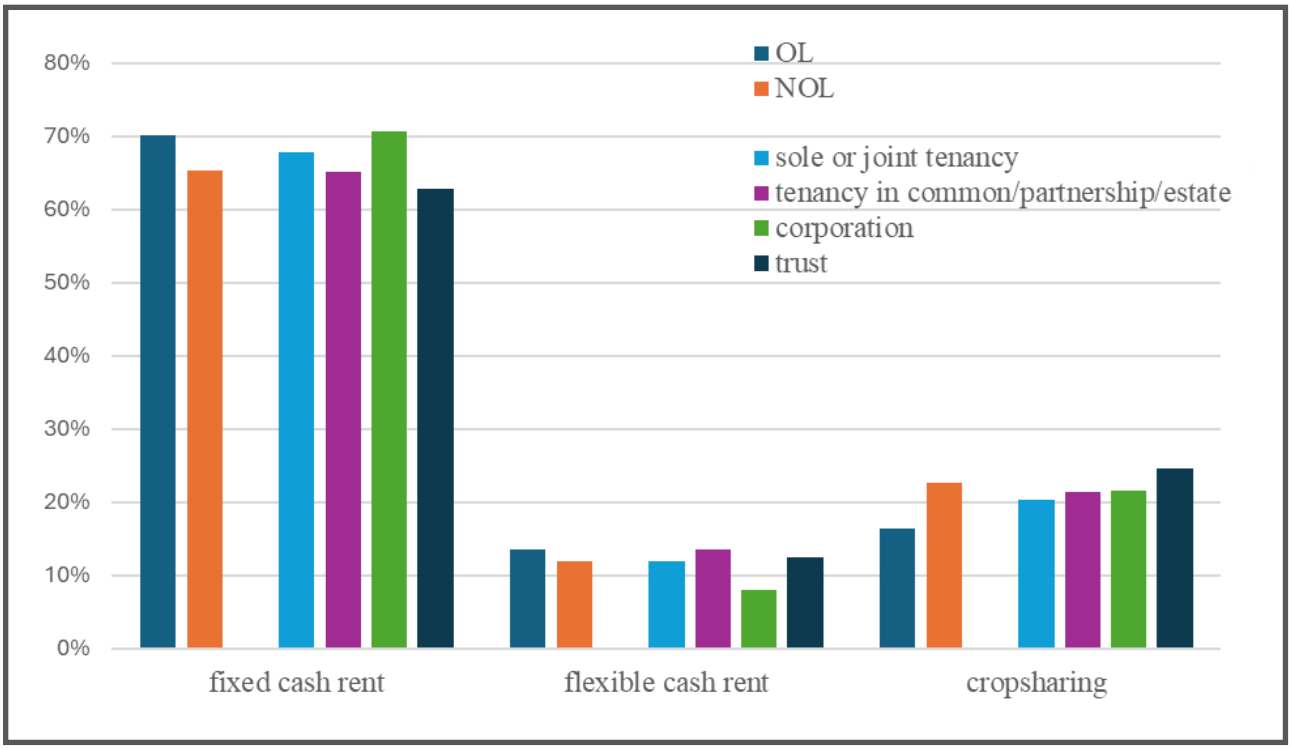

Figure 2. Average share of leasing types by operating status and by farmland ownership arrangements (2002-2022)

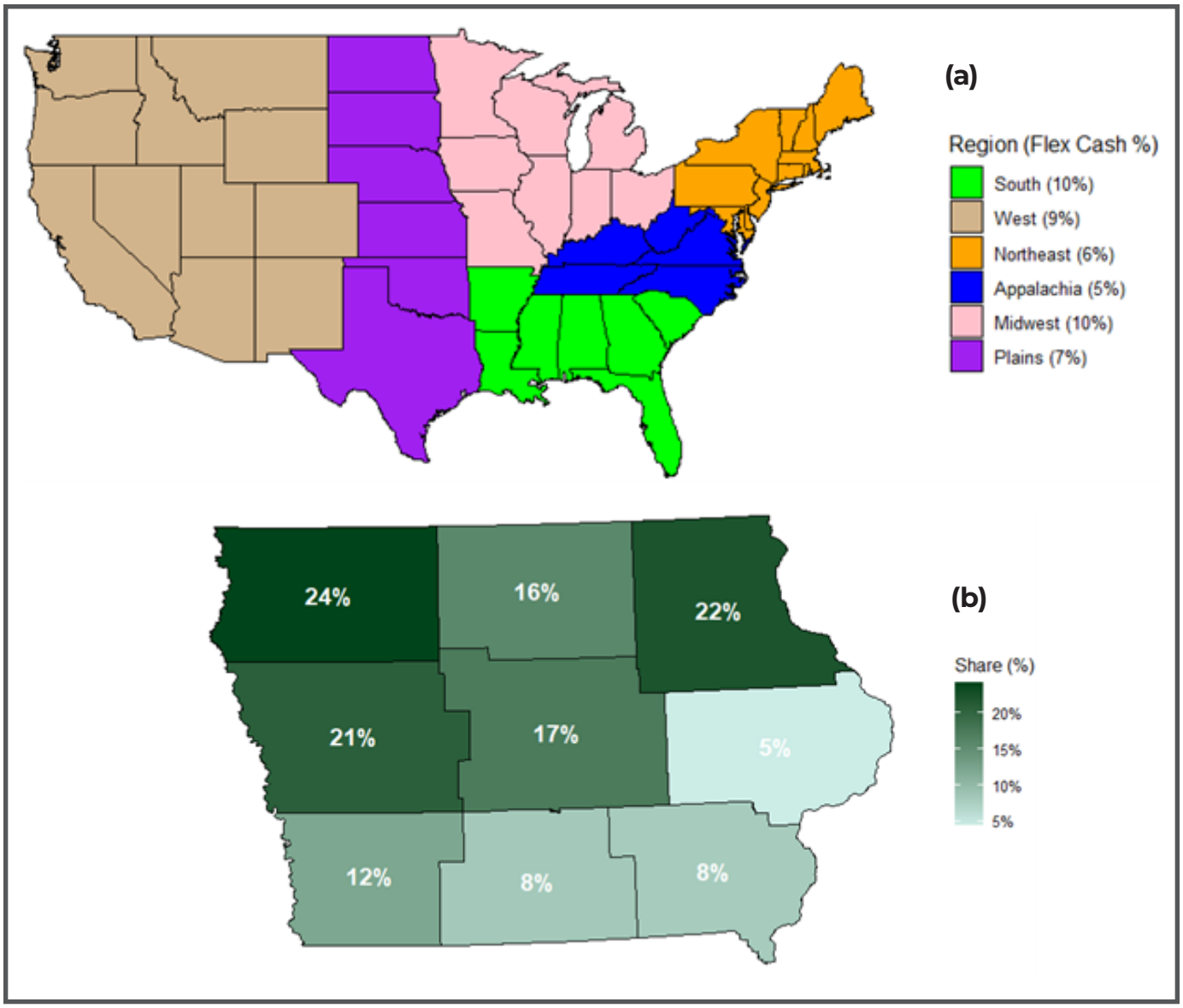

Figure 3. Average shares of flexible cash lease: (a) from 2014 TOTAL survey; (b) in each crop-reporting district of Iowa from 2002 to 2022

Table 1. Descriptive Statistics of Survey Sample (N = 495)					
Variable	**Description**	**Mean**	**Std Dev**	**Min**	**Max**
Flexible Cash Lease	The share lease as flexible cash lease (flexible = 1, or else = 0)	0.25	0.43	0	1
Lease Characteristics					
Written Lease	The lease agreement is written (written = 1, verbal = 0)	0.38	0.49	0	1
Lease Length	The duration of the lease agreement	1.23	2.92	0	11
Lease to Relatives	The farmland is leased to relatives of landowners (relatives = 1, others = 0)	0.31	0.46	0	1
Landowner Characteristics					
Age	Years of age	67	14	25	97
Education	Educational level: college or above = 2	0.28	/	/	/
	Educational level: high school = 1	0.66	/	/	/
	Educational level: below high school = 0	0.06	/	/	/
Rarely Visiting Site	Frequency of landowners visiting the farmland: never or once or twice = 1, higher frequency = 0	0.26	0.44	0	1
Iowa Resident	Residency of landowners: live in Iowa = 1, other states = 0.	0.87	0.34	0	1
Land Quality					
Corn Suitability Rating	Corn suitability rating for each parcel site	67.96	19.30	11.60	98.00

Table 2. Shares of Farmland with Each Characteristic within Fixed vs. Flexible Cash Lease		
	Fixed Cash Lease	**Flexible Cash Lease**
Lease Type		
Written Lease	62.5%	59.0%
Verbal Lease	37.5%	41.0%
Lease Length		
Average Years of Lease	1	1.8
Tenant Type		
Relatives	28.4%	37.7%
Friends or Neighbor	56.0%	37.7%
Someone Else	15.5%	24.6%
Age		
Average Age of Landowners	66.2	70.0
Education		
College or Above	27.3%	32.0%
High School	66.5%	63.1%
Below High School	6.2%	4.9%
Visiting Frequency		
Never	6.4%	8.2%
Once or Twice	16.9%	25.4%
Once a Month	25.7%	15.6%
Once a Week	18.2%	16.4%
Daily	32.7%	34.4%
Residency		
Live in Iowa	87.1%	86.9%
Other States	12.9%	13.1%
Soil Productivity		
Corn Suitability Rating	66.3	73.1

Table 3. Average Marginal Effects on the Probability of Adopting Flexible Cash Lease from the Logit Model							
	Likelihood of Opting for Flexible Cash Lease						
	(1) Full sample	(2) OL	(3) NOL	(4) Traditional	(5) Institutional	(6) Crop-intensive	(7) Non-crop-intensive
Written Lease	-0.103** (0.044)	-0.111** (0.048)	0.121 (0.082)	-0.126*** (0.048)	0.023 (0.095)	-0.071 (0.052)	-0.178** (0.074)
Lease Length	0.018*** (0.006)	0.018** (0.007)	0.026*** (0.009)	0.020*** (0.007)	0.023* (0.014)	0.019*** (0.006)	0.003 (0.018)
Lease to Relatives	0.048 (0.042)	0.035 (0.047)	0.171* (0.094)	0.033 (0.046)	0.152 (0.095)	0.049 (0.049)	0.077 (0.078)
Age	0.004** (0.001)	0.003** (0.002)	0.005* (0.003)	0.004** (0.002)	0.002 (0.003)	0.003* (0.002)	0.004* (0.003)
College or Above Education	0.063 (0.043)	0.052 (0.052)	0.153** (0.077)	0.054 (0.053)	0.028 (0.081)	0.074 (0.051)	0.027 (0.079)
Rarely Visiting Site	0.102* (0.053)	0.035 (0.061)	0.287*** (0.088)	0.078 (0.065)	0.137 (0.089)	0.082 (0.063)	0.131 (0.093)
Iowa Resident	0.046 (0.059)	0.046 (0.077)	0.064 (0.076)	0.084 (0.067)	0.098 (0.099)	0.006 (0.075)	0.182*** (0.063)
Corn Suitability Rating 2	0.003*** (0.001)	0.003*** (0.001)	0.008** (0.003)	0.003** (0.001)	0.006** (0.002)	0.004*** (0.001)	0.004* (0.002)
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	495	389	106	360	135	372	123

Note: *: p-value < 0.10; **: p-value < 0.05; ***: p-value < 0.01

APPENDIX

Table A1. Regression Coefficients on the Probability of Adopting Flexible Cash Lease from the Logit Model

	Binary variable of opting for flexible cash lease						
	(1) Full Sample	(2) OL	(3) NOL	(4) Traditional	(5) Institutional	(6) Crop-intensive	(7) Non-crop-intensive
Written Lease	-0.607** (0.256)	-0.647** (0.285)	1.358 (1.107)	-0.808*** (0.309)	0.144 (0.590)	-0.405 (0.294)	-1.329** (0.610)
Lease Length	0.109*** (0.036)	0.104** (0.044)	0.253** (0.102)	0.131*** (0.044)	0.142 (0.089)	0.112*** (0.038)	0.024 (0.130)
Lease to Relatives	0.282 (0.243)	0.203 (0.268)	1.568* (0.890)	0.208 (0.291)	0.912 (0.580)	0.280 (0.278)	0.525 (0.517)
Age	0.022** (0.009)	0.020** (0.010)	0.051* (0.030)	0.026** (0.011)	0.010 (0.016)	0.019* (0.010)	0.032 (0.019)
College or Above Education	0.383 (0.263)	0.306 (0.304)	1.503* (0.805)	0.352 (0.348)	0.169 (0.499)	0.429 (0.302)	0.192 (0.572)
Rarely Visiting Site	0.584** (0.288)	0.198 (0.341)	2.379*** (0.777)	0.478 (0.380)	0.825 (0.544)	0.457 (0.338)	0.867 (0.583)
Iowa Resident	0.289 (0.396)	0.284 (0.498)	0.673 (0.873)	0.621 (0.567)	0.640 (0.697)	0.033 (0.444)	2.001* (1.212)
Corn Suitability Rating 2	0.021*** (0.007)	0.020*** (0.008)	0.077** (0.034)	0.017** (0.008)	0.035** (0.016)	0.021** (0.008)	0.028* (0.016)
Intercept	-4.908*** (0.918)	-4.574*** (1.041)	-13.748*** (4.205)	-5.712*** (1.176)	-4.626** (1.856)	-4.488*** (1.012)	-7.807*** (2.310)
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	495	389	106	360	135	372	123

Note: *: p-value < 0.10; **: p-value < 0.05; ***: p-value < 0.01

Table A2. Resources for Flexible Leases for Potential Stakeholders		
Subject	**Region**	**Source/Link**
Comparison Between Different Types of Rental Arrangements		
Introduction to Fixed and Flexible Cash Rent Lease Agreements	Midwest	North Central Regional (NCR) Cooperative Extension Services
Introduction to Crop Share Rental Agreements	Midwest	North Central Regional (NCR) Cooperative Extension Services
Introduction and Comparison between Different Types of leases	California	University of California
Purdue Farmland Value and Cash Rent Survey	Indiana	Center for Commercial Agriculture from Purdue University
Introduction to Flexible Farm Lease Agreements and Rent Calculation Methods	Iowa	Ag Decision Maker from Iowa State University
Comparing Net Returns for Alternative Leasing Arrangements	Indiana	Farmdoc Daily from University of Illinois Urbana-Champaign
Some Useful Tools		
Interactive Decision Tool Spreadsheet to Analyze Flexible Farm Lease Agreements	Iowa	Ag Decision Maker from Iowa State University
Computations on Cash Rents and Net Returns for Comparison	Indiana	Center for Commercial Agriculture from Purdue University
Flex Cash Lease Calculator	Nebraska	Center for Agricultural Profitability from University of Nebraska–Lincoln
Cash Rent with Bonus Worksheet	Illinois	Farmdoc from University of Illinois Urbana-Champaign
Flexible Cash Lease Calculator	Ohio	OSU Extension from Ohio State University
Flexible Cash Lease Decision-Aid	Kentucky	University of Kentucky
Land Rent Calculator	Michigan	Michigan State University