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Introduction

Structural change and consolidation in production agriculture is forcing agricultural lenders to reevaluate how they serve borrowers. These changes have increased the market power of large borrowers and concentrated risk in the typical loan portfolio. Larger borrowers often negotiate lower interest rates, demand more and better service, and often influence other, smaller agricultural borrowers. What's more, risk was once spread among a large number of borrowers that required smaller loans. Now, default by a single large customer could have a more significant impact on the financial strength of the lender.

Lending relationships generate earnings over several years and it is critical for lenders to understand how relationship profitability is impacted by changes in the borrowers' operations and credit worthiness. While loan defaults are rare, when they occur the lender may incur substantial collection costs in addition to any lost principle and interest. As a result, higher risk borrowers pay higher rates and lenders enjoy a higher interest rate margin on these borrowers. This fact makes higher risk borrowers more profitable in the short-run, but if default occurs one must consider whether the increased up-front returns are enough to off-set any future default costs.

The interest rate margin must compensate the lender for risk and cover the costs of extending credit to borrowers. One of the most challenging aspects of loan pricing is determining the amount of compensation that the lender should demand for different amounts of credit risk. While there have been numerous studies aimed at understanding how credit risk evolves over time (Barry, Escalante, and Ellinger; Phillips and Katchova; Escalante, et al.; Gloy, LaDue, and Gunderson; Zech and Pederson) there have been few that examine how these changes impact long-term lending relationship profitability.

Barry suggests that there are two major approaches to measuring credit risk, the default-mode and the mark-to-market approach. While the default-mode is only interested in the probability of defaults and their severity when they occur, the mark-to-market approach considers the influence that changes in credit risk have on the market value of the loan relationship. In the agricultural marketing literature the concept of customer lifetime value has been developed (Gloy, Akridge, and Preckel) and is similar to a mark-to-market approach in that it considers the future cash flows of a loan relationship. Based upon historical customer transition probabilities and profitability, customer lifetime value calculates a relationship value using expected revenue and costs data. This process can be used by lenders to understand how the changes in credit risk and loan volume influence the long-term profitability of agricultural loans.

The goal of this paper is to quantify the impact that changes in loan volume and credit risk have on the long-run returns to a loan relationship. Specifically, the paper aims to identify whether the increased risk of default among medium risk borrowers offsets the higher profits that these borrowers generate in the short-run. A simulation model is developed to investigate these issues. The next section explains how credit risk migration, loan volume growth (or decline), and customer retention influence the lifetime value of a lending relationship. Then we present a description of the data and detail the methods used to simulate the lifetime value of a lending relationship. Finally, we present the results and discuss their implications.

Implementing Customer Lifetime Value in Agricultural Lending

Loan volume, credit risk, and customer retention are three key elements of agricultural lending profitability. Loan volume establishes the base amount from which revenues will be generated. Differing interest rates are then charged to cover the costs that financial institutions incur financing the borrower. When setting interest rates lenders consider the risk of default by the borrower. The lender charges higher rates for borrowers with a higher likelihood of default because the cost of capital incurred by the lender will be greater to compensate for the increased risk. Finally, the lender must allocate resources to maintain the relationship and satisfy the borrower rather than losing the business to a competitor.

Using loan volume, interest charged for differing credit risk ratings, and customer retention rates a lending institution can calculate a value for a loan based upon the discounted future cash flows associated with that particular loan, which is similar to the mark-to-market approach outlined by Barry. His simple mark-to-market approach example is only for one loan agreement and considers only the transition in credit risk ratings. However, a lender typically holds several loan agreements with one borrower which influences both the loan volume and the credit rating of a 'borrowing relationship.' Therefore, a more accurate long-term value of a lending relationship would incorporate loan volume, credit ratings, and the likelihood of maintaining the relationship for an extended period of time.

Credit Rating and the Value of a Lending Relationship

The credit rating is one of the key determinants of loan pricing. Using the credit rating as one indicator of the default risk of the loan, the lending institution sets the interest rate such that it will generate an adequate return to compensate for the additional default risk. If a lender focuses on the current period, higher risk borrowers will typically earn the highest returns as losses in any one period are infrequent and rare. For example, Gloy, Gunderson, and LaDue found that the increased costs of monitoring and servicing medium risk loans over low risk loans were more than offset by higher interest rate margins, making medium risk loans on average more profitable than low risk. However, they do not account for the long-term impact of credit risk migration and the costliness of default by a large borrower. By examining costs and returns over a longer time period it is possible to accurately account for the trade-off of risk for return.

Recent studies of agricultural credit risk migration have been aimed at understanding the likelihood that a loan undergoes a change in credit quality (Barry, Escalante, and

Ellinger; Phillips and Katchova; Escalante, et al.; Gloy, LaDue, and Gunderson; Zech and Pederson). These results tend to show that while farm loans have some chance of changing risk strata, they most frequently maintain their existing credit risk rating.

Credit risk influences customer lifetime value directly in at least three ways. First, credit risk influences the costs of monitoring and maintaining the lending relationship. Borrowers that have higher risk of default require lenders to allocate additional time and resources to monitor the operation for sustainability. Second, higher credit risk means a higher likelihood of incurring costs associated with default. Third, when default or a loan loss situation occurs, the lender incurs a number of costs, such as lost interest and principal payments and legal fees, which need to be included when figuring loan relationship profitability. When valuing lending relationships these three factors need to be explicitly incorporated in the model.

Loan Volume and the Value of a Lending Relationship

Increasing loan volumes can increase revenues but also concentrate default risk, which should raise some concerns for lenders. Traditionally the total agricultural loan portfolio had been lent to several borrowers, spreading risk of default among the many borrowers. However, as loan volumes become increasingly large, so does the concentration of risk among any one borrower. This increase in concentration risk does not seem to deter lenders from aggressively pricing large loans (Gloy, Gunderson, and LaDue). There are considerable economies of size in the direct costs of lending such as loan officer, credit analyst, and review committee time. However, it appears that the lenders are over aggressively pricing these economies of size, though overhead costs and other benefits are not considered for each relationship. It could be the case that the increasingly concentrated exposure to large loan volume relationships is not worth the additional revenues that are generated.

In lending, loan volume is the revenue generating base. As farm size grows, so too do the size of loans that are needed to purchase capital and sustain operations. Therefore, resources should be allocated to establishing and maintaining relationships with borrowers that have large growth potential to help grow the lender's loan portfolio. It is probable that borrowers contemplating growth might also be more likely to consider comparing rates among different lenders. Therefore, it will be important for the lender to consider not only the growth in loan volume, but also the ability to maintain the customer relationship.

Customer Retention and the Value of a Lending Relationship

A final critical item needed for calculating the lifetime value of a borrowing relationship will be the probability of retaining the customer, i.e. preventing them from moving their business to a competitor. Customer retention rates should be a factor in customer lifetime value that lenders will have large ability to influence. The dedication to serving existing customers well will require additional resources and it will be important for lenders to assess the return on those additional investments. Moreover, a better understanding of the sensitivity of customer values to retention rates lends itself to an analysis of the trade-off made between improving customer service for existing customers and potential new clients. The model used here is flexible enough to test the returns generated by improving customer retention rates.

Data

In order to calculate the lifetime value of an agricultural lending relationship, three key pieces of information are needed to simulate the future values of agricultural borrowers: historical customer retention rates, transition probabilities for the various loan volume and credit risk strata, and the profitability of various lending relationships segmented by loan volume and credit risk stratum. This data was collected from a stratified random sample taken from the loan portfolios of six agricultural lenders. These lenders represent both commercial banks and farm credit associations in the Northeastern United States. Each of the lenders has an agricultural loan portfolio approaching or in exceeding $100 million. Each of the lenders had a unique credit risk rating system, making it necessary to group the borrowers of the various institutions into homogenous credit risk rating groups. Lenders identified to which of the three strata borrowers of their unique system belonged. Table 1 illustrates the descriptions of the three risk strata presented to the lenders.

A stratified sampling procedure was developed to ensure adequate variance in loan volume and risk rating. Then, a random sample of borrowers was selected from within each stratum (Table 2). Data regarding loan balances, credit ratings, types and terms of loan products, interest paid by the borrower, and other financial services fees earned were collected from the loan files. Furthermore, the loan officer assigned to the borrower completed a questionnaire that inquired about the amount of time that various personnel spent with the borrower over the last 12 months, a critical component of the costs associated with servicing and monitoring the borrower.

Transition Probabilities

Loan files were examined in order to identify the borrowers' current and five-years-previous loan volumes as well as the credit rating assigned to the borrower in 2001, 2000, 1999, and 1998. Changes in credit rating and loan volume are calculated across the four-year period for which data on risk classifications were collected. Recently established customer relationships did not have ratings available for all years. As a result only the available data were included.

To calculate changes in loan volume the current loan volume and the loan volume five years ago was used to estimate the amount of loan volume in each of the intermediate years. Specifically, a growth rate was calculated for each relationship and applied to each of the four years between 1995 and 2000 to obtain a date if and when they transitioned between loan volume stratums.

By combining the risk rating data and the loan volume for each year, four observations on loan volume and risk level data were developed for each borrower. Thus, each farm could have three possible changes in their size/risk stratum. These three years of change data were used to develop the probabilities of changing to another size/risk stratum from any given stratum. Next, the data were combined with the customer retention rates to determine the probabilities that a farm will move to each strata or exit in that year.

We created a transition matrix by combining these historical transitions in loan volume and credit risk rating and the retention rates. Lenders were asked to supply a five-year retention rate for borrowers in each of the nine size/risk categories. Using

this information an annual retention rate was estimated (Table 3)[37]. For example, 96.8 percent of all borrowers in the medium loan volume, medium credit risk stratum continued to do business with their existing lender the following year. As a result 3.2 percent moved the majority of their debt to an alternative lender. The median value of the retention rates were used as an estimate of the retention rates. This resulted in the transition matrix (Table 4) used to simulate a customer's lifecycle over the ten year period.

Clearly, most of the borrowers in a particular strata are most likely to remain in that strata in any given year, with the exception of those in the loss strata who are most likely to no longer be a part of the lending portfolio. Furthermore, the most likely transitions among the low and medium risk strata tend be incremental in either loan volume or credit risk, but typically not both.

For example, those borrowers starting with medium loan volumes and low risk ratings maintain their credit risk rating, but decrease loan volume 5.62 percent of the time and increase loan volume 8.86 percent of the time. Moreover, nearly 2 percent of the time they maintain their medium loan volumes, but move to medium risk. The transitions across both loan volume and credit risk are unlikely (less than 0.5 percent) and a large jump in credit risk rating is highly unlikely (just 0.15 percent).

Customer Profitability

The final piece of the model of relationship lifetime value is the one period profits associated with each of the strata. The following equation was used to calculate one-

$$\pi = V * M + F - W + S - C \qquad \textbf{(1.1)}$$

period relationship profitability:

where π is relationship profit, V is loan volume, M is interest rate margin, F is loan fees collected, W is the amount of write-offs incurred, S is income generated from other financial services, and C is the direct costs associated with the relationship such as loan officer, credit analyst, and loan committee time. This gives us an estimate of the profitability excluding overhead costs.

Summary statistics by loan volume and credit risk strata regarding relationship profit are presented in Table 5. It is clear that in a one-period framework, loan relationships with medium credit risk ratings earn more on average than their low risk peers. This is to be expected because in the one-period the medium risk relationships will earn higher interest rates on their loan volumes. Additionally, the low and medium risk relationships with smaller loan volumes generate on average less profit than their medium and large sized peers.

Notably, large loss loans can have a substantial detrimental impact on the profitability

[37] This was acceptable for all of the six low and medium risk strata. Many of the lenders stated that all loss borrowers would exit by year five, making it impossible to estimate annual retention rates for the high risk strata. As a result, the customer retention rates for loss borrowers were developed after additional data and input were gathered from the lenders.

of the lending institution. On average these borrowers create a loss of more than $60,000 in annual profit, so it should be no surprise that these types of relationships occur infrequently. On average, it would take more than 86 small, loss relationships to total the negative profits caused by one large, loss relationship. This illustrates the idea that a large amount of default risk is concentrated as loan volumes are increasing.

Lifetime Value of Lending Relationships

In order to estimate the lifetime value of the lending relationships, we combine these three elements (retention rates, transition probabilities, and one period profitability) in a simulation model (Figure 2). This will provide an indication of the value of borrowers in different strata, and should indicate for lenders where resources could be directed to improve the long-term profitability and viability of the entire loan portfolio. The simulation model works in three easy steps: (1) assigns a loan volume and credit risk rating strata (or potentially not a customer) for borrowers during each period for ten periods, (2) assigns the profitability based upon that assigned strata, and (3) the assigned profits are discounted and summed.

After identifying the initial stratum the borrower is in, the model begins by drawing a random number between 0 and 1. This number is compared to the cumulative density function of the transition matrices. This assigns the new strata for the borrower. This process is repeated for ten periods assigning the transitions in each period based upon the transition probabilities associated with the updated strata.

The second step of the model is to assign a profit for that period based upon the assigned strata. The model identifies in which strata the borrower is located and chooses a random profit determined from the empirical distribution of the profits associated with that stratum. Each profit is randomly drawn for each period, i.e. the profits will be different for every period even if the borrower stays in the same stratum throughout the simulation.

The final step is to discount these values based upon the cost of funds for the lender and are summed for the ten time periods. The average cost of funds is an appropriate discount rate as it represents the opportunity cost of the funds for other uses. The model is simulated for 10,000 iterations and analysis draws from these results. Results from this model can be used to assess the level of credit risk premiums currently being charged by agricultural lenders. Furthermore, as loan volumes become increasingly larger, it should help lenders understand the pitfalls of concentrating risk among few, large borrowers.

Results

The results of the simulation suggest that current risk premiums adequately compensate the lenders for probability of default increases associated with higher risk borrowers. This results section highlights the implications changes in loan volume, credit risk, and retention rates have on customer lifetime value. The fact that lenders earn larger amounts of lifetime value on their medium credit risk borrowers (relative to low risk peers within loan volume strata) indicates that the additional likelihood of default is being captured in pricing. The results also indicate that the concentration of

risk that occurs with larger borrowers also earns a premium. Finally, the impact of a change in the retention rate of one stratum has importance influences within and across other strata.

Loan Volume and Lifetime Value

Generally relationships with larger loan volumes generate greater amounts of lifetime value. Loan relationships with loan volumes between $100,000 and $400,000 generate more than double the amount of lifetime value than do relationships with less than $100,000 loan volume among risk peers. Large loan relationships generate nearly six times the amount of relationship value compared to their small peers of the same risk stratum. Also of note, is that these medium and large relationships generate lifetime value with less variability relative to their mean lifetime value. So, while the lenders are increasingly concentrating risk among fewer large borrowers, it appears that they are doing so in a way that limits negative lifetime value by these relationships.

It is not surprising that larger loan volumes generate larger amounts of lifetime value. But it has been noted that per dollar of loan volume, loan relationships with small volumes can be more profitable than their larger peers in a one-period framework (Gloy, Gunderson, and LaDue). If we divide the mean lifetime values generated over this ten-year period by the mean average daily balances by size stratum, then these results suggest that even in a multi-period framework, the value per dollar of loan volume can be greater for small loan volume relationships (Table 7). For loan relationships with small volumes, these per dollar lifetime values are more than 60 percent larger than medium volume peers with low risk and about 55 percent greater for peers with medium risk.

These results seem to send mixed signals regarding loan volume and profitability. While the lender stands to earn large amounts of lifetime value from a single large loan relationship, it might be at the expense of reaping high 'per dollar of loan volume' values from several small volume relationships. Admittedly, the lender will have limited opportunities to serve the larger relationships and therefore might choose to serve them to add diversity to their portfolio.

Credit Rating and Lifetime Value

For each of the size strata, medium risk borrowers generate greater lifetime values than do their low risk peers (Table 6). It is roughly a ten percent premium in lifetime value for the medium risk borrowers in the small and medium loan volume strata and about a twelve percent premium in the large loan volume stratum. This additional revenue generated by large loan volume relationships might reflect a premium earned for the additional concentration in risk.

The results also show that the medium risk loans have greater absolute variability as well as greater variability relative to the mean lifetime value. For example, the small loan volumes with medium risk have a standard deviation that is 22 percent larger than their low risk peers. Interestingly, the percent of simulated relationships with negative lifetime values is less for the medium risk borrowers in this small loan volume stratum than the low risk borrowers. For the large loan volume strata the

opposite is true, i.e. a larger percentage of simulated medium risk borrowers had negative values than did volume peers with low risk. Senior managers can use this information if they are working to limit the number relationships that are generating negative long-term profitability.

When considering lifetime value and credit risk transitions lenders should likely consider incorporating transitions from a larger time frame than used here. It would be wise for agricultural lenders to consider time periods of instability in production agriculture caused by macroeconomic variables. The time period considered here (1998 to 2001) is likely not fully reflective of the cyclical nature of agriculture.

Retention Rates and Lifetime Value

This model is useful for agricultural lenders as they consider allocating their resources. By choosing the types of borrowers that are most valuable for the lender and working to improve the lifetime value generated by less profitable groups, the lender can improve the overall profitability of the loan portfolio. Therefore, it will be important for lenders to consider the resources spent to maintain and serve existing relationships. One means of evaluating this is to consider the retention rates of different customer groups.

Running the model for different levels of retention rates for each of the customer groups can help lenders identify the greatest return on retention activities. It is important to note that the impact of changes in a particular stratum's retention rate will impact not only the stratum under consideration, but also other strata whose members might transition into that stratum. Therefore, it is important to consider the changes in lifetime value across all of the strata, rather than just the stratum whose retention rate under consideration.

As an example the model was run an additional five times, varying the retention rate for borrowers with low risk and large loan volumes. The retention rate used in the initial model was 98.8 percent, and we varied the rate from 90 percent to 100 percent. As anticipated the largest impact is on lifetime value of large, low risk relationships (Figure 1). If the lender were to maintain its relationship with 100 percent of the large, low risk borrowers, lifetime values could be expected to increase by about $24,550 per relationship or about 16 percent. Alternatively, if the lender let retention with this stratum slide to 90 percent they would lose about 48 percent of the average lifetime value (about $59,000).

Included in Figure 1 is the impact the change in retention rates has on medium size loan volume borrowers (it also impacted relationships with small loan volume, but to a much smaller degree). It is notable that the medium sized, low risk borrowers more frequently transition to become large sized, low risk borrowers than do their medium risk peers. Therefore, improvements in retention of large, low risk borrowers actually accelerate the gain in average lifetime value among these medium sized, low risk borrowers as well. Therefore, lenders might allocate additional resources to retain low risk borrowers rather than medium risk borrowers, assuming the cost of improving retention rates is equal across strata.

Conclusions

The goal of this research is to better understand the impacts of credit risk and loan volume on the lifetime value of agricultural borrowers. Using historical transition data on loan volume and credit risk migrations, a simulation model was constructed to calculate a ten-year lifetime value for customers of different loan volumes and credit risk ratings. The results suggest that lenders are doing a satisfactory job of pricing for the increased potential of default among medium risk borrowers compared to their low risk peers. Additionally, large loan volume relationships generate more dollars of lifetime value, but fewer dollars of lifetime value per dollar of loan volume among risk peers.

Lenders are competing in an increasingly consolidated product agriculture market. This tool should help them consider their resource allocation in establishing and maintaining loan relationships with borrowers. It should also provide some insight into pricing and assessing risk for long-term success. Lenders should have greater access to credit risk and loan volume transitions over more refined credit risk rating strata and a larger time frame. This additional data should improve the accuracy and usefulness of the results for individual lenders.

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Table 1. Credit Risk Rating Descriptions

Credit Risk Rating	Description
Low	• Highest quality and strong credits • Strong financial statements with high, acceptable, or sufficient levels of profitability, liquidity, and repayment capacity • History of timely repayment • Might be monitored frequently for compliance with covenants • Very low to modest likelihood of loss in the event of adverse industry financial conditions
Medium	• Classified as special mention or OAEM as well as substandard and doubtful loans that are still accruing • Highly leveraged and the financial statements reveal several weaknesses that threaten repayment. • Require substantial attention • Uncorrected weaknesses may seriously threaten repayment capacity. • Currently experiencing adverse economic conditions or if experienced repayment could be jeopardized • Collateral securing the loan may be questionable • Although possible, default is not imminent
Loss	• Classified, substandard, doubtful, or loss • Inadequately covered by collateral and repayment capacity. • The likelihood of loss of interest and principal is high or the lender must go to great lengths to protect their position • All loans for which interest and principle are in excess of 90 days past due or classified as non-accrual. • Repayment likely depends upon collateral.

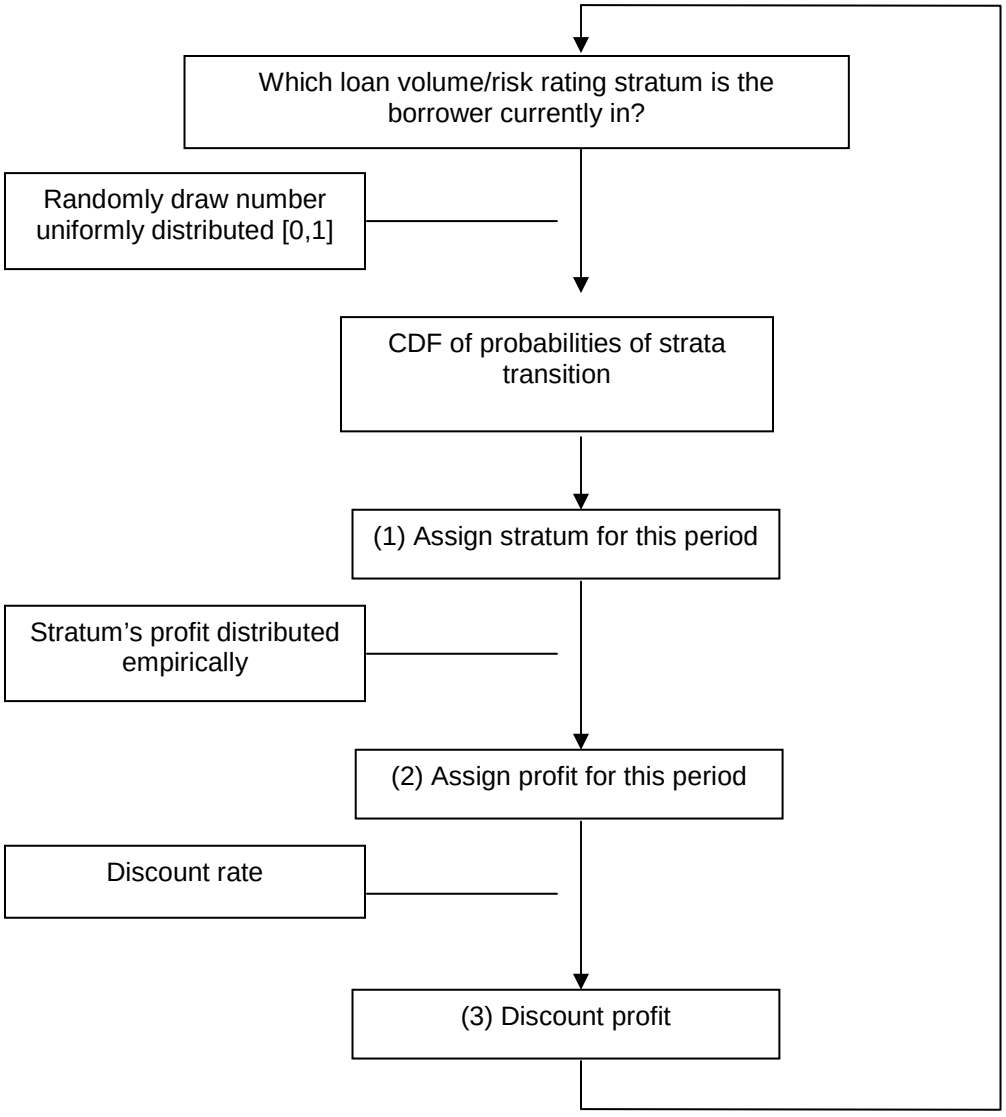

Figure 1. Customer Lifetime Value Simulation Model

Table 2. Relationships in Sample by Loan Volume and Credit Risk

	Total Outstanding Relationship Balances		
Risk	**Small (<$100K)**	**Medium ($100k-$400k)**	**Large (>$400k)**
Low Risk	158	142	143
Sampling %	3.29%	6.65%	23.68%
Average Loan Volume	$55,758	$222,332	$1,068,649
Medium Risk	120	113	98
Sampling %	19.74%	28.46%	75.97%
Average Loan Volume	$66,170	$253,246	$1,494,967
Loss and non-accrual	67	32	11
Sampling %	52.34%	82.05%	84.62%
Average Loan Volume	$65,709	$236,666	$848,657

Table 3. Customer Retention and Exit Rates by Size and Risk

Size/Risk Level	Retention Rate (Percent)[a]	Exit Rate (Percent)
Small/low	95.6	4.4
Small/medium	94.6	5.4
Small/loss	40	60
Medium/low	98.0	2
Medium/medium	96.8	3.2
Medium/loss	45	55
Large/low	98.8	1.2
Large/medium	95.4	4.6
Large/loss	50	50

[a]Median of values provided by lenders.
[b]Estimated from values provided by lenders. Data supplied were five-year retentions, many of which were zero, with some added data on when borrowers actually exited the lender.

Table 4. Distribution of Borrowers in Next Year After Being in Current Strata

Moving from (current strata)	Moving to: (Next Year Strata)									
Strata Size/Risk	1	2	3	4	5	6	7	8	9	Exit
	----------Percent----------									
1 Small/low	84.16	0.87	0.26	9.77	0.15	0	0.38	0.01	0	4.4
2 Small/medium	1.03	83.02	0.36	0.29	9.73	0	0	0.17	0	5.4
3 Small/loss	6.8	1.06	31.26	0	0	0.76	0	0	0.12	60
4 Medium/low	5.62	0.13	0	81.01	1.95	0.15	8.86	0.28	0	2
5 Medium/medium	0	3.75	0	6.55	78.66	0	0.62	7.22	0	3.2
6 Medium/loss	0	0	2.92	6.27	1.4	34.41	0	0	0	55
7 Large/low	0	0	0	1.43	0	0	94.36	2.83	0.18	1.2
8 Large/medium	0	0	0	0	2.42	0	0	92.21	0.77	4.6
9 Large/loss	0	0	0	0	0	0	5.05	0	44.95	50

Table 5. One-Period Profitability by Loan Volume and Credit Risk Stratum

Size/Risk Strata	Mean	Standard Deviation	Coefficient of Variation	% negative profitability
Small/low	$1,145.53	$1,649.23	1.44	9.15%
Small/medium	$1,526.68	$1,546.33	1.01	9.17%
Small/loss	-$793.53	$4,683.04	5.90	43.86%
Medium/low	$3,618.52	$4,116.06	1.14	13.67%
Medium/medium	$4,482.90	$5,023.40	1.12	12.39%
Medium/loss	$1,473.25	$11,491.93	7.80	25.00%
Large/low	$16,138.78	$17,503.42	1.08	9.15%
Large/medium	$22,999.86	$36,568.29	1.59	4.21%
Large/loss	-$68,832.01	$148,380.20	2.16	57.14%

Table 6. Lifetime Value by Loan Volume and Credit Risk Stratum

Size/Risk Strata	Mean	Standard Deviation	Coefficient of Variation	% negative lifetime value
Small/low	$21,020.41	$27,870.11	1.33	1.20%
Small/medium	$23,238.32	$34,085.90	1.47	1.16%
Small/loss	$810.93	$13,277.21	16.37	40.96%
Medium/low	$51,756.00	$47,278.09	0.91	1.04%
Medium/medium	$57,119.75	$62,070.50	1.09	1.37%
Medium/loss	$7,426.42	$24,243.66	3.26	23.56%
Large/low	$122,256.78	$60,645.44	0.50	0.92%
Large/medium	$136,947.49	$107,104.25	0.78	2.00%
Large/loss	-$105,976.56	$186,721.46	-1.76	66.79%

Table 7. Lifetime Value per Dollar of Loan Volume

Size/Risk Strata	Mean Lifetime Value	Mean Loan Volume	Lifetime Value per Dollar of Loan Volume
Small/low	$21,020.41	$55,758	$0.377
Small/medium	$23,238.32	$66,170	$0.351
Small/loss	$810.93	$65,709	$0.012
Medium/low	$51,756.00	$222,332	$0.233
Medium/medium	$57,119.75	$253,246	$0.226
Medium/loss	$7,426.42	$236,666	$0.031
Large/low	$122,256.78	$1,068,649	$0.114
Large/medium	$136,947.49	$1,494,967	$0.092
Large/loss	-$105,976.56	$848,657	-$0.125

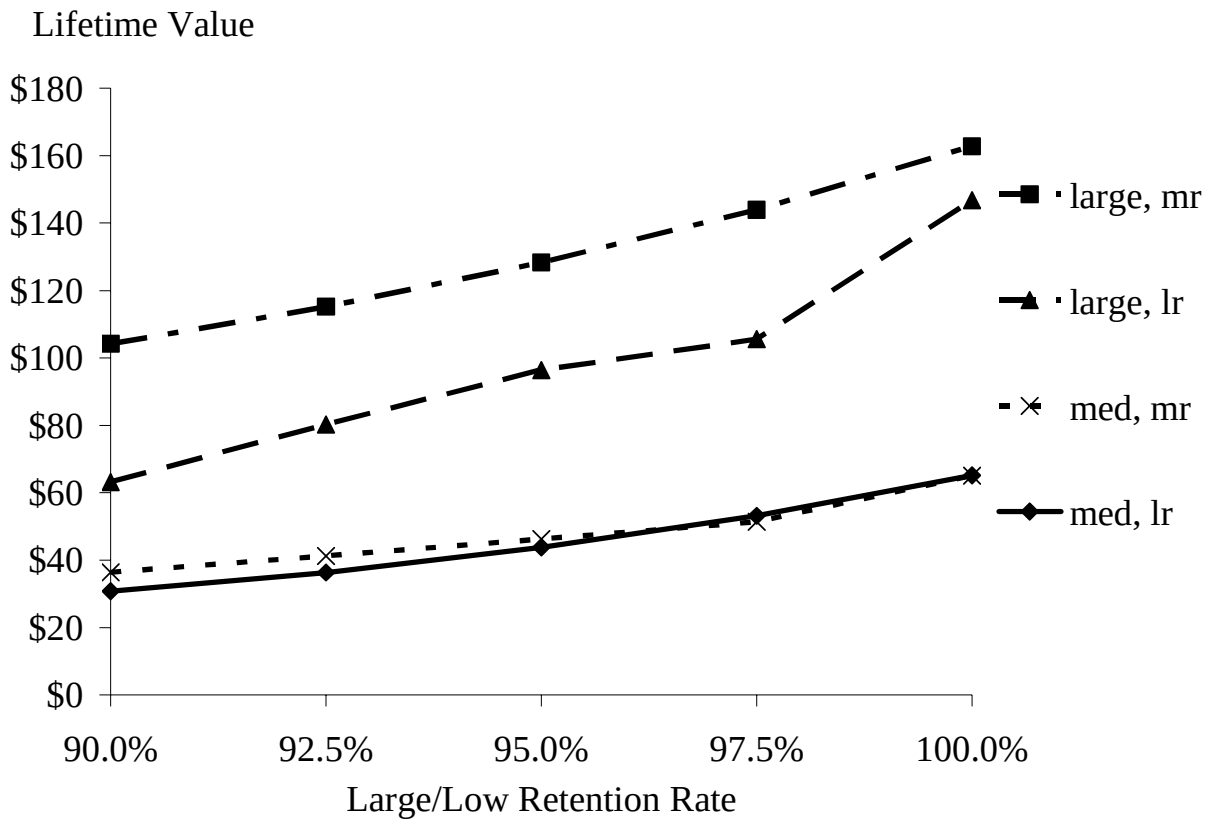

Figure 2. Sensitivity to Low Risk, Large Volume Retention Rate