2015 SENATE AGRICULTURE

SB 2291

2015 SENATE STANDING COMMITTEE MINUTES

Agriculture Committee
Roosevelt Park Room, State Capitol

SB 2291
1/30/2015
Job # 22891

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature Emmery Grotberg

Explanation or reason for introduction of bill/resolution:

Relating to the allowable time for grain warehouse scale ticket conversions

Minutes: *Attachments: #1-2*

Vice Chairman Luick opened the hearing on SB 2291.

Senator Wanzek Introduced SB 2291. There is a law in place which states that grain warehouses are responsible to put grain deliveries on a credit sale contract or a warehouse receipt within 45 days of issuing a ticket for grain. Many times when that 45 day window is up, farmers are not ready to make the decision. The problem is if there is ever an insolvency and enough of those receipts build up beyond the 45 day window, those operators are unsecure because they don't fall under the warehouse bond or the indemnity fund. Since many warehouse men do not want to infuriate their customers by putting pressure on them, this bill would establish an option where the farmer can keep their tickets without converting them but the farmer has to sign off stating that he understands he is at risk (no coverage under the ware house bond or the indemnity fund) by holding onto that ticket.

Vice Chairman Luick: (4:03) Basically this bill is filling that void between that gap of protection. It puts the risk on the farmer, not the grain holder?

Senator Wanzek: That is essentially correct. In my mind this bill will make the farmer aware of the risk when he allows his tickets to go beyond those 45 days which will provide him with incentive to make a decision. If we let the tickets go beyond the 45 days and there is an instance of an insolvency, it creates a huge problem where there a several farmers in an area who are not covered and you don't know what to do with them.

Senator Warner: I have a concern from the warehouse point of view about someone tying up all the warehouse space. You could have someone tying up the entire elevator just a month before the harvest starts and the elevator would apparently be unable to collect any rent and has an ambiguous situation where they elevator is unable to contract or sell the

grain because it may be demanded back at some point. Aren't we putting the warehouses in considerable jeopardy?

Senator Wanzek: No, I don't see that way because the warehouse still is able to establish their market guidelines. They have to treat everyone equitably but they can have a policy that these bushels after 45 days if you haven't indicated to us what's going to happen to them then they're automatically going to go on a credit sale contract. Once you put it on a credit sale contract that essentially enables the elevator to move the grain. You basically become a creditor to the warehouse.

Senator Warner: I'm still unclear, by signing this waiver does it stop the warehouse receipt or does it stop the credit sale contract?

Senator Wanzek: No. When you deliver your grain, you get a ticket with bushels, moisture information, etc. That's your proof that you delivered grain to that elevator. The law currently says that you can hold that but the warehouse has to, after 45 days, either have paid you for that ticket or it has to be recorded on a credit sale contract or it has to go into storage under a warehouse receipt. The warehouse receipt is covered by the bond that you had to have filed to be licensed and certified as a warehouse. The credit sale would be covered under the indemnity fund we have created here in the state. The farmers don't get those things signed and it puts the warehouse in an awkward position. This bill would enable them to send this form to them which would make the farmer aware that they can keep it in a ticket form and not transfer it to these other two areas which we are required to do by law. You can keep the ticket by signing off with the understanding that you are not covered under either one of these protection areas.

Senator Warner: But the grain still isn't moving and it is still blocking the elevator.

Senator Wanzek: That's not true, a lot of times the grain still moves. Very few warehouses use warehouse receipts anymore, it's all mostly credit sale contracts.

Senator Warner: If you can't force the credit sale contract, how does the grain move?

Senator Wanzek: It does, there's other folks here who would be able to explain that who actually work in that industry every day.

Senator Warner: It seems like you are putting the warehouse at a tremendous risk if they move grain and there is volatility in the market and all of a sudden because they're has been no contract signed and they couldn't force it, that they've exposed themselves to huge financial liability.

Senator Wanzek: You're right, but that's already available today. That grain is moving and that's why very little gets put into the warehouse receipt. When it's under a warehouse receipt, it has to be warehoused there and you have to have the bushels there. When it's under credit sale contract, the farmer is extending credit to that elevator and they can sell and move that grain.

Senator Klein: This is really protection to the producer who's delivering this. This is telling the producer that if the grain house becomes insolvent he won't have any coverage. This is protection to the producer from an insolvency that would be created by the warehouse, isn't it?

Senator Wanzek: It would be protection for the consumer or the farmer in the sense that it would warn him. The farmer in me says that if my elevator calls me after 45 days and says we're putting this on a credit sale contract, I would just tell him to sell it. It would warn me of my risk and give me an incentive to make a decision with my grain.

Chairman Miller: Why would someone want to leave this open for so long?

Senator Wanzek: This is a problem the warehouses have. It is a frustration because they don't want to put pressure on their customer to sign the credit sale contract because they want to maintain a good relationship. It's also a concern for the Public Service Commission (PSC) because there are the areas where a lot of the problems occur when we have insolvencies.

Randy Christmann, Public Service Commission: (13:57) (see attachment #1)

Senator Warner: (17:10) It seems to me that gaming by dumping your grain into an elevator, monopolizing space for free storage is a major cause of insolvency. The warehouse can't move or sell the grain and they can't speculate the prices. It seems to me that this would aggravate insolvencies rather than provide a solution to them. The situation you mentioned where there are old grain receipts, that's essentially free storage isn't it?

Randy Christmann: The situation is though that the grain has been shipped and if they become insolvent: the grain's gone and the money's spent and here's this two year old ticket that never got paid out and there's not enough assets to pay it out. What you're talking about isn't where we're running into our problem. The problem we are trying to solve for the grain warehousemen is when the farmers don't want to sign a contract or take the cash because they are unsure of what year they want to record the money. The grain warehouses are trying to get along well with their customers and so the proper thing for them to do would be to just write out a check and put it in the mail. But they don't want to do that. What this does is give another option to that grain warehousemen and to their customer where they can come in and sign the waiver and the waiver will be required to mention the specific grain tickets that it applies to and it will relieve the grain warehouseman of that obligation to convert within 45 days so that when we go out to inspect them we don't write them up and penalize them. As part of that agreement, if that producer refuses to make that decision whether to accept cash or do a contract they can take responsibility for their own decision and if the elevator becomes insolvent the producer has waived their right to protection under a trust fund. I think it's a good tool and I don't think it's going to hold up grain in anyway.

Senator Warner: (21:31) When the warehouseman moves the grain it has to be priced, doesn't it? There has to be a value established and the producer signs the waiver it allows the producer an infinite amount of time to speculate on the market.

Randy Christmann: Keep in mind that these are only our grain warehousemen, those federal licensees are not covered under this, they have federal rules. This is ND licensed warehouses. In the case of some of the large facilities, the grain is like money. It's fungible and they're taking grain in and shipping it out and unless you have these warehouse receipts, I expect that you're particular grain is not being held there and they are just turning it over. They should have the amount of grain that is not paid for on hand of similar quality and such. Under the current system is where I see the backlog. If you are that grain warehouseman and you're almost at capacity, yet you have a producer who won't sign a contract or take the money voluntarily, that's where there's trouble. This will provide a tool to help alleviate that problem. But the grain warehouseman can just write out a check and send it out.

Chairman Miller: I'm surprised that people keep their scale tickets for years.

Randy Christmann: When a public notice goes out that something has become insolvent and there is timeline to turn in claims, it is amazing all the people that then remember claims that are old. A lot of times they don't have the tickets, so our inspector goes out and pours through the files to find it and see if they can make the case that the bill is still payable.

Vice Chairman Luick: This isn't necessarily a question, but on the topic of free storage, typically most of those places start charging you storage after so many days.

Randy Christmann: In the second paragraph of my testimony (see attachment #1) the licensees can make their own policies for when the payment is made, except one of these options has to be exercised within 45 days. If the grain warehouse doesn't want to store grain, they can have a policy that they pay every day. If the producer doesn't want to abide y the policies, then they'll have to go to a different grain dealer. Within those 45 days the warehouseman can set their own policies.

Senator Oban: So is the problem that we aren't enforcing the law that is on the books already?

Randy Christmann: We have tried over the years to be patient with the warehousemen when we find these instances. When we do our inspections, our inspectors take a random sampling and go through them. When we find one beyond those 45 days, we try to work with them. The problem is getting worse and we realize we have to increase the enforcement. The story we typically hear is that the grain warehouse does not want to put pressure on the producer and cannot afford to lose him. So when we become stricter, we want to give our licensees an opportunity to work their customers too.

Senator Oban: So this really to ensure that the producer understands the law?

Randy Christmann: That and in addition to that that if this really is a problem, instead of all of the customers sharing in the responsibility for one producers decision to drag this out, the producer will take full responsibility for any losses that happen.

Tom Lilja, Corn Growers Association: (29:23) Testified in support of SB 2291 (see attachment #2) (highlighted pages 24 and pages 18-20)

There is a study on a lot of the risks producers face conducted by Dr. Bill Wilson and Bruce Dahl at the Department of Agriculture Economics at NDSU. It does address some of these issues.

The report makes some possible recommendations on review and analysis of the overhaul (see attachment #2, page 24).

They developed a simulation model of risk of insolvency (see attachment #2 pages 18-20). There are different margins for different crops. There is more risk on the wheat side of things so there is a greater chance for insolvencies on the western part of the state.

The Tornado model (see attachment #2 page 19-20) throws in some d . IT comes down to the margins and the least important thing in terms of causing the different risk scenarios in terms of what can lead to these insolvencies.

The most important things that lead to an insolvency (page 20) comes down to the margins. The least important is the volume that the elevators are handling. Our bonding laws are currently structured on the volume. If you're capacity is x amount then your amount is x. What this report is showing is that it is more the financial aspect. That's what commissioner Christmann is getting to in order to improve this process. There are farmers who are not converting the tickets. I asked myself if you are putting the farmer at more risk by opening this up or are you actually helping him. My conclusion is that you are actually helping to incentivize the producer to commit. It's not an end all answer, but it is an important first step to preventing these insolvencies. The recent rules released by the PSC address the turning of grain. So if you have a facility that is turning grain more frequently there is going to be some higher bond requirements to that.

Senator Warner: Maybe I'm misunderstanding this, but the key point is when is this being priced? Is it being priced at the time of delivery or is it being priced before it's moved? That's where I see the vulnerability.

Tom Lilja: The other things is, you can have farmers forward contracting in the spring of the year even before they deliver so there the elevator is taking the risk. Generally, as a rule, producers don't want to take the harvest low price, so they deliver it at harvest and they might want to take that deferred payment time. You run into that end of year scenario, the producer doesn't want to take the very end low price so they'll get that ticket and wait to get an increase in price. If it goes down lower, the farmer is assuming the risk. That's why you've see a build out of farmers storing their own grain.

Chairman Miller: (39:15) In my experience in farming with Fordville Co-op, soybean loads are coming in and they are selling it that day. The other elevator gives you a week to decide what to do and then they put it in storage and charge a lot. Every warehouse makes their own policy.

Jeff Kittell, North Dakota Grain Dealers: (41:18) To answer your question, it is the cash sale. The guy delivers grain and he's either delivering it delayed price which turns possession over to the elevator or cash. Very few of the elevators in ND write a warehouse receipt. This bill gives us the option to walk up and tell the producer who us unwilling to take money and tell him to "sign this piece of paper" to move the liability. Everything has been priced out, if you are Moved Do Pass and the grain hasn't been priced, we still own possession of it. It's not storage and you can't come and get it back. It's ours when you wrote the scale ticket. It's already on a signed contract that's on a delayed price contract. This is just a way to help the elevators stay in those 45 days.

Senator Klein: The grain dealers are in support of the bill?

Jeff Kittell: Yes. This just gives us one more step; we call the farmer and tell him you have to sign this or take the check and it makes him make a decision. It gives us the opportunity to educate the farmer.

Senator Klein moves for a Do Pass.

Senator Larsen seconded the motion.

Chairman Miller: This certainly doesn't hurt me. I guess if I was a massive farmer with tons of money I'd be a little worried about it, but in that case he can bear the risk and that's what this does it puts the risk back on the person who is causing the trouble. I think this is a good bill.

Senator Larsen: Sooner or later they are going to pay the taxes instead of trying to hide form them.

Chairman Miller: The problem is when people won't follow the rules of the PSC, they put the rest of the pool at risk. Every other farmer is at risk if it should go insolvent and makes that one farmer bear that risk.

Senator Warner: I have a little more comfort if the value has been established before it's moving. Then that minimizes the risks of the warehouse. It still seems like you are trying to coddle a child. It doesn't seem like a business way of doing things.

Chairman Miller: They have identified those elevators who have less onsite storage and run a high volume, they more at risk for insolvency and they are probably the ones who are doing more of this.

Senator Klein: For a long time we've been making every attempt to have the producer land on their feet after insolvencies. The indemnity fund was started in the early 200s after the Wimbledon insolvency. The PSC is making another attempt to make sure the producer understands that he will not be covered if he will not make a decision within those 45 days.

A Roll Call vote was taken. Yea: 5; Nay: 1; Absent: 0.

Do Pass carries.

Chairman Miller will carry the bill.

Date: January 30, 2015
Roll Call Vote #: 1

2015 SENATE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. 2291

Senate Agriculture Committee

☐ Subcommittee

Amendment LC# or Description:

Recommendation: ☐ Adopt Amendment
☒ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar

Other Actions: ☐ Reconsider ☐

Motion Made By Senator Klein Seconded By Senator Larsen

Senators	Yes	No	Senators	Yes	No
Chairman Joe Miller	Y		Sen. Erin Oban	Y	
Vice Chairman Larry Luick	Y		Sen. John M. Warner		N
Sen. Jerry Klein	Y				
Sen. Oley Larsen	Y				

Total Yes 5 No 1

Absent 0

Floor Assignment Senator Miller

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2291: Agriculture Committee (Sen. Miller, Chairman) recommends **DO PASS** (5 YEAS, 1 NAYS, 0 ABSENT AND NOT VOTING). SB 2291 was placed on the Eleventh order on the calendar.

2015 HOUSE AGRICULTURE

SB 2291

2015 HOUSE STANDING COMMITTEE MINUTES

Agriculture Committee
Peace Garden Room, State Capitol

SB 2291
3/6/2015
Job #24436

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature: Le Mae Kuehn

Explanation or reason for introduction of bill/resolution:

Relating to the allowable time for grain warehouse scale ticket conversions.

Minutes: Attachment #1, 2a and 2b

Senator Wanzek, Bill Sponsor: I was approached by Public Service Commissioner Randy Christmann. On our farm we do have a bonded and licensed warehouse. We purchase dry edible beans from other producers and process and market them to canners, etc. We also have a feed plant where we buy corn from farmers and process into feed. So we are bonded and licensed in both areas.

Within the warehouse Public Service Commission laws, our producers that sell corn to a warehouse are protected. They are protected if they are storing their grain through a bond that is required by the entity for the first 45 days. After 45 days we have to get that producer to either put the grain into a storage contract or they have to sign a credit sale agreement to defer the price or to defer the payment. Sometimes the farmers won't sign. The buyer doesn't want to infuriate the customer so they let it go. When there are insolvencies, then there are problems. What this bill is trying to do is say, "We can allow that to not go into storage or the credit sale contract. Then the farmer has to sign off and realize he is not protected."

Representative Craig Headland: From my experience when you haul grain into elevator, it is either sold or put on delayed-price contract.

Senator Wanzek: Most of them go on a credit sale type contract. We don't make money by storing grain. On a storage contract you have to have possession of the grain at the warehouse. On a credit sale the farmer becomes a creditor to the entity and the grain can be moved. They are covered under the indemnity fund rather than the bond.
When there are insolvencies a lot of problems come from tickets that weren't dealt with.

Representative Craig Headland: If my custom harvester delivers, he is going to have to sign away the rights to my grain. I don't want anybody signing away my commodity.

Senator Wanzek: All this is doing is giving the warehouseman an opportunity that if it is not on a credit sale and it is not on storage, a signature is needed so the owner knows that the grain is not protected. The owner has to be the one to sign off--accepting that he is not covered or protected.

Chairman Dennis Johnson: The way the bill is written "the person to whom the ticket is issued." Does that mean the seller of the grain or the trucker delivering?

Senator Wanzek: Typically the name on the ticket is the owner.

Representative Craig Headland: Most elevators have a sign posted in the scale house that says cash or deferred.

Chairman Dennis Johnson: That would depend on the warehouse you are going to.

Senator Wanzek: This is another tool to tell them they are not covered under the indemnity funds. In some of these insolvencies there were tickets that were out there for a year.

Randy Christmann, ND Public Service Commissioner: (Attachment #1)

(17:38)
Representative Craig Headland: The person to whom the ticket is issued is the owner?

Randy Christmann: That is the one to get money from the trust fund if there would be an insolvency.

Vice Chair Wayne Trottier: Do specialty crops fall under this more such as edible dry beans, etc.?

Randy Christmann: I don't know which would be more.

Representative Cynthia Schreiber Beck: How many insolvencies are there in a year?

Randy Christmann: Over the past 20 years, 1 every year or year-and-a-half.

Representative Cynthia Schreiber Beck: I see this protects the producer as well as the warehouseman.

Randy Christmann: I don't think it helps the producers specifically. Right now if someone shows up with their year old ticket in an insolvency, they will be included as a claimant. This would protect other producers who sold more recently because they would get a larger portion of the fund.

Representative Cynthia Schreiber Beck: It is forcing them to do something so they are protected.

Randy Christmann: It gives the grain warehouseman an opportunity to give an alternative. You don't have to take cash or a contract. But then you are not protected any more.

Representative Craig Headland: Today's law would give the elevator the ability to sell the grain after 45 days if they refuse to sign a delayed price contract.

Randy Christmann: The elevator needs to have on hand as much grain as what their books show.

Representative Craig Headland: It seems that government is getting into my business.

Randy Christmann: When a warehouse does become insolvent, farmers expect protection from the trust fund. So there is benefit to government intervention.

Jeff Enger, ND Corn Growers Association Board of Directors: (Attachments #2a & b)

Opposition: None

Chairman Dennis Johnson: Closed the hearing

2015 HOUSE STANDING COMMITTEE MINUTES

Agriculture Committee
Peace Garden Room, State Capitol

SB 2291
3/12/2015
Job #24739

☐ Subcommittee
☐ Conference Committee

Committee Clerk Signature LeMae Kaehn

Explanation or reason for introduction of bill/resolution:

Relating to the allowable time for grain warehouse scale ticket conversions
(Committee Work)

Minutes:

Representative Craig Headland: I am going to reject the bill. In this environment there is risk involved. I like the flexibility to be able to put off my decision on how I want to handle my grain sale until I know. This will take away that ability. I think they are trying to protect both farmers and warehouses in the case of insolvency. It is my responsibility to know who I am doing business with.

Chairman Dennis Johnson: It has been regulation in the PSC that this should be documented and I don't think that has been enforced. That is why it has been brought forward.

Representative Cynthia Schreiber Beck: Is there a note on the scale tickets that you have 45 days?

Representative Craig Headland: In today's world, in most cases, you have two choices. You sell it or put it on a delayed contract. You are forced to sign a document that takes away your right to the grain even though it may not be priced

Chairman Dennis Johnson: Your scale ticket is a document that shows what commodity you brought it. In the rush of harvest there is a sign on the door that says "cash only." It also depends on the capacity of the elevator.

Representative Craig Headland: An example, you harvest your soybeans in October **but m**ay not have other book work up to date so you don't know financially for tax purposes where you stand. So you may want to hedge. If we force one of these documents to be signed, the problem will continue to exist.

Vice Chair Wayne Trottier: There are two choices. It is a cash sale or delayed pricing. Do you usually let the elevator know which choice?

Chairman Dennis Johnson: I will tell the manager. I see this as a document acknowledging that you have the grain in there. That is what the PSC wants on record.

Representative Craig Headland: If you sign that document, you are forced to take that money or leave it at risk unless you put it on a contract for payment later.

Chairman Dennis Johnson: That is what we do now.

Representative Cynthia Schreiber Beck: That is to pay out for the loss then the fund has to pay out? It is indefinite if nothing is signed? If you sign it you are not covered after 45 days. Correct?

Chairman Dennis Johnson: That was a concern from the commissioner.

Representative Cynthia Schreiber Beck: I see it from both sides. It is protection for that fund.

Representative Alan Fehr: What is this bill trying to fix. Is it the owner isn't indicating he wants to sell it? Or is it that he is not protected?

Chairman Dennis Johnson: It is the paper trail that the farmer acknowledges that he has a number of bushels in the facility that aren't committed to a sale. When the PSC looks at the records, they can see which is which.

Representative Alan Fehr: What is the problem that is intended to fix?

Chairman Dennis Johnson: If there is an insolvency it shows what grains are still on the books which is a requirement of the PSC to monitor.

Representative Alan Fehr: Does this fix that problem? The owner is not the one delivering the grain.

Chairman Dennis Johnson: The owner is on the scale ticket and has to sign acknowledging the grain is in the elevator.

Representative Alan Fehr: This bill is intended to have a paper trail to protect the producer?

Chairman Dennis Johnson: Yes.

Representative Craig Headland: I like protection. If I sign this contract and I don't take the money, I won't be protected. I just won't sign.

Whenever you leave money in an organization, your money is at risk. The indemnity fund has been capped. That is the protection on unpriced grain. Once the grain is priced, it is at risk if you leave it there.

Representative Cynthia Schreiber Beck: It seems this process is two-fold where it could be a single process.

Chairman Dennis Johnson: It is to cover their basis. If we have a 20,000 bushel contract with beans we are harvesting, they send the papers out a couple days after we are done hauling.

Vice Chair Wayne Trottier: You have cash sale, storage, and delayed pricing. If you contract, you can delay taking the money. Which one are you totally not protected?

Representative Craig Headland: You are not protected by deferred payment.

Vice Chair Wayne Trottier: You price it today but not take money until after the first of the year.

Representative Craig Headland: The bond would cover open storage. The indemnity fund covers 80%.

Vice Chair Wayne Trottier: The bonds mean almost nothing. Many times in insolvency they get 20 to 40%. What have you got against signing that piece of paper?

Representative Craig Headland: Because then I am signing away my protection.

Chairman Dennis Johnson: It will be a learning curve. To me this is the way it is going.

Representative Alex Looysen: Moved Do Pass.

Representative Bert Anderson: Seconded the motion.

A Roll Call vote was taken: Yes 10, No 1, Absent 2.

Do Pass carries.

Representative Fehr will carry the bill.

Date: 3/12/2015

Roll Call Vote #: 1

2015 HOUSE STANDING COMMITTEE
ROLL CALL VOTES
BILL/RESOLUTION NO. 2291

House **Agriculture** Committee

☐ Subcommittee

Amendment LC# or Description:

Recommendation:
☐ Adopt Amendment
☒ Do Pass ☐ Do Not Pass ☐ Without Committee Recommendation
☐ As Amended ☐ Rerefer to Appropriations
☐ Place on Consent Calendar

Other Actions: ☐ Reconsider ☐

Motion Made By Rep. Looysen Seconded By Rep. Bert Anderson

Representatives	Yes	No	Representatives	Yes	No
Chairman Dennis Johnson	X		Rep. Joshua Boschee	X	
Vice Chairman Wayne Trottier	X		Rep. Jessica Haak	X	
Rep. Bert Anderson	X		Rep. Alisa Mitskog	X	
Rep. Alan Fehr	X				
Rep. Craig Headland		X			
Rep. Tom Kading	AB				
Rep. Dwight Kiefert	AB				
Rep. Diane Larson	X				
Rep. Alex Looysen	X				
Rep. Cynthia Schreiber Beck	X				

Total (Yes) 10 No 1

Absent 2

Floor Assignment Rep. Fehr

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2291: Agriculture Committee (Rep. D. Johnson, Chairman) recommends **DO PASS** (10 YEAS, 1 NAYS, 2 ABSENT AND NOT VOTING). SB 2291 was placed on the Fourteenth order on the calendar.

2015 TESTIMONY

SB 2291

#1

Senate Bill 2291

Presented by: **Randy Christmann, Commissioner**
Public Service Commission

Before: **Senate Agriculture Committee**
The Honorable Joe Miller, Chairman

Date: **January 30, 2015**

TESTIMONY

Mister Chairman and committee members, I am Randy Christmann, Commissioner of the Public Service Commission. The North Dakota Public Service Commission supports passage of Senate Bill 2291 and appreciates the sponsors' efforts to help make our licensing program even better and more efficient.

Current law requires that every grain warehouseman provide a scale ticket to people delivering grain for each and every load. Although these licensees may set their own policies for when payment will be made, all scale tickets must be converted to cash, noncredit-sale contracts, credit-sale contracts, or warehouse receipts within 45 days after the grain is delivered.

This is an important part of our grain licensing law because if a grain licensee is having financial problems we don't want them to accumulate obligations for longer periods of time. That puts all of their customers in a vulnerable situation if that grain licensee becomes insolvent.

Violation of the 45 day conversion requirement is one of the most common violations that our grain licensing inspectors find. In fairness to the grain

warehousemen found in violation, I do understand why they sometimes choose not to follow the law.

In many instances, producers are unsure of when they want to be paid. The timing of their grain payments can have enormous financial implications on producers, and may revolve around the timing of unassociated purchases they plan to make later in the year or in the following year. This may put a grain warehouseman in a very difficult position when a customer wants to wait before deciding on a cash payment or a contract that will set a date for payment. Thus it is understandable when a grain licensee decides to violate this provision of law rather than upset their customer.

However, just because it is understandable does not make it acceptable, so we want to add another option for the grain warehousmen and their customers. This bill allows them to sign a waiver for specific scale tickets that relieve a grain warehouseman of the obligation to convert those tickets within 45 days. As part of the agreement, the grain producer is waiving their rights to benefits from the Commission trust fund if that grain licensee becomes insolvent.

Senate Bill 2291 creates an opportunity for individual producers to continue working with their grain warehousemen to make decisions that are best for them. However, with this law change, those producers will be making those decisions and accepting the risks involved with their decisions and the grain licensee will not be in violation of the law.

Mister Chairman, this concludes my testimony. I will be happy to answer any questions.

#2
SB 2291
1/30/15

Agribusiness & Applied Economics Report 732 October 2014

Risk Exposure of Financial Failure for North Dakota Grain Handling

William W. Wilson

and

Bruce Dahl

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Acknowledgments

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Risk Exposure of Financial Failure for North Dakota Grain Handling

Introduction

An important element of risk for North Dakota grain and oilseed growers is commonly referred to as "counter-party" risk for transactions involving grain sales and input purchases. Growers are exposed to some elements of risk related to default on transactions with buyers and input suppliers. Mechanisms exist in North Dakota (and in most states) to protect growers against buyer default. The purpose of these mechanisms is to protect grain sellers against default of the grain buyer. These mechanisms include requiring buyers to be licensed and to have bond coverage. Detailed statutes explain these mechanisms and requirements in addition to the process of reclaiming losses.

The exposure to risk has escalated in recent years. There have been important changes that impact risk of default. First, price levels have increased. Whereas corn, soybeans and wheat were traditionally in areas of $3, $7 and $5/bushel, these values have now increased by a factor of nearly two and are more recently in the area of $4-6, $11-12 and $7-8, respectively, and, have since declined. Second, the volumes handled by individual shippers have increased due, in part, to the shift in commodities, the adoption of shuttle facilities and consolidation. Third, volatility (risk) for all prices has increased. Our work suggests that the volatility (as conventionally measured) has increased from about .18 in the early 1980s to about .4 or more in recent years. Fourth, the increased cost and value of inputs as well as their volatility (notably fertilizer) have escalated. The combination of these changes has heightened the risk exposure for all firms in this industry and its supply chain. While the grain handling sector is well managed and has had limited defaults, the mechanisms and protections offered to growers will escalate in importance as these changes ensue.

The purpose of this report is to document risks to growers and the mechanisms used to mitigate risks related to buyer default. This report is structured as follows: First, current North Dakota programs are discussed. Second, mechanisms used in other states are examined, and proposed/recent changes are summarized. Third, changes in growers' risk exposure in North Dakota are examined, and changes in North Dakota grain-elevator characteristics are summarized. Fourth, estimated default probabilities for U.S. grain handlers are examined over time. Fifth, results from a simulation model are presented. Finally, recommendations are discussed.

North Dakota Grain Buyer/Warehouse Bankruptcy Programs

North Dakota has two programs that provide coverage for grain-buyer financial failures. The first has two parts: the grain warehouse licensing and bonding program, and the grain buyer licensing and bonding program. These programs require warehouses and grain buyers to be

licensed and to submit a bond which is dependent on the warehouse's rated storage capacity and on the grain buyer's average sales over the last 3 years.

The second program is the North Dakota grain insurance fund which provides coverage for credit sales (which are not covered by the grain buyer's bond). The North Dakota grain insurance fund, or credit-sale indemnity fund, was established in 2003 to cover credit sales deferred for more than 30 days. The fund assesses $2 per $1,000 of credit sales' value; when the fund rises to $10 million, the assessment is dropped until the fund declines to $6 million; then, the assessment is re-imposed. In 2007, the maximum fund was dropped from $10 million to $6 million, and the minimum was lowered from $6 million to $3 million. The indemnity fund pays 80% of claims, up to a maximum of $280,000 per producer.

North Dakota licenses warehouses for storage and requires bonding, with a minimum bond of $50,000 up to a maximum of $1.5 million. The minimum bond requirements are assessed from a bond schedule based on storage capacity. Grain buyer licenses can be either facility based, or for roving grain buyers. There is also a federal bond that is required for licensed federal storage capacity. The federal bond also requires a minimum bond of $50,000 and a maximum of $1 million. The minimum bond requirement is based on the average the last 3 years of volumes handled. Bonds on file for ethanol plants appear to be equal to the required bond for the warehouses' storage capacity.[1]

There have been 40 insolvencies for the North Dakota Grain Warehouse and Buyer Programs since 1975, with periods of multiple insolvencies (the early and late 1980's, the late 1990's to early 2000's, and from 2007 forward (Figure 1). There have been 11 insolvencies since 2007 (Appendix Table B1). The recent insolvencies included nine grain warehouses and two roving grain buyers, and three of these insolvencies made claims on the Credit-Sale Contract Indemnity fund. The insolvencies included two in 2007, three in 2009, two in 2010, one in 2011, two in 2012 and one in 2013. The total payouts for claims against the three Indemnity fund insolvencies ranged from $110,315 to $330,630.

A recent insolvency, Earth Harvest Mills in 2013, which was still in process when Appendix Table B1 was developed, was recently completed with the claims paid amounting to $948,630 (ND PSC, 2014a). This claim was the largest one paid, to date, from the Indemnity fund and left a balance around $4.5 million in the fund (Port, 2014). Three other claims (Mitchell Feeds, Anderson Seed and Falkirk Farmers Elevator Co) are still in the process of completion with significant claims on the Indemnity fund for at least two of them (ND PSC 2013a,b). These two claims could potentially lower the Indemnity fund balance to near $3.6 million, and the balance could be further impacted depending on what occurs with the Mitchell

[1] Ethanol plants have lower bonding requirements because the bond is based on storage capacity. Ethanol plants usually have a higher turnover rate than elevators having similar storage capacity.

Feeds insolvency. There is a trend for the size of the claims paid by the Indemnity fund. These claims have increased from 2007 with the latest one being the largest at $948,953.

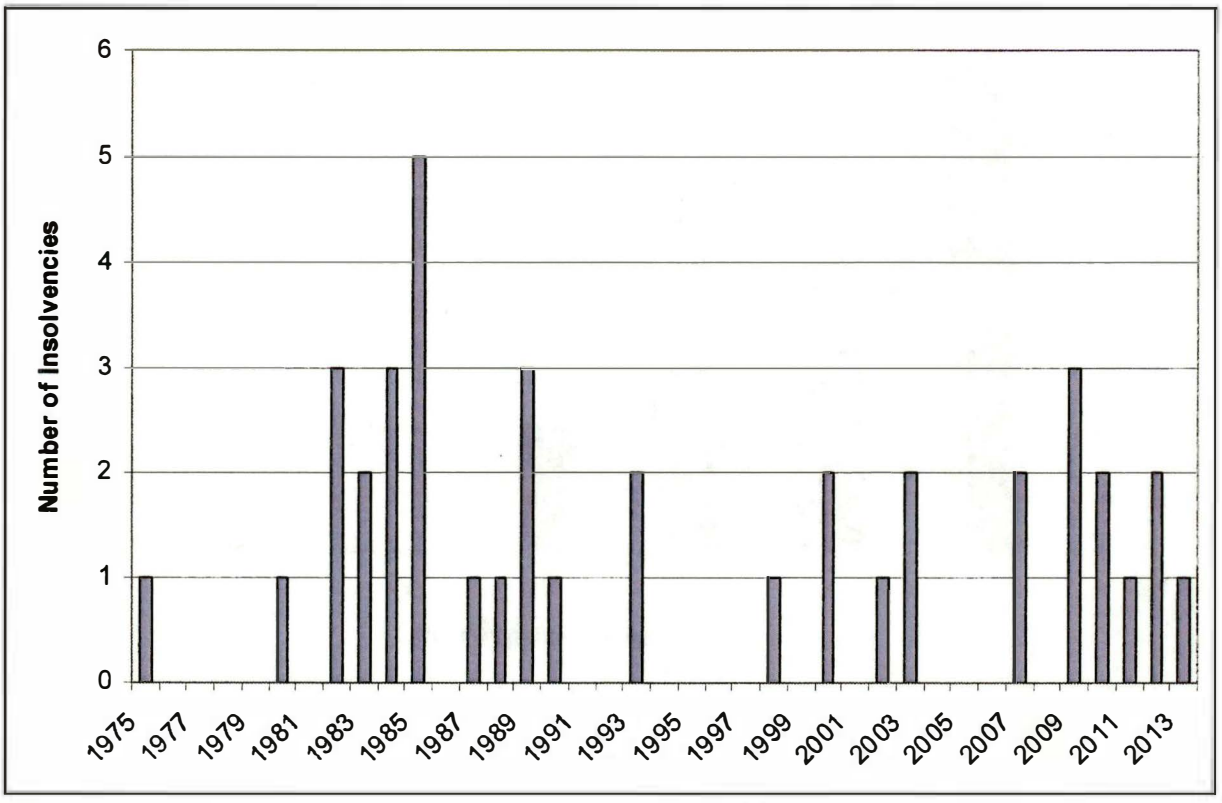

Figure 1. North Dakota Warehouse/Grain Buyer Insolvencies per Year.

The probability of insolvencies occurring for any year was estimated (Figure 2). The probabilities calculated indicates that North Dakota warehouse/grain buyer programs experienced no insolvencies per year about 46% of the time, 1 insolvency 23% of the time, 2 insolvencies about 18% of the time, etc. from 1975 to 2013. The estimated probabilities also indicate that the likelihood of at least 1 insolvency in a year is about 54%. The probability of 1 or less insolvencies in a year was 69%; two or less insolvencies was 87%; and 3 or less insolvencies was 97% (Figure 3).

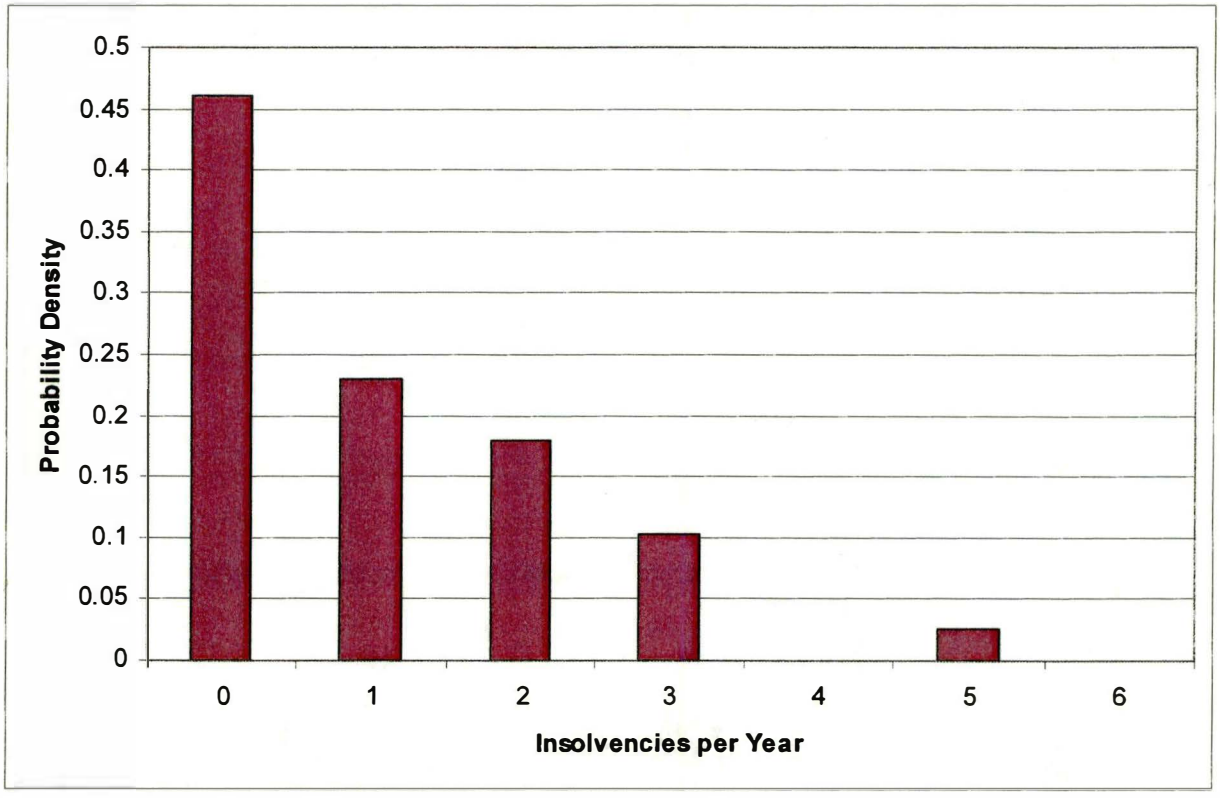

Figure 2. Probability of Given Number of Insolvencies Occurring per Year.

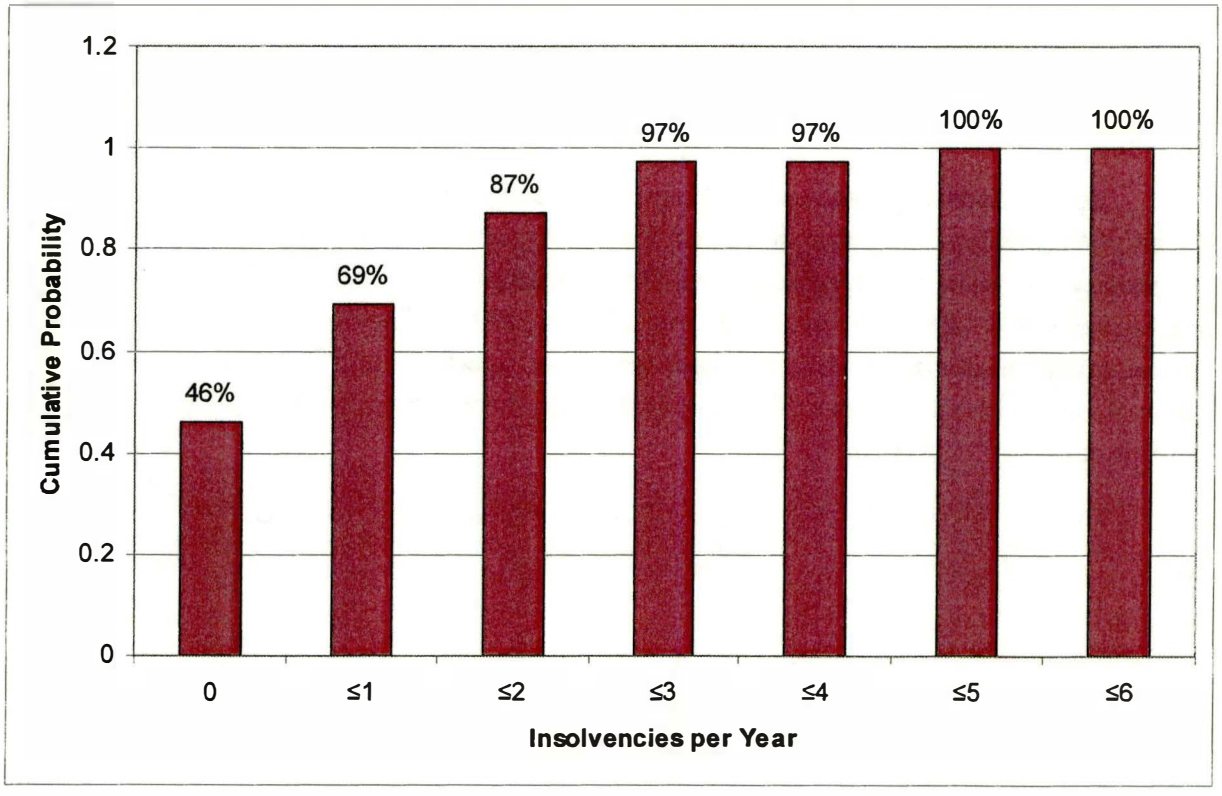

Figure 3. Cumulative Probability of Insolvencies per Year.

Mechanisms in Other States

States generally have either indemnity funds or bonding programs. Only North Dakota and Oklahoma have both, while Oregon has neither. States that only have bonding include: Alabama, Arkansas, Colorado, Georgia, Kansas, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, South Dakota, Texas, Virginia and Wyoming. States that only have indemnity funds include: Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, New York, Ohio, South Carolina, Tennessee, Washington and Wisconsin (AGRO, 2014).

Most states with bonding have warehouse bonding requirements. A few have both warehouse and grain buyer bonding requirements (Alabama, Colorado, Georgia, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Dakota, South Dakota and Virginia). It is notable that other states with grain buyer bonding requirements apply the bond based on a percentage of the value of agricultural commodities purchased in the prior year (Colorado, Minnesota, Missouri, Montana, Nebraska and South Dakota) while North Dakota uses a three year average for volumes handled as the basis for its bonding requirements.

Two of the states with bonding apply different requirements for dry bean warehouse storage bonding requirements than for commodity grains (Colorado and Wyoming). The Colorado requirements for dry beans imply bonding requirements could be up to three times higher than for a similarly sized non-dry bean facility over one for commodity grains. Nebraska varies the bonding requirement based on the type of storage (normal vs. without turning or aeration capabilities). Virginia splits its bonding requirements into two categories: grain dealers (who can purchase or store grain from Virginia growers) and grain handlers (who can buy bulk grain and either resell the grain or grain products, but cannot purchase or store grain from Virginia growers).

Several states also impose net worth requirements which, if violated, require an additional bond to be licensed (Colorado, Kansas, Missouri, Nebraska, Texas and Wyoming). These net worth bonding requirements typically require net worth to equal 20 to 25 cents/bu. of storage capacity, and an additional bond is required to make up the difference for shortfalls. Most states treat bonds for grain buyers and warehouses separately, so a firm that both buys and stores grain would require two bonds. Colorado determines it's bonding requirements as the maximum of either the estimated bond for the warehouse or the grain buyer.

In addition to state regulations, there are bonding requirements to become a federal warehouse. These rules are similar to state level bonding requirements in several of the states. Bond requirements are scaled based on storage capacity and require 20 cents/bu. for the first 1 million bushels of storage, 15 cents/bu. for 1 million to 2 million bushels and 10 cents/bu. for storage capacity over 2 million bushels. The minimum bond required is $50,000, and the

maximum is $500,000. Also, an additional bond is required if the firm's net worth falls below 25 cents/bu. of storage capacity.

The Association of Grain Regulatory Officials (AGRO) conducted a study on the characteristics of indemnity funds for those states that offered them (AGRO, 2013). It found minimum and maximum sizes for insurance funds varied by state. The lowest specified minimum for an insurance fund was $1 million dollars for New York and Oklahoma. The highest minimum was $10 million dollars for Idaho and Indiana. Maximum amounts for the insurance funds ranged from a low of $3 million in Washington to a high of $15 million in Indiana (Table 1).

Most insurance funds covered "priced later" sales. Only Iowa, Louisiana and Oklahoma did not cover "priced later" sales. The maximum coverage for claims varied from 80 to 100%, with the lowest coverage by Indiana, Kentucky, North Dakota, New York and Ohio; and the highest coverage was by South Carolina. North Dakota and Illinois also impose maximum limits on farmer payouts in addition to coverage limits. North Dakota limits farmer payouts to $280,000 per farmer while Illinois limits the amount to $250,000 per farmer. The insurance funds have been in operation for a range of years. The Oklahoma fund started in 1980 and was the oldest. The Louisiana fund started in 2008 and was the newest.

Table 1 shows the total failures and claims paid, from which we calculated the average failure per year of operation and the average claims paid per failure. Most states had failures that averaged less than one per year and average claims were generally less than $400,000 per failure.

The average claims per failure, by state, were fitted for a relationship with either the maximum or minimum of the state's indemnity fund (Appendix Figures A1-A2). These relationships suggest that North Dakota actually has a slightly higher minimum indemnity fund value related to its average claims per failure than in other states, although the value is not as high as Ohio, Indiana or Idaho. For the relationship between average claims per failure and the indemnity fund's maximum, North Dakota is about on average with that implied across all states with indemnity funds (Appendix Figure A2). These relationships suggest that North Dakota's Indemnity fund minimum and maximum values are in line with other states. These relationships also suggest that if average payouts for claims increase, the size of the minimum and maximum for the state's indemnity fund would likely need to increase to be consistent with other states.

If we include the latest insolvency against the indemnity fund (The Earth Harvest Mills insolvency was not completed at the time of the AGRO study), this increases North Dakota's average claim per failure from $94,363 to $216,937. This value does not include potential payouts for the several unresolved insolvencies which could increase average claims per failure to around $341,000. This level of average claims per failure further shifts North Dakota's

position for minimum and maximum fund sizes to a smaller than average position across the states. It is notable that North Dakota's average claims per failure $216,937 would still be less than that observed in most other states (Idaho, Illinois, Indiana, Iowa, Louisiana, Ohio and Oklahoma) ranging from $251,350 in Iowa to $853,205 in Idaho. Only Kentucky, Michigan, New York, South Carolina, Tennessee, Washington and Wisconsin have lower average claims per failure. At $341,000 per claim, only Idaho, Indiana, Louisiana and Ohio would have higher claims per insolvency.

Table 1. Selected Characteristics of State Indemnity/Insurance Funds[1]

State	Minimum ($ Million)	Maximum ($ Million)	Cover Price Later Sales	Max Coverage (Percent)	Farmer Max Payout ($)	Established Year	Failures Total	Average Failures per Year	Total Claims Paid ($)	Average Claims/Failure ($)
ID	10	12	Y	90		1989	12	0.50	10,238,459	853,205
IL	2	6	Y	85	250,000	1983	82	2.73	21,203,519	258,580
IN	10	15	Y	80		1996	11	0.65	4,280,703	389,155
IA	3	8	N	0		1986	58	2.15	14,578,304	251,350
KY		4	Y	80		1984	14	0.48	2,415,267	172,519
LA	3	6	N	0		2008	1	0.20	400,000	400,000
MI	3	5	Y	90		2003	6	0.60	920,382	153,397
ND	3	6	Y	80	280,000	2003	6	0.60	566,178	94,363
NY	1	4	Y	80		1984	64	2.21	4,565,386	71,334
OH	8	10	Y	80		2004	37	4.11	12,710,798	343,535
OK	1	6	N	0		1980	14	0.42	4,300,000	307,143
SC	1.5	5	Y	100		1982	107	3.45	2,850,353	26,639
TN		10	Y	85		1990	6	0.26	958,995	159,833
WA		3	Y	Sliding		1987	0	0.00	0	0
WI	1	6	Y			2002	0	0.00	0	0

Source: Derived from ARGO (2013).

1. Only states having indemnity funds are shown. Many Midwestern wheat producing states including the nearby states of MN, MT and SD only have bonding programs

Changes/Proposed Changes to State Regulations

South Dakota requires licensing and bonding of warehouses and grain buyers. Warehouses are required to submit a minimum bond that is equal to the maximum of $25,000 times the number of facilities or 50% of the value of grain in storage. The value of grain in storage must be reported monthly (SD Public Utilities Commission, 2014). In 2013, the South Dakota law was changed from requiring the last annual financial report to be licensed to requiring more frequent information about financials, thus requiring buyers to self-report financial difficulties to the South Dakota Public Utilities Commission if the firm experiences financial trouble (GrainNet, 2013). The South Dakota Public Service Commission proposed changing the rules for oral credit sales in July 2013, and changes were enacted in September 2013. The new rule required that contracts be mailed to the farmer; then, the farmer has 48 hours to object in writing, or the contract goes into effect (Pates, 2013).

Iowa has an indemnity fund with a maximum of $6 million. The fund assesses .014 cents/bu. on grain transactions and .014 cents/bu. on storage capacity for grain warehouses, and producers are charged .25 cents/bu. on grain sold. The fee was stopped in 1989, however, fees are still collected for grain buyer's license fees. This fund only covers loses for cash sales and does not cover losses on credit sale contracts (South Dakota Farmers Union, 2013).

In 2013 Ohio increased the size of its indemnity fund and made farmers first in line for assets in the case of a bankruptcy (Seachrist, 2013). The language covering the order of claims on assets removed the ambiguity of preferences on claims but retained farmers as having prioity. The Ohio indemnity fund allows lenders to participate. Ohio increased the indemnity fund minimum/maximum from $8/$10 million to $10/$15 million. The fund, which contained $8 million, would collect a ½ cent/bu. levy until the fund cap of $15 million is reached. Then, the levy is suspended until funds drop to $10 million. The fund generally reimburses 100% for storage grain, deferred payments up to 90 days with a signed agreement and insufficient funds checks (Moore, 2012). The fund provides 100% coverage for the first $10,000 and 80% of the balance for delayed price grain and basis grain. Lenders have the ability to use the grain indemnity fund by asking handlers to utilize state warehouse receipts (OABA, 2014).

The Texas Grain Producer Indemnity Board proposed an indemnity fund that would be designed to mitigate up to 90% of losses when grain buyers fail (Texas Department of Agriculture, 2013). The fund would have made an assessment of 0.2% to 0.6% of the final value of the sale to fund the indemnity at the first point of sale grain buyer. However, the proposal required a two-thirds vote to be adopted, and growers voted not to adopt the Texas Grain Producer Indemnity Board (Smith, 2013).

Nebraska has a bonding/surety mechanism. The Nebraska Public Service Commission brought up the idea of an indemnity fund in 2008 and 2009. Little support existed from the state's commodity and farm groups in 2009 (Dakota Farmer, 2009).

Changes in Risk Exposure for Growers

Crops grown and farm sizes have changed over time for North Dakota farmers. In an effort to examine the risk exposure of farmers, we constructed an average size farm and applied planted and harvested acres, yields and marketing year prices to derive a measure of gross receipts. Farm sizes were taken from Swenson (Various), reported an average size farm for commercial operators in North Dakota. Crop mix was estimated as the proportion of total planted acres devoted to individual crops by year. The ratio of harvested to planted acres was estimated from actual North Dakota planted and harvested acres, by year, from 1990 to 2013 (USDA-NASS, 2014). Yields and marketing year prices were also obtained from USDA-NASS (2014). Gross receipts from crop sales were estimated by crop and aggregated. Gross receipts were estimated by multiplying harvested acres by yields and marketing year average prices.

Estimated gross receipts per farm grew from about $100,000 in 1991 to $803,351 in 2012 (Figures 4-5). The increase in gross receipts was due to increased farm sizes, changes in crop mix, increased yields, and higher prices for crops. Farm size grew from 1,387 acres in 1991 to around 2,000 acres from 2007 forward. The crop mix shifted toward higher production of corn, soybeans, canola and durum wheat, and away from barley, sunflowers, spring wheat and winter wheat. Marketing year average prices for 2013 increased, on average, from 1.8 to 4.1 times 1991 prices, with corn rising 1.8 times and flax increasing 4.1 times 1991 prices.

The gross receipts per farm increased from about $100,000 in 1991 to over $800,000 in 2012, reflecting a large increase in farmers' risk exposure given the coverage limits for the bonding and indemnity programs. The indemnity fund limits farmer payouts to 80% of the claim, up to a maximum of $280,000 per producer. This limit suggests that, in the early 1990's to early 2000's, an average farmer would likely not run into the maximum per farm limits. From 2007 forward, an average farmer in North Dakota would have significant risk exposure if all crops were sold to a single firm and, even if split evenly between bonding and indemnity programs, may exceed grower limits for maximum payments. In fact, in the most recent insolvency, two claimants had claims exceeding the $280,000 payout limit (ND PSC, 2014a).

The indemnity fund would potentially provide coverage for up to a maximum of $350,000 ($280,000/.80) in gross receipts. For a farm in 1991 to obtain gross receipts of about $350,000, a farm size of about 4,725 acres is implied. In 2003, the year the indemnity fund

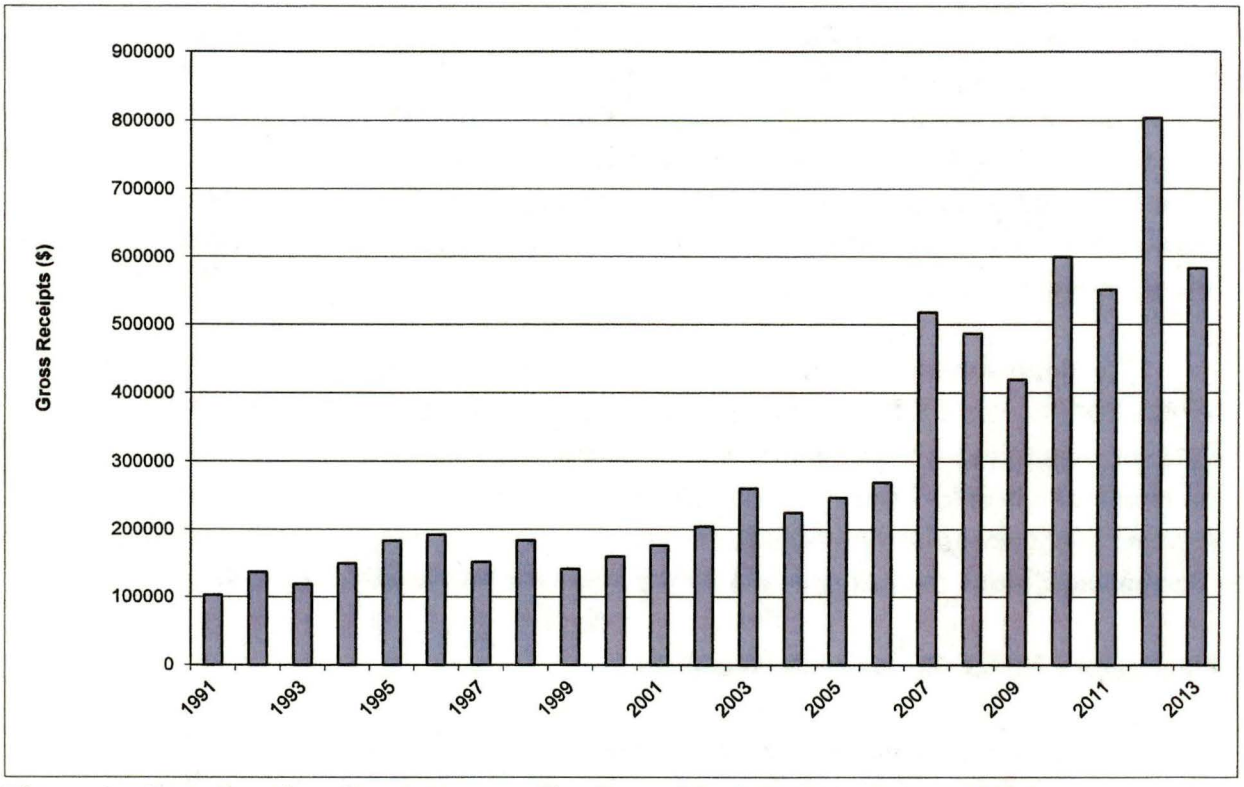

Figure 4. Gross Receipts for an Average Size Farm, North Dakota, 1991 to 2013.

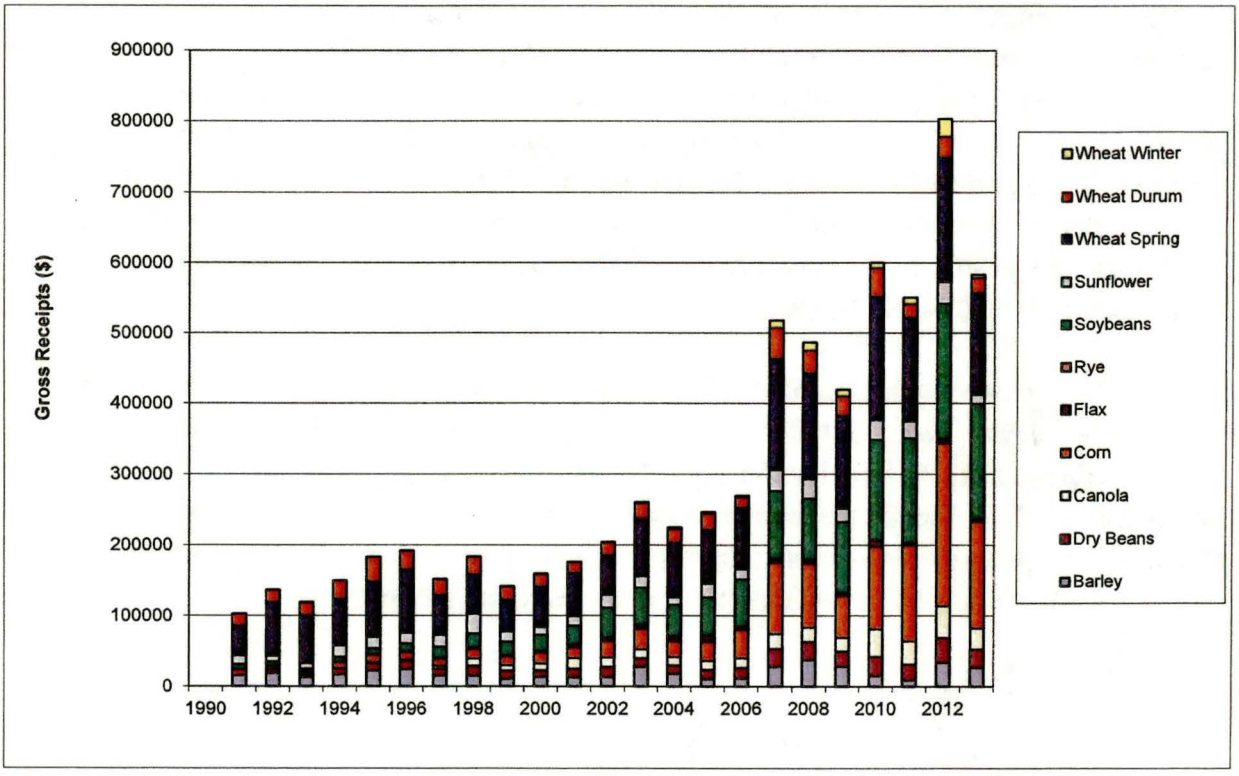

Figure 5. Gross Receipts for an Average Size Farm, North Dakota, 1991 to 2013, by Crop.

was established, this limit would cover an average farm of 2,680 acres. In 2013, the payment limit would only imply an average farm size of 1,160 acres. If the maximum payment were to provide the same coverage for the same size farm as in 1991, this would imply a maximum payment of $1,140,000 ($1,426,352 gross receipts *.8). If the maximum payment were to cover a farm size equivalent to that in 2003, this would imply a maximum payment of about $650,000 ($809,021 gross receipts *.8). Thus, the indemnity fund should provide less coverage to fewer and smaller farms in 2013 than it did in 2003.

Volatility of monthly prices received by growers was evaluated by marketing year from 1990 to 2013 for North Dakota (Appendix Figures C.1-C.7). These figures show changes over time with volatilities increasing for some crops (soybeans, durum and spring wheat) and declining for others (dry beans). The increase in volatilities adds risk for both growers and elevators. The results also show that dry beans are somewhat more risky than other crops. This is complicated further in that price risks for dry beans are not readily hedgeable..

Changes for North Dakota Grain Handlers

Changes in the number, size and distribution of grain elevators in North Dakota have been ongoing (Vachal and Benson, Various). The number of firms has declined from 363 in 2000/01 to 292 in 2012/13, and the total storage capacity has increased from 209,474,000 to 302,048,000 bushels (Figure 6). With declining firms and increased total storage capacity, the distribution of firms by type of elevator shipping capability has also changed. The proportion of elevators by type is largely similar from 2000 to 2012 for firms with No Rail, Single Car or Multi-Car capabilities. The proportion of 100 car shippers has increased and Unit trains have decreased in importance (Figure 7). This relationship changes dramatically when we look at the share of storage capacity. Most elevator shipping types declined in terms of their share of total capacity while the 100 car shippers grew from about 9% of capacity in 2000/01 to 44% of storage capacity in 2012/13 (Figure 8).

The average volume handled by size of rail shipping capabilities, shows increased volumes per elevator, especially for the 100 car shippers (Figure 9). 100 car shippers grew in average volume from 8 million bushels per elevator in 2000/01 to over 16 million bushels per elevator in 2012/13. While the turnover ratios for this category of grain elevators have been declining, the size of storage capacity has been increasing (Figures 9-10). The net effect on bushels handled has been for volumes to continue increasing (Figure 11).

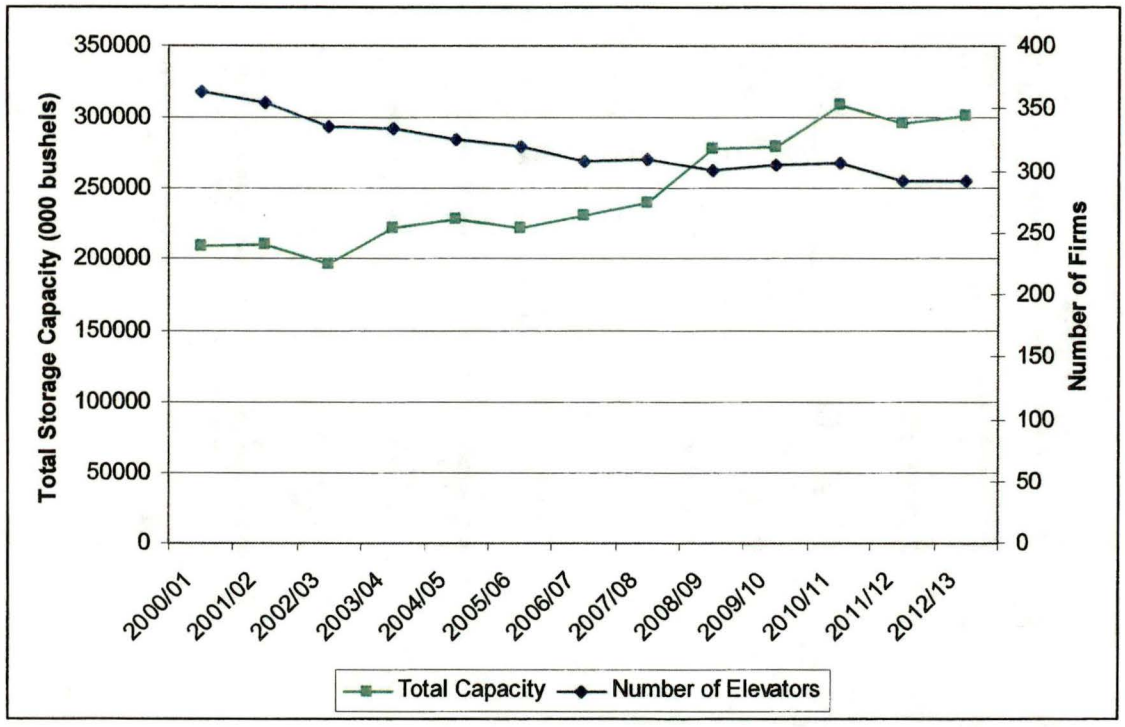

Figure 6. Total Storage Capacity and Number of Grain Elevators in North Dakota, 2000/01 to 2012/13.

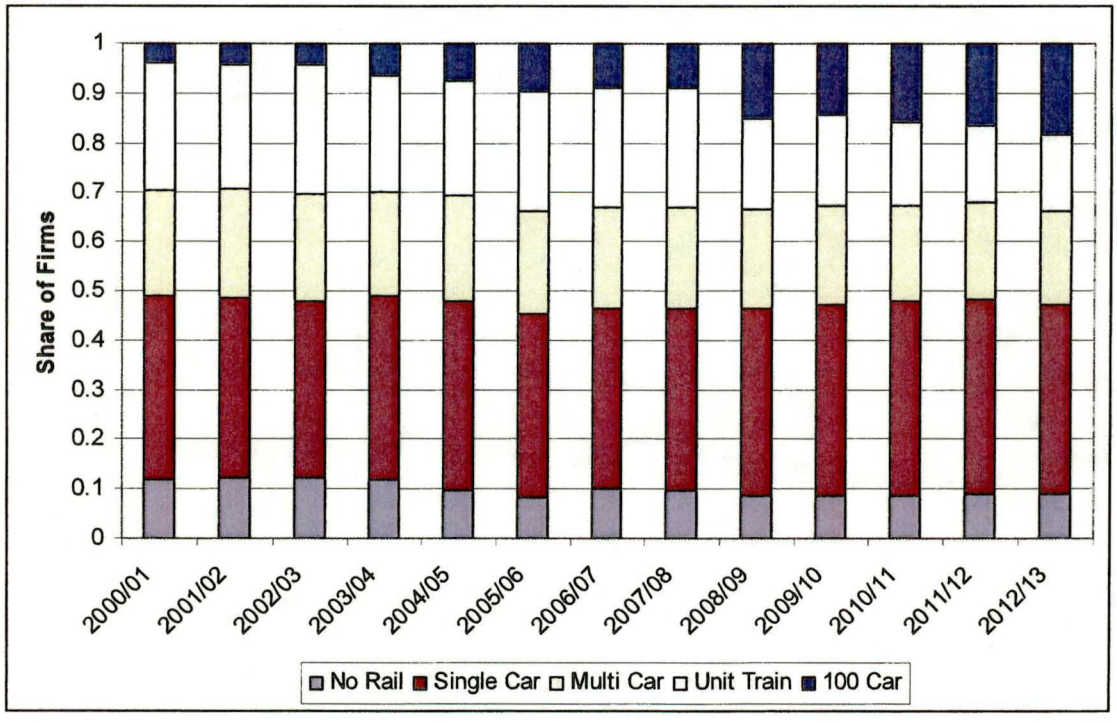

Figure 7. Share of Grain Elevators in North Dakota, by Shipping Type, 2000/01 to 2012/13.

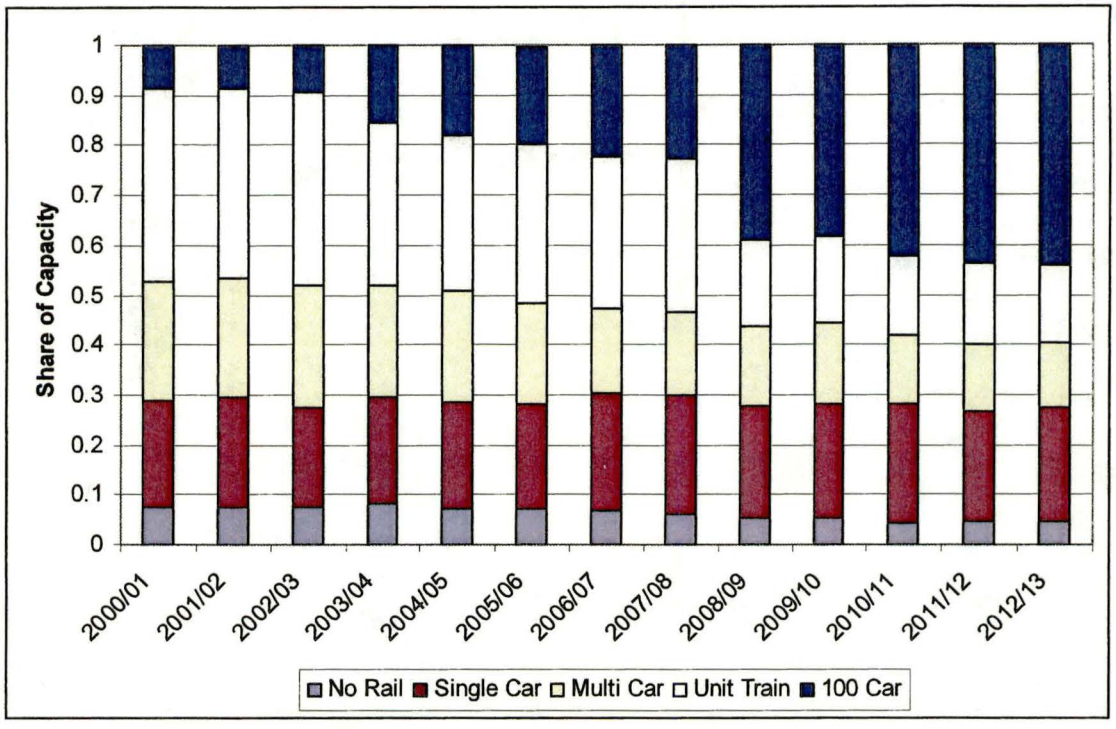

Figure 8. Share of Grain Elevator Storage Capacity in North Dakota, by Shipping Type, 2000/01 to 2012/13.

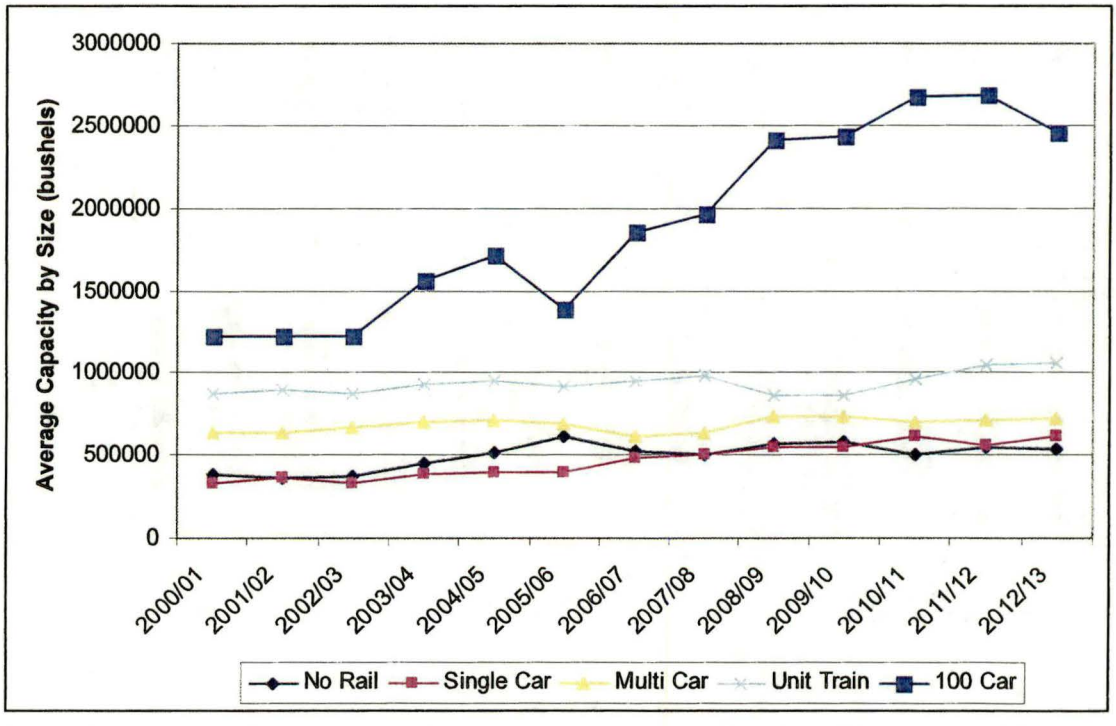

Figure 9. Average Storage Capacity, by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

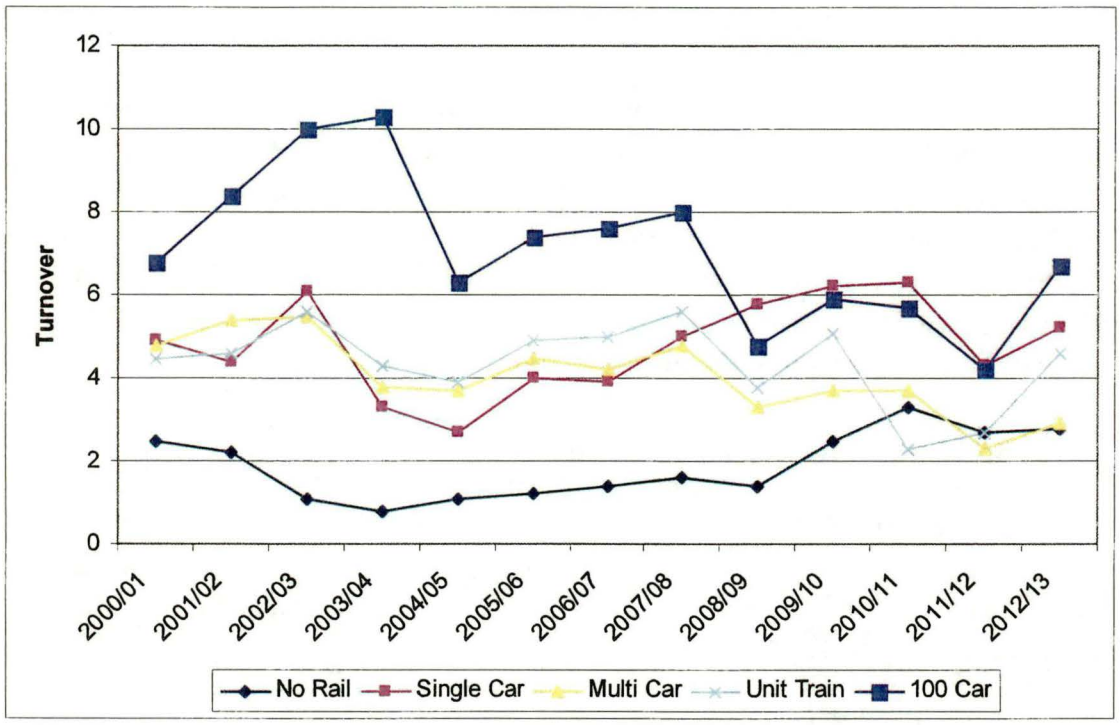

Figure 10. Average Turnover, by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

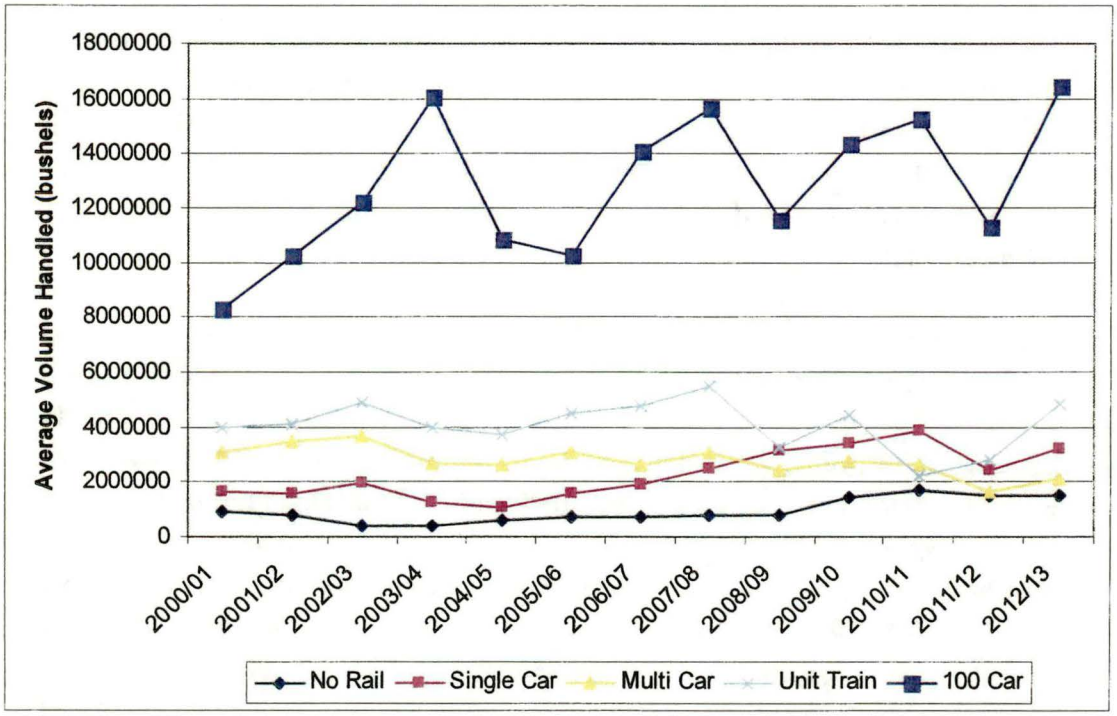

Figure 11. Average Volume Handled (Average Capacity * Average Turnover), by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

Characteristics of North Dakota Ethanol Processors

Characteristics of North Dakota ethanol producers were developed from the North Dakota PSC (2014b,c). These reports list grain storage licenses for licensed storage capacity and bonding levels. Average rated capacities were obtained from industry sources. Using storage capacity and rated capacities, prospective turnover rates were estimated assuming plants run at rated capacities. Estimated turnover rates for the three ethanol plants were 6 for Underwood, 18 for Casselton and 33 for Hankinson (Table 2). These turnover rates are much higher than averages reported for grain elevators (Vachal and Benson, Various)).

Table 2. Characteristics of Ethanol Plants, North Dakota 2014.

City	Licensed Storage Capacity	Corn Use Based on Ethanol Production	Storage Turnover Rate	ND Grain Storage Bond 2014
	Bushels	Bushels	Turns/year	
Casselton	3,006,000	54,642,857	18	5,000,000
Underwood	3,644,000	21,867,857	6	880,000
Hankinson	1,441,000	47,142,857	33	40,000

Sources: ND PSC (2014bc) and Industry Sources.

Estimated Default Probability of U.S. Grain Handlers

Industry studies of annual reports typically evaluate characteristics of annual reports by industry and publish these for use in benchmarking participants in the industry. RMA is one agency that publishes annual studies by industry (RMA, 2014). An industry similar to grain elevators is that for Wholesale Grain and Field Bean Wholesalers (424510). RMA (2014) reported 5 year histories of estimated 1 and 5 year default probabilities, including the mean and 25% and 75% percentiles.

These default probabilities show that, for U.S wholesale grain and field bean wholesalers, the distribution of 1 year default probabilities was generally less than 1% for 2003/04 to 2012/13, except for the 3 years from 2007/08 to 2009/10, with the largest increase in 2008/09. In 2008/09, the 1 year defaults ranged from 1.76%, 3.75% and 7.36% for the lower quartile, median and upper quartile of the distribution. The quartile results imply 25% of default probabilities would be lower than 1.75%, 25% would be between 1.76 and 3.75%, 25% would be from 3.75 to 7.36% and 25% would be over 7.36%. Five year estimated default rates show the same pattern, with most years from 2003/04 to 2012/13 below 8%; with the 5-year default rates increasing to 7%, 11% and 20% for the lower quartile, median and upper quartile of the distribution, respectively. Again, the quartiles imply 25% of the 5 year default probabilities would be less than 7%, that 25% would be from 7% to 11%, that 25% would be from 11% to 20% and that 25% would be above 20%.

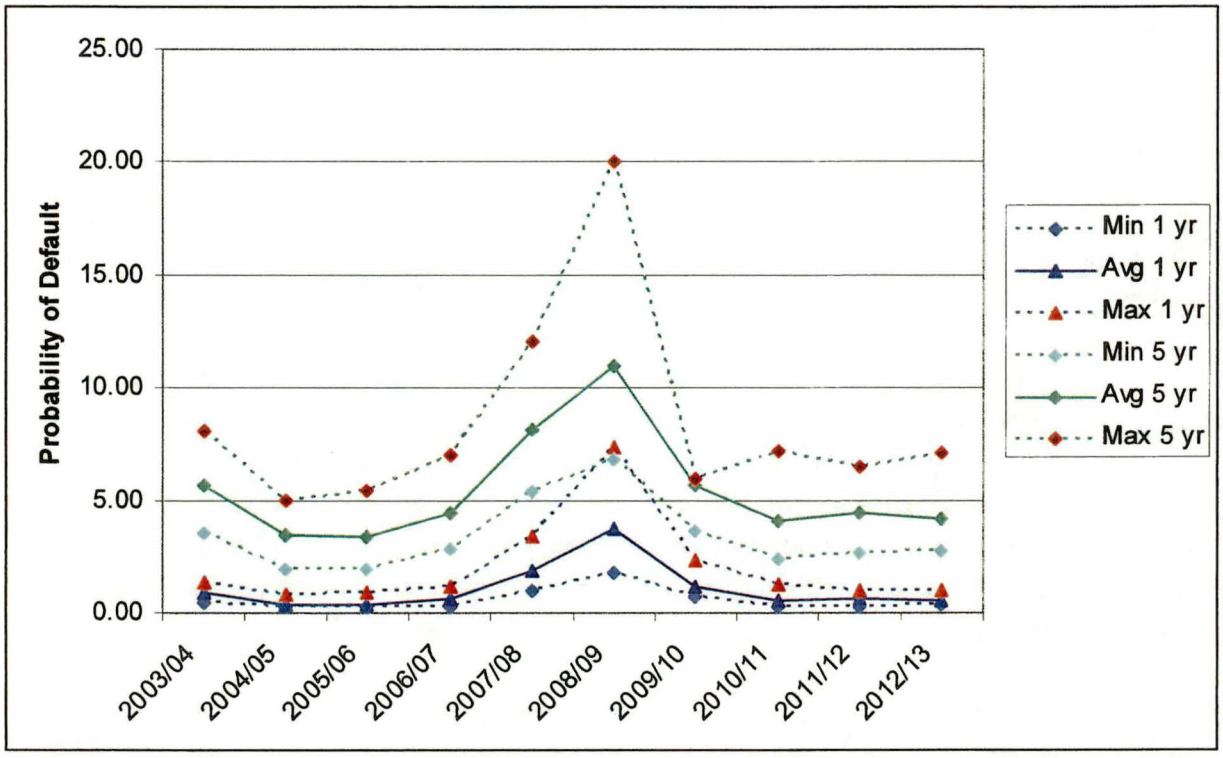

Figure 12. Estimated 1 and 5 Year Default Probabilities for Wholesale Grain and Field Bean Wholesalers, 2003/04 to 2012/13.
Source: RMA (2014).

Simulation Model

In order to quantify and illustrate the prospective risks of failure, we developed a stochastic simulation model for a representative grain merchandiser (co-op and corporate) in North Dakota. The model was used to illustrate the effect of risk and stresses on profitability. A stochastic simulation model from McKee, Wilson and Dahl (forthcoming) was adapted for a co-op and corporate structure representative of a North Dakota firm. This model simulated the profitability of a North Dakota cooperative or corporate firm where distributions for volume handled and gross margins were random.[2]

Volume handled for corn, soybeans and wheat was defined as representative of a North Dakota shuttle elevator located in Stutsman County. The average handle was 17 million bushels per year, ranging from a minimum of 15.3 to a maximum of 18.7 million bushels per year. Volumes per crop were estimated as the proportion of grain handled by elevators in Crop Reporting District 5 (CRD5) for corn (48%), soybeans (34%) and wheat (19%), respectively, and

[2] A detailed description and the assumptions for the model used here are in Appendix D.

were estimated from Vachal and Benson (2013) for 2012/13.[3] Representative distributions were based on industry contacts (Table 3) for gross margins.

Table 3. Parameters for Gross Margin Distributions of a Representative North Dakota Elevator.

	Minimum	Most Likely	Maximum
Corn	$0.10	$0.25	$0.40
Soybeans	0.12	$0.30	$0.60
Wheat	$-0.20	$0.35	$2.00

Rail costs (tariff and fuel service charges) were assumed to be included in the gross margin calculations. Shuttle premiums were modeled based on secondary car markets for daily car values (DCV). These DCVs were either added to gross margins, if DCVs were negative, or subtracted from gross margins, if DCVs were positive, implying a high cost for shuttle rail freight. Distributions for DCVs were estimated using data from Tradewest Brokerage Co. (Various) from 2006 to 2014. Primary car values were obtained from BNSF (2014), and distributions were estimated from 2006 to 2014. A discount rate of 6% was used.

The model was run which represented a cooperative firm, and for a corporate firm. The reason for modeling both ownership types is the difference in tax treatment across ownership structures. Three cases were simulated. The first assumed a cooperative elevator with managed freight as part of its operations, so freight was assumed to be limited in variability (co-op-fixed). In this case the elevator has covered its freight and for this reason, freight values were not at risk. The second was for a corporate elevator which was also assumed to manage freight operations, so freight was, again, considered to be limited in variability (corporate-fixed). The third assumed a cooperative elevator where freight was not covered and had to be procured for all shipments in the secondary market (co-op-risky).

Results: The three models were simulated in an unstressed version where all distributions were assumed to be equal to the base case; then, the distribution for freight (DCV) in year 1 was stressed,[4] representing a year with adverse changes in freight costs. The results showed distributions for net present values (NPV) for the elevator operated over a 10 year time frame. Average NPVs were profitable for all three unstressed cases, showing little probability of negative NPVs during the 10 year horizon (Table 4).

[3] Volumes of corn and soybeans shipped from CRD5 are only reported in Vachal and Benson (Various) for the most recent year available, 2012/13. Volumes for state level shipments of corn, soybeans and wheat from 2006/07 to 2012/13 reveal large shifts from wheat toward corn and soybeans.

[4] The distribution in Year 1 for freight (DCV) was stressed by forcing the distribution to only allow the choice of values in the top 10% of the distribution, thus only allowing for high costs for freight.

The NPV was higher for the co-op than for the corporate elevator, largely due to different tax treatment. Variability of NPVs nearly doubled in size when freight was shifted from fixed (limited variability) to risky (reflecting the full purchase of freight in the secondary market). The probability of NPV being negative increased from .02% to 1.2% (Figure 13). While this result is not the probability of bankruptcy, it is the closest that can be approximated.

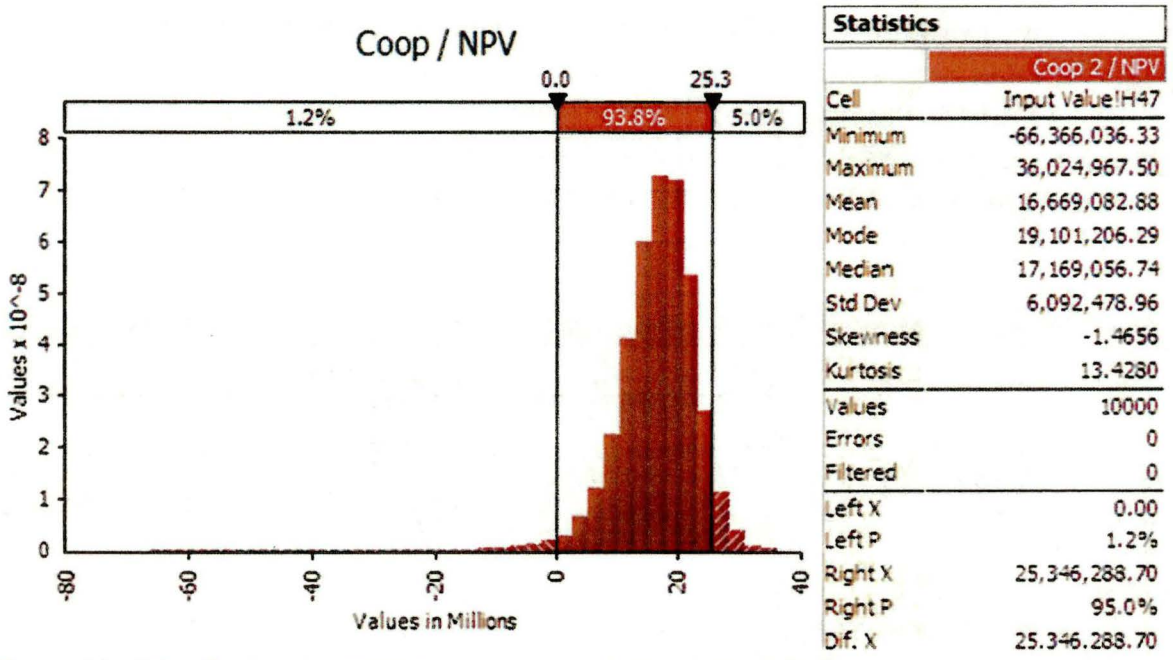

Figure 13. Distribution for NPV for a Co-op with Risky Freight Costs.

The sensitivity of NPV to changes in the value of random inputs shows that the base unstressed co-op and corporate firms with fixed freight were similarly affected by randomness. Both cases were affected the most by margins for wheat, soybeans and corn, with margins in early years having the largest impact and then declining with time. For example, a 1 unit increase in wheat margins in year 1 would increase the NPV by .34 while a 1 unit increase in wheat margins in year 10 would only increase NPV by .20 (Table 4). The sensitivity of the co-op-risky case to input distributions showed a change, where freight costs (DCV) had the largest impact on NPV, followed by margins for wheat, soybeans and corn. Here, a 1 unit increase in freight costs, reduced the NPV by .33 in year 1 and by .19 in year 10. The effect of the crop margins on the co-op risky case also declined in impact from the freight fixed cases. Thus, a 1 unit increase in wheat margins in year 1 only increased the NPV by .20 while, in the fixed freight cases, it increased NPV by .34.

When we stress the cost for freight in year 1 (of the 10 year time horizon) to be in the top 10% of the distribution, it has limited impacts on NPV when freight is fixed. However, where freight is risky, the co-op's mean NPV drops by over $4 million; the standard deviation increases by $800,000; and the probability of a negative NPV goes from 1.2% to 3.7%. Thus, one bad

year with uncovered freight in the top 10% of the secondary market costs can dramatically impact the financial performance of an elevator.

We also stressed margins so that the distributions for corn, soybeans and wheat were in the lower 25% of the distributions for each. This had limited impacts on the probability of a negative NPV occurring (Table 5). The average NPV declined by $1.9-$2.5 million, and the standard deviation of NPV declined by $104,000 to $237,000. Similarly, when we stressed margins in year 1 to the lowest 10% of the distributions for corn, soybeans and wheat, the average NPV declined by $2.5 million to $3.2 million. Standard deviations declined by $103,000 to $251,000. Restricting margins to the lower 10% of distributions did impact the probability of a negative NPV for the corporate and risky co-op cases. The non-risky corporate probability of a negative NPV increased from 0.4% to 3%, and the risky co-op increased from 1.2% to 2.3% (Table 6).

Table 4. Results for the Simulation Model, Unstressed and Freight Stressed, in Year 1 ($).

	Unstressed			Freight Stressed in Year 1		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Co-op-Risk
Mean	16,854,099	7,026,782	16,669,083	16,108,239	6,454,111	12,630,695
Std. Dev.	3,561,601	2,735,160	6,092,479	3,600,321	2,770,929	6,896,045
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	0.7%	3.7%
Tornado Graph: Range of Regression Coefficients for the Sensitivity of Results to Random Input Draws from Year 1-Year 10						
Most Important	Wheat Margin .34-.20	Wheat Margin .34-.20	DCV -.33 to -.19			
	Soybean Margin .13-.08	Soybean Margin .13-.08	Wheat Margin .20-.12			
	Corn Margin .11-.07	Corn Margin .11-.07	Soybean Margin .08-.05			
	DCV -.10 to -.06	DCV -.10 to -.06	Corn Margin .07-.04			
Least Important	Volume Handled .06-.04	Volume Handled .06-.04	Volume Handled .04-.02			

Table 5. Results for the Simulation Model, Unstressed and Margins Stressed, in Year 1 to Lower 25% of Distribution ($)						
	Unstressed			Margins Stressed in Year 1 to Lower 25%		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Co-op-Risk
Mean	16,854,099	7,026,782	16,669,083	14,3424,90	5,103,322	14,145,889
Std. Dev.	3,561,601	2,735,160	6,092,479	3,324,397	2,554,617	5,988,536
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	1.8%	1.9%

Table 6. Results for the Simulation Model, Unstressed and Margins Stressed, in Year 1 to Lower 10% of distribution ($)						
	Unstressed			Margins Stressed in Year 1 to Lower 10%		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Coop-Risk
Mean	16,854,099	7,026,782	16,669,083	13,655,270	4,576,788	13,451,800
Std. Dev.	3,561,601	2,735,160	6,092,479	3,310,809	2,544,649	5,989,334
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	3.00%	2.30%

Conclusions and Recommendations

Grain and oilseed growers confront numerous risks. One of the uncertainties relates to the risk that buyers may become insolvent, ultimately resulting in losses for the grower. Most states, including North Dakota, have mechanisms that partially protect against these losses. However, the grain market has changed drastically, giving rise to increased risks. These mechanisms serve to protect grain sellers against default by the grain buyer. These mechanisms include requiring buyers and storage facilities to be licensed and to have bond coverage. The purpose of this report is to document risks to growers and the mechanisms used to mitigate the risks related to buyer default.

***Risks confronting growers*:** Growers confront a number of risks when selling grains and oilseeds. First, growers are becoming larger operators. The average farm size increased from 1,387 acres in 1991 to around 2,000 acres from 2007 forward. The mix of crops planted has shifted toward higher production of corn, soybeans, canola and durum wheat and away from barley, sunflowers, spring wheat and winter wheat. Along with recent increases in price levels and volatility for most agricultural commodities, the combination of these changes has resulted in the value of gross receipts for an average farmer increasing dramatically and being subject to

higher variability. Estimated gross receipts per farm grew from about $100,000 in 1991 to $803,351 in 2012.

The grain elevator industry is also experiencing trends toward consolidation and concentration into larger shuttle loading facilities with higher volumes handled. Notably, the elevator industry in North Dakota is larger in capacity and volumes handled, and the volumes handled are becoming more concentrated at large shuttle facilities.

***Mechanisms in North Dakota*:** Mechanisms exist in North Dakota (and in most states) to protect growers against buyer default. The purpose of these mechanisms is to protect grain sellers against default by the grain buyer. North Dakota has two basic programs to deal with buyer defaults. The first program includes a licensing and bonding program for grain warehouses and for grain buyers. These mechanisms require warehouses and grain buyers to be licensed and to submit a bond which is dependent on the rated storage capacity of the warehouse and on the 3 year average sales volume for grain buyers. The second program is the North Dakota grain insurance fund which provides coverage for credit sales (which are not covered by the grain buyer's bond). The North Dakota grain insurance fund, or credit-sale indemnity fund, was established in 2003 to cover credit sales deferred for more than 30 days.

The North Dakota Indemnity fund has a maximum farmer payout. The farmer's payout limit is more limiting now than in 2003 when the Indemnity fund was created. The average claims paid from the indemnity fund per insolvency suggest that this issue has not been a big issue yet, although it has impacted claims for one of the recent insolvencies. The size of claims per insolvency on the Indemnity fund has increased, with the largest claims being the most recent ones. The balance for the Indemnity fund is currently around $4.5 million, but the balance could drop to around $3.6 million or lower depending on outcomes from the unresolved insolvencies.

When comparing programs in other states, most states either have an indemnity fund or warehouse/grain buyer bonding. States that focus on corn and soybeans tend to have indemnity funds while more traditional wheat producing states tend toward bonding programs. Only two states do both (North Dakota and Oklahoma).

Most other states with bond funds apply the bond to a proportion of the value of grain handled (value * volume) over the last three years. North Dakota calculates the bond value based on storage capacity. Discussions about changing North Dakota's bond schedule have included moving to a 3 year average based on either the volume or value of grain handled.

Changes for bond funds have also included handling dry bean facilities/buyers and processors differently than other grain handlers. Colorado and Wyoming apply higher bonding requirements for dry bean facilities than other grain handlers. In Colorado, there is about a

threefold increase in the bonding level required for a dry bean facility than a similar sized facility that handles other grains. Processors, primarily ethanol producers in North Dakota, can have much higher turnover rates than country elevators, suggesting that there might be a higher risk for a given storage level for a processor than for a country elevator.

***Mechanisms in other states that do not exist in North Dakota*:** Most other states base bonding requirements on a proportion of the average value of grains handled in the last 3 years. Several other states also require a bond on net worth to cover shortfalls below 25%. South Dakota appears more proactive in this area, requiring within year reporting for financial conditions and imposing legal requirements on elevators to report net worth issues within the year. Many states with bonding programs also require an additional bond to make up shortfalls in net worth below a minimum (usually 25%).

Ohio modified its indemnity program in 2013 and made farmers first in line for bankruptcies. This change is being watched by Ohio and other states because it may have adverse impacts on elevator borrowing.

Risks confronting elevators in North Dakota: A couple of results are shown to depict the risks of elevator failure. One of these is from existing studies, and the other one is a model we developed to illustrate these risks in North Dakota.

The RMA publishes annual studies, by industry, on the probability of bankruptcy (RMA, 2014). Projections for the probabilities of 1 and 5 year bankruptcies were estimated for the wholesale grain and field bean wholesalers in the U.S. These indicated the distribution of 1 year default probabilities was generally less than 1% for 2003/04 to 2012/13, except for the 3 years from 2007/08 to 2009/10. In 2008/09, 25% of the 1 year default probabilities would be lower than 1.75%; 25% would be between 1.76 and 3.75%; 25% would be from 3.75 to 7.36%; and 25% would be over 7.36%. Five year estimated default rates show the same pattern, with most years from 2003/04 to 2012/13 below 8%. The distribution for 5 year defaults in 2008/09 being 25% would be less than 7%, 25% from 7% to 11%, 25% from 11% to 20% and 25% above 20%.

We also developed a model to quantify and illustrate the prospective risks of failure for a representative grain merchandiser (co-op and corporate) in North Dakota. The model was used to illustrate the effect of risk and stresses on profitability. The model analyzed the impacts of overall risks on profitability as well as the impact of the recent rise in secondary freight costs on grain elevators. The base case suggested that the probability of negative NPV's was in the area of .02% to 1.2%. Stressing the parameters for freight costs reduced the mean NPV by over $4 million; the standard deviation increased by 800,000; and the probability of a negative NPV went from 1.2% to 3.7%. Thus, one bad year with uncovered freight in the top 10% of the secondary market costs at the beginning of a 10-year time horizon can dramatically impact financial

performance of an elevator. These results showed that freight management can have a significant impact on elevator profitability.

Recommendations for further review and/or analysis: The purpose of this study was to identify the changes in relevant risks that confront grain and oilseed producers in North Dakota and to assess the adequacy of mechanisms designed to mitigate these risks. The intent was not to prescribe specific changes but, rather, to identify those areas worthy of consideration for legislative changes to assure protections for growers. It appears that the most important considerations for North Dakota include:

1) Increasing the maximum payment from the indemnity fund. Currently, the fund pays 80% of the claims, up to a maximum of $280,000 per producer.

   Given the increase in producer size, production and market volatility, this value is probably inadequate. Indeed, given current market parameters, the maximum would have to increase to provide equivalent coverage as originally intended by this mechanism.

2) There are several recent insolvencies that could potentially lower the Indemnity fund balance to near $3.6 million, which is much less than earlier minimum levels at which assessments would be re-imposed.

3) Re-evaluating the structure of the mechanisms. Alternatives include considering
   - Value of the commodity. Currently, the mechanisms in North Dakota are based on storage capacity (or sales).
   - Whether to use indemnity funds or bonding, or to use both. Currently, North Dakota is one of the few states that uses both methods.
   - Adding net worth requirements. Typically, minimum net worth requirements are imposed and an additional bond is required to make up the difference for shortfalls.
   - The relationships between claims and indemnity fund min/max suggest that, if average payouts for claims increase, then minimums and maximums for the indemnity fund would likely need to increase to be consistent with other states.

4) Dry beans: This crop has greater risks than other crops. Other states' bonding requirements for dry beans are much greater than those in North Dakota.

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Appendix

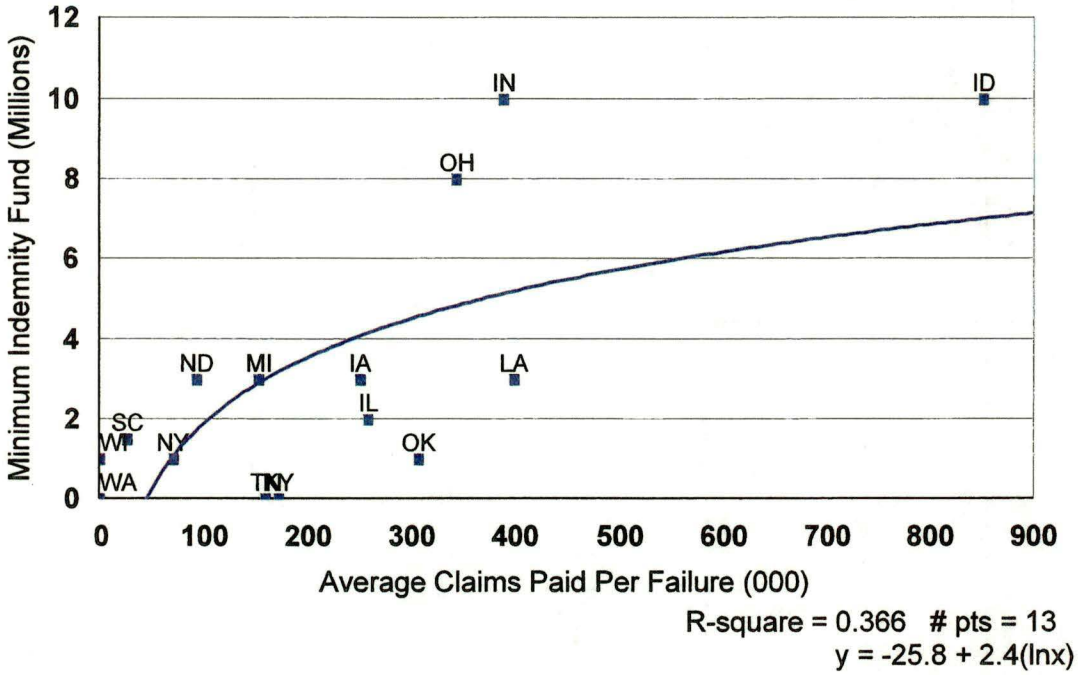


Figure A1. Relationship Between Average Claims Paid per Failure and Minimum Indemnity Fund.

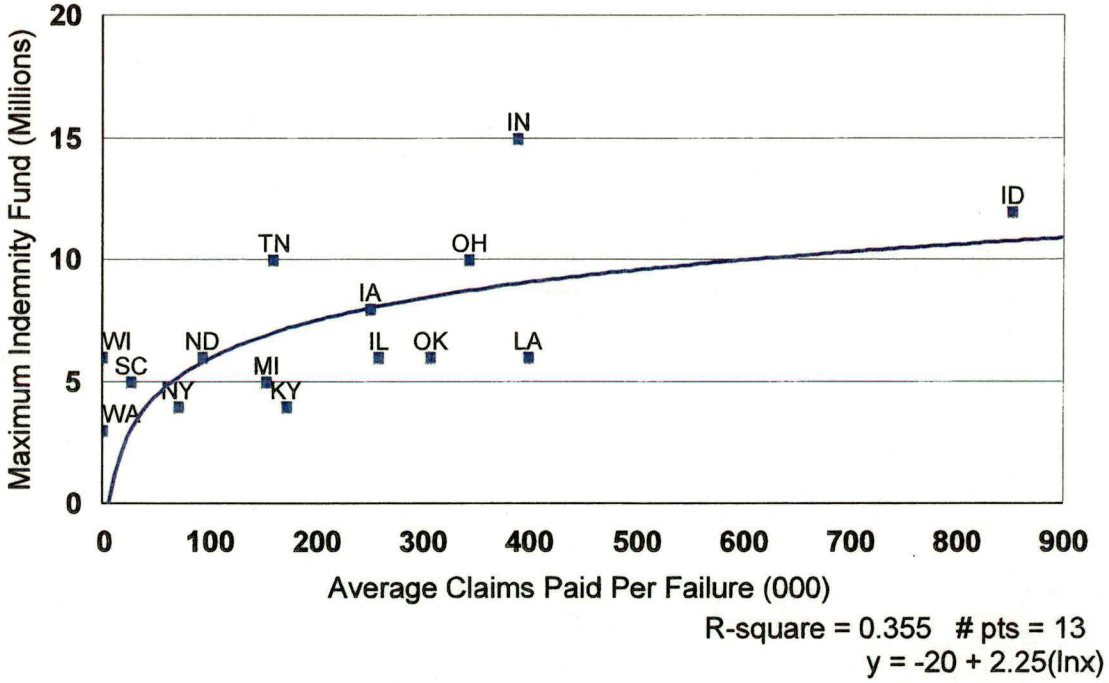


Figure A2. Relationship Between Average Claims Paid per Failure and Maximum Indemnity Fund.

Appendix Table B1. NORTH DAKOTA PUBLIC SERVICE COMMISSION

Grain Warehouse/Grain Buyer Insolvencies – 2007 through Current

Updated February 2013 – Page 1

Licensee Location(s) License Type Case Filed Case Closed	Total Claims Filed	Valid Cash Claims Filed	Valid CSC I-Fund Claims Filed	Invalid Claims Filed	Grain Proceeds	Bond on File & Bond Proceeds Used	Interest Earned on Trust Account	Valid Cash Claim Payments (% Payment)	Interest Paid To Cash Claimants [5]	CSC I-Fund Claim Payments (80%)	Total Claims Paid & Expenses Reimbursed [6]
Minnesota Grain, Inc., Rhame, ND (GW) March 2007 February 2009	$930,365.67	$323,117.58	$137,893.69	$467,920.69	$0	$100,000 Entire Bond	$1,429.19	$101,429.19 31%		$110,314.95	$211,744.14
Specialty Export Productions, Inc., Hatton & East Fairview, ND (GW) August 2007 September 2008	$190,485.55	$188,019.22	$0	$2,466.33	$61,463.92	$200,000 $142,243.17	$450.69	$195,991.24 100%		$0	$195,991.24 $8,166.54
Northwood Mills, LLLP, Northwood, ND (GW) January 2009 October 2009	$880,009.90	$880,009.90 11 Claims	$0	$19,477.95	$0	$50,000 $50,000	$129.05	$50,129.05 5.8%	$0	$0	$50,129.05 $0
Sustainable Systems, LLC dba Montola, Culbertson, MT (RGB) March 2009 December 2009	$617,663.45 19 Claims	$561,629.40 19 Claims	$0	$54,095.83	$0	$130,000 $130,000	$241.66	$130,241.66 77% + 23% [7]	$241.66	$0	$130,241.66 $1,307.11 [8]
VeraSun Hankinson, LLC, Hankinson, ND (GW) March 2009 September 2011	$132,784.85	$132,784.85 2 Claims	$0	$0	$0	$380,000 $3,908.83 [9]	$0	N/A	N/A	$0	N/A $3,908.83

GW – Grain Warehouse RGB – Roving Grain Buyer CSC – I Fund – Credit-Sale Contract Indemnity Fund (provides maximum payment of 80% not to exceed $280,000 for each insolvency)

[5] If funds are available, cash claimants can be paid interest at the weighted average prime rate charged by the Bank of North Dakota since the date of insolvency.

[6] The statute provides for the reimbursement of expenses incurred by the Commission in the administration of the insolvency.

[7] The Montana Dept. of Agriculture liquidated available assets. ND claimants received 77% of each valid claim from the Montana liquidation proceeds, 23% from ND trust fund proceeds, and a proportionate share of interest earned on the ND trust fund.

[8] The Montana Dept. of Agriculture reimbursed the Commission for the insolvency expenses incurred.

[9] Two claims were filed and eventually withdrawn by the claimants. The Commission was reimbursed for its insolvency expenses from the bond proceeds.

Appendix Table B1. (continued) NORTH DAKOTA PUBLIC SERVICE COMMISSION

Grain Warehouse/Grain Buyer Insolvencies – 2007 through Current

Updated February 2013 – Page 2

Licensee Location(s) License Type Case Filed Case Closed	Total Claims Filed	Valid Cash Claims Filed	Valid CSC I-Fund Claims Filed	Invalid Claims Filed	Grain Proceeds	Bond on File & Bond Proceeds Used	Interest Earned on Trust Account	Valid Cash Claim Payments (% Payment)	Interest Paid To Cash Claimants	CSC I-Fund Claim Payments (80%)	Total Claims Paid & Expenses Reimbursed
Organic Grain & Milling, Inc., Clyde, ND (GW) June 2010 September 2011	$193,467.24	$17,276.88 1 Claim	$160,829.65 4 Claims	$8,276.62 1 Claim	$28,148.74 [10]	$62,500 $0	$41.43	$17,276.88 100%	$531.05	$128,663.72	$147,607.24 $1,135.60
Grabanski Grain, LLC, Grafton, ND (GW) July 2010 May 2013	$848,296.08	$184,964.03 7 Claims	$409,002.41 7 Claims	$266,329.68	0	$340,000 $201,376.20		$184,964.03 100% + interest	$12,984.47	$327,201.92 + ½ expenses = ($330,629.62)	$532,005.82 $6,855.40[11]
Mitchell Feeds, Inc., Fargo, ND (RGB) February 2011						$70,000 bond on file					
Anderson Seed Co., Inc., Durbin & Selz, ND (GW) February 2012	$4.1 Million [11]	2.233 Million	$809,000			$280,000 bond on file					
Falkirk Farmers Elevator Co, Falkirk, ND (GW) October 2012	$2 Million [11]	1.7 Million	$279,000 7 Claims	1 Claim		$380,000 bond on file					
Earth Harvest Mills, Inc., Harvey, ND (GW) February 2013	$4.3 Million [11]	$81,000 7 Claims	2.4 Million 18 Claims			$50,000 bond on file				$948,952.69 [10]	

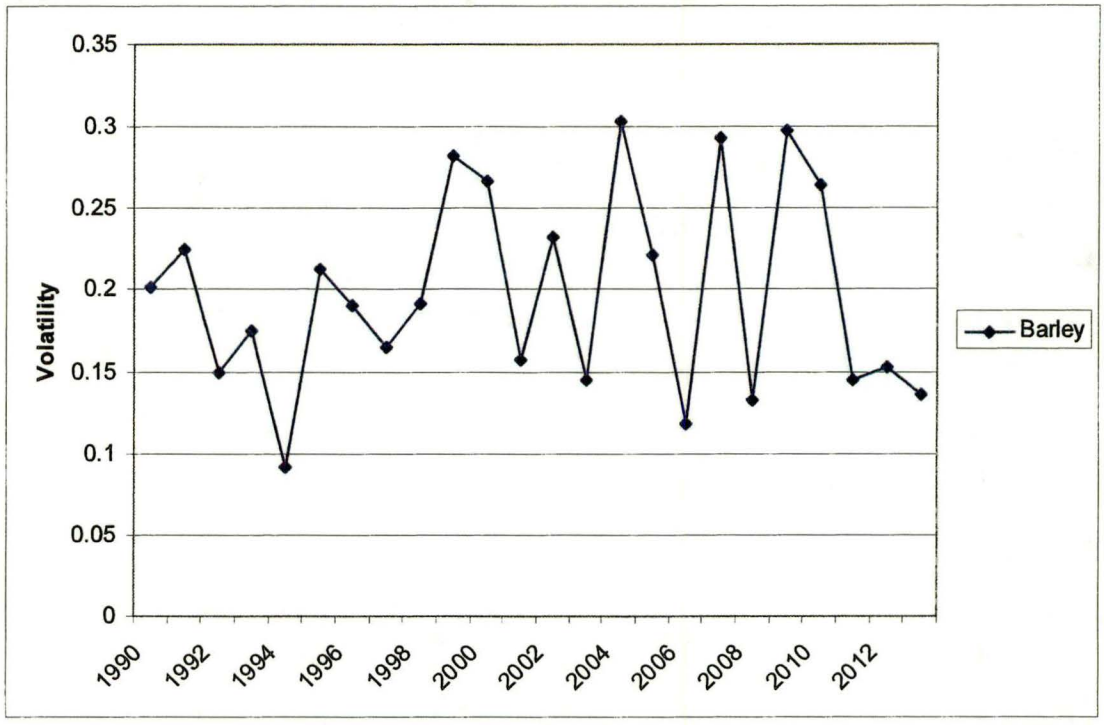
[10] The unused proceeds, totaling $9,246.64, were returned to Organic Grain & Milling, Inc.

[11] Insolvency expenses totaled $6,855.40 with ½ paid from the trust fund and ½ paid from the CSC I-Fund.

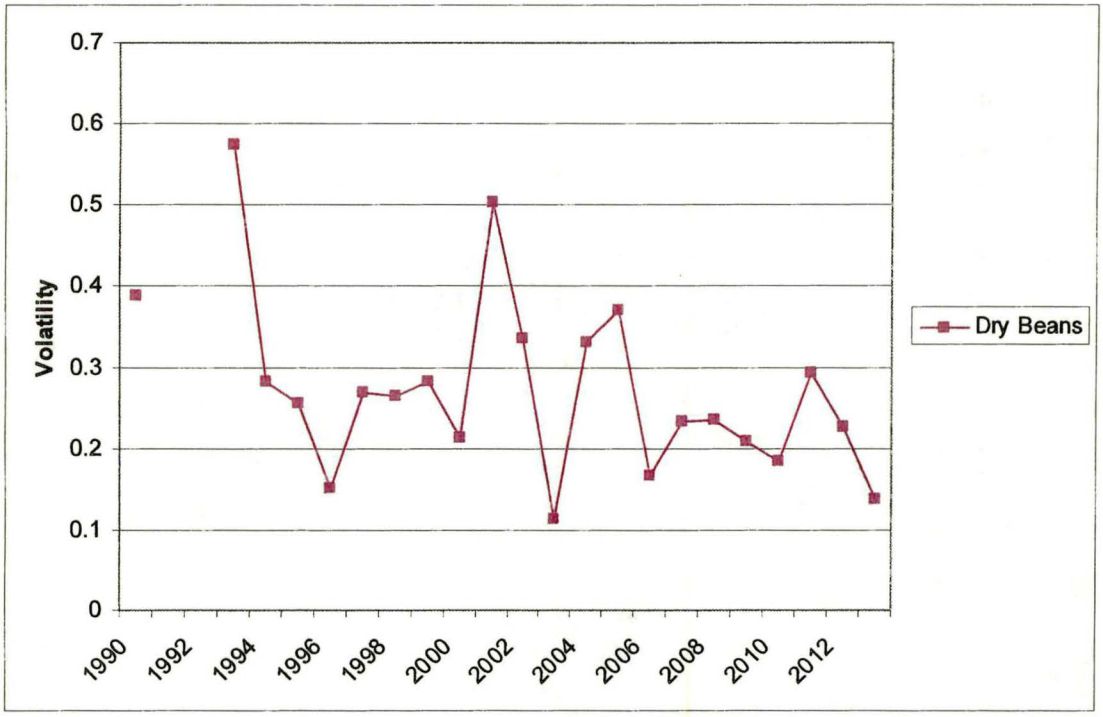
[10.] Two claimants in the Earth Harvest Mills, Inc. insolvency exceeded the $280,000 Indemnity Fund Cap.

[11] Additional claims information was added for Anderson Seed, Falkirk Farmers Elevator and Earth Harvest Mills (ND PSC 2013a, 2013b, 2014).

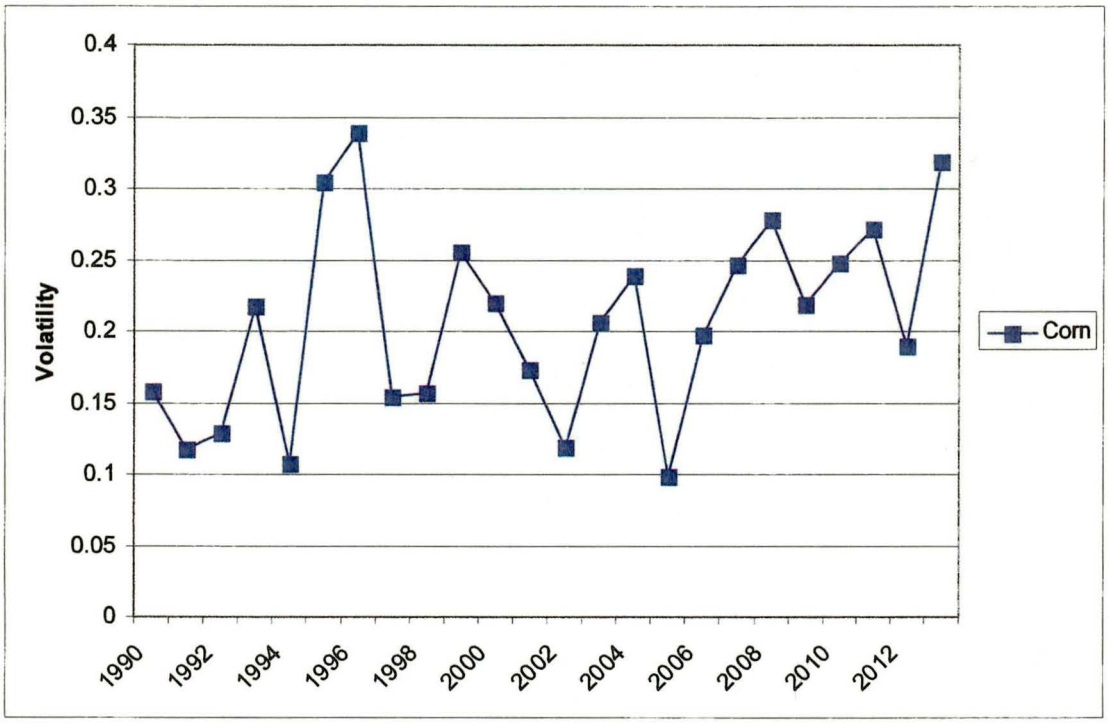
Appendix C. Volatility of Monthly Prices by Crop



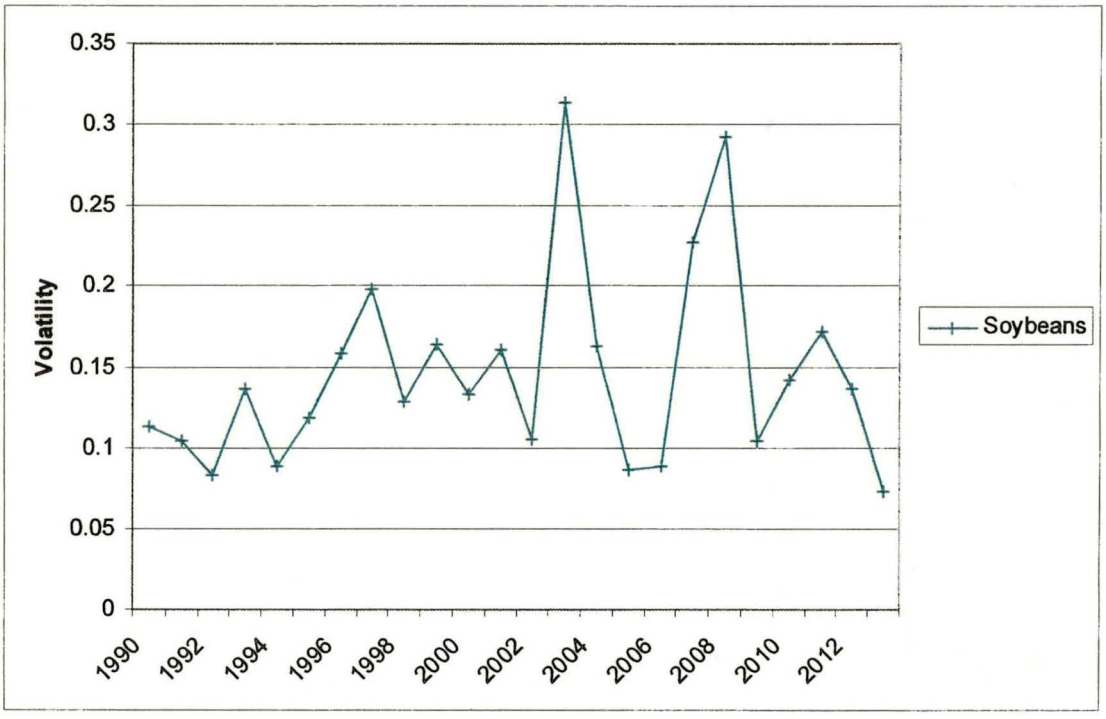
Appendix Figure C1. Volatility of Monthly Prices Received by Growers, Barley, North Dakota, 1990-2013.



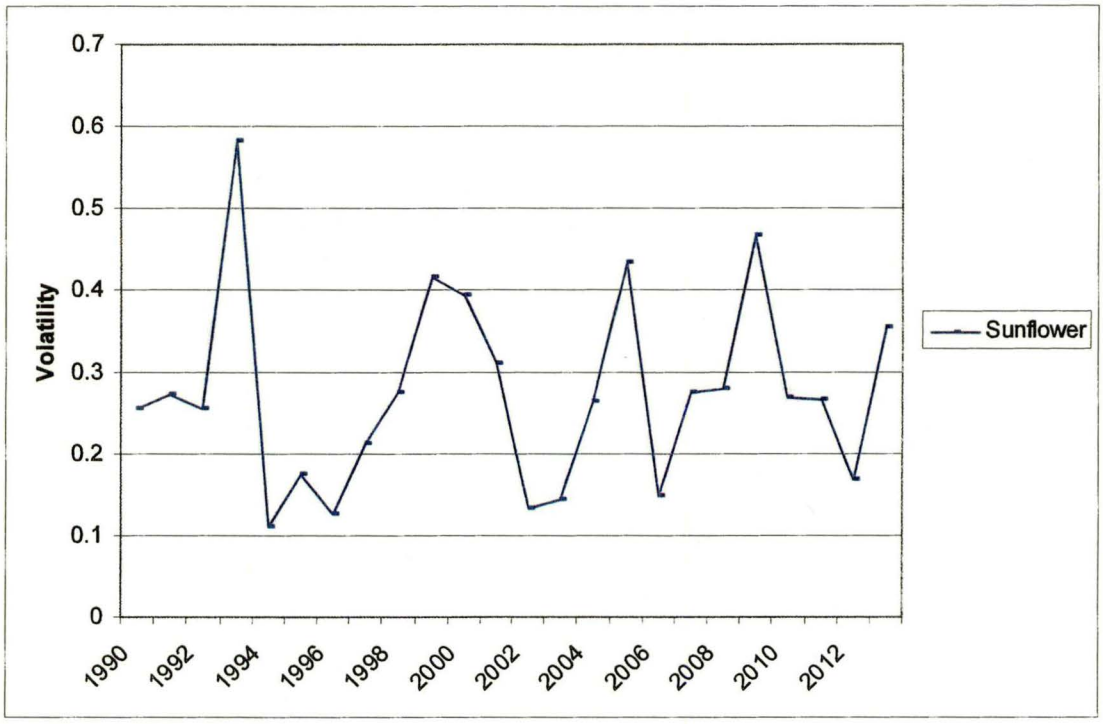
Appendix Figure C2. Volatility of Monthly Prices Received by Growers, Dry Beans, North Dakota, 1990-2013.



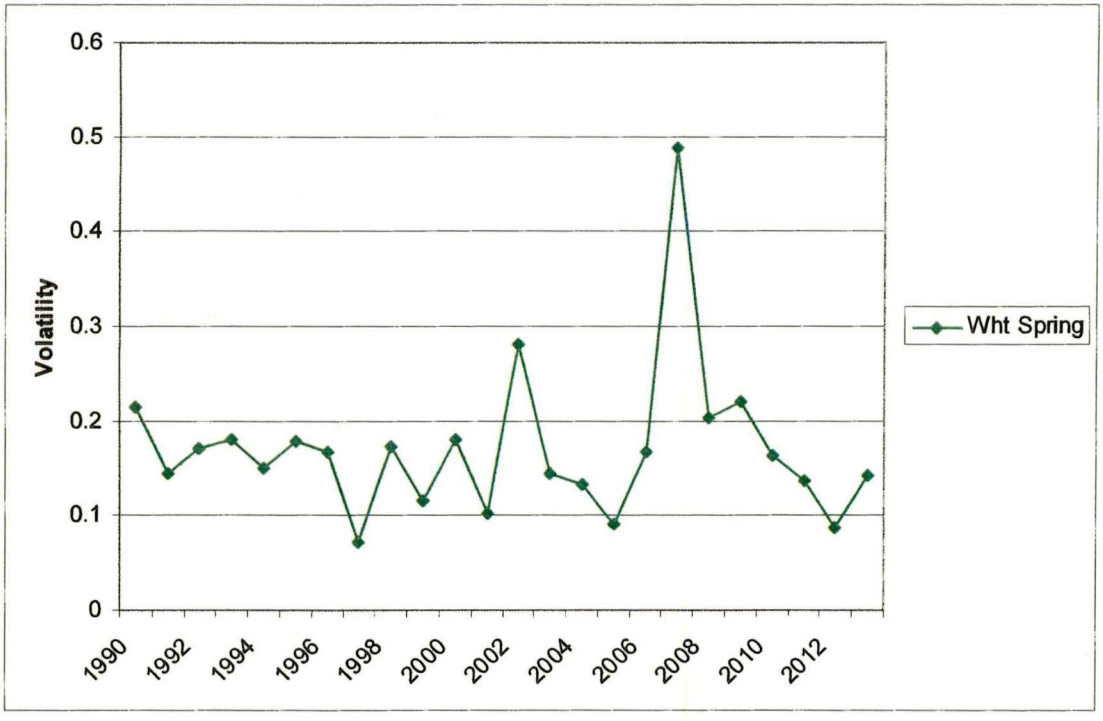
Appendix Figure C3. Volatility of Monthly Prices Received by Growers, Corn, North Dakota, 1990-2013.



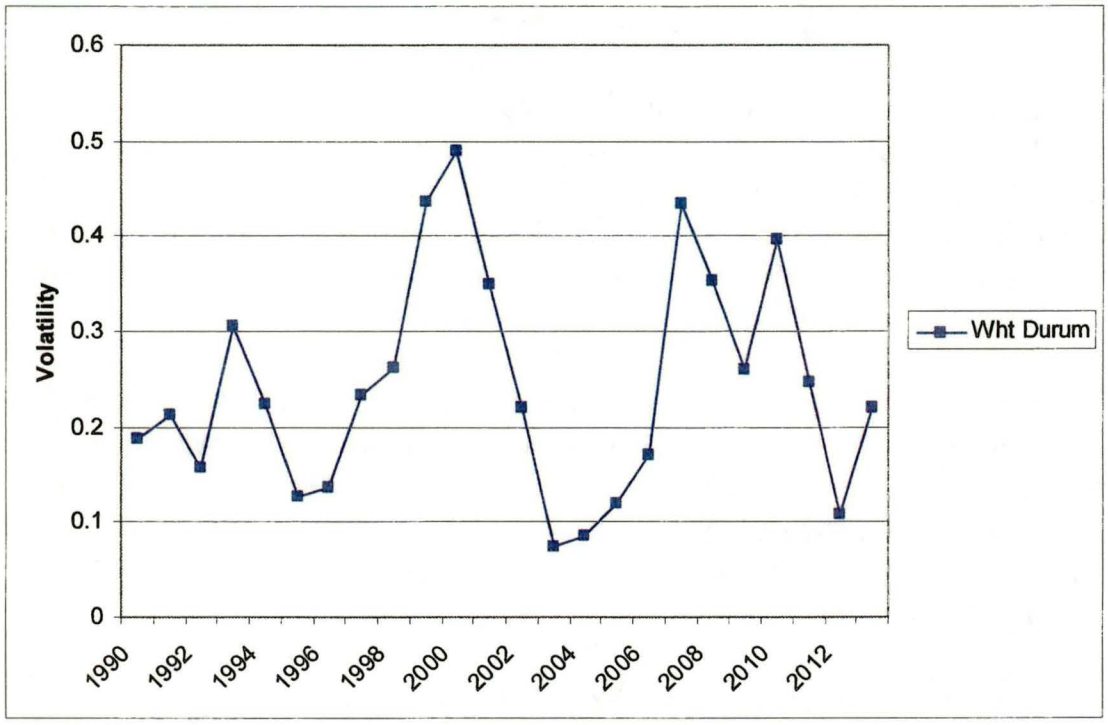
Appendix Figure C4. Volatility of Monthly Prices Received by Growers, Soybeans, North Dakota, 1990-2013.



Appendix Figure C5. Volatility of Monthly Prices Received by Growers, Sunflowers, North Dakota, 1990-2013.



Appendix Figure C6. Volatility of Monthly Prices Received by Growers, Hard Red Spring Wheat, North Dakota, 1990-2013.



Appendix Figure C7. Volatility of Monthly Prices Received by Growers, Durum Wheat, North Dakota, 1990-2013.

Appendix D. Simulation Model Description and Assumptions

A stochastic simulation model for a grain merchandiser (co-op and corporate) was modeled to illustrate the effect of certain stresses on profitability. A stochastic simulation model from McKee, Wilson and Dahl (forthcoming) was adapted for a co-op and corporate structure representative of a North Dakota firm. This model simulated profitability of a North Dakota cooperative or corporate firm where distributions for volume handled and gross margins were random.

Volumes handled for corn, soybeans and wheat were defined as representative of a North Dakota shuttle elevator handling 17 million bushels per year, on average, but ranging from 15.3 to 18.7 million bushels per year. Volumes per crop were estimated as the proportion of grain handled by elevators in Crop Reporting District 5 (CRD5) for corn (48%), soybeans (34%) and wheat (19%), respectively, and were estimated from Vachal and Benson (2013) for 2012/13.[12] Distributions for the gross margins were determined based on industry contacts.

Appendix Table D1. Parameters for Gross Margin Distributions for a Representative North Dakota Elevator.

	Minimum	Most Likely	Maximum
Corn	$0.10	$0.25	$0.40
Soybeans	$0.12	$0.30	$0.60
Wheat	$-0.20	$0.35	$2.00

Rail costs (tariff and fuel service charges) were assumed to be contained in the gross margin calculations. However, shuttle premiums were modeled based on the secondary car markets for daily car values (DCV). These DCVs were either added to the gross margins, if DCVs were negative, or subtracted from gross margins, if DCVs were positive, implying a high cost for shuttle rail freight. Distributions for DCVs were estimated from Tradewest Brokerage Co. (Various) from 2006 to 2014. Primary car values were obtained from BNSF (2014), and distributions were estimated from 2006 to 2014.

The model was run representing both a cooperative firm, and a corporate firm. Three cases were simulated. The first assumed that a cooperative elevator managed freight as part of its operations, so freight was assumed to be limited in variability (co-op-fixed). The second represented a corporate elevator that also was assumed to manage freight operations, so freight was limited in variability (corporate-fixed). The third assumed a cooperative elevator where freight was not covered and had to be procured for all shipments in the secondary market (co-op-risky). Freight was assumed to be from loglogistic distributions for all three models. However,

[12] Volumes of corn and soybeans shipped from CRD5 are only reported in Vachal and Benson (Various) for the most recent year available, 2012/13. Volumes for state level shipments of corn, soybeans and wheat since 2006/07 2012/13 reveal large shifts in shipments from wheat toward corn and soybeans.

for the co-op-fixed and corporate fixed models, distributions had means of .01 c/bu. and a standard deviation of .026 c/bu. The third case, co-op-risky, had a mean of .01 c/bu. and a standard deviation of .14 c/bu. This result was derived utilizing fitting weekly observations for secondary market values for freight from 2006 to 2014 (Tradewest Brokerage Co., Various).

The models were simulated 10,000 times, at which time results converged to within stopping criteria. Then, year 1 distributions for freight were stressed, assuming that values were in the top 90% of the assumed distributions.

#1

Senate Bill 2291

Presented by: **Randy Christmann, Commissioner**
Public Service Commission

Before: **House Agriculture Committee**
The Honorable Dennis Johnson, Chairman

Date: **March 6, 2015**

TESTIMONY

The North Dakota Public Service Commission supports passage of Senate Bill 2291 and appreciates the sponsors' efforts to help make our licensing program even better and more efficient.

Current law requires that every grain warehouseman provide a scale ticket to people delivering grain for each and every load. Although these licensees may set their own policies for when payment will be made, all scale tickets must be converted to cash, noncredit-sale contracts, credit-sale contracts, or warehouse receipts within 45 days after the grain is delivered.

This is an important part of our grain licensing law because if a grain licensee is having financial problems we don't want them to accumulate obligations for longer periods of time. That puts all of their customers in a vulnerable situation if that grain licensee becomes insolvent.

Violation of the 45 day conversion requirement is one of the most common violations that our grain licensing inspectors find. In fairness to the grain warehousemen found in violation, I do understand why they sometimes choose not to follow the law.

/

In many instances, producers are unsure of when they want to be paid. The timing of their grain payments can have enormous financial implications on producers, and may revolve around the timing of unassociated purchases they plan to make later in the year or in the following year. This may put a grain warehouseman in a very difficult position when a customer wants to wait before deciding on a cash payment or a contract that will set a date for payment. Thus it is understandable when a grain licensee decides to violate this provision of law rather than upset their customer.

However, just because it is understandable does not make it acceptable, so we want to add another option for the grain warehousemen and their customers. This bill allows them to sign a waiver for specific scale tickets that relieve a grain warehouseman of the obligation to convert those tickets within 45 days. As part of the agreement, the grain producer is waiving their rights to benefits from the Commission trust fund if that grain licensee becomes insolvent.

Senate Bill 2291 creates an opportunity for individual producers to continue working with their grain warehousemen to make decisions that are best for them. However, with this law change, those producers will be making those decisions and accepting the risks involved with their decisions and the grain licensee will not be in violation of the law.

Jeff Enger

#2a
SB2291
3/6/15

Good Morning Chairman Johnson and Members of the House Ag Committee. My name is Jeff Enger and I farm near Marion, ND. I serve on the North Dakota Corn Growers Association Board of Directors. The North Dakota Corn Growers Association stands in support of SB 2291.

We would like to place into public record the study entitled "Risk Exposure of Financial Failure for North Dakota Grain Handling." This study was conducted by Dr. William Wilson and Bruce Dahl of the Dept. of Agribusiness and Applied Economics at NDSU and was completed in October of 2014.

Rather than going into the report in its entirety – I would just like to point out a few things from the report that may be instructive as the committee deliberates this bill.

On page 24 the report lists considerations for further review and analysis. Among them being that producer size and market volatility have increased in recent years and that more consideration be given to the financial aspects of grain handling.

On page 18 / Table 3 – This outlines a gross margin distribution for a representative North Dakota elevator. It is instructive as it shows that the wheat margin can sometimes go negative based on weather factors concerning quality and that there would be a higher probability of elevator insolvency for facilities handling wheat vs. corn or soybeans.

Page 20 then summarizes and ranks most important to least important factors that would lead to insolvencies. I will add that the study does break out Cooperative vs. Corporate structures for elevators as their tax structures are different. You will see that the most important factors that would contribute to an insolvency are Wheat margins, Soybean margins and Daily Car Values (or DCV) for shipping via rail. The least important factor is Volume Handled which is what North Dakota law is currently based on.

With the recent elevator insolvencies, the North Dakota Public Service Commission (PSC) is attempting to address the financial consideration of scale ticket conversion. We want to compliment Commissioner Christmann and the PSC for tackling this issue. The North Dakota Corn Growers Association stands in support of Senate Bill 2291 as it addresses a part of the overall financial consideration of potential elevator insolvencies.

I would be happy to take any questions that the committee would have.

Jeff Enger

#2b
SB 2291
3/6/15

Agribusiness & Applied Economics Report 732

October 2014

Risk Exposure of Financial Failure for North Dakota Grain Handling

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and

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Acknowledgments

Thank you to the ND Corn Council, ND Soybean Council, and the US Durum Growers Association for the research funding.

The author would like to thank Greg McKee, Ryan Larsen, Frayne Olson, and David Saxowsky for their constructive comments.

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Risk Exposure of Financial Failure for North Dakota Grain Handling

Introduction

An important element of risk for North Dakota grain and oilseed growers is commonly referred to as "counter-party" risk for transactions involving grain sales and input purchases. Growers are exposed to some elements of risk related to default on transactions with buyers and input suppliers. Mechanisms exist in North Dakota (and in most states) to protect growers against buyer default. The purpose of these mechanisms is to protect grain sellers against default of the grain buyer. These mechanisms include requiring buyers to be licensed and to have bond coverage. Detailed statutes explain these mechanisms and requirements in addition to the process of reclaiming losses.

The exposure to risk has escalated in recent years. There have been important changes that impact risk of default. First, price levels have increased. Whereas corn, soybeans and wheat were traditionally in areas of $3, $7 and $5/bushel, these values have now increased by a factor of nearly two and are more recently in the area of $4-6, $11-12 and $7-8, respectively, and, have since declined. Second, the volumes handled by individual shippers have increased due, in part, to the shift in commodities, the adoption of shuttle facilities and consolidation. Third, volatility (risk) for all prices has increased. Our work suggests that the volatility (as conventionally measured) has increased from about .18 in the early 1980s to about .4 or more in recent years. Fourth, the increased cost and value of inputs as well as their volatility (notably fertilizer) have escalated. The combination of these changes has heightened the risk exposure for all firms in this industry and its supply chain. While the grain handling sector is well managed and has had limited defaults, the mechanisms and protections offered to growers will escalate in importance as these changes ensue.

The purpose of this report is to document risks to growers and the mechanisms used to mitigate risks related to buyer default. This report is structured as follows: First, current North Dakota programs are discussed. Second, mechanisms used in other states are examined, and proposed/recent changes are summarized. Third, changes in growers' risk exposure in North Dakota are examined, and changes in North Dakota grain-elevator characteristics are summarized. Fourth, estimated default probabilities for U.S. grain handlers are examined over time. Fifth, results from a simulation model are presented. Finally, recommendations are discussed.

North Dakota Grain Buyer/Warehouse Bankruptcy Programs

North Dakota has two programs that provide coverage for grain-buyer financial failures. The first has two parts: the grain warehouse licensing and bonding program, and the grain buyer licensing and bonding program. These programs require warehouses and grain buyers to be

licensed and to submit a bond which is dependent on the warehouse's rated storage capacity and on the grain buyer's average sales over the last 3 years.

The second program is the North Dakota grain insurance fund which provides coverage for credit sales (which are not covered by the grain buyer's bond). The North Dakota grain insurance fund, or credit-sale indemnity fund, was established in 2003 to cover credit sales deferred for more than 30 days. The fund assesses $2 per $1,000 of credit sales' value; when the fund rises to $10 million, the assessment is dropped until the fund declines to $6 million; then, the assessment is re-imposed. In 2007, the maximum fund was dropped from $10 million to $6 million, and the minimum was lowered from $6 million to $3 million. The indemnity fund pays 80% of claims, up to a maximum of $280,000 per producer.

North Dakota licenses warehouses for storage and requires bonding, with a minimum bond of $50,000 up to a maximum of $1.5 million. The minimum bond requirements are assessed from a bond schedule based on storage capacity. Grain buyer licenses can be either facility based, or for roving grain buyers. There is also a federal bond that is required for licensed federal storage capacity. The federal bond also requires a minimum bond of $50,000 and a maximum of $1 million. The minimum bond requirement is based on the average the last 3 years of volumes handled. Bonds on file for ethanol plants appear to be equal to the required bond for the warehouses' storage capacity.[1]

There have been 40 insolvencies for the North Dakota Grain Warehouse and Buyer Programs since 1975, with periods of multiple insolvencies (the early and late 1980's, the late 1990's to early 2000's, and from 2007 forward (Figure 1). There have been 11 insolvencies since 2007 (Appendix Table B1). The recent insolvencies included nine grain warehouses and two roving grain buyers, and three of these insolvencies made claims on the Credit-Sale Contract Indemnity fund. The insolvencies included two in 2007, three in 2009, two in 2010, one in 2011, two in 2012 and one in 2013. The total payouts for claims against the three Indemnity fund insolvencies ranged from $110,315 to $330,630.

A recent insolvency, Earth Harvest Mills in 2013, which was still in process when Appendix Table B1 was developed, was recently completed with the claims paid amounting to $948,630 (ND PSC, 2014a). This claim was the largest one paid, to date, from the Indemnity fund and left a balance around $4.5 million in the fund (Port, 2014). Three other claims (Mitchell Feeds, Anderson Seed and Falkirk Farmers Elevator Co) are still in the process of completion with significant claims on the Indemnity fund for at least two of them (ND PSC 2013a,b). These two claims could potentially lower the Indemnity fund balance to near $3.6 million, and the balance could be further impacted depending on what occurs with the Mitchell

[1] Ethanol plants have lower bonding requirements because the bond is based on storage capacity. Ethanol plants usually have a higher turnover rate than elevators having similar storage capacity.

Feeds insolvency. There is a trend for the size of the claims paid by the Indemnity fund. These claims have increased from 2007 with the latest one being the largest at $948,953.

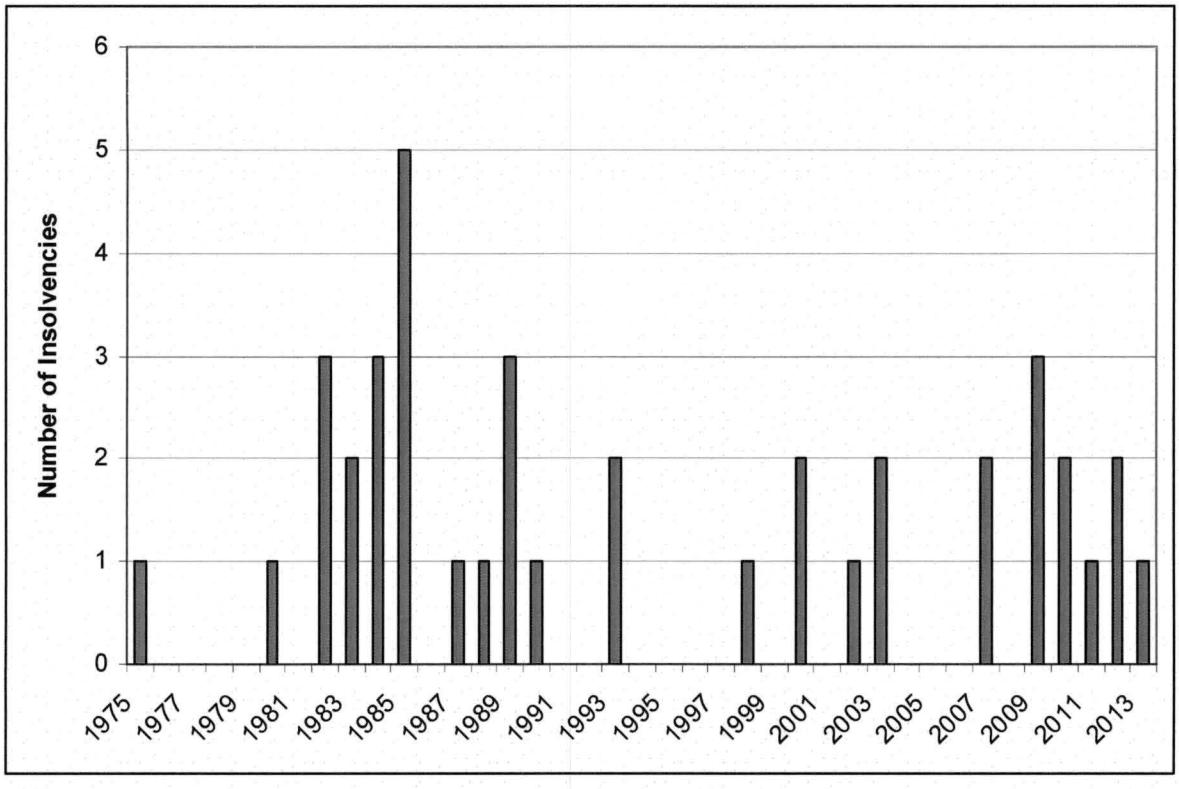


Figure 1. North Dakota Warehouse/Grain Buyer Insolvencies per Year.

The probability of insolvencies occurring for any year was estimated (Figure 2). The probabilities calculated indicates that North Dakota warehouse/grain buyer programs experienced no insolvencies per year about 46% of the time, 1 insolvency 23% of the time, 2 insolvencies about 18% of the time, etc. from 1975 to 2013. The estimated probabilities also indicate that the likelihood of at least 1 insolvency in a year is about 54%. The probability of 1 or less insolvencies in a year was 69%; two or less insolvencies was 87%; and 3 or less insolvencies was 97% (Figure 3).

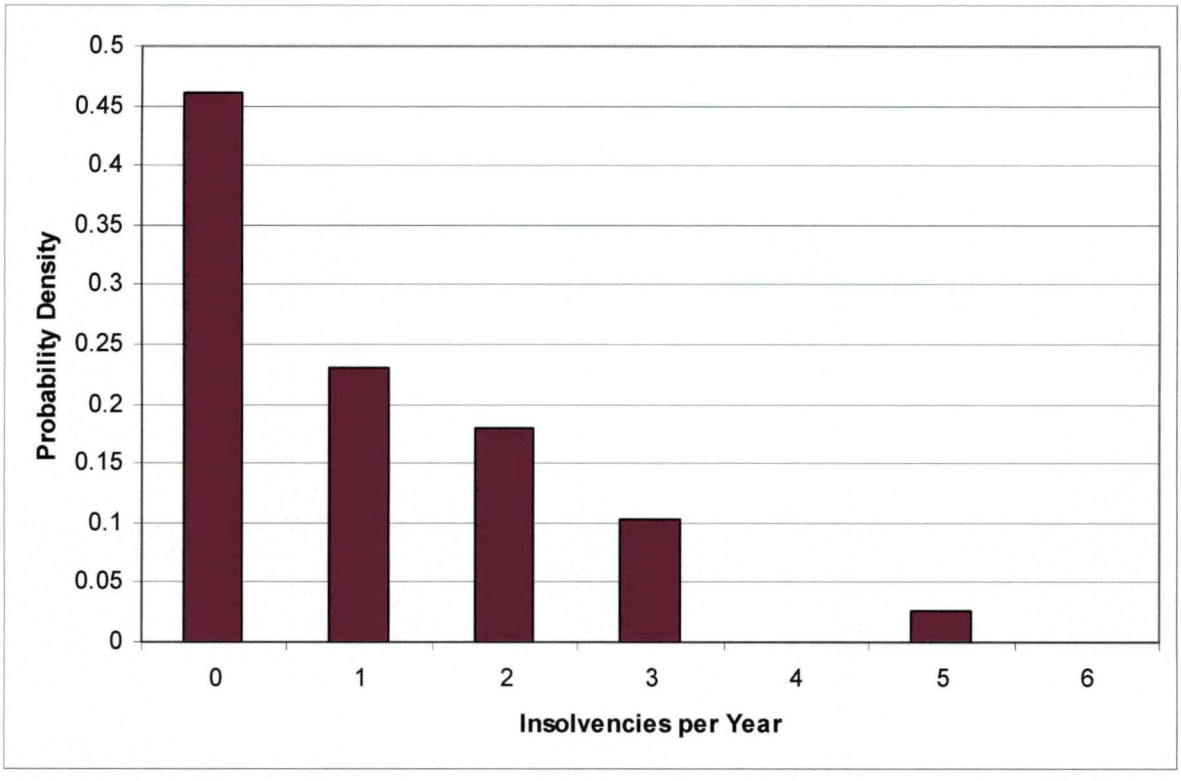


Figure 2. Probability of Given Number of Insolvencies Occurring per Year.

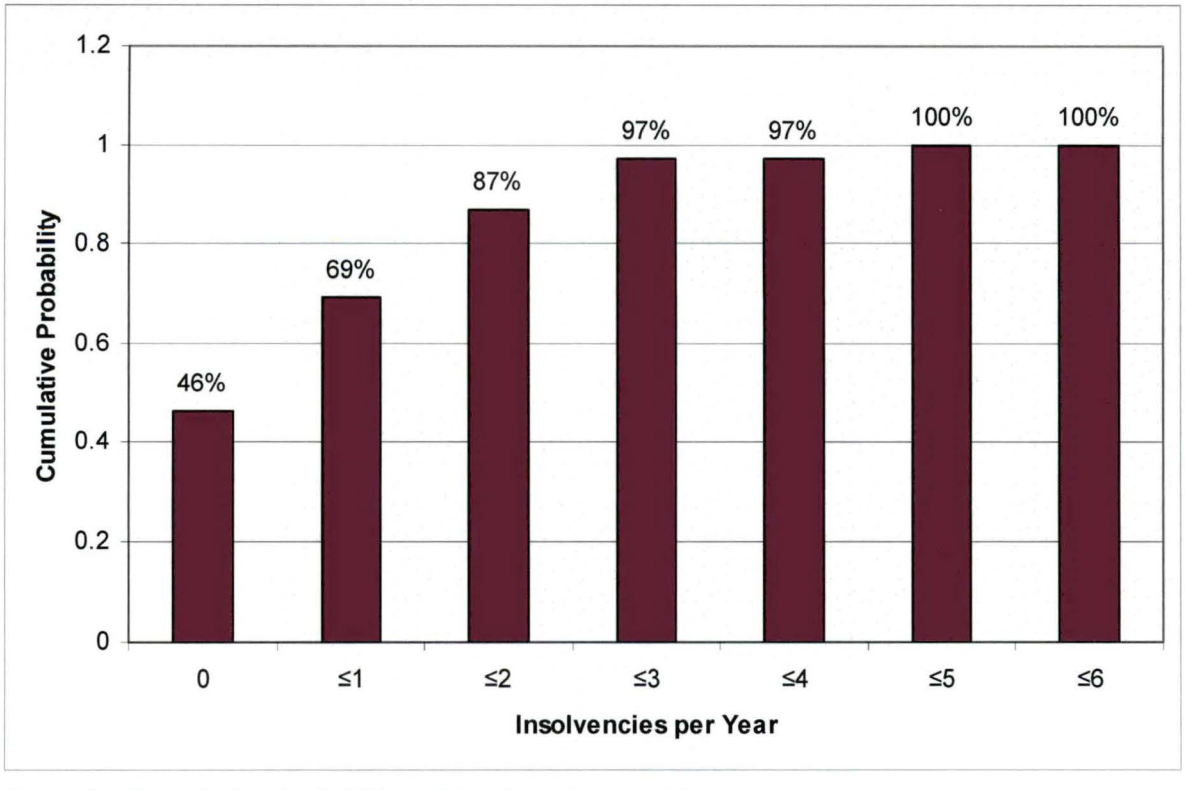


Figure 3. Cumulative Probability of Insolvencies per Year.

Mechanisms in Other States

States generally have either indemnity funds or bonding programs. Only North Dakota and Oklahoma have both, while Oregon has neither. States that only have bonding include: Alabama, Arkansas, Colorado, Georgia, Kansas, Maryland, Minnesota, Mississippi, Missouri, Montana, Nebraska, South Dakota, Texas, Virginia and Wyoming. States that only have indemnity funds include: Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, New York, Ohio, South Carolina, Tennessee, Washington and Wisconsin (AGRO, 2014).

Most states with bonding have warehouse bonding requirements. A few have both warehouse and grain buyer bonding requirements (Alabama, Colorado, Georgia, Minnesota, Mississippi, Missouri, Montana, Nebraska, North Dakota, South Dakota and Virginia). It is notable that other states with grain buyer bonding requirements apply the bond based on a percentage of the value of agricultural commodities purchased in the prior year (Colorado, Minnesota, Missouri, Montana, Nebraska and South Dakota) while North Dakota uses a three year average for volumes handled as the basis for its bonding requirements.

Two of the states with bonding apply different requirements for dry bean warehouse storage bonding requirements than for commodity grains (Colorado and Wyoming). The Colorado requirements for dry beans imply bonding requirements could be up to three times higher than for a similarly sized non-dry bean facility over one for commodity grains. Nebraska varies the bonding requirement based on the type of storage (normal vs. without turning or aeration capabilities). Virginia splits its bonding requirements into two categories: grain dealers (who can purchase or store grain from Virginia growers) and grain handlers (who can buy bulk grain and either resell the grain or grain products, but cannot purchase or store grain from Virginia growers).

Several states also impose net worth requirements which, if violated, require an additional bond to be licensed (Colorado, Kansas, Missouri, Nebraska, Texas and Wyoming). These net worth bonding requirements typically require net worth to equal 20 to 25 cents/bu. of storage capacity, and an additional bond is required to make up the difference for shortfalls. Most states treat bonds for grain buyers and warehouses separately, so a firm that both buys and stores grain would require two bonds. Colorado determines it's bonding requirements as the maximum of either the estimated bond for the warehouse or the grain buyer.

In addition to state regulations, there are bonding requirements to become a federal warehouse. These rules are similar to state level bonding requirements in several of the states. Bond requirements are scaled based on storage capacity and require 20 cents/bu. for the first 1 million bushels of storage, 15 cents/bu. for 1 million to 2 million bushels and 10 cents/bu. for storage capacity over 2 million bushels. The minimum bond required is $50,000, and the

maximum is $500,000. Also, an additional bond is required if the firm's net worth falls below 25 cents/bu. of storage capacity.

The Association of Grain Regulatory Officials (AGRO) conducted a study on the characteristics of indemnity funds for those states that offered them (AGRO, 2013). It found minimum and maximum sizes for insurance funds varied by state. The lowest specified minimum for an insurance fund was $1 million dollars for New York and Oklahoma. The highest minimum was $10 million dollars for Idaho and Indiana. Maximum amounts for the insurance funds ranged from a low of $3 million in Washington to a high of $15 million in Indiana (Table 1).

Most insurance funds covered "priced later" sales. Only Iowa, Louisiana and Oklahoma did not cover "priced later" sales. The maximum coverage for claims varied from 80 to 100%, with the lowest coverage by Indiana, Kentucky, North Dakota, New York and Ohio; and the highest coverage was by South Carolina. North Dakota and Illinois also impose maximum limits on farmer payouts in addition to coverage limits. North Dakota limits farmer payouts to $280,000 per farmer while Illinois limits the amount to $250,000 per farmer. The insurance funds have been in operation for a range of years. The Oklahoma fund started in 1980 and was the oldest. The Louisiana fund started in 2008 and was the newest.

Table 1 shows the total failures and claims paid, from which we calculated the average failure per year of operation and the average claims paid per failure. Most states had failures that averaged less than one per year and average claims were generally less than $400,000 per failure.

The average claims per failure, by state, were fitted for a relationship with either the maximum or minimum of the state's indemnity fund (Appendix Figures A1-A2). These relationships suggest that North Dakota actually has a slightly higher minimum indemnity fund value related to its average claims per failure than in other states, although the value is not as high as Ohio, Indiana or Idaho. For the relationship between average claims per failure and the indemnity fund's maximum, North Dakota is about on average with that implied across all states with indemnity funds (Appendix Figure A2). These relationships suggest that North Dakota's Indemnity fund minimum and maximum values are in line with other states. These relationships also suggest that if average payouts for claims increase, the size of the minimum and maximum for the state's indemnity fund would likely need to increase to be consistent with other states.

If we include the latest insolvency against the indemnity fund (The Earth Harvest Mills insolvency was not completed at the time of the AGRO study), this increases North Dakota's average claim per failure from $94,363 to $216,937. This value does not include potential payouts for the several unresolved insolvencies which could increase average claims per failure to around $341,000. This level of average claims per failure further shifts North Dakota's

position for minimum and maximum fund sizes to a smaller than average position across the states. It is notable that North Dakota's average claims per failure $216,937 would still be less than that observed in most other states (Idaho, Illinois, Indiana, Iowa, Louisiana, Ohio and Oklahoma) ranging from $251,350 in Iowa to $853,205 in Idaho. Only Kentucky, Michigan, New York, South Carolina, Tennessee, Washington and Wisconsin have lower average claims per failure. At $341,000 per claim, only Idaho, Indiana, Louisiana and Ohio would have higher claims per insolvency.

Table 1. Selected Characteristics of State Indemnity/Insurance Funds[1]

State	Minimum ($ Million)	Maximum ($ Million)	Cover Price Later Sales	Max Coverage (Percent)	Farmer Max Payout ($)	Established Year	Failures Total	Average Failures per Year	Total Claims Paid ($)	Average Claims/Failure ($)
ID	10	12	Y	90		1989	12	0.50	10,238,459	853,205
IL	2	6	Y	85	250,000	1983	82	2.73	21,203,519	258,580
IN	10	15	Y	80		1996	11	0.65	4,280,703	389,155
IA	3	8	N	0		1986	58	2.15	14,578,304	251,350
KY		4	Y	80		1984	14	0.48	2,415,267	172,519
LA	3	6	N	0		2008	1	0.20	400,000	400,000
MI	3	5	Y	90		2003	6	0.60	920,382	153,397
ND	3	6	Y	80	280,000	2003	6	0.60	566,178	94,363
NY	1	4	Y	80		1984	64	2.21	4,565,386	71,334
OH	8	10	Y	80		2004	37	4.11	12,710,798	343,535
OK	1	6	N	0		1980	14	0.42	4,300,000	307,143
SC	1.5	5	Y	100		1982	107	3.45	2,850,353	26,639
TN		10	Y	85		1990	6	0.26	958,995	159,833
WA		3	Y	Sliding		1987	0	0.00	0	0
WI	1	6	Y			2002	0	0.00	0	0

Source: Derived from ARGO (2013).

[1] Only states having indemnity funds are shown. Many Midwestern wheat producing states including the nearby states of MN, MT and SD only have bonding programs

Changes/Proposed Changes to State Regulations

South Dakota requires licensing and bonding of warehouses and grain buyers. Warehouses are required to submit a minimum bond that is equal to the maximum of $25,000 times the number of facilities or 50% of the value of grain in storage. The value of grain in storage must be reported monthly (SD Public Utilities Commission, 2014). In 2013, the South Dakota law was changed from requiring the last annual financial report to be licensed to requiring more frequent information about financials, thus requiring buyers to self-report financial difficulties to the South Dakota Public Utilities Commission if the firm experiences financial trouble (GrainNet, 2013). The South Dakota Public Service Commission proposed changing the rules for oral credit sales in July 2013, and changes were enacted in September 2013. The new rule required that contracts be mailed to the farmer; then, the farmer has 48 hours to object in writing, or the contract goes into effect (Pates, 2013).

Iowa has an indemnity fund with a maximum of $6 million. The fund assesses .014 cents/bu. on grain transactions and .014 cents/bu. on storage capacity for grain warehouses, and producers are charged .25 cents/bu. on grain sold. The fee was stopped in 1989, however, fees are still collected for grain buyer's license fees. This fund only covers loses for cash sales and does not cover losses on credit sale contracts (South Dakota Farmers Union, 2013).

In 2013 Ohio increased the size of its indemnity fund and made farmers first in line for assets in the case of a bankruptcy (Seachrist, 2013). The language covering the order of claims on assets removed the ambiguity of preferences on claims but retained farmers as having prioity. The Ohio indemnity fund allows lenders to participate. Ohio increased the indemnity fund minimum/maximum from $8/$10 million to $10/$15 million. The fund, which contained $8 million, would collect a ½ cent/bu. levy until the fund cap of $15 million is reached. Then, the levy is suspended until funds drop to $10 million. The fund generally reimburses 100% for storage grain, deferred payments up to 90 days with a signed agreement and insufficient funds checks (Moore, 2012). The fund provides 100% coverage for the first $10,000 and 80% of the balance for delayed price grain and basis grain. Lenders have the ability to use the grain indemnity fund by asking handlers to utilize state warehouse receipts (OABA, 2014).

The Texas Grain Producer Indemnity Board proposed an indemnity fund that would be designed to mitigate up to 90% of losses when grain buyers fail (Texas Department of Agriculture, 2013). The fund would have made an assessment of 0.2% to 0.6% of the final value of the sale to fund the indemnity at the first point of sale grain buyer. However, the proposal required a two-thirds vote to be adopted, and growers voted not to adopt the Texas Grain Producer Indemnity Board (Smith, 2013).

Nebraska has a bonding/surety mechanism. The Nebraska Public Service Commission brought up the idea of an indemnity fund in 2008 and 2009. Little support existed from the state's commodity and farm groups in 2009 (Dakota Farmer, 2009).

Changes in Risk Exposure for Growers

Crops grown and farm sizes have changed over time for North Dakota farmers. In an effort to examine the risk exposure of farmers, we constructed an average size farm and applied planted and harvested acres, yields and marketing year prices to derive a measure of gross receipts. Farm sizes were taken from Swenson (Various), reported an average size farm for commercial operators in North Dakota. Crop mix was estimated as the proportion of total planted acres devoted to individual crops by year. The ratio of harvested to planted acres was estimated from actual North Dakota planted and harvested acres, by year, from 1990 to 2013 (USDA-NASS, 2014). Yields and marketing year prices were also obtained from USDA-NASS (2014). Gross receipts from crop sales were estimated by crop and aggregated. Gross receipts were estimated by multiplying harvested acres by yields and marketing year average prices.

Estimated gross receipts per farm grew from about $100,000 in 1991 to $803,351 in 2012 (Figures 4-5). The increase in gross receipts was due to increased farm sizes, changes in crop mix, increased yields, and higher prices for crops. Farm size grew from 1,387 acres in 1991 to around 2,000 acres from 2007 forward. The crop mix shifted toward higher production of corn, soybeans, canola and durum wheat, and away from barley, sunflowers, spring wheat and winter wheat. Marketing year average prices for 2013 increased, on average, from 1.8 to 4.1 times 1991 prices, with corn rising 1.8 times and flax increasing 4.1 times 1991 prices.

The gross receipts per farm increased from about $100,000 in 1991 to over $800,000 in 2012, reflecting a large increase in farmers' risk exposure given the coverage limits for the bonding and indemnity programs. The indemnity fund limits farmer payouts to 80% of the claim, up to a maximum of $280,000 per producer. This limit suggests that, in the early 1990's to early 2000's, an average farmer would likely not run into the maximum per farm limits. From 2007 forward, an average farmer in North Dakota would have significant risk exposure if all crops were sold to a single firm and, even if split evenly between bonding and indemnity programs, may exceed grower limits for maximum payments. In fact, in the most recent insolvency, two claimants had claims exceeding the $280,000 payout limit (ND PSC, 2014a).

The indemnity fund would potentially provide coverage for up to a maximum of $350,000 ($280,000/.80) in gross receipts. For a farm in 1991 to obtain gross receipts of about $350,000, a farm size of about 4,725 acres is implied. In 2003, the year the indemnity fund

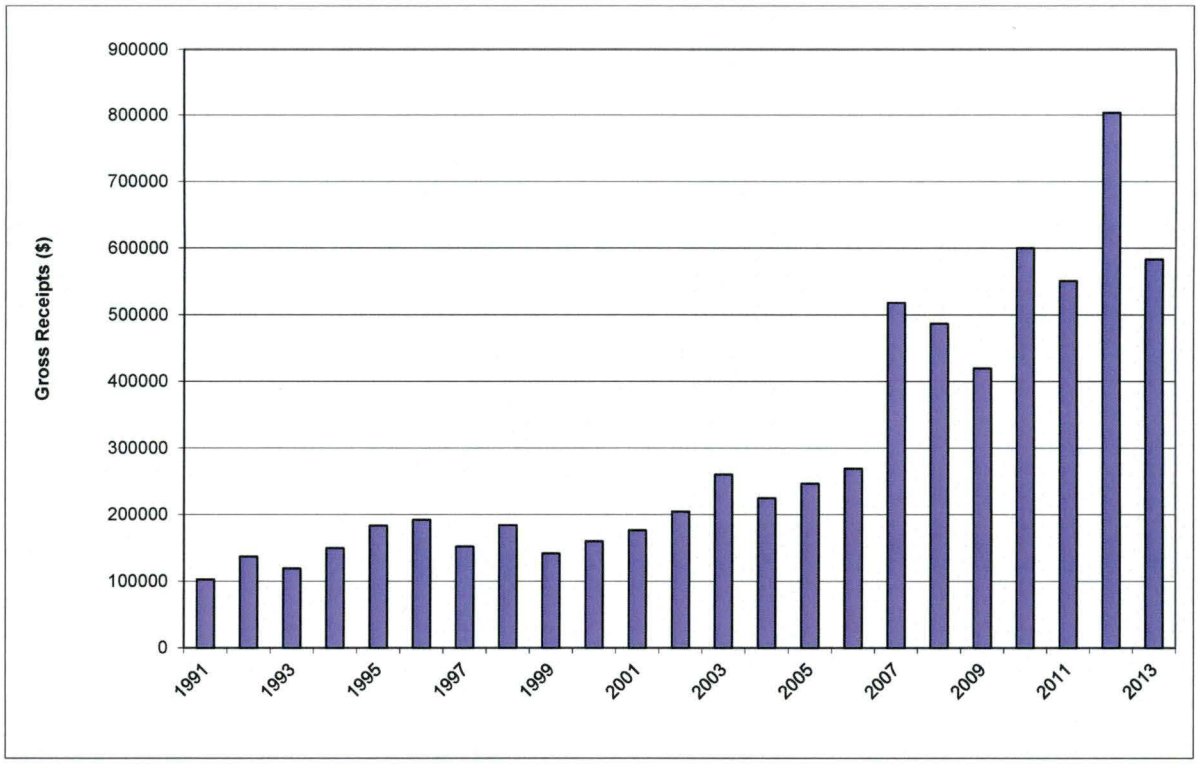


Figure 4. Gross Receipts for an Average Size Farm, North Dakota, 1991 to 2013.

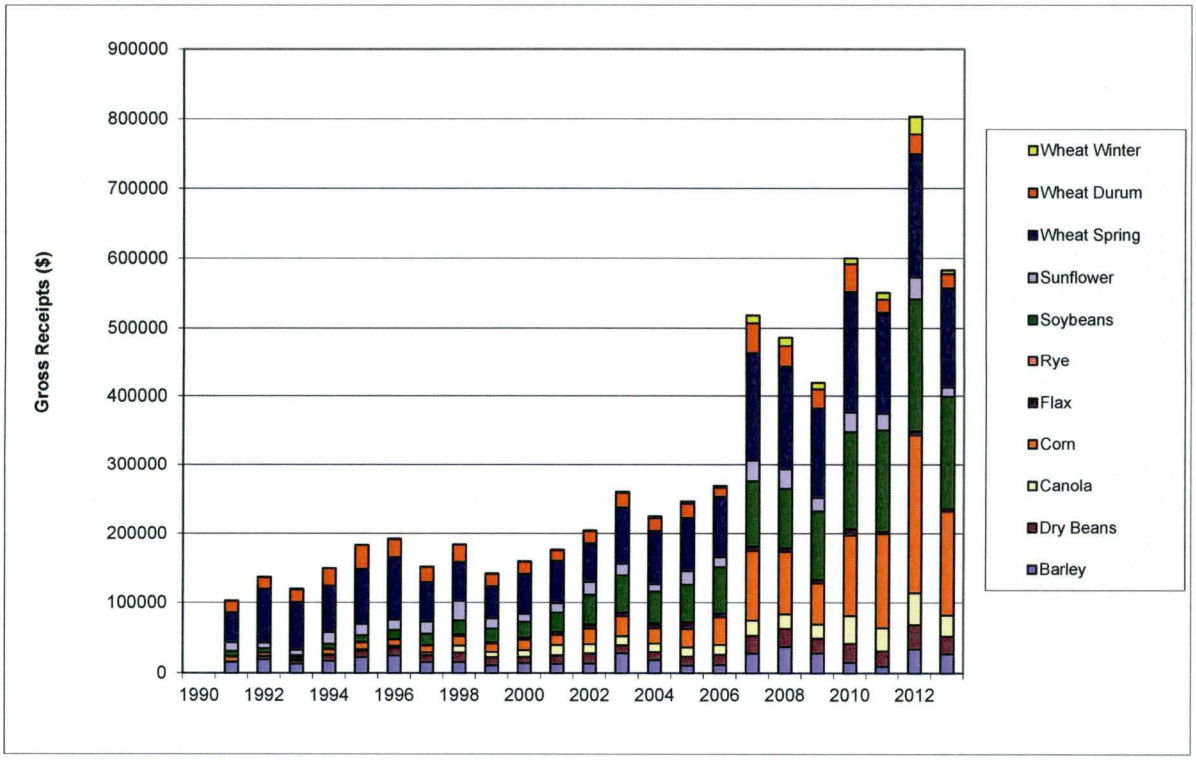


Figure 5. Gross Receipts for an Average Size Farm, North Dakota, 1991 to 2013, by Crop.

was established, this limit would cover an average farm of 2,680 acres. In 2013, the payment limit would only imply an average farm size of 1,160 acres. If the maximum payment were to provide the same coverage for the same size farm as in 1991, this would imply a maximum payment of $1,140,000 ($1,426,352 gross receipts *.8). If the maximum payment were to cover a farm size equivalent to that in 2003, this would imply a maximum payment of about $650,000 ($809,021 gross receipts *.8). Thus, the indemnity fund should provide less coverage to fewer and smaller farms in 2013 than it did in 2003.

Volatility of monthly prices received by growers was evaluated by marketing year from 1990 to 2013 for North Dakota (Appendix Figures C.1-C.7). These figures show changes over time with volatilities increasing for some crops (soybeans, durum and spring wheat) and declining for others (dry beans). The increase in volatilities adds risk for both growers and elevators. The results also show that dry beans are somewhat more risky than other crops. This is complicated further in that price risks for dry beans are not readily hedgeable..

Changes for North Dakota Grain Handlers

Changes in the number, size and distribution of grain elevators in North Dakota have been ongoing (Vachal and Benson, Various). The number of firms has declined from 363 in 2000/01 to 292 in 2012/13, and the total storage capacity has increased from 209,474,000 to 302,048,000 bushels (Figure 6). With declining firms and increased total storage capacity, the distribution of firms by type of elevator shipping capability has also changed. The proportion of elevators by type is largely similar from 2000 to 2012 for firms with No Rail, Single Car or Multi-Car capabilities. The proportion of 100 car shippers has increased and Unit trains have decreased in importance (Figure 7). This relationship changes dramatically when we look at the share of storage capacity. Most elevator shipping types declined in terms of their share of total capacity while the 100 car shippers grew from about 9% of capacity in 2000/01 to 44% of storage capacity in 2012/13 (Figure 8).

The average volume handled by size of rail shipping capabilities, shows increased volumes per elevator, especially for the 100 car shippers (Figure 9). 100 car shippers grew in average volume from 8 million bushels per elevator in 2000/01 to over 16 million bushels per elevator in 2012/13. While the turnover ratios for this category of grain elevators have been declining, the size of storage capacity has been increasing (Figures 9-10). The net effect on bushels handled has been for volumes to continue increasing (Figure 11).

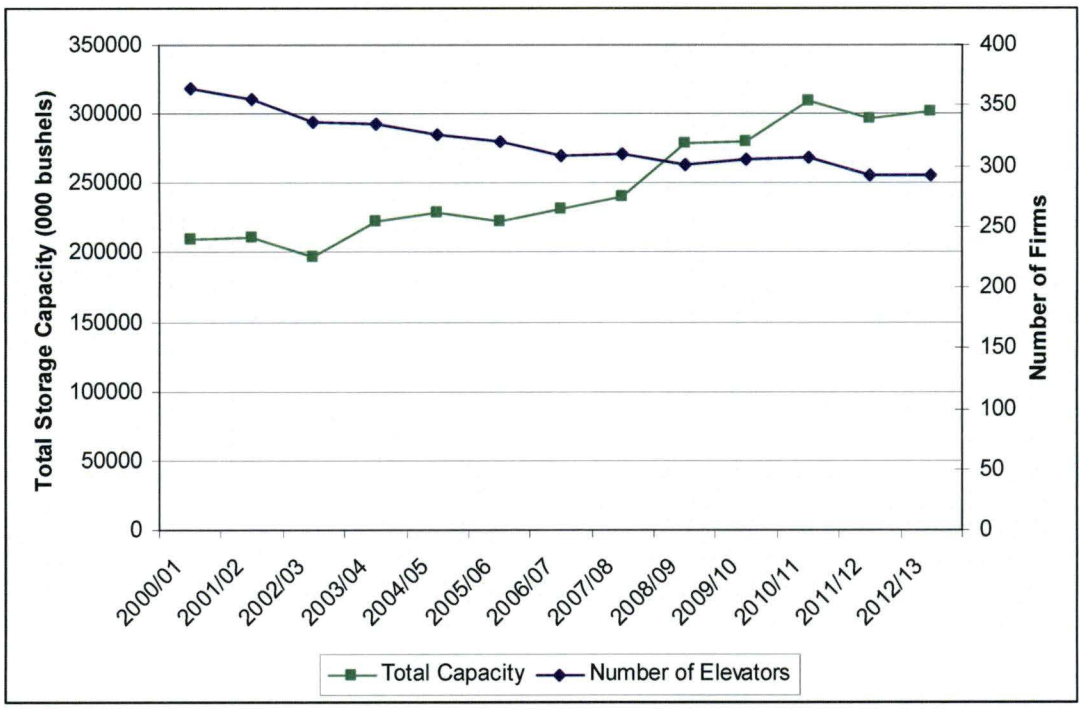


Figure 6. Total Storage Capacity and Number of Grain Elevators in North Dakota, 2000/01 to 2012/13.

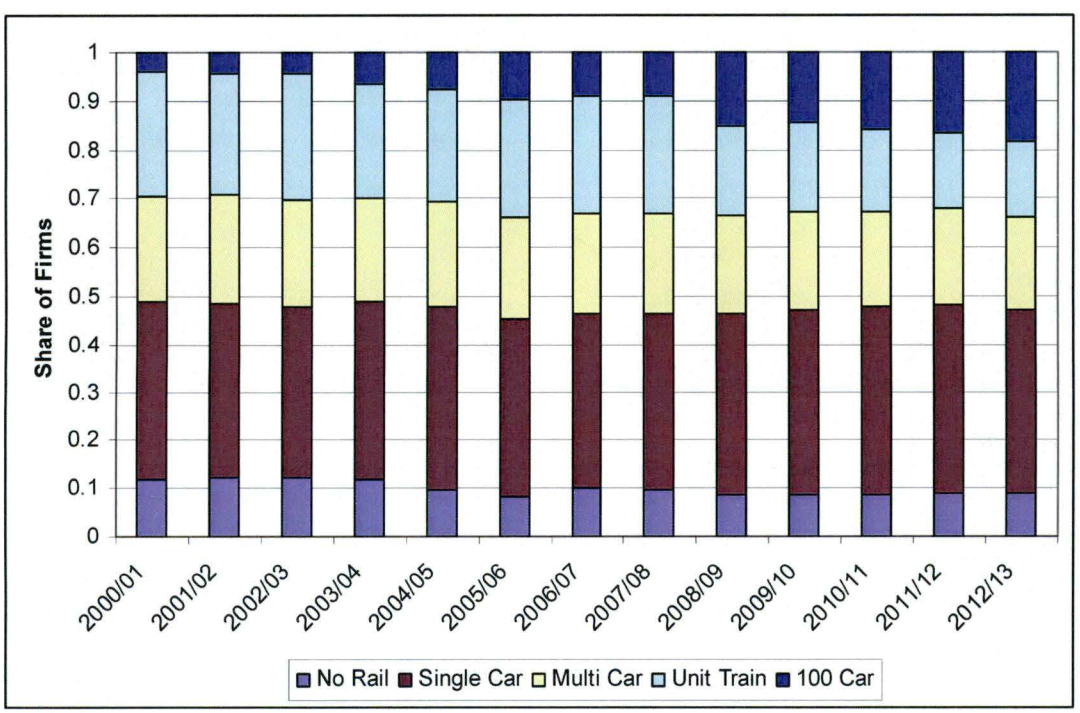


Figure 7. Share of Grain Elevators in North Dakota, by Shipping Type, 2000/01 to 2012/13.

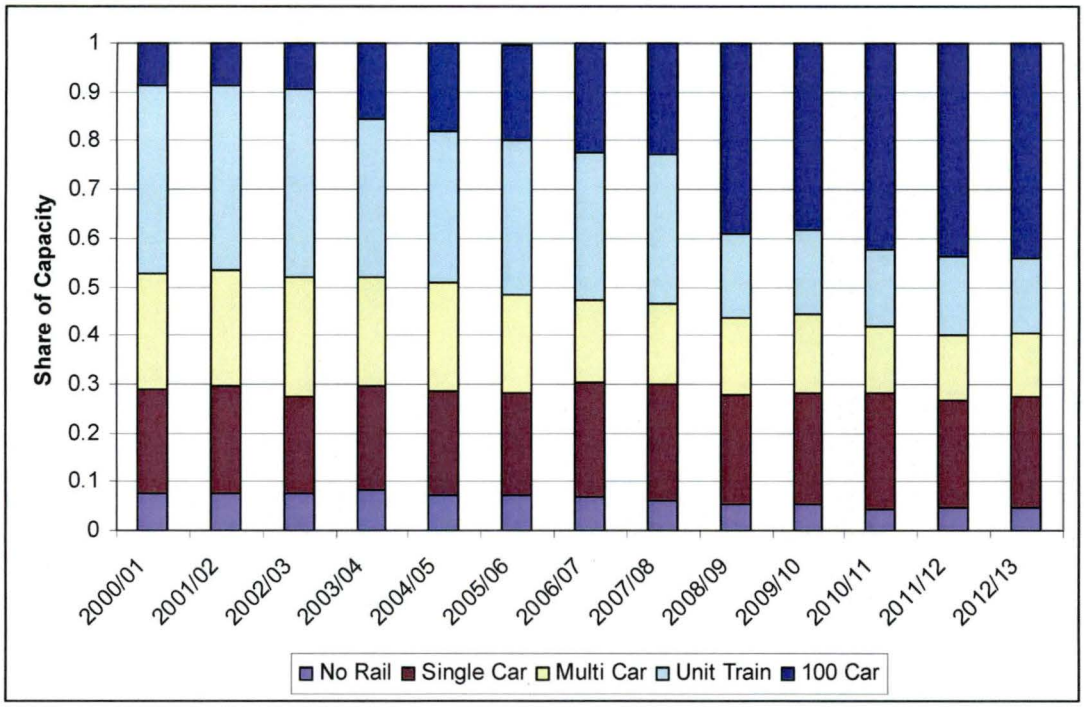


Figure 8. Share of Grain Elevator Storage Capacity in North Dakota, by Shipping Type, 2000/01 to 2012/13.

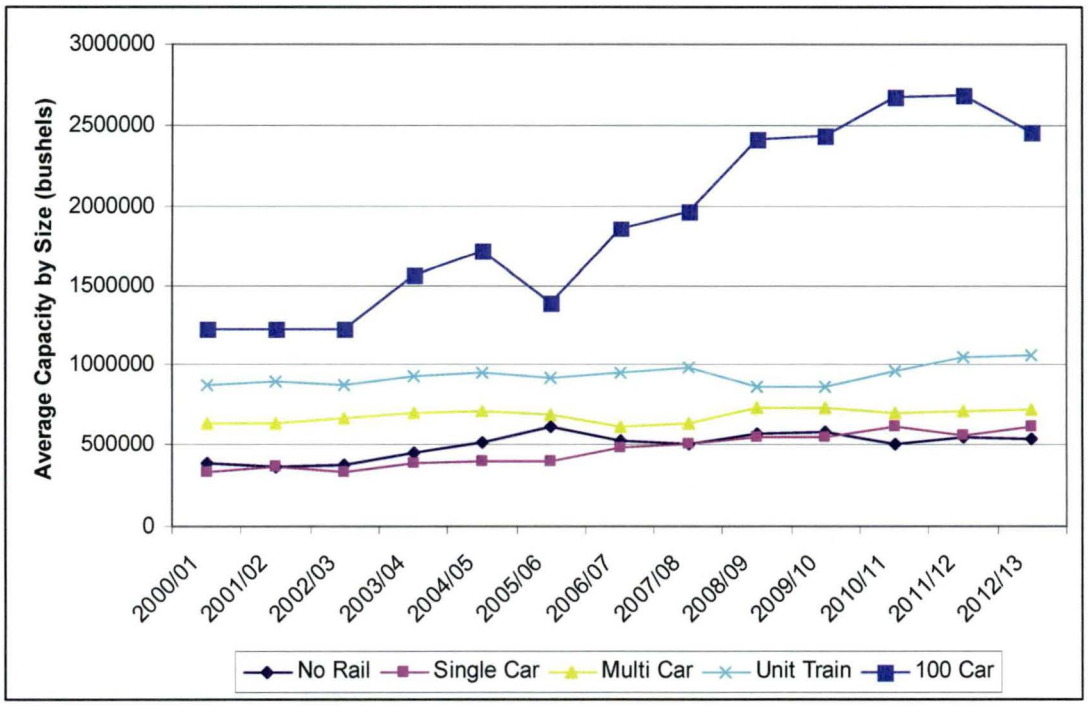


Figure 9. Average Storage Capacity, by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

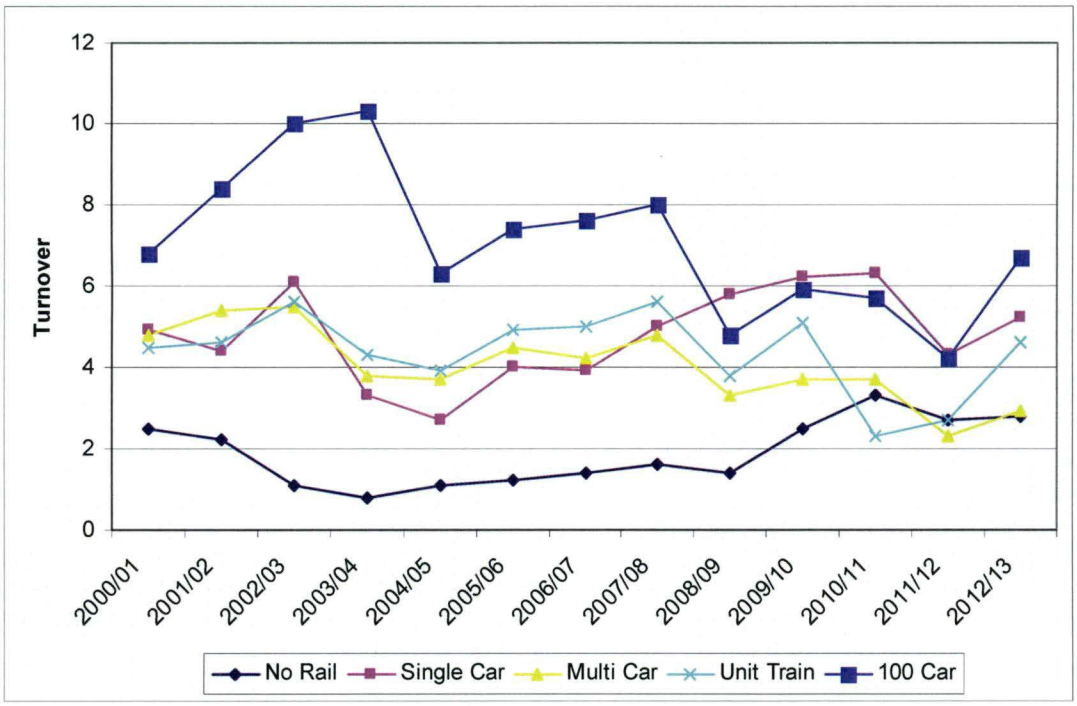


Figure 10. Average Turnover, by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

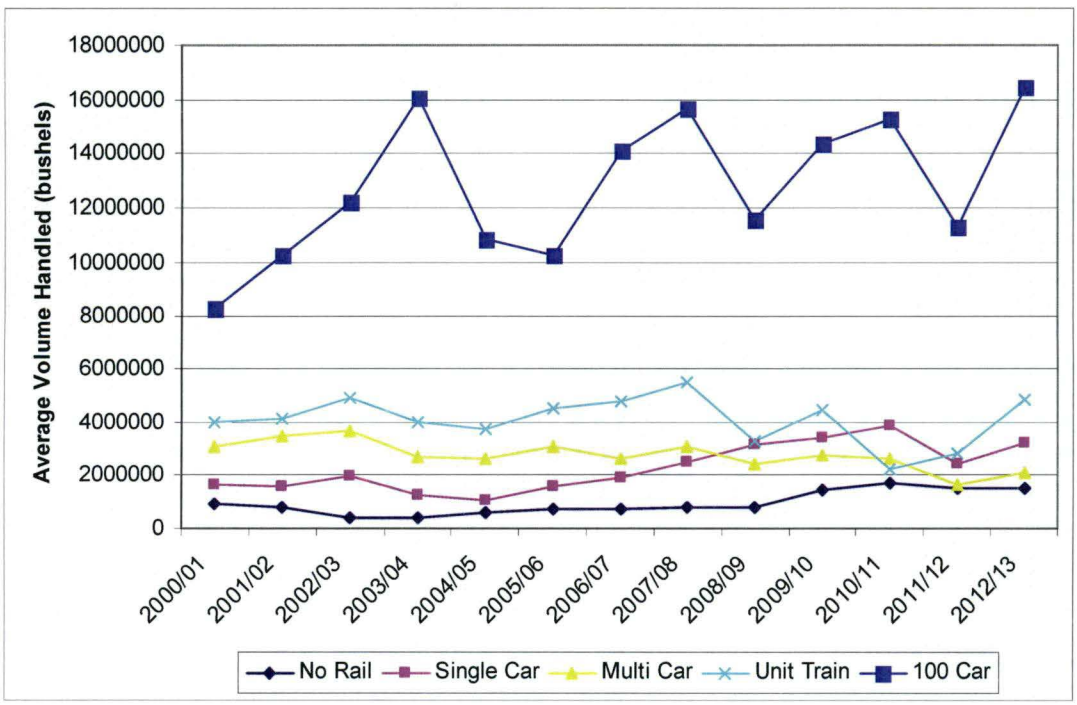


Figure 11. Average Volume Handled (Average Capacity * Average Turnover), by Shipping Type, for Grain Elevators in North Dakota, 2000/01 to 2012/13.

Characteristics of North Dakota Ethanol Processors

Characteristics of North Dakota ethanol producers were developed from the North Dakota PSC (2014b,c). These reports list grain storage licenses for licensed storage capacity and bonding levels. Average rated capacities were obtained from industry sources. Using storage capacity and rated capacities, prospective turnover rates were estimated assuming plants run at rated capacities. Estimated turnover rates for the three ethanol plants were 6 for Underwood, 18 for Casselton and 33 for Hankinson (Table 2). These turnover rates are much higher than averages reported for grain elevators (Vachal and Benson, Various)).

Table 2. Characteristics of Ethanol Plants, North Dakota 2014.

City	Licensed Storage Capacity	Corn Use Based on Ethanol Production	Storage Turnover Rate	ND Grain Storage Bond 2014
	Bushels	Bushels	Turns/year	
Casselton	3,006,000	54,642,857	18	5,000,000
Underwood	3,644,000	21,867,857	6	880,000
Hankinson	1,441,000	47,142,857	33	40,000

Sources: ND PSC (2014bc) and Industry Sources.

Estimated Default Probability of U.S. Grain Handlers

Industry studies of annual reports typically evaluate characteristics of annual reports by industry and publish these for use in benchmarking participants in the industry. RMA is one agency that publishes annual studies by industry (RMA, 2014). An industry similar to grain elevators is that for Wholesale Grain and Field Bean Wholesalers (424510). RMA (2014) reported 5 year histories of estimated 1 and 5 year default probabilities, including the mean and 25% and 75% percentiles.

These default probabilities show that, for U.S wholesale grain and field bean wholesalers, the distribution of 1 year default probabilities was generally less than 1% for 2003/04 to 2012/13, except for the 3 years from 2007/08 to 2009/10, with the largest increase in 2008/09. In 2008/09, the 1 year defaults ranged from 1.76%, 3.75% and 7.36% for the lower quartile, median and upper quartile of the distribution. The quartile results imply 25% of default probabilities would be lower than 1.75%, 25% would be between 1.76 and 3.75%, 25% would be from 3.75 to 7.36% and 25% would be over 7.36%. Five year estimated default rates show the same pattern, with most years from 2003/04 to 2012/13 below 8%; with the 5-year default rates increasing to 7%, 11% and 20% for the lower quartile, median and upper quartile of the distribution, respectively. Again, the quartiles imply 25% of the 5 year default probabilities would be less than 7%, that 25% would be from 7% to 11%, that 25% would be from 11% to 20% and that 25% would be above 20%.

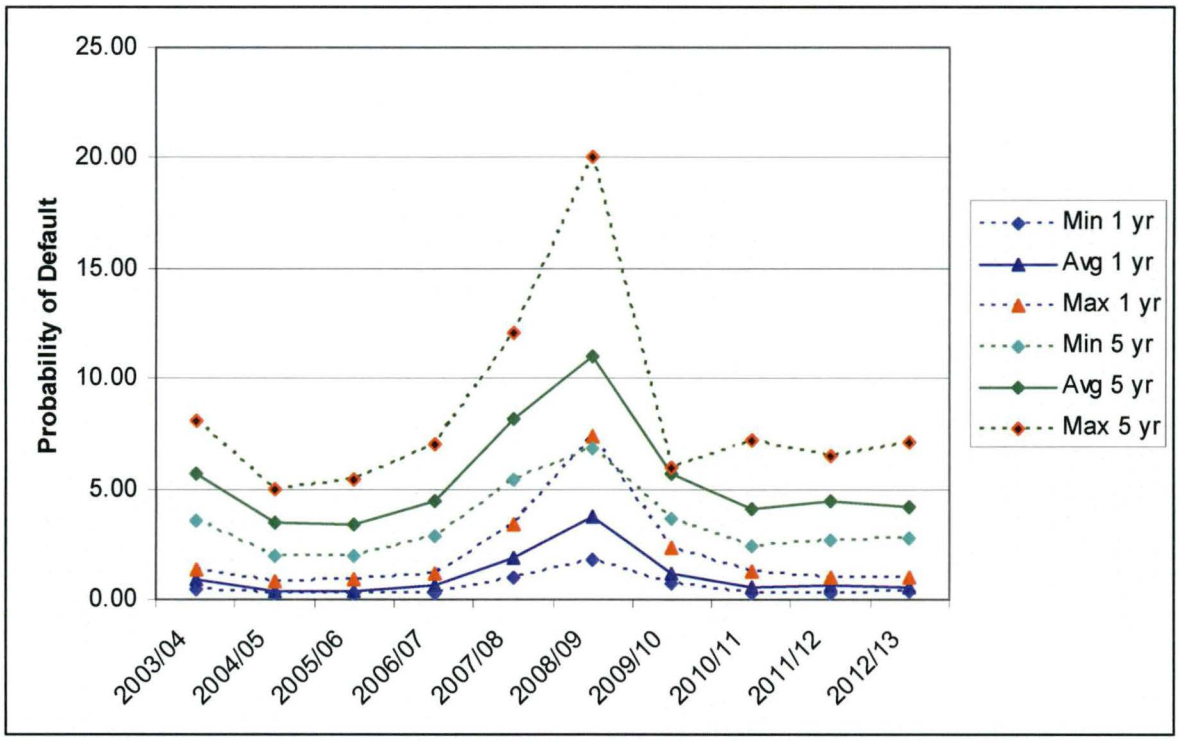


Figure 12. Estimated 1 and 5 Year Default Probabilities for Wholesale Grain and Field Bean Wholesalers, 2003/04 to 2012/13.
Source: RMA (2014).

Simulation Model

In order to quantify and illustrate the prospective risks of failure, we developed a stochastic simulation model for a representative grain merchandiser (co-op and corporate) in North Dakota. The model was used to illustrate the effect of risk and stresses on profitability. A stochastic simulation model from McKee, Wilson and Dahl (forthcoming) was adapted for a co-op and corporate structure representative of a North Dakota firm. This model simulated the profitability of a North Dakota cooperative or corporate firm where distributions for volume handled and gross margins were random.[2]

Volume handled for corn, soybeans and wheat was defined as representative of a North Dakota shuttle elevator located in Stutsman County. The average handle was 17 million bushels per year, ranging from a minimum of 15.3 to a maximum of 18.7 million bushels per year. Volumes per crop were estimated as the proportion of grain handled by elevators in Crop Reporting District 5 (CRD5) for corn (48%), soybeans (34%) and wheat (19%), respectively, and

[2] A detailed description and the assumptions for the model used here are in Appendix D.

were estimated from Vachal and Benson (2013) for 2012/13.[3] Representative distributions were based on industry contacts (Table 3) for gross margins.

Table 3. Parameters for Gross Margin Distributions of a Representative North Dakota Elevator.

	Minimum	Most Likely	Maximum
Corn	$0.10	$0.25	$0.40
Soybeans	0.12	$0.30	$0.60
Wheat	$-0.20	$0.35	$2.00

Rail costs (tariff and fuel service charges) were assumed to be included in the gross margin calculations. Shuttle premiums were modeled based on secondary car markets for daily car values (DCV). These DCVs were either added to gross margins, if DCVs were negative, or subtracted from gross margins, if DCVs were positive, implying a high cost for shuttle rail freight. Distributions for DCVs were estimated using data from Tradewest Brokerage Co. (Various) from 2006 to 2014. Primary car values were obtained from BNSF (2014), and distributions were estimated from 2006 to 2014. A discount rate of 6% was used.

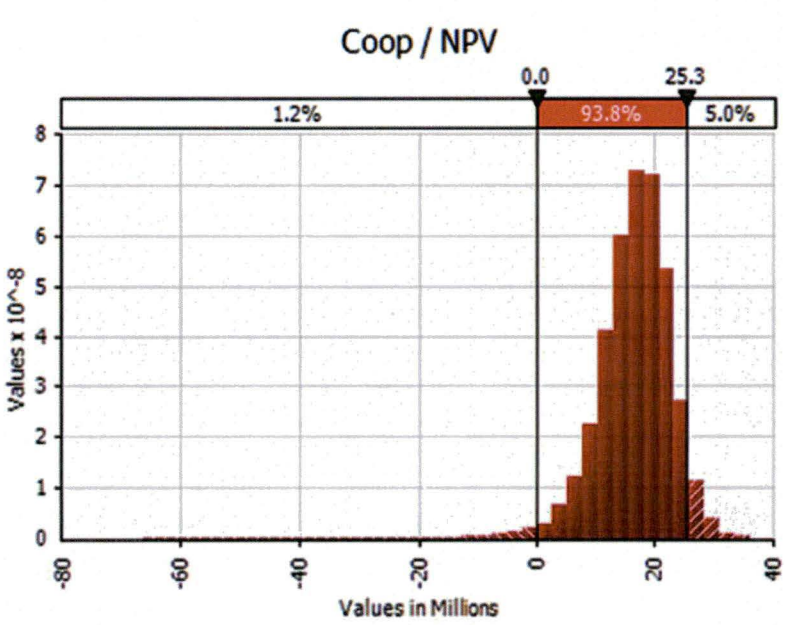
The model was run which represented a cooperative firm, and for a corporate firm. The reason for modeling both ownership types is the difference in tax treatment across ownership structures. Three cases were simulated. The first assumed a cooperative elevator with managed freight as part of its operations, so freight was assumed to be limited in variability (co-op-fixed). In this case the elevator has covered its freight and for this reason, freight values were not at risk. The second was for a corporate elevator which was also assumed to manage freight operations, so freight was, again, considered to be limited in variability (corporate-fixed). The third assumed a cooperative elevator where freight was not covered and had to be procured for all shipments in the secondary market (co-op-risky).

Results: The three models were simulated in an unstressed version where all distributions were assumed to be equal to the base case; then, the distribution for freight (DCV) in year 1 was stressed,[4] representing a year with adverse changes in freight costs. The results showed distributions for net present values (NPV) for the elevator operated over a 10 year time frame. Average NPVs were profitable for all three unstressed cases, showing little probability of negative NPVs during the 10 year horizon (Table 4).

[3] Volumes of corn and soybeans shipped from CRD5 are only reported in Vachal and Benson (Various) for the most recent year available, 2012/13. Volumes for state level shipments of corn, soybeans and wheat from 2006/07 to 2012/13 reveal large shifts from wheat toward corn and soybeans.

[4] The distribution in Year 1 for freight (DCV) was stressed by forcing the distribution to only allow the choice of values in the top 10% of the distribution, thus only allowing for high costs for freight.

The NPV was higher for the co-op than for the corporate elevator, largely due to different tax treatment. Variability of NPVs nearly doubled in size when freight was shifted from fixed (limited variability) to risky (reflecting the full purchase of freight in the secondary market). The probability of NPV being negative increased from .02% to 1.2% (Figure 13). While this result is not the probability of bankruptcy, it is the closest that can be approximated.



Statistics	
	Coop 2 / NPV
Cell	Input Value!H47
Minimum	-66,366,036.33
Maximum	36,024,967.50
Mean	16,669,082.88
Mode	19,101,206.29
Median	17,169,056.74
Std Dev	6,092,478.96
Skewness	-1.4656
Kurtosis	13.4280
Values	10000
Errors	0
Filtered	0
Left X	0.00
Left P	1.2%
Right X	25,346,288.70
Right P	95.0%
Dif. X	25.346.288.70

Figure 13. Distribution for NPV for a Co-op with Risky Freight Costs.

The sensitivity of NPV to changes in the value of random inputs shows that the base unstressed co-op and corporate firms with fixed freight were similarly affected by randomness. Both cases were affected the most by margins for wheat, soybeans and corn, with margins in early years having the largest impact and then declining with time. For example, a 1 unit increase in wheat margins in year 1 would increase the NPV by .34 while a 1 unit increase in wheat margins in year 10 would only increase NPV by .20 (Table 4). The sensitivity of the co-op-risky case to input distributions showed a change, where freight costs (DCV) had the largest impact on NPV, followed by margins for wheat, soybeans and corn. Here, a 1 unit increase in freight costs, reduced the NPV by .33 in year 1 and by .19 in year 10. The effect of the crop margins on the co-op risky case also declined in impact from the freight fixed cases. Thus, a 1 unit increase in wheat margins in year 1 only increased the NPV by .20 while, in the fixed freight cases, it increased NPV by .34.

When we stress the cost for freight in year 1 (of the 10 year time horizon) to be in the top 10% of the distribution, it has limited impacts on NPV when freight is fixed. However, where freight is risky, the co-op's mean NPV drops by over $4 million; the standard deviation increases by $800,000; and the probability of a negative NPV goes from 1.2% to 3.7%. Thus, one bad

year with uncovered freight in the top 10% of the secondary market costs can dramatically impact the financial performance of an elevator.

We also stressed margins so that the distributions for corn, soybeans and wheat were in the lower 25% of the distributions for each. This had limited impacts on the probability of a negative NPV occurring (Table 5). The average NPV declined by $1.9-$2.5 million, and the standard deviation of NPV declined by $104,000 to $237,000. Similarly, when we stressed margins in year 1 to the lowest 10% of the distributions for corn, soybeans and wheat, the average NPV declined by $2.5 million to $3.2 million. Standard deviations declined by $103,000 to $251,000. Restricting margins to the lower 10% of distributions did impact the probability of a negative NPV for the corporate and risky co-op cases. The non-risky corporate probability of a negative NPV increased from 0.4% to 3%, and the risky co-op increased from 1.2% to 2.3% (Table 6).

Table 4. Results for the Simulation Model, Unstressed and Freight Stressed, in Year 1 ($).

	Unstressed			Freight Stressed in Year 1		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Co-op-Risk
Mean	16,854,099	7,026,782	16,669,083	16,108,239	6,454,111	12,630,695
Std. Dev.	3,561,601	2,735,160	6,092,479	3,600,321	2,770,929	6,896,045
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	0.7%	3.7%
Tornado Graph: Range of Regression Coefficients for the Sensitivity of Results to Random Input Draws from Year 1-Year 10						
Most Important	Wheat Margin .34-.20	Wheat Margin .34-.20	DCV -.33 to -.19			
	Soybean Margin .13-.08	Soybean Margin .13-.08	Wheat Margin .20-.12			
	Corn Margin .11-.07	Corn Margin .11-.07	Soybean Margin .08-.05			
	DCV -.10 to -.06	DCV -.10 to -.06	Corn Margin .07-.04			
Least Important	Volume Handled .06-.04	Volume Handled .06-.04	Volume Handled .04-.02			

Table 5. Results for the Simulation Model, Unstressed and Margins Stressed, in Year 1 to Lower 25% of Distribution ($)						
	Unstressed			Margins Stressed in Year 1 to Lower 25%		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Co-op-Risk
Mean	16,854,099	7,026,782	16,669,083	14,3424,90	5,103,322	14,145,889
Std. Dev.	3,561,601	2,735,160	6,092,479	3,324,397	2,554,617	5,988,536
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	1.8%	1.9%

Table 6. Results for the Simulation Model, Unstressed and Margins Stressed, in Year 1 to Lower 10% of distribution ($)						
	Unstressed			Margins Stressed in Year 1 to Lower 10%		
	Co-op-Fixed	Corp-Fixed	Co-op-Risk	Co-op-Fixed	Corp-Fixed	Coop-Risk
Mean	16,854,099	7,026,782	16,669,083	13,655,270	4,576,788	13,451,800
Std. Dev.	3,561,601	2,735,160	6,092,479	3,310,809	2,544,649	5,989,334
Prob NPV Negative	0.02%	0.4%	1.2%	0.03%	3.00%	2.30%

Conclusions and Recommendations

Grain and oilseed growers confront numerous risks. One of the uncertainties relates to the risk that buyers may become insolvent, ultimately resulting in losses for the grower. Most states, including North Dakota, have mechanisms that partially protect against these losses. However, the grain market has changed drastically, giving rise to increased risks. These mechanisms serve to protect grain sellers against default by the grain buyer. These mechanisms include requiring buyers and storage facilities to be licensed and to have bond coverage. The purpose of this report is to document risks to growers and the mechanisms used to mitigate the risks related to buyer default.

***Risks confronting growers*:** Growers confront a number of risks when selling grains and oilseeds. First, growers are becoming larger operators. The average farm size increased from 1,387 acres in 1991 to around 2,000 acres from 2007 forward. The mix of crops planted has shifted toward higher production of corn, soybeans, canola and durum wheat and away from barley, sunflowers, spring wheat and winter wheat. Along with recent increases in price levels and volatility for most agricultural commodities, the combination of these changes has resulted in the value of gross receipts for an average farmer increasing dramatically and being subject to

higher variability. Estimated gross receipts per farm grew from about $100,000 in 1991 to $803,351 in 2012.

The grain elevator industry is also experiencing trends toward consolidation and concentration into larger shuttle loading facilities with higher volumes handled. Notably, the elevator industry in North Dakota is larger in capacity and volumes handled, and the volumes handled are becoming more concentrated at large shuttle facilities.

Mechanisms in North Dakota: Mechanisms exist in North Dakota (and in most states) to protect growers against buyer default. The purpose of these mechanisms is to protect grain sellers against default by the grain buyer. North Dakota has two basic programs to deal with buyer defaults. The first program includes a licensing and bonding program for grain warehouses and for grain buyers. These mechanisms require warehouses and grain buyers to be licensed and to submit a bond which is dependent on the rated storage capacity of the warehouse and on the 3 year average sales volume for grain buyers. The second program is the North Dakota grain insurance fund which provides coverage for credit sales (which are not covered by the grain buyer's bond). The North Dakota grain insurance fund, or credit-sale indemnity fund, was established in 2003 to cover credit sales deferred for more than 30 days.

The North Dakota Indemnity fund has a maximum farmer payout. The farmer's payout limit is more limiting now than in 2003 when the Indemnity fund was created. The average claims paid from the indemnity fund per insolvency suggest that this issue has not been a big issue yet, although it has impacted claims for one of the recent insolvencies. The size of claims per insolvency on the Indemnity fund has increased, with the largest claims being the most recent ones. The balance for the Indemnity fund is currently around $4.5 million, but the balance could drop to around $3.6 million or lower depending on outcomes from the unresolved insolvencies.

When comparing programs in other states, most states either have an indemnity fund or warehouse/grain buyer bonding. States that focus on corn and soybeans tend to have indemnity funds while more traditional wheat producing states tend toward bonding programs. Only two states do both (North Dakota and Oklahoma).

Most other states with bond funds apply the bond to a proportion of the value of grain handled (value * volume) over the last three years. North Dakota calculates the bond value based on storage capacity. Discussions about changing North Dakota's bond schedule have included moving to a 3 year average based on either the volume or value of grain handled.

Changes for bond funds have also included handling dry bean facilities/buyers and processors differently than other grain handlers. Colorado and Wyoming apply higher bonding requirements for dry bean facilities than other grain handlers. In Colorado, there is about a

threefold increase in the bonding level required for a dry bean facility than a similar sized facility that handles other grains. Processors, primarily ethanol producers in North Dakota, can have much higher turnover rates than country elevators, suggesting that there might be a higher risk for a given storage level for a processor than for a country elevator.

***Mechanisms in other states that do not exist in North Dakota*:** Most other states base bonding requirements on a proportion of the average value of grains handled in the last 3 years. Several other states also require a bond on net worth to cover shortfalls below 25%. South Dakota appears more proactive in this area, requiring within year reporting for financial conditions and imposing legal requirements on elevators to report net worth issues within the year. Many states with bonding programs also require an additional bond to make up shortfalls in net worth below a minimum (usually 25%).

Ohio modified its indemnity program in 2013 and made farmers first in line for bankruptcies. This change is being watched by Ohio and other states because it may have adverse impacts on elevator borrowing.

Risks confronting elevators in North Dakota: A couple of results are shown to depict the risks of elevator failure. One of these is from existing studies, and the other one is a model we developed to illustrate these risks in North Dakota.

The RMA publishes annual studies, by industry, on the probability of bankruptcy (RMA, 2014). Projections for the probabilities of 1 and 5 year bankruptcies were estimated for the wholesale grain and field bean wholesalers in the U.S. These indicated the distribution of 1 year default probabilities was generally less than 1% for 2003/04 to 2012/13, except for the 3 years from 2007/08 to 2009/10. In 2008/09, 25% of the 1 year default probabilities would be lower than 1.75%; 25% would be between 1.76 and 3.75%; 25% would be from 3.75 to 7.36%; and 25% would be over 7.36%. Five year estimated default rates show the same pattern, with most years from 2003/04 to 2012/13 below 8%. The distribution for 5 year defaults in 2008/09 being 25% would be less than 7%, 25% from 7% to 11%, 25% from 11% to 20% and 25% above 20%.

We also developed a model to quantify and illustrate the prospective risks of failure for a representative grain merchandiser (co-op and corporate) in North Dakota. The model was used to illustrate the effect of risk and stresses on profitability. The model analyzed the impacts of overall risks on profitability as well as the impact of the recent rise in secondary freight costs on grain elevators. The base case suggested that the probability of negative NPV's was in the area of .02% to 1.2%. Stressing the parameters for freight costs reduced the mean NPV by over $4 million; the standard deviation increased by 800,000; and the probability of a negative NPV went from 1.2% to 3.7%. Thus, one bad year with uncovered freight in the top 10% of the secondary market costs at the beginning of a 10-year time horizon can dramatically impact financial

performance of an elevator. These results showed that freight management can have a significant impact on elevator profitability.

Recommendations for further review and/or analysis: The purpose of this study was to identify the changes in relevant risks that confront grain and oilseed producers in North Dakota and to assess the adequacy of mechanisms designed to mitigate these risks. The intent was not to prescribe specific changes but, rather, to identify those areas worthy of consideration for legislative changes to assure protections for growers. It appears that the most important considerations for North Dakota include:

1) Increasing the maximum payment from the indemnity fund. Currently, the fund pays 80% of the claims, up to a maximum of $280,000 per producer.

   Given the increase in producer size, production and market volatility, this value is probably inadequate. Indeed, given current market parameters, the maximum would have to increase to provide equivalent coverage as originally intended by this mechanism.

2) There are several recent insolvencies that could potentially lower the Indemnity fund balance to near $3.6 million, which is much less than earlier minimum levels at which assessments would be re-imposed.

3) Re-evaluating the structure of the mechanisms. Alternatives include considering
   - Value of the commodity. Currently, the mechanisms in North Dakota are based on storage capacity (or sales).
   - Whether to use indemnity funds or bonding, or to use both. Currently, North Dakota is one of the few states that uses both methods.
   - Adding net worth requirements. Typically, minimum net worth requirements are imposed and an additional bond is required to make up the difference for shortfalls.
   - The relationships between claims and indemnity fund min/max suggest that, if average payouts for claims increase, then minimums and maximums for the indemnity fund would likely need to increase to be consistent with other states.

4) Dry beans: This crop has greater risks than other crops. Other states' bonding requirements for dry beans are much greater than those in North Dakota.

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Appendix

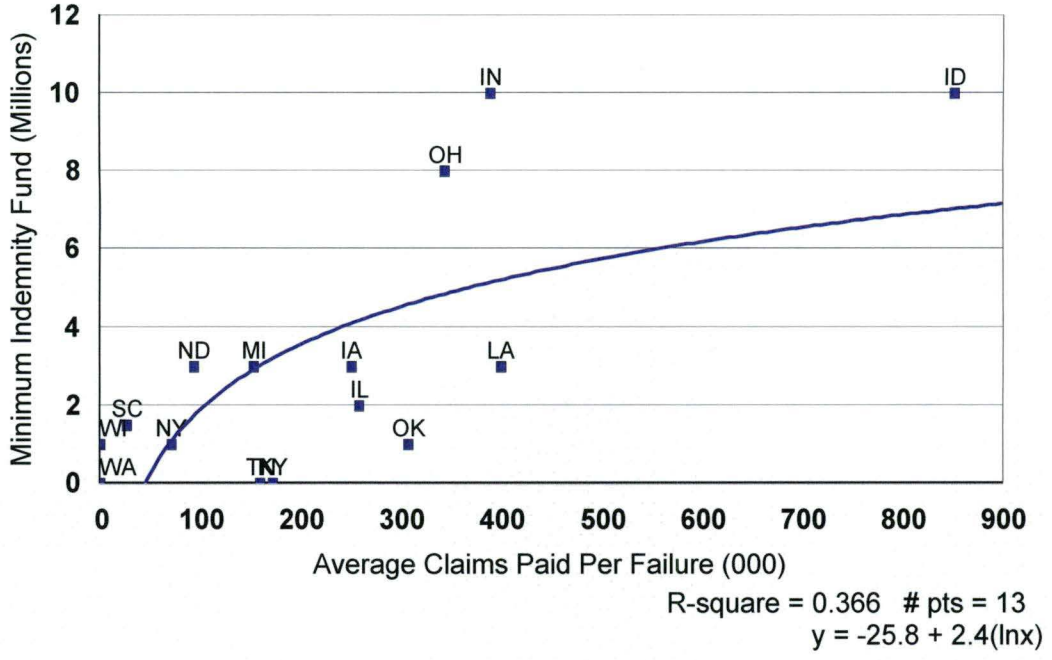

Figure A1. Relationship Between Average Claims Paid per Failure and Minimum Indemnity Fund.

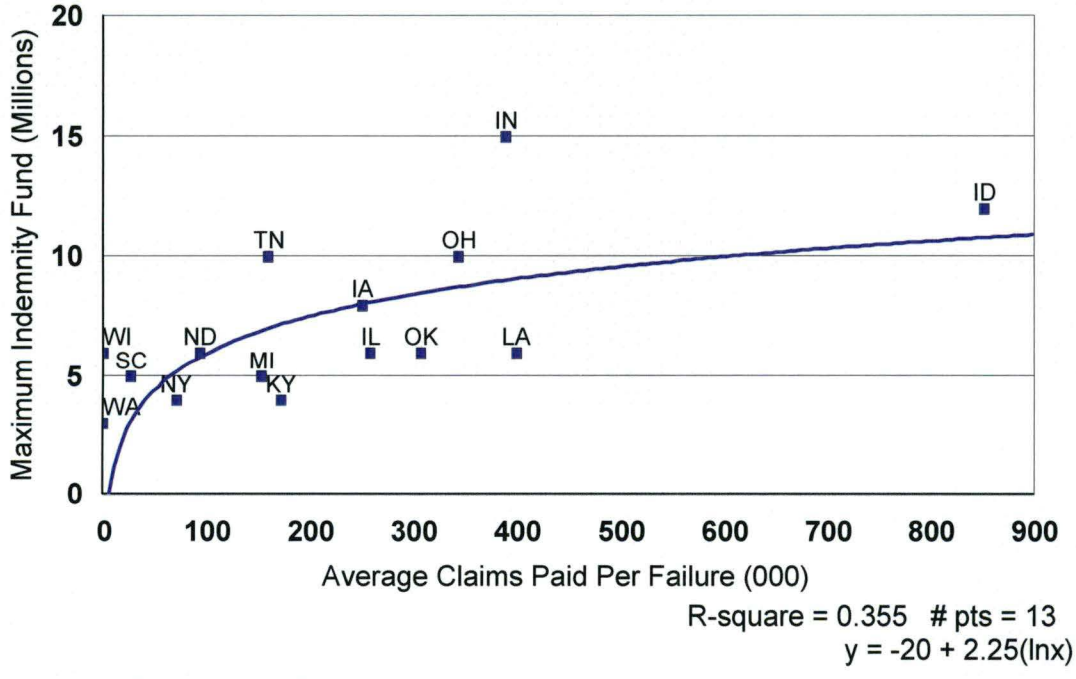

Figure A2. Relationship Between Average Claims Paid per Failure and Maximum Indemnity Fund.

Appendix Table B1. NORTH DAKOTA PUBLIC SERVICE COMMISSION
Grain Warehouse/Grain Buyer Insolvencies – 2007 through Current
Updated February 2013 – Page 1

Licensee Location(s) License Type Case Filed Case Closed	Total Claims Filed	Valid Cash Claims Filed	Valid CSC I-Fund Claims Filed	Invalid Claims Filed	Grain Proceeds	Bond on File & Bond Proceeds Used	Interest Earned on Trust Account	Valid Cash Claim Payments (% Payment)	Interest Paid To Cash Claimants [5]	CSC I-Fund Claim Payments (80%)	Total Claims Paid & Expenses Reimbursed [6]
Minnesota Grain, Inc., Rhame, ND (GW) March 2007 February 2009	$930,365.67	$323,117.58	$137,893.69	$467,920.69	$0	$100,000 Entire Bond	$1,429.19	$101,429.19 31%		$110,314.95	$211,744.14
Specialty Export Productions, Inc., Hatton & East Fairview, ND (GW) August 2007 September 2008	$190,485.55	$188,019.22	$0	$2,466.33	$61,463.92	$200,000 $142,243.17	$450.69	$195,991.24 100%		$0	$195,991.24 $8,166.54
Northwood Mills, LLLP, Northwood, ND (GW) January 2009 October 2009	$880,009.90	$880,009.90 11 Claims	$0	$19,477.95	$0	$50,000 $50,000	$129.05	$50,129.05 5.8%	$0	$0	$50,129.05 $0
Sustainable Systems, LLC dba Montola, Culbertson, MT (RGB) March 2009 December 2009	$617,663.45 19 Claims	$561,629.40 19 Claims	$0	$54,095.83	$0	$130,000 $130,000	$241.66	$130,241.66 77% + 23% [7]	$241.66	$0	$130,241.66 $1,307.11 [8]
VeraSun Hankinson, LLC, Hankinson, ND (GW) March 2009 September 2011	$132,784.85	$132,784.85 2 Claims	$0	$0	$0	$380,000 $3,908.83 [9]	$0	N/A	N/A	$0	N/A $3,908.83

GW – Grain Warehouse RGB – Roving Grain Buyer CSC – I Fund – Credit-Sale Contract Indemnity Fund (provides maximum payment of 80% not to exceed $280,000 for each insolvency)

[5] If funds are available, cash claimants can be paid interest at the weighted average prime rate charged by the Bank of North Dakota since the date of insolvency.
[6] The statute provides for the reimbursement of expenses incurred by the Commission in the administration of the insolvency.
[7] The Montana Dept. of Agriculture liquidated available assets. ND claimants received 77% of each valid claim from the Montana liquidation proceeds, 23% from ND trust fund proceeds, and a proportionate share of interest earned on the ND trust fund.
[8] The Montana Dept. of Agriculture reimbursed the Commission for the insolvency expenses incurred.
[9] Two claims were filed and eventually withdrawn by the claimants. The Commission was reimbursed for its insolvency expenses from the bond proceeds.

Appendix Table B1. (continued) NORTH DAKOTA PUBLIC SERVICE COMMISSION
Grain Warehouse/Grain Buyer Insolvencies – 2007 through Current
Updated February 2013 – Page 2

Licensee Location(s) License Type Case Filed Case Closed	Total Claims Filed	Valid Cash Claims Filed	Valid CSC I-Fund Claims Filed	Invalid Claims Filed	Grain Proceeds	Bond on File & Bond Proceeds Used	Interest Earned on Trust Account	Valid Cash Claim Payments (% Payment)	Interest Paid To Cash Claimants	CSC I-Fund Claim Payments (80%)	Total Claims Paid & Expenses Reimbursed
Organic Grain & Milling, Inc., Clyde, ND (GW) June 2010 September 2011	$193,467.24	$17,276.88 1 Claim	$160,829.65 4 Claims	$8,276.62 1 Claim	$28,148.74 [10]	$62,500 $0	$41.43	$17,276.88 100%	$531.05	$128,663.72	$147,607.24 $1,135.60
Grabanski Grain, LLC, Grafton, ND (GW) July 2010 May 2013	$848,296.08	$184,964.03 7 Claims	$409,002.41 7 Claims	$266,329.68	0	$340,000 $201,376.20		$184,964.03 100% + interest	$12,984.47	$327,201.92 + ½ expenses = ($330,629.62)	$532,005.82 $6,855.40 [11]
Mitchell Feeds, Inc., Fargo, ND (RGB) February 2011						$70,000 bond on file					
Anderson Seed Co., Inc., Durbin & Selz, ND (GW) February 2012	$4.1 Million [11]	2.233 Million	$809,000			$280,000 bond on file					
Falkirk Farmers Elevator Co, Falkirk, ND (GW) October 2012	$2 Million [11]	1.7 Million	$279,000 7 Claims	1 Claim		$380,000 bond on file					
Earth Harvest Mills, Inc., Harvey, ND (GW) February 2013	$4.3 Million [11]	$81,000 7 Claims	2.4 Million 18 Claims			$50,000 bond on file				$948,952.69 [10]	

[10] The unused proceeds, totaling $9,246.64, were returned to Organic Grain & Milling, Inc.
[11] Insolvency expenses totaled $6,855.40 with ½ paid from the trust fund and ½ paid from the CSC I-Fund.
[10]. Two claimants in the Earth Harvest Mills, Inc. insolvency exceeded the $280,000 Indemnity Fund Cap.
[11] Additional claims information was added for Anderson Seed, Falkirk Farmers Elevator and Earth Harvest Mills (ND PSC 2013a, 2013b, 2014).

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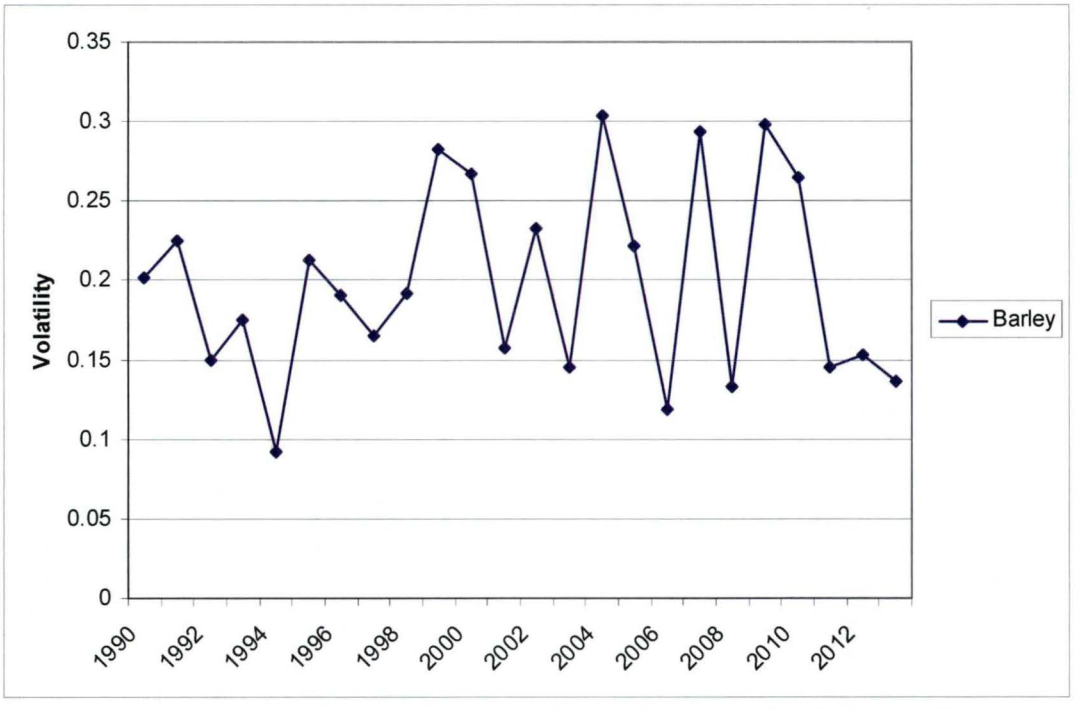
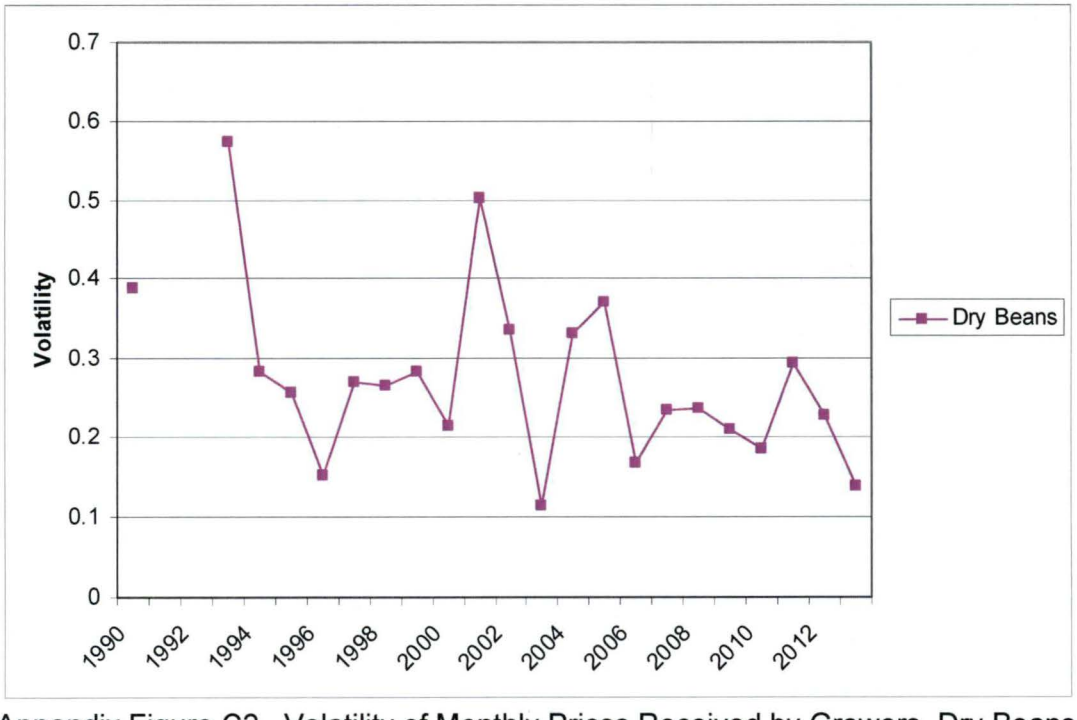
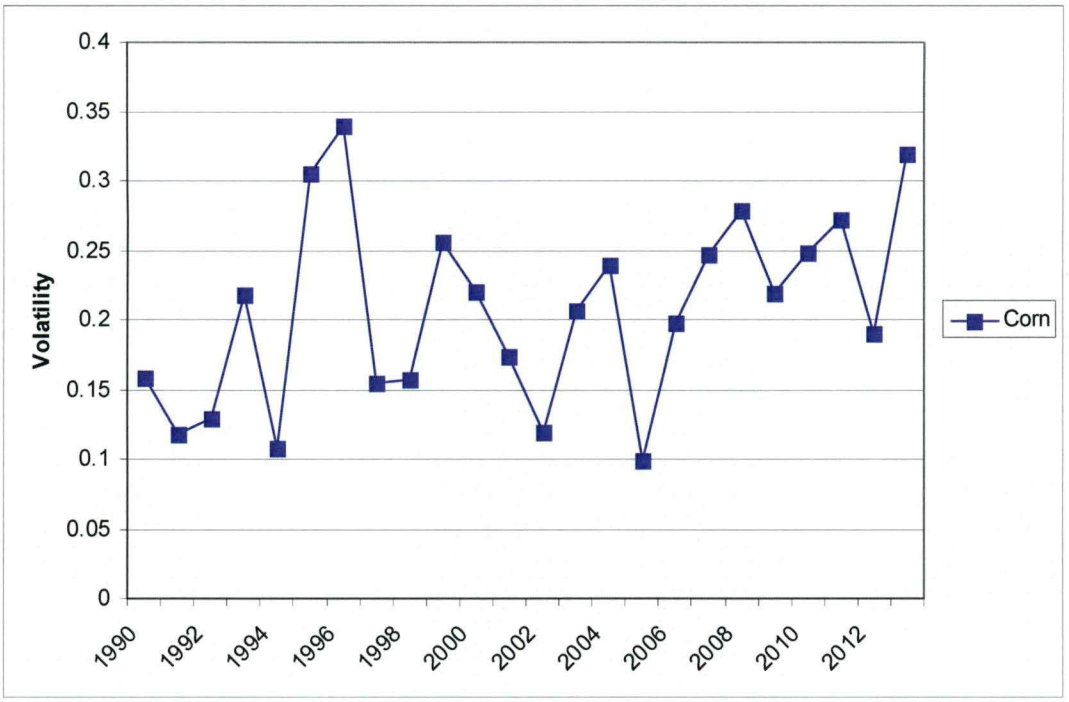
Appendix C. Volatility of Monthly Prices by Crop



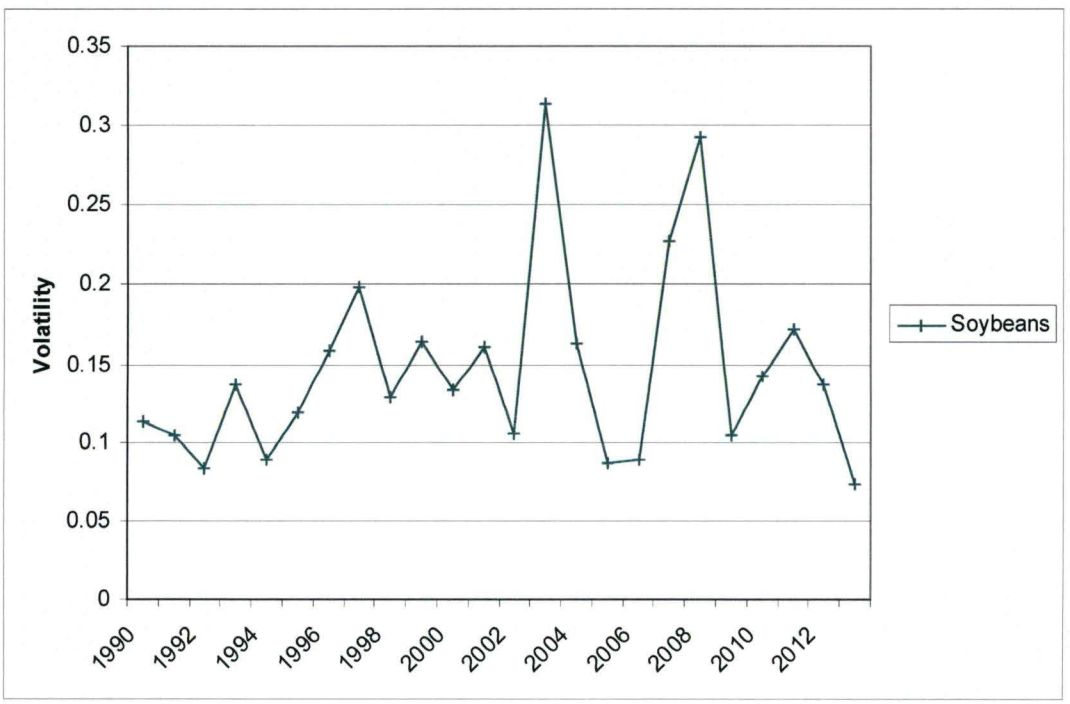
Appendix Figure C1. Volatility of Monthly Prices Received by Growers, Barley, North Dakota, 1990-2013.



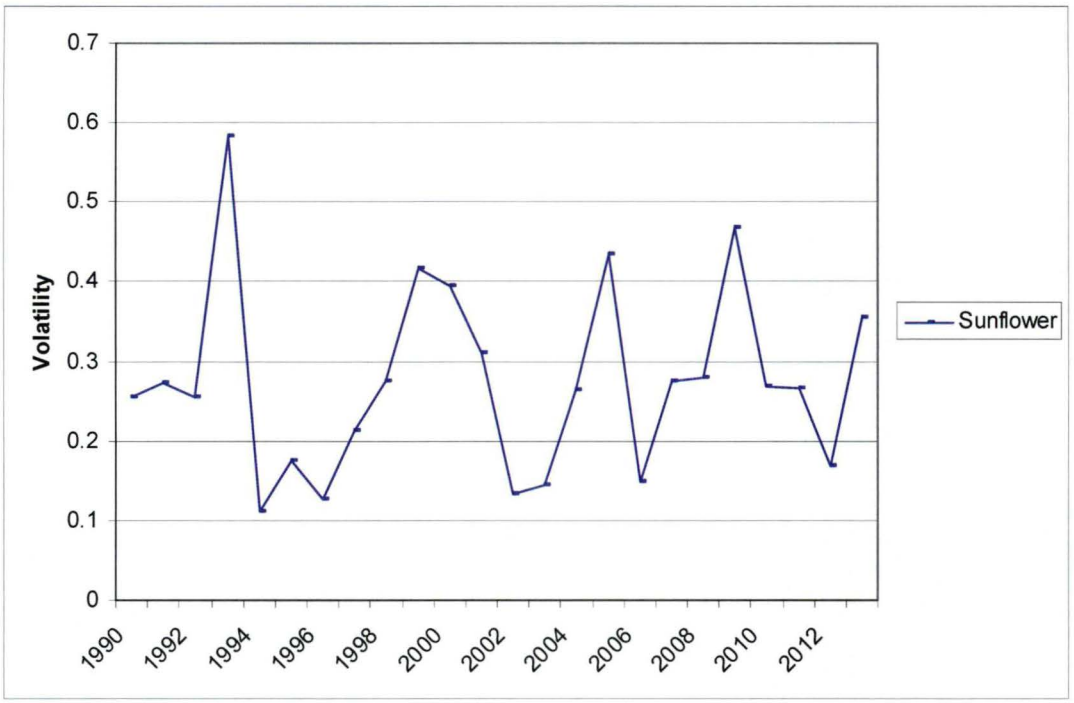
Appendix Figure C2. Volatility of Monthly Prices Received by Growers, Dry Beans, North Dakota, 1990-2013.



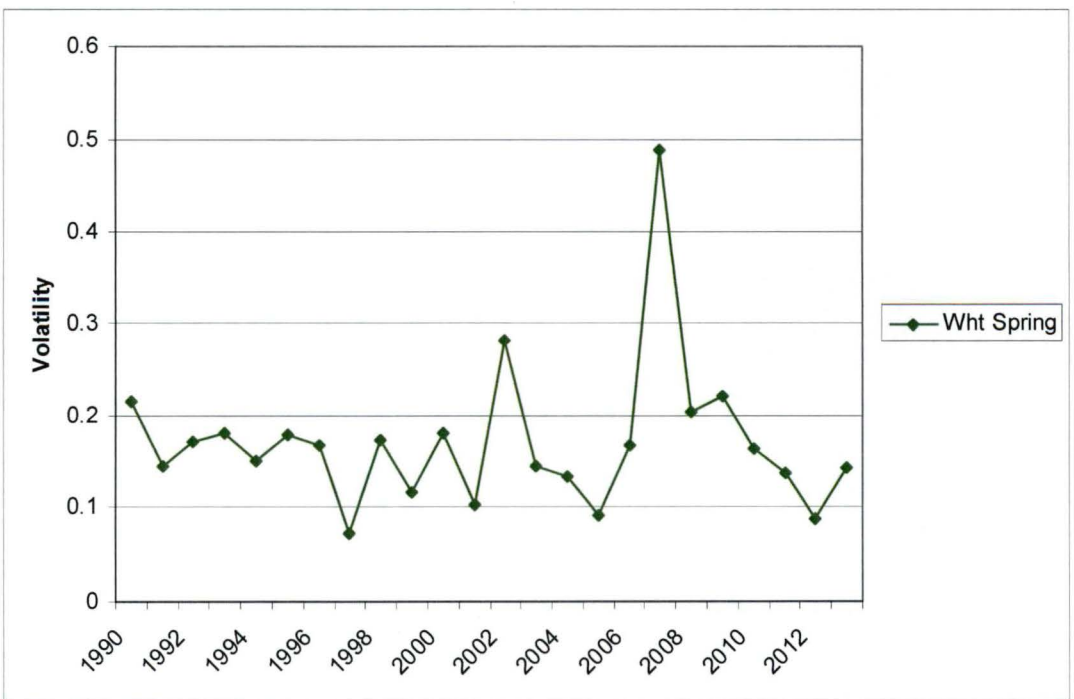
Appendix Figure C3. Volatility of Monthly Prices Received by Growers, Corn, North Dakota, 1990-2013.



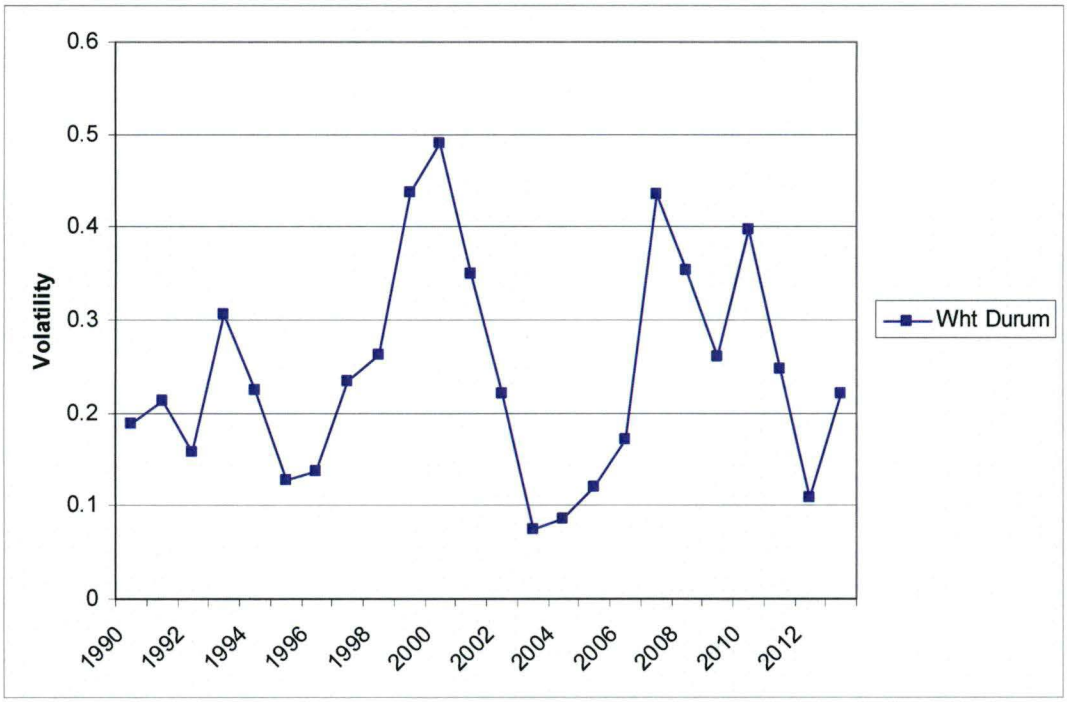
Appendix Figure C4. Volatility of Monthly Prices Received by Growers, Soybeans, North Dakota, 1990-2013.



Appendix Figure C5. Volatility of Monthly Prices Received by Growers, Sunflowers, North Dakota, 1990-2013.



Appendix Figure C6. Volatility of Monthly Prices Received by Growers, Hard Red Spring Wheat, North Dakota, 1990-2013.



Appendix Figure C7. Volatility of Monthly Prices Received by Growers, Durum Wheat, North Dakota, 1990-2013.

Appendix D. Simulation Model Description and Assumptions

A stochastic simulation model for a grain merchandiser (co-op and corporate) was modeled to illustrate the effect of certain stresses on profitability. A stochastic simulation model from McKee, Wilson and Dahl (forthcoming) was adapted for a co-op and corporate structure representative of a North Dakota firm. This model simulated profitability of a North Dakota cooperative or corporate firm where distributions for volume handled and gross margins were random.

Volumes handled for corn, soybeans and wheat were defined as representative of a North Dakota shuttle elevator handling 17 million bushels per year, on average, but ranging from 15.3 to 18.7 million bushels per year. Volumes per crop were estimated as the proportion of grain handled by elevators in Crop Reporting District 5 (CRD5) for corn (48%), soybeans (34%) and wheat (19%), respectively, and were estimated from Vachal and Benson (2013) for 2012/13.[12] Distributions for the gross margins were determined based on industry contacts.

Appendix Table D1. Parameters for Gross Margin Distributions for a Representative North Dakota Elevator.

	Minimum	Most Likely	Maximum
Corn	$0.10	$0.25	$0.40
Soybeans	$0.12	$0.30	$0.60
Wheat	$-0.20	$0.35	$2.00

Rail costs (tariff and fuel service charges) were assumed to be contained in the gross margin calculations. However, shuttle premiums were modeled based on the secondary car markets for daily car values (DCV). These DCVs were either added to the gross margins, if DCVs were negative, or subtracted from gross margins, if DCVs were positive, implying a high cost for shuttle rail freight. Distributions for DCVs were estimated from Tradewest Brokerage Co. (Various) from 2006 to 2014. Primary car values were obtained from BNSF (2014), and distributions were estimated from 2006 to 2014.

The model was run representing both a cooperative firm, and a corporate firm. Three cases were simulated. The first assumed that a cooperative elevator managed freight as part of its operations, so freight was assumed to be limited in variability (co-op-fixed). The second represented a corporate elevator that also was assumed to manage freight operations, so freight was limited in variability (corporate-fixed). The third assumed a cooperative elevator where freight was not covered and had to be procured for all shipments in the secondary market (co-op-risky). Freight was assumed to be from loglogistic distributions for all three models. However,

[12] Volumes of corn and soybeans shipped from CRD5 are only reported in Vachal and Benson (Various) for the most recent year available, 2012/13. Volumes for state level shipments of corn, soybeans and wheat since 2006/07 2012/13 reveal large shifts in shipments from wheat toward corn and soybeans.

for the co-op-fixed and corporate fixed models, distributions had means of .01 c/bu. and a standard deviation of .026 c/bu. The third case, co-op-risky, had a mean of .01 c/bu. and a standard deviation of .14 c/bu. This result was derived utilizing fitting weekly observations for secondary market values for freight from 2006 to 2014 (Tradewest Brokerage Co., Various).

The models were simulated 10,000 times, at which time results converged to within stopping criteria. Then, year 1 distributions for freight were stressed, assuming that values were in the top 90% of the assumed distributions.