Examining Share Lease Arrangements for Grain Operations in the Texas Panhandle under Changing Market Conditions

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This paper examines the profit maximizing share arrangement for both landlords and tenants producing grain in the Texas High Plains (based on risk preference), and determines whether the results are affected by input costs and market prices. Results of the analyses show that tenants and landlords prefer different arrangements in all scenarios. Results also indicate that a tenant would prefer a different lease arrangement in 2008 than in 2005, while the landlord's preference would remain unchanged.

Introduction

Rental arrangements are an important component of agricultural land tenure in Texas as they are in much of the United States. The Texas High Plains region (NASS District 1) produces the vast majority of Texas grain. Crop share and other lease arrangements are a typical practice in this area. The most recent Census of Agriculture (2002) indicates that of the 130 million acres of Texas farmland, farm owners operate 42%. Approximately 36 million acres are operated by part owners and 18 million acres are operated by tenants. Leasing of agricultural land is especially common in states with a high number of commercial operators, where crop receipts make up a significant portion of farm income, and/or where land is highly valued (Moss and Erven, Dillon et al).

Historically, the most common type of lease arrangement between landlords and tenants in the Texas High Plains has been a crop share agreement. A crop share lease is characterized by the landowner and operator both sharing in the cost of growing the crop. In return, crop receipts (including government payments) are shared by the landlord and tenant based on pre-determined percentages. The basic premise of this agreement is for each party to receive income from the crop in the same proportion that expenses are shared. In contrast to a cash lease, a crop share lease places the owner at higher risk for price and production volatility. Both the owner and operator share the risk of yields and/or prices being lower than expected. On the other hand, by sharing crop receipts and expenses, the farm operator is giving up a higher profit potential during good years (Pflueger).

Most crop share leases are based upon what is customary for the area. They can vary greatly throughout the country and even within a single region. For example, more than 75% of leases in Ohio are a 50% crop share (Breece and Forster). In most cases, landowners and tenants try to negotiate an arrangement that is fair and equitable to both parties. According to Langemeier, a good share lease

should follow five basic principles: (1) yield increasing inputs should be shared; (2) share arrangements should be adjusted as technology changes; (3) total returns should be divided in the same proportion as resources contributed; (4) long-term investments should be compensated when the lease is terminated; and (5) there must be good communication between landowner and tenant. Examples of yield increasing inputs are fertilizer, chemicals, irrigation and possibly hybrid seed.

Crop share agreements for grain in the Texas High Plains typically involve a 33% crop share. However, individual costs shared by the landlord and tenant differ between the Northern and Southern High Plains. In the Northern High Plains, the landlord typically pays 33% of ***fertilizer, chemicals, and irrigation costs***. In the Southern High Plains, the landlord typically pays 33% of ***fertilizer, insecticide and harvest costs***. According to regional Texas AgriLife Extension Economists, sharing irrigation expenses in the Northern High Plains has only become standard within the last five years. There is also a question of whether landlords should be sharing in seed cost, due to the prevalence of seed-enhancing technologies that result in increased yields. In some portions of the Texas High Plains, producers have switched to a straight share lease, where the landlord shares no costs and receives 20% of crop income.

This paper determines the profit maximizing share arrangement for both landlords and tenants producing grain in the Texas High Plains (based on risk preference). It also examines whether this optimal lease is affected by input costs and market prices. The analysis calculates Net Returns above Variable Costs for both the tenant and landlord in five alternative share arrangements currently being used or considered in the region. Results are determined at the whole farm level, assuming a crop mix of irrigated (pivot) corn, irrigated (pivot) wheat, dryland wheat and dryland sorghum under two scenarios. The first scenario assumes 75% of the acres are irrigated and 25% are dryland, while the second scenario assumes that 75% of the acres are dryland and 25% are irrigated. The analysis provides a side-by-side comparison of each scenario in two significantly different market environments: 2005 (lower cost and low price) and 2008 (record high costs and prices).

Data and Methods

The base analysis in this study is performed using Texas AgriLife Extension Services' *Financial And Risk Management Assistance (FARM Assistance)*. As described by Klose and Outlaw (2005), the FARM Assistance program is technically a 10-year pro forma financial analysis that incorporates the research methods of stochastic simulation. While FARM Assistance is a unique combination of methodology and application, it is preceded by many other simulation applications. Most directly, the experience with simulation and policy analysis in the Agricultural and Food Policy Center (AFPC) of the Texas A&M University System has contributed to the foundation of FARM Assistance. Richardson and Nixon (1981 and 1986) provide a description of the Farm Level Income and Policy Simulation (FLIPSIM) model used for policy analysis conducted in the AFPC.

Best described as a computerized decision support model, Financial and Risk Management (FARM) Assistance is a highly specialized Extension effort aimed at helping farmers and ranchers with strategic planning and risk management. The program uses both farm-level information supplied by participating producers as well as market price forecasts from the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri.

The FARM Assistance database was queried to extract yields, prices received, and input costs for all units of irrigated (pivot) corn, irrigated wheat, dryland wheat, and dryland sorghum reported by participants in Texas AgriLife Extension Districts 1 and 2 for 2005 and 2008, respectively. Extension District 1 includes the 22 most northern counties in the Texas Panhandle, and District 2 includes the 20 counties south of District 1. The data from Districts 1 and 2 was then aggregated, and weighted averages were determined for yields, prices, and input costs using planted acres. No overhead costs were included in this study.

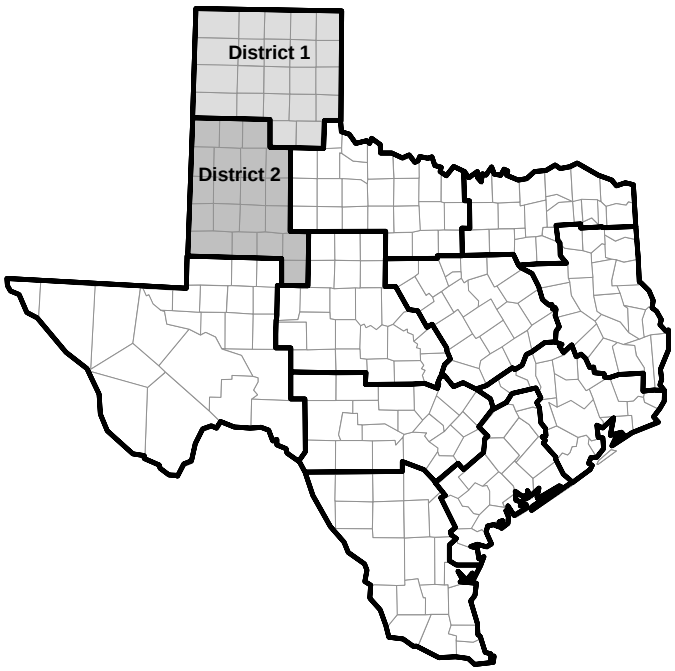

Table 1. Assumptions Used for Share Lease Analysis in Texas North Plains, 2005

	Corn (Irr)	Wheat (Irr)	Wheat (Dry)	Sorghum (Dry)
Variable				
# Observations	72	80	170	52
Expected Yield	204.5 bu	58.4 bu	23.1 bu	44.9 bu
Price Received	$ 2.63	$ 3.16	$ 3.16	$ 2.08
Variable Input Costs				
Seed	$ 41.01	$ 6.58	$ 2.68	$ 4.28
Fertilizer	$ 71.36	$ 24.77	$ 5.47	$ 9.52
Herbicide	$ 27.62	$ 5.80	$ 6.43	$ 13.21
Insecticide	$ 16.64	$ 1.19	$ 0.19	$ 1.29
Custom Application	$ 0.74	$ 0.26	$ 0.50	$ 0.14
Scouting	$ 3.81	$ 0.93	$ -	$ 0.54
Irrigation Fuel	$ 141.83	$ 43.16	$ -	$ -
Other Fuel	$ 2.90	$ 2.42	$ 0.79	$ -
Harvest Cost per Acre	$ 9.41	$ 6.93	$ 6.34	$ 3.26
Harvest Cost per Bushel	$ 0.05	$ 0.08	$ 0.07	$ 0.07
Custom Labor	$ 0.63	$ 0.40	$ 0.12	$ 1.02

Table 2. Assumptions Used for Share Lease Analysis in Texas North Plains, 2008

	Corn (Irr)	Wheat (Irr)	Wheat (Dry)	Sorghum (Dry)
Variable				
# Observations	39	39	45	12
Expected Yield	204.5 bu	58.4 bu	23.1 bu	44.9 bu
Price Received	$ 5.00	$ 9.00	$ 9.00	$ 4.45
Variable Input Costs				
Seed	$ 57.09	$ 14.12	$ 6.65	$ 7.15
Fertilizer	$ 118.08	$ 59.36	$ 17.85	$ 18.79
Herbicide	$ 29.89	$ 7.73	$ 10.66	$ 21.65
Insecticide	$ 10.90	$ 3.63	$ 0.25	$ 1.70
Custom Application	$ -	$ -	$ -	$ -
Scouting	$ 1.94	$ 4.35	$ -	$ 1.70
Irrigation Fuel	$ 181.93	$ 74.30	$ -	$ -
Other Fuel	$ -	$ -	$ -	$ -
Harvest Cost per Acre	$ 11.57	$ 5.33	$ 4.42	$ 4.24
Harvest Cost per Bushel	$ 0.01	$ 0.03	$ 0.04	$ 0.04
Custom Labor	$ -	$ -	$ -	$ -

**Note: The data contained within the FARM Assistance database is reported by participants and may be projected in some cases. The number of observations represents farm units reported by all producers, not individual producers or farms. The number of observations is lower for 2008 since this analysis was performed before all data was collected for the year.*

Five alternative lease arrangement scenarios were developed based on typical District 1 and District 2 arrangements. Several scenarios were also developed that represent potentially feasible arrangements not commonly utilized. Alternative 1 represents a typical District 1 arrangement: 1/3-2/3

crop share with landlord sharing fertilizer, herbicide, insecticide, and irrigation costs. Alternative 2 represents a typical arrangement in District 2:1/3-2/3 crop share with landlord sharing fertilizer, insecticide, and harvest costs. Alternative 3 represents an arrangement that some economists feel might be more practical given the nature of crop share agreements: 1/3-2/3 with landlord sharing ***seed***, fertilizer, herbicide and insecticide costs, but ***not irrigation***. As previously discussed, seed-enhancing technologies that result in increased yields have become standard in this area, and may need to be shared. Alternative 4 assumes that landlords agree to share in the cost of all items considered 'yield improving', including ***seed***, fertilizer, herbicide, insecticide, ***and irrigation***. Alternative 5 demonstrates a straight share arrangement that is becoming more popular in the Texas High Plains region. In this arrangement, the landlord shares none of the crop production costs and receives 20% of crop income.

Table 3. Description of Alternative Share Arrangement Scenarios Analyzed

Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Landlord Share %				
0.333	**0.333**	**0.333**	**0.333**	**0.20**
Input Costs Shared				
Fert	Fert	Seed	Seed	None
Herb	Insect	Fert	Fert	
Insect	Harv per Acre	Herb	Herb	
Irrigation	Harv per Bu	Insect	Insect	
			Irrigation	

Both scenarios were performed assuming one section (640 acres) of farmland. The first, or irrigated scenario assumed the section was primarily (75%) irrigated. The second, or dryland scenario, assumed the section was primarily (75%) dryland. Both irrigated and dryland scenarios were run in two different market environments, 2005 and 2008. According to FARM Assistance data, input costs for grain in the Texas Panhandle are 40-50% higher in 2008 than they were in 2005. Market prices during much of the growing season were up 100% or more, depending on the crop, in 2008 versus 2005. The final price received for 2008 was not yet determined at the time of this report. For purposes of this study, arbitrary prices representing the lower to mid-range of the futures market between January and August 2008 were used. Corn price was assumed to be $5.00, wheat price was assumed to be $9.00, and sorghum was assumed to be $4.45.

Table 4. Crops and Acres Used for Whole Farm Analysis

	Irrigated Scenario	Dryland Scenario
	Acres	
Irr Corn	240	80
Irr Wheat	240	80
Dry Wheat	80	240
Dry Sorghum	80	240
Total	**640**	**640**

The results of each simulation were then ranked using stochastic efficiency with respect to a function (SERF) and defined in terms of Pratt Risk Aversion Coefficients (RACs). A method of stochastic dominance with respect to a function (SDRF), SERF orders a set of risky alternatives in terms of certainty equivalents (CEs) for a specified range of attitudes to risk. Unlike conventional SDRF, SERF involves comparing each alternative with all the other alternatives simultaneously, not pairwise, and hence can produce a smaller efficient set than that found by simple pairwise SDRF over the same range of risk attitudes. (Hardaker et al) Based on Anderson and Hardaker's (1992) proposed definition of a normal RAC, the lower RAC was set at 0 (representing a risk neutral tenant or landlord) and the upper RAC at 0.0001 (representing an extremely risk averse tenant or landlord). As discussed by Anderson et al (1997), risk-averse behavior is common and aversion to risk is expected to decrease as wealth increase. The midpoint of these two RACs is considered to be "somewhat risk averse". The scenario with the highest CE within a range of RACs is the preferred scenario. CE is based on the negative exponential utility function with constant risk aversion. Freund (1956) defined CE for a risky scenario as "the amount of money a decision maker would pay for a risky investment over a no-risk investment", with indifference between scenarios when CE lines cross; this is also known as the "breakeven risk aversion coefficient" or BRAC.

Results

In the 2005 irrigated scenario, tenants preferred the crop share arrangement represented by Alternative 4 above all others regardless of risk aversion. The second most preferred option was Alternative 1, followed by Alternative 5, Alternative 3 and Alternative 2; this ranking remained constant across all RACs. The CE between Alternative 4 and Alternative 1 is $3,988.81 at all RACs. This is the amount of money that a tenant would require in order to be indifferent between Alternatives 1 and 4.

Table 5. Tenant Results Ranked Using SERF, Irrigated (2005)

Level of Preference	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
	Strategy	CE vs Alt 4	Strategy	CE vs Alt 4	Strategy	CE vs Alt 4
Most Preferred	**Alt 4**		**Alt 4**		**Alt 4**	
2nd Most Preferred	Alt 1	$ 3,988.81	Alt 1	$ 3,988.81	Alt 1	$ 3,988.81
3rd Most Preferred	Alt 5	$ 4,204.13	Alt 5	$ 5,713.37	Alt 5	$ 7,130.98
4th Most Preferred	Alt 3	$14,784.40	Alt 3	$ 14,784.40	Alt 3	$ 14,784.40
Least Preferred	Alt 2	$19,112.47	Alt 2	$ 19,159.30	Alt 2	$ 19,216.51

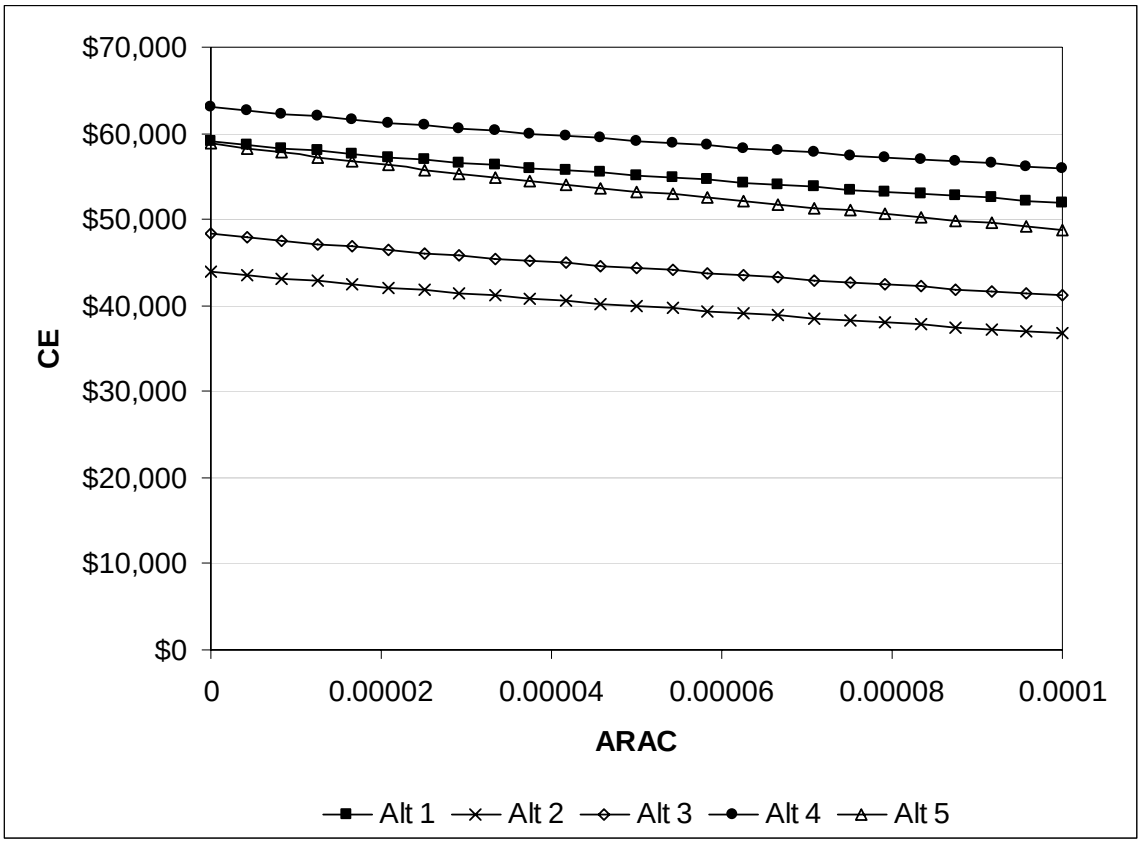

Figure 1. SERF Under a Negative Exponential Utility Function, Tenant, Irrigated (2005)

The landlord's preferred share arrangement under the 2005 irrigated scenario is Alternative 2 at all RACS; the second most preferred option is Alternative 3 with the CE between Alternative 2 and 3 increasing with risk aversion from $4,328 to $4,380.

As may be expected, the preferred alternatives of the landlord and tenant are not the same, and in most cases, completely opposite, which should necessitate some kind of compromise in order to ensure that the lease arrangement is fair and equitable to both parties.

Table 6. Landlord Results Ranked Using SERF, Irrigated (2005)

Level of Preference	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
	Strategy	CE vs Alt 2	Strategy	CE vs Alt 2	Strategy	CE vs Alt 2
Most Preferred	**Alt 2**		**Alt 2**		**Alt 2**	
2nd Most Preferred	Alt 3	$ 4,328.06	Alt 3	$ 4,352.47	Alt 3	$ 4,380.36
3rd Most Preferred	Alt 1	$ 15,123.66	Alt 5	$ 14,526.57	Alt 5	$ 13,934.60
4th Most Preferred	Alt 5	$ 15,148.52	Alt 1	$ 15,148.07	Alt 1	$ 15,175.95
Least Preferred	Alt 4	$ 19,112.46	Alt 4	$ 19,136.88	Alt 4	$ 19,164.76

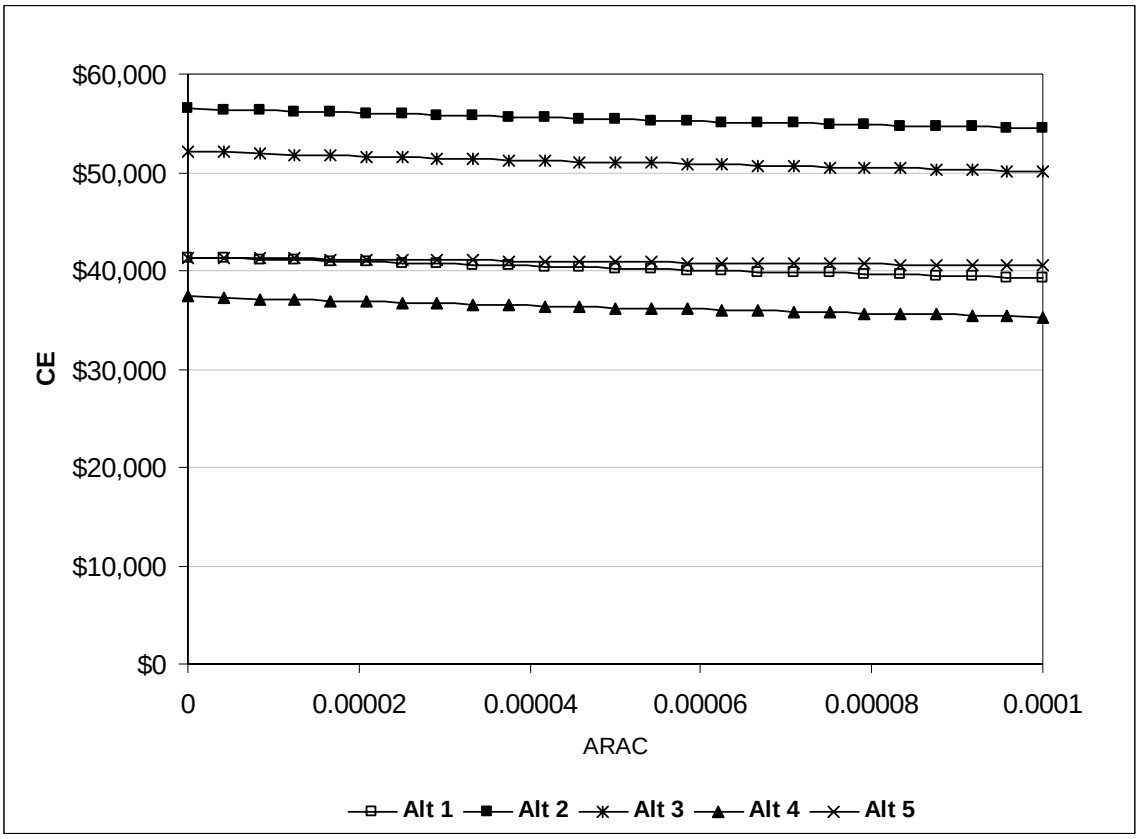

Figure 2. SERF Under a Negative Exponential Utility Function, Landlord, Irrigated (2005)

Interestingly, the 2005 dryland scenario results in the tenant choosing Alternative 5 over all others, if he/she is risk neutral, but reverting back to Alternative 4 with higher levels of risk aversion. Alternative 4 is the second most preferred option for a risk neutral tenant, while Alternative 5 is the second most preferred for a slightly risk averse and Alternative 1 is second for an extremely risk averse tenant.

Table 7. Tenant Results Ranked Using SERF, Dryland (2005)

Level of Preference	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
	Rank	CE vs Alt 5	Rank	CE vs Alt 4	Rank	CE vs Alt 4
Most Preferred	**Alt 5**		**Alt 4**		**Alt 4**	
2nd Most Preferred	Alt 4	$ 1,108.27	Alt 5	$ 877.54	Alt 1	$ 1,824.04
3rd Most Preferred	Alt 1	$ 2,932.31	Alt 1	$ 1,824.04	Alt 5	$ 1,891.19
4th Most Preferred	Alt 3	$ 6,036.41	Alt 3	$ 4,928.14	Alt 3	$ 4,928.14
Least Preferred	Alt 2	$ 8,352.31	Alt 2	$ 7,371.77	Alt 2	$ 7,452.76

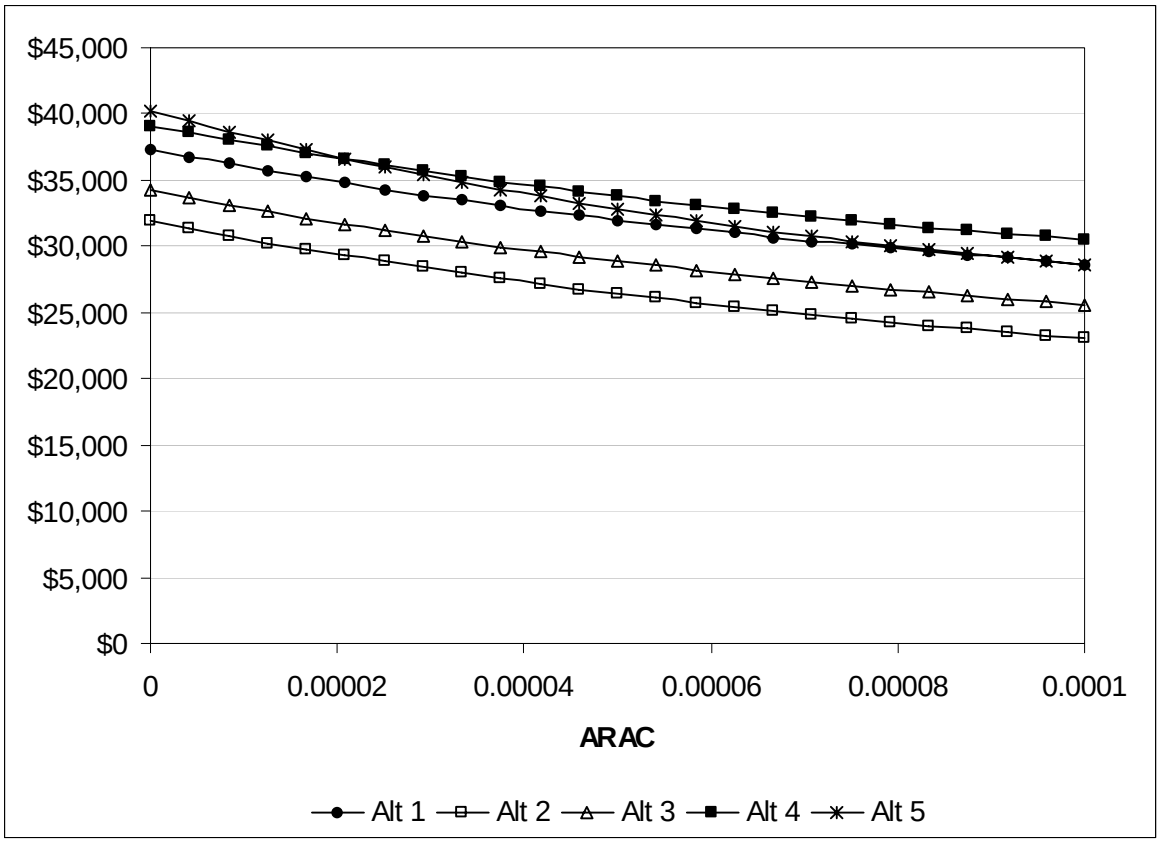

Figure 3. SERF Under a Negative Exponential Utility Function, Tenant, Dryland (2005)

The landlord in the 2005 dryland scenario prefers Alternative 3 if he/she is risk neutral or slightly risk averse, but Alternative 2 if extremely risk averse. In both the risk neutral and somewhat risk averse scenarios, the second most preferred option is Alternative 3, but the CE decreases substantially between Alternative 3 and Alternative 2 as risk aversion increases.

Table 8. Landlord Results Ranked Using SERF, Dryland (2005)

Level of Preference	Risk Neutral Rank	Risk Neutral CE vs Alt 3	Slightly Risk Averse Rank	Slightly Risk Averse CE vs Alt 3	Extremely Risk Averse Rank	Extremely Risk Averse CE vs Alt 2
Most Preferred	**Alt 3**		**Alt 3**		**Alt 2**	
2nd Most Preferred	Alt 2	$ 3,609.69	Alt 2	$ 48.62	Alt 3	$ 2,302.41
3rd Most Preferred	Alt 1	$ 9,029.69	Alt 1	$ 5,541.70	Alt 1	$ 5,559.11
4th Most Preferred	Alt 4	$ 10,853.73	Alt 4	$ 7,365.74	Alt 5	$ 6,840.49
Least Preferred	Alt 5	$ 12,043.50	Alt 5	$ 7,631.50	Alt 4	$ 7,383.16

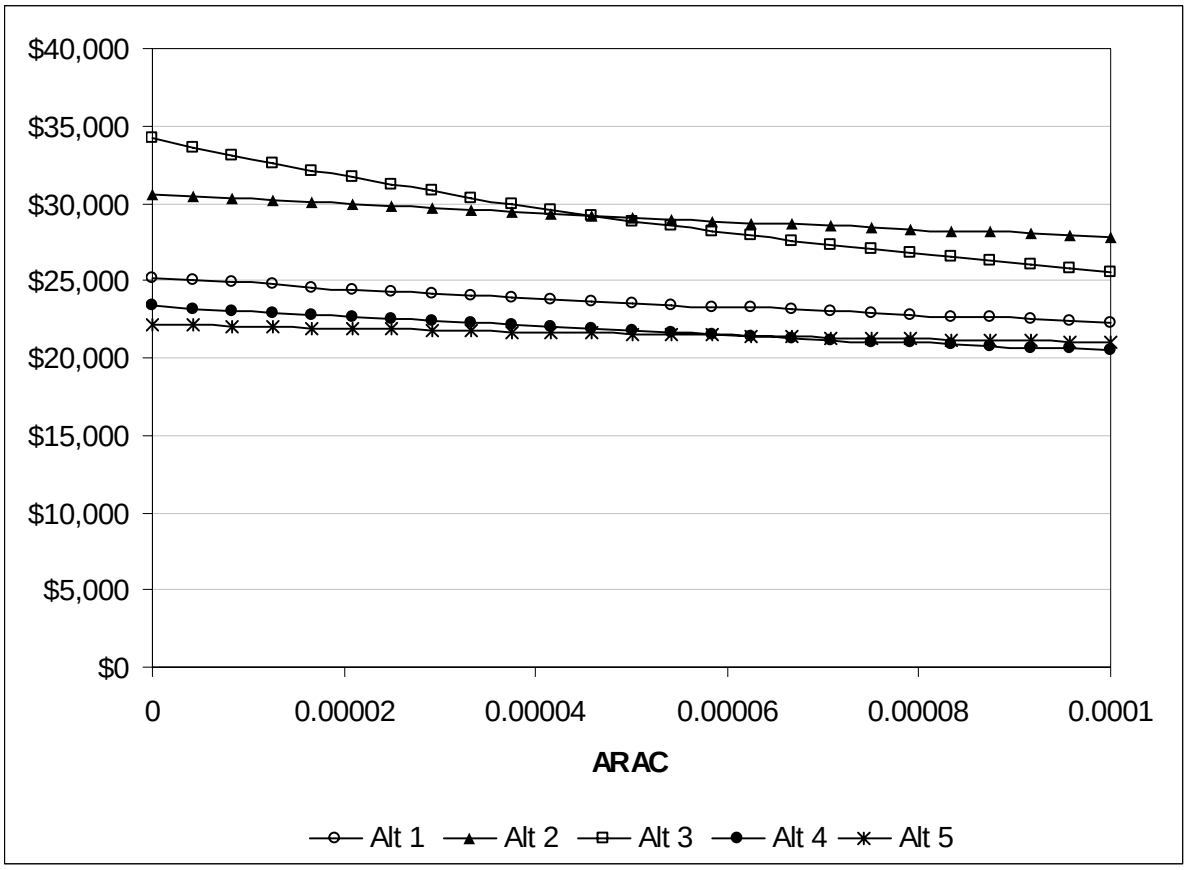

Figure 4. SERF Under a Negative Exponential Utility Function, Landlord, Dryland (2005)

In the 2008 irrigated scenario, tenants preferred the straight share lease represented by Alternative 5 if risk neutral and continued to choose Alternative 4 if more risk averse. The second most preferred option was Alternative 4 for the risk neutral tenant, Alternative 5 for the somewhat risk averse tenant and Alternative 1 for the extremely risk averse tenant. The ranking order for risk neutral and somewhat risk averse tenants is different in 2008 than it was in 2005, while order preference for an extremely risk averse tenant is unchanged in the new market environment. However, the CE between Alternative 1 and

Alternative 4 in 2008 is 50% higher than it was in 2005, indicating that the tenant would require significantly more money to be indifferent between Alternative 4 and Alternative 1.

Table 9. Tenant Results Ranked Using SERF, Irrigated (2008)

Level of Preference	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
	Strategy	**CE vs Alt 5**	**Strategy**	**CE vs Alt 4**	**Strategy**	**CE vs Alt 4**
Most Preferred	**Alt 5**		**Alt 4**		**Alt 4**	
2nd Most Preferred	Alt 4	$ 7,422.32	Alt 5	$ 3,963.60	Alt 1	$ 6,058.74
3rd Most Preferred	Alt 1	$13,481.07	Alt 1	$ 6,058.74	Alt 5	$ 8,663.93
4th Most Preferred	Alt 3	$27,900.22	Alt 3	$ 20,477.90	Alt 3	$ 20,477.90
Least Preferred	Alt 2	$35,878.35	Alt 2	$ 28,517.43	Alt 2	$ 28,547.83

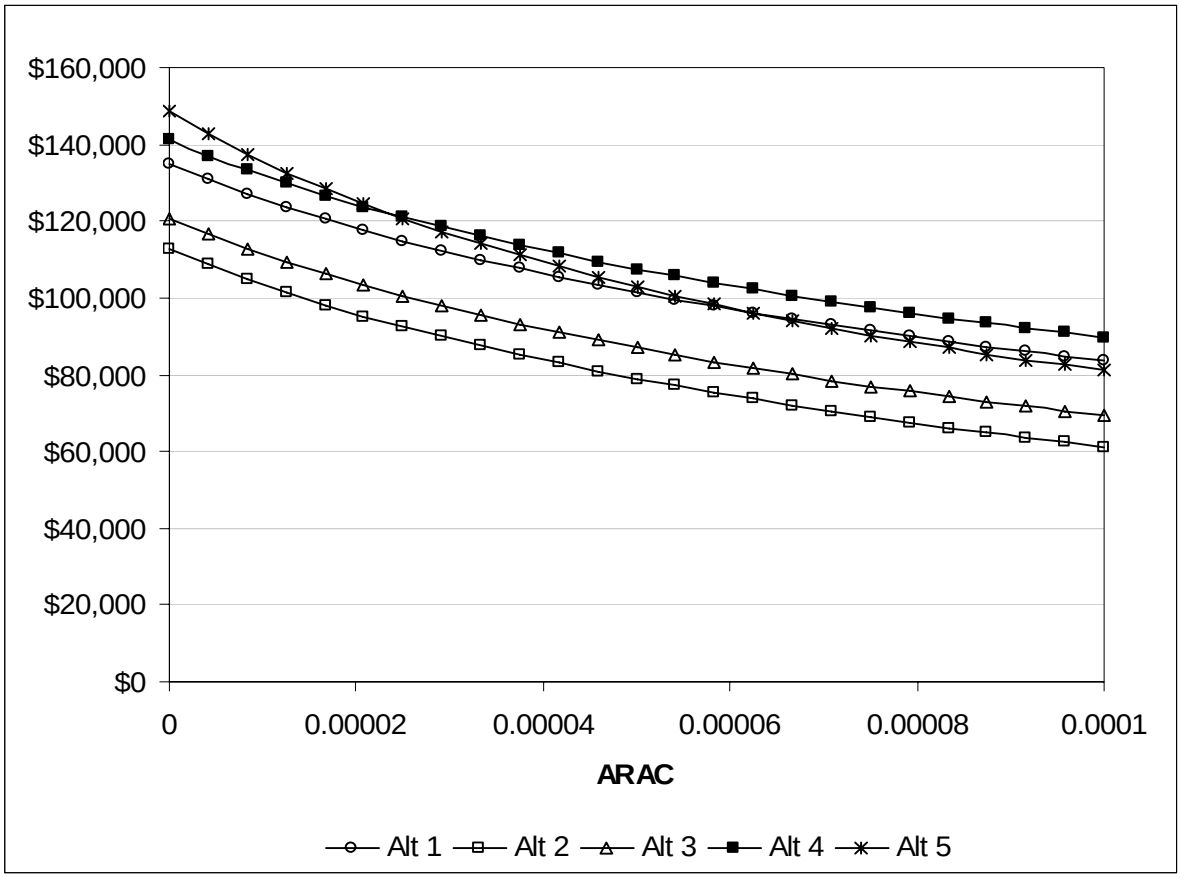

Figure 5. SERF Under a Negative Exponential Utility Function, Tenant, Irrigated (2008)

The landlord's preferred share arrangement under the 2008 irrigated scenario is Alternative 2 across all RACs, which is unchanged from 2005. The CE between Alternative 2 and Alternative 3 however is 84% higher in 2008 than it was in 2005.

Table 10. Landlord Results Ranked Using SERF, Irrigated (2008)

Level of Preference	Risk Neutral Strategy	Risk Neutral CE vs Alt 2	Slightly Risk Averse Strategy	Slightly Risk Averse CE vs Alt 2	Extremely Risk Averse Strategy	Extremely Risk Averse CE vs Alt 2
Most Preferred	**Alt 2**		**Alt 2**		**Alt 2**	
2nd Most Preferred	Alt 3	$ 7,978.11	Alt 3	$ 8,012.86	Alt 3	$ 8,043.57
3rd Most Preferred	Alt 1	$ 22,397.28	Alt 1	$ 22,432.02	Alt 1	$ 22,462.73
4th Most Preferred	Alt 4	$ 28,456.01	Alt 5	$ 28,459.76	Alt 5	$ 24,355.59
Least Preferred	Alt 5	$ 34,163.91	Alt 4	$ 28,490.76	Alt 4	$ 28,521.47

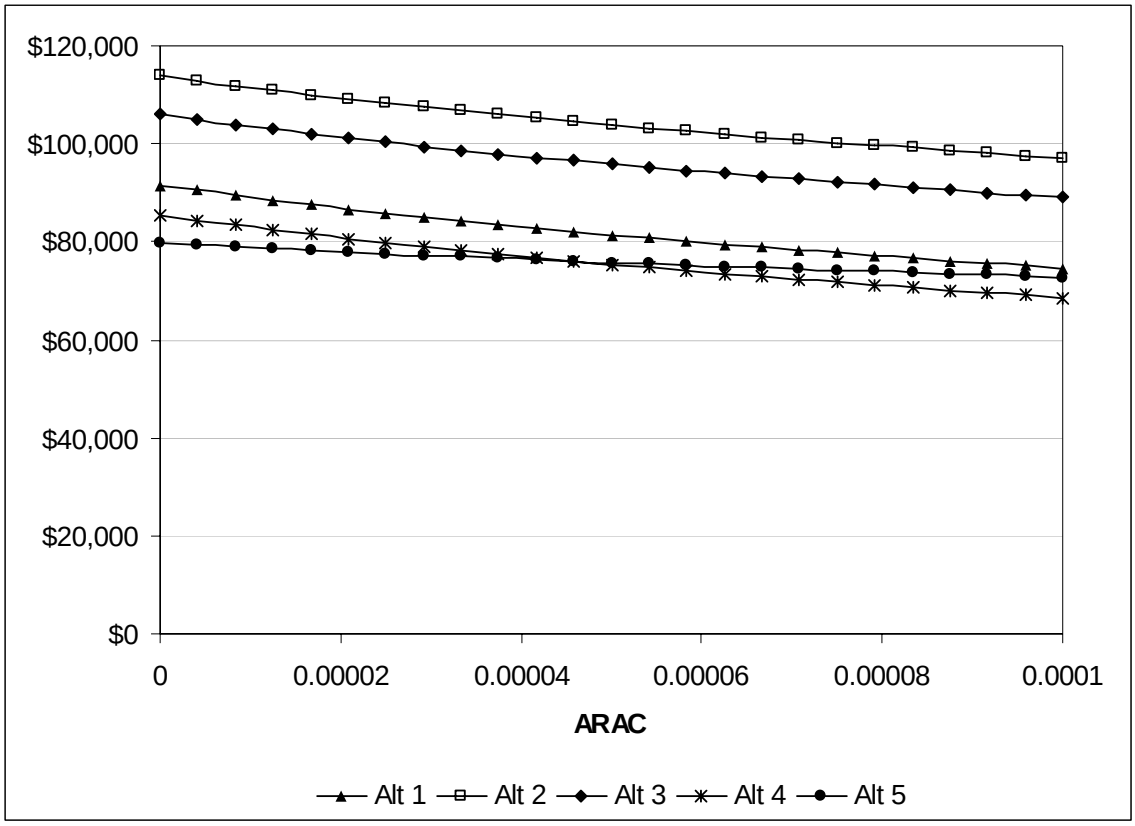

Figure 6. SERF Under a Negative Exponential Utility Function, Landlord, Irrigated (2008)

The 2008 dryland scenario for tenants results in the same ranking as 2005 for the risk neutral or somewhat risk averse. Alternative 5 is preferred to Alternative 4 for the risk neutral tenant and Alternative 4 is preferred to Alternative 5 for the somewhat risk averse tenant. The extremely risk averse tenant also chooses Alternative 4, with Alternative 1 being preferred second. For this same scenario in 2005, Alternative 1 was preferred second.

Table 11. Tenant Results Ranked Using SERF, Dryland (2008)

	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
Level of Preference	**Rank**	**CE vs Alt 5**	**Rank**	**CE vs Alt 4**	**Rank**	**CE vs Alt 4**
Most Preferred	**Alt 5**		**Alt 4**		**Alt 4**	
2nd Most Preferred	Alt 4	$ 8,833.78	Alt 5	$ 880.39	Alt 5	$ 2,772.07
3rd Most Preferred	Alt 1	$11,833.71	Alt 1	$ 2,999.93	Alt 1	$ 2,999.93
4th Most Preferred	Alt 3	$15,659.74	Alt 3	$ 6,825.97	Alt 3	$ 6,825.97
Least Preferred	Alt 2	$20,788.44	Alt 2	$ 12,089.60	Alt 2	$ 12,119.25

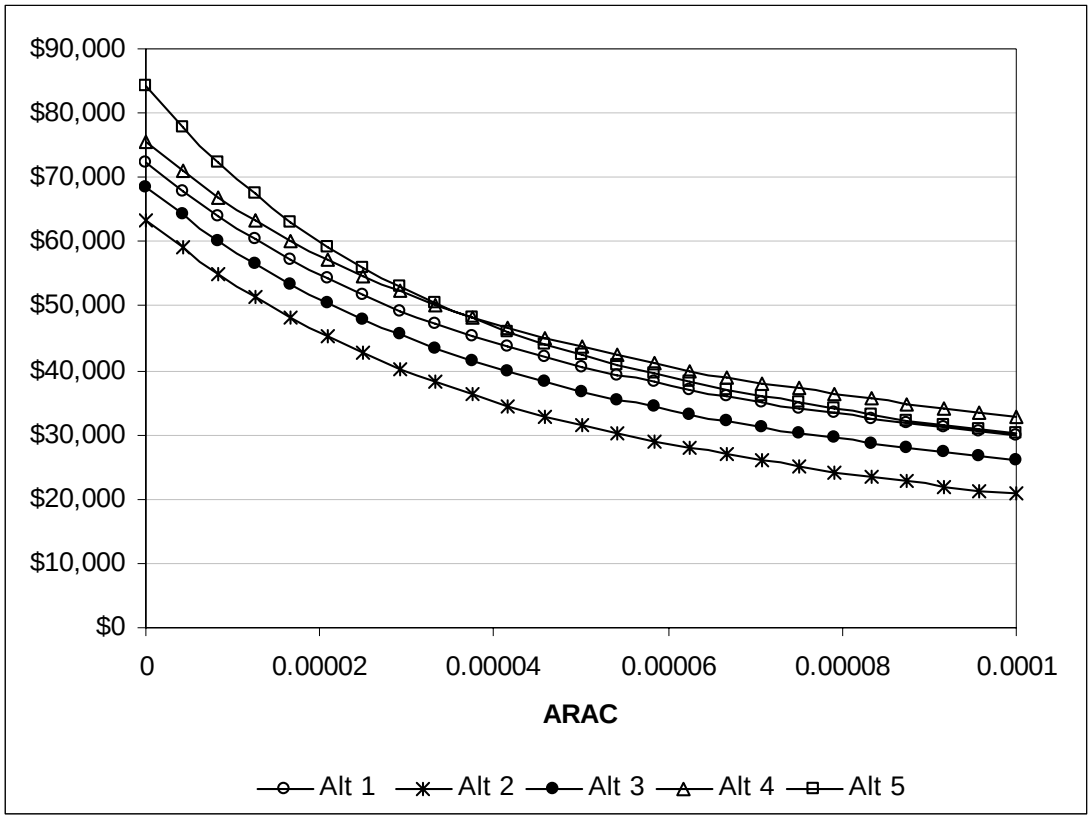

Figure 7. SERF Under a Negative Exponential Utility Function, Tenant, Dryland (2008)

The landlord in the dryland scenario chooses Alternative 2 over Alternative 3 at all RACs. This ranking is different than in 2005 when the landlord preferred Alternative 3 unless he/she was extremely risk averse.

Table 12. Landlord Results Ranked Using SERF, Dryland (2008)

Level of Preference	Risk Neutral		Slightly Risk Averse		Extremely Risk Averse	
	Rank	CE vs Alt 2	Rank	CE vs Alt 2	Rank	CE vs Alt 2
Most Preferred	**Alt 2**		**Alt 2**		**Alt 2**	
2nd Most Preferred	Alt 3	$ 5,128.70	Alt 3	$ 5,222.59	Alt 3	$ 5,268.34
3rd Most Preferred	Alt 1	$ 8,954.73	Alt 1	$ 9,048.63	Alt 1	$ 9,094.37
4th Most Preferred	Alt 4	$ 11,954.66	Alt 4	$ 12,048.56	Alt 5	$ 10,473.39
Least Preferred	Alt 5	$ 19,259.83	Alt 5	$ 13,455.45	Alt 4	$ 12,094.30

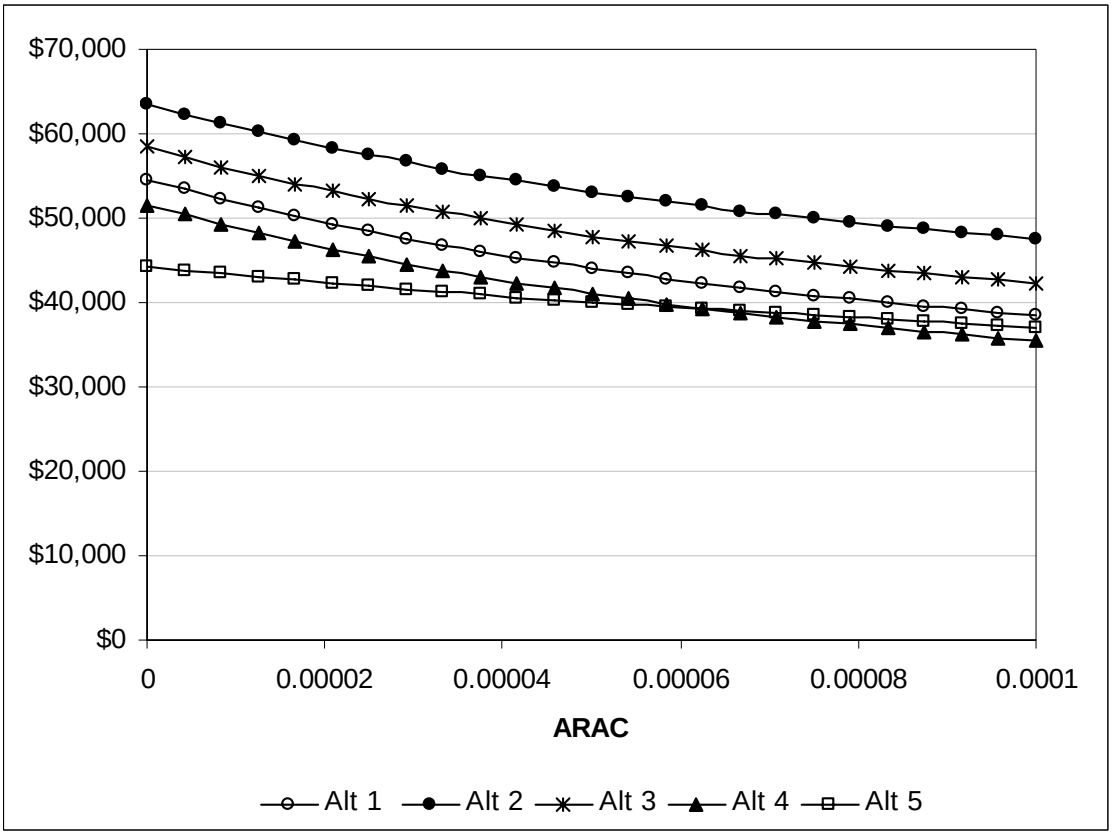

Figure 8. SERF Under a Negative Exponential Utility Function, Landlord, Dryland (2008)

Conclusions

This paper examines the profit maximizing share arrangement for both landlords and tenants producing grain in the Texas High Plains (based on risk preference), and determines whether the results are affected by input costs and market prices. Regardless of form, the overriding concern is that the lease is fair and equitable to both parties. The agreement must also be adaptable and provide for change, meeting the requirements of modern technology and the rapidly changing environment faced by today's farmers. (Libbin, 2004) Based on the results of the analysis, the following conclusions can be made:

- Under no circumstances is the most preferred alternative by the tenant also the most preferred by the landlord or vice versa;
- Crop share lease arrangements should be determined with consideration to the risk aversion characteristics of both the tenant and the landlord;
- New market conditions (e.g. increased costs and prices) call for a review of existing lease agreements as indicated by the difference in preferred alternatives in 2005 vs. 2008, especially for tenants.
- The share arrangement typically being practiced in District 1 is not the most preferred alternative for tenants or landlords in any of the scenarios studied. In 2008, it is the second most preferred alternative for tenants with irrigated farms who are extremely risk averse.
- The typical share arrangement practiced in District 2 is the most preferred alternative for landlords in most of the scenarios studied. In 2008 dryland farms, it is the second most preferred scenario for risk neutral and somewhat risk averse landlords. With regard to tenant preferences, Alternative 2 ranks last (fifth) in all scenarios studied.
- The new 'straight share lease' scenario being utilized in District 2 ranks either1, 2, or 3 for tenants depending on market conditions. In 2008, this alternative ranks highest for risk neutral tenants and lowest for extremely risk averse tenants. Alternative 5 ranks 3rd, 4th or 5th for landlords, with more risk averse landlords having a higher preference for the alternative than those who are risk neutral.

A recent study by Abdullahi et al (2003) found that dryland wheat producers and irrigated corn producers in Kansas (where farm conditions are similar to those in the Texas Panhandle) were characterized by risk aversion. The overall results from the study also show that an increase in gross farm income is associated with a lower absolute risk aversion coefficient. Thus, it is expected that a farmer with higher sales volume would be less risk averse than other farmers in the same enterprise. This assumption can be used to summarize the preferences in 2008 vs. 2005 and between irrigated and dryland scenarios. In the 2008 market environment (higher farm income), both an irrigated and a dryland tenant is more likely to prefer Alternative 5, the 20% straight crop share (risk neutral). In 2005 this tenant would likely have preferred Alternative 4. The landlord's preferences remain unchanged between 2005 and 2008 regardless of gross sales; Alternative 2 is the preferred lease arrangement in both environments. This theory is also demonstrated for a dryland vs. irrigated producer in 2008. The dryland producer, with lower gross farm sales is more likely to choose Alternative 4, whereas the irrigated producer in the same year would prefer Alternative 5.

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