A Partial Budget Approach to Estimating Cash Rents

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Abstract

Because of the extra risk, tenants who cash lease land should earn more money than those tenants with share leases. A competitive land market and the need to support bigger and newer machinery can easily lead tenants to pay more than they should for a cash lease. Share leases tend to avoid the overpayment problem as the share percentage is usually relatively fixed. Since share leases are not always available, this paper presents a way for tenants to determine if a cash lease rate is reasonable for the area by using a partial budget approach that compares lease types.

Cash leasing and share leasing allocate risk and reward very differently. With cash leasing, tenants assume all the risk because landlords get a fixed amount of money each year. Any profit the tenant earns on cash rented land is subject to variability in yields and prices. Yields are affected by a whole host of factors but most of these are weather driven. There are tools tenants can use to mitigate the effects of these risks, but the risks themselves are still present. Even with good risk management tools, tenants are likely to have variability in net income.

With a traditional share lease, both tenants and landlords share in the risks as well as the rewards. In a traditional share lease, tenants and landlords both get a percentage of the crop and both also pay the same percentages for the major expenses of seed, chemicals, and fertilizer. Tenants still have the same risks and same risk management tools as under the cash lease, but now the overall risk is less with the landlord bearing a share.

Economic theory tells us that those bearing the risk should earn more overall profit. Thus, tenants who cash rent land should make more money than those tenants with share leases. Flexible cash leases have less risk than cash leases but more than share leases from a tenants's perspective. Thus, a tenant's return from a flexible cash lease should fall between the return from a cash lease and a share lease. Landlords, by contrast, should make more money with a share lease as they are taking on risk they would not have under a cash lease or a flexible cash lease. This paper presents a way for tenants to determine if a cash lease rate is reasonable for the area. A partial budgeting framework is used that only requires a minimal amount of information and can be analyzed fairly quickly. An example from eight years of data in central Illinois is used to show how the method works.

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Background

In many areas of the country, there is active competition among tenants for farmland to rent. Thus, cash rents are well known and tenants have a good idea of what it would take to farm additional land using a cash lease. However, paying current cash lease rates may not always be the best business decision for a farm. Often a temporary increase in crop prices may drive cash rental rates up to a point that tenants have too much risk for the profit (if any) earned. Also, newer and bigger equipment may have tenants overbidding on farmland because they think they need more acres to justify their equipment base. Location effects can lead to higher cash rents if tenants think land nearer their home base will reduce other expenses related to moving and transporting equipment. If tenants overestimate these expenses from moving and transporting equipment there could be a tendency to over bid for land close to home.

Tenants renting land are not required to use cash leases though. Share leases are also used as an alternative to cash leasing and produce the least risk for tenants renting land. Other lease arrangements are also available that have risk levels somewhere between cash leasing and a pure share lease. Share leasing has the advantage of not overpaying for land because the share arrangement is not negotiated very often and usually fits within certain pre-established bounds. Share leases are thus not changed yearly or vary from one tenant to another the way cash leases can. Share leasing has other advantages to the tenant including potential for less capital requirements and shared management (Langemeier, 1997). Share leasing does have potential disadvantages including more record keeping and some degree of trust in the tenant by the landlord.

Unfortunately for tenants, they may not be able to specify whether they prefer a cash or share lease. With many tenants competing for the same available land, landlords are often able to dictate the lease type. As seen in most areas of the country, cash leases are becoming more popular. Assuming that tenants may not be able to specify a share lease, tenants need to know if the current going cash rental rate is reasonable.

Model

A partial budget is a way to compare two options by only looking at the relevant difference between the options. When comparing a cash lease to a share lease, the relevant pieces of information are the gross crop receipts, government payments, fertilizer, seed, and chemical expenses, the cash rental rate, and the typical share arrangement for the area. Some expenses such as crop insurance, drying and storage, and transportation could be shared if the tenant is handling these for the landlord. Other expenses such as machinery use, fuel, labor, etc., are the same no matter what lease arrangement is used and are borne by the tenant. Likewise, land taxes are also borne by the landlord and do not vary by lease type.

To compare the two lease types, first calculate the net income over selected expenses for a cash lease. As shown in Table 1, take gross revenue (including government payments) and subtract out fertilizer, seed, chemical, drying, storage, and crop insurance expenses. Also subtract out the cash rent. This number is the return to the tenant over selected expenses for a cash lease. Second, calculate net income to the tenant over selected expenses for a share lease. For this calculation, multiply gross revenue, fertilizer, seed, chemical, drying, storage, and crop insurance expenses by the share percentage given to tenants. From these numbers perform the same calculation as used by the cash lease returns. The only difference in this second calculation is that no cash rent is needed. Finally, compare the net return from each lease arrangement to see which provides the higher net return to the tenant over selected expenses.

The cash lease should give the tenant a higher return since a tenant assumes more risk with this type of lease. Because only looking at one year's worth of data could be misleading, at least five to ten years of data should be analyzed and then averaged to compare lease types. The returns to a tenant using a flexible cash lease should fall in between those of a pure cash lease and a share lease

To evaluate leasing opportunities in a given or upcoming year, crop budgets can be used. Many states provide these or tenants generate their own using a tool such as the Mississippi State Budget Generator. Basically the same procedures would be followed using a partial budget as was used for historical data.

An Application

Detailed data for revenue and expenses for growing corn in high productivity soils in central Illinois is available from the Illinois Farmdoc website (www.farmdoc.uiuc.edu). This site has data from 2001 through 2007. Using this data, a table was developed that shows the information needed to produce a partial budget and the results from a cash lease versus a share lease. In central Illinois, a 50-50 share lease is common. These results are shown in Table 2.

As illustrated, the cash lease does give tenants a higher net return when averaged over the eight years of data. Cash leasing produced and average of $207 per acre to a tenant while share leasing produced an average of $176 per acre to a tenant. Cash leasing provided the greatest return to a tenant in six of the seven years analyzed. However, because of more variability, a cash lease will always be the riskiest method for leasing farmland for a tenant. From this seven-year sample, cash leases would appear to be reasonable for central Illinois given the lack of knowledge about the risk preferences of the tenant. With a risk neutral tenant, returns from cash leasing would only need to equal returns from share leasing. As the tenant becomes more risk adverse, the spread between the returns from cash leasing and share leasing would have to increase.

Conclusion

This partial budget method of analyzing a cash lease will not give an exact answer for cash rental rates as information would be needed about the risk preferences of an individual tenant. However, it does provide a good "ballpark" number to see if cash lease rates in the area are reasonable. Although the application shown here used past data, budget information could be used to examine projections about future cash rental rates.

References

Langemeier, Larry. "Crop-Share and Crop/Share Cash Rental Arrangements for Your Farm." *North Central Regional Extension Publication No. 105* (1989). (http://agecon.uwyo.edu/RiskMgt/legalrisk/CSorCSCASHRENTALArrangforFarmPDF.PDF).

Farmdoc. "Central High Productivity Corn." http://www.farmdoc.uiuc.edu/manage/return_cost_v2.asp?Region=Central_Illinois_High-Productivity_Farmland_Corn.

Table 1. Partial budget method to analyze cash leases

Cash Rent Partial Budget	**Share Leasing Partial Budget**
Gross revenue	Gross revenue * Share %
- Fertilizer	- Fertilizer * Share %
- Seed	- Seed * Share %
- Chemicals	- Chemicals * Share %
- Crop insurance	- Crop insurance * Share %
- Drying and storage	- Drying and storage * Share %
- Cash rent	
= Return over selected expenses when cash renting	= Return over selected expenses when share renting

Table 2. Results from an application to Central Illinois corn production

		Year							
REVENUE		**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	
	Yield per acre	$168	$152	$186	$190	$172	$180	$201	
	Price per bu	$2.06	$2.37	$2.41	$2.17	$2.11	$2.99	$4.00	
	Govt payments and crop ins	$74	$28	$25	$96	$130	$29	$25	
	Gross Revenue	$420	$388	$473	$508	$493	$567	$829	
EXPENSES									
	Fertilizer	$57	$55	$57	$68	$78	$82	$90	
	Pesticides	$33	$34	$38	$38	$43	$40	$40	
	Seed	$34	$34	$36	$38	$43	$45	$55	
	Drying	$8	$9	$9	$9	$9	$11	$9	
	Storage	$7	$7	$5	$6	$9	$8	$8	
	Crop insurance	$3	$5	$7	$8	$6	$11	$20	
	Cash rent	$137	$137	$140	$143	$147	$150	$166	
Returns to Tenant (cash lease)									**Avg**
	Gross Revenue	$420	$388	$473	$508	$493	$567	$829	
	Minus expenses	$279	$281	$292	$310	$335	$347	$388	
	= net over selected expenses	**$141**	**$107**	**$181**	**$198**	**$158**	**$220**	**$441**	**$207**
Returns to Tenant (50-50 share lease)									
	Gross revenue (50%)	$210	$194	$237	$254	$247	$284	$415	
	Minus expenses (50% & no cash rent)	$71	$72	$76	$84	$94	$99	$111	
	= net over selected expenses	**$139**	**$122**	**$161**	**$171**	**$153**	**$185**	**$304**	**$176**