

# Agricultural ECONOMICS

Farm Management

## What's the Right Rent?

### Adjusting Operating Arrangements in a New Economic Environment

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#### Introduction

Three factors have caused significant changes in the economic environment for farm operators and land-owners.

First, farmers observed record corn and wheat prices in 1996 and near record soybean prices in 1997. These prices were much higher than most persons would have predicted two years ago. In November, 1997 farmers could sell 1997, 1998, and 1999 crops at prices higher than in 1994. Prices above 1994 levels are expected until prospects materialize for increased year-end carry-over supplies.

Second, given the changes in government policies, increased price variability is likely for the foreseeable future. The 1996-97 price changes are an example of increased price variability. During the last half of 1996, prices for 1997 harvest varied 50 cents per bushel for corn and \$1.50 per bushel for soybeans. That's a revenue variation of \$65 per acre for average-yielding Indiana cropland.

Third, over the next five years, most farmers expect to receive government payments. Farmers who signed up for this program know the amount of their payment, which differs by year and will gradually decline.

How are landlords and tenants affected by this new economic environment? What are the likely consequences under different types of operating arrangements? What new features might appropriately solve new or old problems for either or both parties? This publication considers these questions.

Since increased price variability is forecast for the foreseeable future, more landlords and tenants may be interested in conventional share leases, perhaps with

provisions for privilege payments to better match the rent to the current price level. In addition, there may be interest in including terms in cash leases which adjust rents to account for changes in crop prices and also for changes in yields, costs, and government programs.

Budgeted earnings for 1998, as expressed by per-acre contribution margins, are significantly higher than budgeted earnings for three years ago. Some tenants may be willing and able to make a cash payment to landlords for the privilege of having an otherwise conventional share lease.

Besides wanting to adjust cash leases for changes in costs, yields, prices, and government program payments, some tenants and some landlords may want these adjustments to be based on outside-the-farmgate benchmarks other than on the tenant's actual production and marketing performance.

When using such adjustors, landlords may be more willing to consider lower skilled prospective tenants and tenants who may plant and/or harvest their farm late in the season when yields are expected to be lowest. Highly skilled tenants may also prefer using outside-the-farmgate adjustors because they will realize 100% of their actual exceptional performance.

#### Division of Government Payments

The question of who gets the government payment is not raised elsewhere in this publication. Why? The payment is just another source of revenue. As such, it is added to corn sales and soybean sales in the calculation of per acre contribution margin. The

<sup>1</sup> The author acknowledges the contributions of J.H. Atkinson, Mike Boehlje, Chris Hurt, Bob Jones, Marshall Martin, and Wally Tyner. Thanks to their help, this is a much-improved publication.

corn payment is calculated by multiplying the FSA yield x .85 x payment rate x acres of corn base. The corn payment rate is estimated as follows: 1998, \$0.36; 1999, \$0.35; 2000, \$0.32; 2001, \$0.26; and 2002, \$0.25.

Present tenants and landlords may wish to discuss this question. But, if given the opportunity to bid for the farm in a rental auction, prospective tenants would bid the government payment into the rent.

## Price Effects

### Higher Prices

The most immediate and evident change in the economic environment in 1996 was higher crop prices. Tables 1-3 illustrate the impacts of these higher prices and other changes on what we will call "contribution margin." This term is simply the difference between sales revenue and variable costs.

One could think of the contribution margin as representing returns per acre to machinery, management, labor, and land. Hence, it is the amount of expected returns to be allocated in any operating arrangement.

Actual prices for 1997 crops may be lower than actual prices for 1996 crops. However, from Tables 1-3, it is clear that the expected returns as measured by contribution margin are still higher for 1998 crops. The percentage changes vary by type of soil, but the changes are large under any conditions and are largest for the highly productive soil. As shown on Table 1 for the low yield soil, the budgeted contribution margin increased \$42 from 1995 to 1998. On the average soil, the budgeted contribution margin increased \$52 from 1995 to 1998. On the high yield soil, the budgeted contribution margin increased \$61 from 1995 to 1998.

**Table 1. Per Acre Budget Summary, Eroded Miami Type Soil  
Corn/Soybean Rotation, Owner Operator  
Budgets Prepared November 15, 1994, 1995, 1996, 1997, for 1995, 1996, 1997, 1998 Crops**

	1995			1996		1997		1998	
	Corn	Set - aside	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield <sup>1</sup>	103.6		33.2	104.8	33.5	105.9	33.9	107.1	34.3
Price <sup>2</sup>	\$2.30		\$5.71	\$2.57	\$6.37	\$2.50	\$6.53	\$2.63	\$6.70
Sales	\$238		\$190	\$269	\$213	\$265	\$221	\$282	\$230
Government <sup>3</sup>		\$413				35		28	
Total revenue	\$238	\$413	\$190	\$269	\$213	\$300	\$232	\$310	\$230
Less variable costs <sup>1</sup>	120	20	79	122	80	124	82	124	83
Contribution margin <sup>4</sup>	\$118	\$393	\$111	\$147	\$133	\$176	\$139	\$186	\$147
Rotation contribution margin <sup>5</sup>	\$125			\$140		\$158		\$167	

<sup>1</sup>Source: Doster, D.H., et al., Purdue Crop Guide, ID-166. Variable costs include seed, fertilizer, fuel, repairs, hauling, crop insurance, misc., and interest on variable costs. The year-to-year increase in variable costs reflects inflation and also slightly higher expected yields.

<sup>2</sup>Source: Chicago Board of Trade November 15 prices for November beans and December corn 12 months later, less local harvest basis for central Indiana elevator; beans, \$0.25; corn, \$0.20.

<sup>3</sup>Author estimates. The 1995 corn deficiency payment was estimated @ \$0.45 per bushel X 90 bushel ASCS yield X .775x base acres with the base acres at 50% of the tillable acres = \$31/acre of corn base or \$413 per acre of set-aside. On November 15, 1996, there was no farm program for 1996. The new farm program of April 1996 provided for a payment based on \$0.25 per bushel x .85 of the FSA yield of 90 bushels = \$20/acre or \$10/acre increase, not included in the rotation contribution margin for 1996. The 1997 payment is based on \$0.46 per bushel x .85 of the FSA yield of 90 bushels = \$38. The 1998 payment is based on \$0.36 per bushel, etc.

<sup>4</sup>Contribution margin (CM) is the returns to machinery, labor, management, and land.

<sup>5</sup>Rotation contribution margin is the contribution margin per tillable acre assuming all tillable acres are in a corn/soybean rotation with a 1995 corn base of 50% (and 7.5% set-aside in 1995 only).

## Break-Even Prices

Was your rent right for 1995? After also considering cost increases and normal trend yield increases, how much would prices need to fall to put you in a break-even situation with your 1995 budget? For the average-yielding soil situation represented in Table 2, 1998 harvest prices would need to fall to \$2.29 for corn and to \$5.35 for beans.

If you were to also recognize higher machinery replacement costs in 1998 versus 1995, the break-even prices would be about \$2.34 for corn and \$5.50 for beans.

Particularly on low-quality land, 1995 leases may not have provided the tenant with sufficient funds to replace his machinery and also cover his labor costs. Therefore, do not necessarily use your 1995 lease as a benchmark for making adjustments for future years.

## Impacts of Changes on Different Operating Arrangements

Changes in expected returns and perceived changes in risk will affect operating arrangements in different ways. For example, changes in contribution margin will affect cash rent and share rent differently.

The impacts of changes in returns are pretty clear for the owner operator and custom farming alternatives. For each \$1 change in expected and in realized contribution margin, the owner operator receives the entire \$1, as shown in Table 4. In the owner operator situation, the landlord and tenant are the same, and the increase accrues to the owner operator. In custom farming, the landlord is contracting with the farmer to do the farming operations. The landlord bears all the risk and receives all the gain or loss from a change in economic conditions.

**Table 2. Per Acre Budget Summary, Crosby Type Soil  
Corn/Soybean Rotation, Owner Operator  
Budgets Prepared November 15, 1994, 1995, 1996, 1997 for 1995, 1996, 1997, 1998 Crops**

	1995			1996		1997		1998	
	Corn	Set - aside	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield <sup>1</sup>	128.3		41	129.7	41.5	131.4	41.9	132.6	42.4
Price <sup>2</sup>	\$2.30		\$5.71	\$2.57	\$6.37	\$2.50	\$6.53	\$2.63	\$6.70
Sales	\$295		\$234	\$333	\$264	\$329	\$274	\$349	\$284
Government <sup>3</sup>		\$507				43		34	
Total revenue	\$295	\$507	\$234	\$333	\$264	\$372	\$274	\$383	\$284
Less variable costs <sup>1</sup>	138	20	90	141	90	144	93	144	94
Contribution margin <sup>4</sup>	\$157	\$487	\$144	\$192	\$174	\$228	\$181	\$239	\$190
Rotation contribution margin <sup>5</sup>	\$163			\$183		\$204		\$215	

<sup>1</sup>Source: Doster, D.H., et al., Purdue Crop Guide, ID-166. Variable costs include seed, fertilizer, fuel, repairs, crop insurance, misc., and interest on variable costs. The year-to-year increase in variable costs reflects inflation and also slightly higher expected yields.

<sup>2</sup>Source: Chicago Board of Trade November 15 prices for November beans and December corn 12 months later, less local harvest basis for central Indiana elevator. Beans, \$0.25; corn, \$0.20.

<sup>3</sup>Author estimates. The 1995 corn deficiency payment was estimated @ \$0.45 per bushel X 110 bushel ASCS yield X .775x base acres with the base acres at 50% of the tillable acres=\$38/acre of corn base or \$507 per acre of set-aside. On November 15, 1995, there was no farm program for 1996. The new farm program of April, 1996 provided for a payment based on \$0.25 per bushel x .85 of the FSA yield of 110 bushels-\$23/acre or \$11/acre increase, not included in the rotation contribution margin for 1996. The 1997 payment is based on \$0.46 per bushel X .85 of the FSA yield of 110 bushels=\$43/acre. The 1998 payment is based on \$0.36 per bushel, etc.

<sup>4</sup>Contribution margin (CM) is the returns to machinery, labor, management, and land.

<sup>5</sup>Rotation contribution margin is the contribution margin per tillable acre assuming all tillable acres are in a corn/soybean rotation with a 1995 corn base of 50% (and 7.5% set-aside in 1995 only).

**Table 3. Per Acre Budget Summary, Brookston Type Soil  
Corn/Soybean Rotation, Owner Operator  
Budgets Prepared November 15, 1994, 1995, 1996, 1997 for 1995, 1996, 1997, 1998 Crops**

	1995			1996		1997		1998	
	Corn	Set - aside	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield <sup>1</sup>	159.9		50.5	159.6	51.1	161.4	51.6	163.2	52.2
Price <sup>2</sup>	\$2.30		\$5.71	\$2.57	\$6.37	\$2.50	\$6.53	\$2.63	\$6.70
Sales	\$363		\$288	\$410	\$325	\$404	\$337	\$429	\$350
Government <sup>3</sup>		627				53		41	
Total revenue	\$363	\$627	\$288	\$410	\$325	\$457	\$337	\$470	\$350
Less variable costs <sup>1</sup>	155	20	98	162	99	167	103	166	104
Contribution margin <sup>4</sup>	\$208	\$607	\$190	\$248	\$226	\$290	\$234	\$304	246
Rotation contribution margin <sup>5</sup>	\$214			\$237		\$262		\$275	

<sup>1</sup>Source: *Doster, D.H., et al., Purdue Crop Guide, ID-166. Variable costs include seed, fertilizer, fuel, repairs, hauling, crop insurance, misc., and interest on variable costs. The year-to-year increase in variable costs reflects inflation and also slightly higher expected yields.*

<sup>2</sup>Source: Chicago Board of Trade November 15 prices for November beans and December corn 12 months later, less local harvest basis for central Indiana 100 car unit train elevator: beans, \$.25; corn, \$.20.

<sup>3</sup>Author estimates. The 1995 corn deficiency payment was estimated @ \$.45 per bushel X 135 bushel ASCS yield X .775x base acres with the base acres at 50% of the tillable acres = \$47/acre of corn base or \$627 per acre of set-aside. On November 15, 1995, there was no farm program for 1996. The new farm program of April, 1996 provided for a payment based on \$.25 per bushel x .85 of the FSA yield of 135 bushels = \$29/acre or \$15/acre increase, not included in the rotation contribution margin for 1996. The 1997 payment is based on \$.46 per bushel X .85 of the FSA yield of 135 bushels = \$53/acre. The 1998 payment is based on \$0.36 per bushel, etc.

<sup>4</sup>Contribution margin (CM) is the returns to machinery, labor, management, and land.

<sup>5</sup>Rotation contribution margin is the contribution margin per tillable acre assuming all tillable acres are in a corn/soybean rotation with a 1995 corn base of 50% and 7.5% set-aside.

The allocation of a \$1 increase in share leasing arrangements also is pretty straightforward. The increase is shared 50/50 between the tenant and landlord. However, in a dynamic context, a perceived change in economic conditions may lead to different sharing arrangements. Who pays what could change if the contribution margin and thus the implied or theoretical rent changes significantly due to higher or lower prices.

For cash rent, the allocation of an unexpected change in revenue also is straightforward. Since the cash rent payment was agreed to in advance, the unexpected revenue increase was not factored into the rental rate, and the tenant receives the total increase.

The complicated case is the one we now face—the expected increase in contribution margin, mainly because of expected higher prices. The question

marks in Table 4 indicate that we cannot say how the expected increase will be allocated. It depends on many factors, including speed of adjustment of rental terms to changing economic conditions.

For rents to be set now, it can be assumed that the changes in expected contribution margins in Tables 1-3 can serve as the upper limits for cash rent changes, as well as the upper limits for changes in theoretical rents. However, normally actual changes would be lower, for awhile, at least, on many farms. Landlords and tenants may perceive that the current upswing in prices is temporary. They may perceive that the adjustment costs of moving rent quickly up and down to reflect the changing conditions are too high. That is, landlords and tenants may strive for some notion of “average” rent that is “too high” in some years and “too low” in others. They may prefer stability to complicated and potentially stressful renegotiations every year.

However, in other cases, either landlords or tenants may want to adjust cash rents to better reflect the changed economic conditions. Under these conditions, some landlords will change lease terms with their present tenants. Other landlords will change lease terms and change tenants. Some farmers will perceive an opportunity to get more land by bidding higher rents, which is made possible by the increased returns depicted in Tables 1-3.

There is little doubt that the major changes in prices will lead to changes in tenancy, rent levels, and perhaps operating arrangements. It is difficult to predict how pervasive the changes will be, but landlords and tenants need to be prepared to factor the changed economic environment into leasing decisions.

## Personal Factors

### Operator Performance

Operators differ greatly in their production and marketing performance, in their ability to bear risks, and in their preference for bearing risks. Therefore, a rent that's right for a tenant for a specific farm may not be the highest rent a landlord can receive. In a market economy, better performing tenants will pay higher rents than poorer performing tenants are able to pay for comparable land.

Likely, no one characterizes a market economy as being kind. It is efficient, however, in that people are likely to use their resources where they have the greatest comparative advantage.

Better performing tenants get better cropland and frequently expand the scale of their operations. The poorest performing tenants exit the industry and use their resources where they have a comparative advantage.

## Motivation

A landlord has farmland. Prospective tenants have labor, management skills, machinery, and financing. The economic or business goal for each party is to realize the largest return to his resources, i.e., the largest contribution margin for the lease period.

Closely related economic or business goals for a landlord might include maintaining or improving the land for use in future periods, a known amount of rent paid monthly, or even an operating arrangement which allows a landlord to participate in changes in costs, yields, prices, or government programs without participating in the risks of the operator's actual performance.

Landlords may be motivated by other goals. These include helping a relative or friend, having the farm look nice, having the snow plowed out of the driveway, or having a weekend or vacation place. The landlord chooses which prospective operator to contract with. Therefore, prospective operators will want to offer the services the landlord wants.

Landlords regularly offer contracts to prospective operators who may not pay the landlord the highest rent, since they may receive one or more of the above non-monetary benefits.

## Expected Variation in Contribution Margin

Many tenants currently rent farms from multiple landlords. Their expected contribution margin may vary considerably for the different farms they rent. For example, participants at the Purdue Top Farmer Crop Workshop reported expected per-acre contribution margin differences July, 1997 of \$50 between their most profitable and least profitable rentals. For various reasons, they had negotiated better deals with some landlords than with other landlords.

**Table 4. Impacts of a \$1 Increase in Return**

	Owner Operator	Custom Farming	50/50 Share Lease	Cash Rent
<b>Expected return increase</b>				
Landlord	\$1.00	\$1.00	\$.50	?
Tenant			\$.50	?
<b>Realized but not expected increase</b>				
Landlord	\$1.00	\$1.00	\$.50	
Tenant			\$.50	\$1.00

## Basic Operating Arrangements

### Owner Operator Arrangement

Land is farmed by persons using one of four types of operating arrangements. The owner operator owns all the farm resources and is responsible for producing and marketing the crops. Since only one party is involved in this operating arrangement, it is not considered further in this publication.

### Custom Farm Arrangement

The custom farm operator is hired by a landowner to do some or all of the production jobs. However, the landowner is responsible for purchasing seed, fertilizer, and chemicals, and for marketing the crops.

In a basic custom farm arrangement, the landowner assumes all the risks of changes in seed, fertilizer, and chemical costs, yields, prices, and government programs. The landowner is dependent upon the custom operator's performance in regard to the timing and effectiveness of field operations. Presumably, the landowner selects a highly skilled operator. The landowner's next challenge is to motivate the operator to do fieldwork at or near the optimum dates for planting and harvesting. Landowners may offer to make incentive payments on all work performed on pre-identified dates.

If the custom operator has his own or cash rented land to plant, his opportunity cost for doing planting or harvesting on the best dates is the expected yield lost, and thus contribution margin lost, from not doing the work on his own or cash rented land on those dates, but instead doing his own acres last.

Therefore, the custom operator must calculate whether he can afford to do the fieldwork on the custom farm on the best dates. This calculation is similar to the budgeting the share rent tenant needs to make as he decides whether to do his own or cash rent land on the best dates. For both the custom operator and the share rent tenant, the question is how can he make more total returns on his resources, i.e., more contribution margin. If he has to do the work on the best dates in order to retain the contract, he will do so as long as the total expected contribution margin is greater with, than without, the custom contract.

### Share Lease Arrangement

The share arrangement explicitly accounts for how the contribution margin changes will be shared. For example, a landlord and a tenant may want to share equally in changes in total contribution margin which

occur during the lease period. Thus, they choose a 50/50 share lease.

### Conflicting Share Lease Terms

You may have heard the statement, "Landowners and tenants should share costs and revenue in the same percentage." That certainly holds for fertilizer, seed, and chemicals. In a 50/50 lease, if both parties pay half of these costs and realize half of the benefits, they will likely find it easy to agree on how much of each item to use. If they both use the same input-output research information, the point where marginal cost equals marginal revenue is the same for both the landlord and the tenant.

Recognize, however, that the above statement is violated in a 1/3 - 2/3 share arrangement where one party pays for all the seed, fertilizer, and chemicals and gets only 2/3 of the yield. Theoretically, that party can't afford to put on as much fertilizer, etc.

By type of operating arrangement, who can afford to be most timely with his field work? The answer is, the owner operator and the cash rent tenant. They provide all the labor and machinery and receive all the crops. The crop share tenant provides all the labor and machinery and receives only part of the crop.

### Cash Rent Arrangement

With the cash rent arrangement, the tenant pays the landlord for the right to use the farm for a period such as a year. The landlord may include terms such as which fields can not be plowed or which fields must have alfalfa. The landlord may even commit to applying a set amount of lime, phosphate, and/or potash each year. However, the tenant generally decides what crops to raise, what tillage to use, what seed, fertilizer, and chemicals to purchase, and when to grow, harvest, and market the crops.

### Adjusting the Basic Arrangement

In any operating arrangement, other terms can be included. Here are some examples for the three basic arrangements involving two parties.

### Adjusting Custom Farm Arrangements

As economic conditions change, changes in dollar amount are least likely for custom farm arrangements. Why? The landlord merely needs to negotiate with the operator to perform the agreed upon jobs. When economic conditions improve, an operator can realize higher rewards from being timely on his other farms. Therefore, he will demand slightly higher custom rate charges.

## Adjusting Share Rents

Suppose, however, the budgeted 50/50 lease is not the right rent for the land in terms of current economic conditions. For the given economic environment, a 50/50 share rent on low-quality, near marginal land will not provide a tenant with sufficient funds to replace his machinery and compensate him for his personal opportunity cost. Such a rental amount is much more than the landlord can expect to realize with other operating arrangements. Land is generally considered the residual claimant for returns. Machinery replacement cost and personal opportunity cost, sometimes called labor and management charge, must be recognized before finding the amount for theoretical land rent.

A 50/50 share rent is likely not representative of the right rent on extremely high-quality Indiana land, either. Why? The landlord's expected share of the total contribution margin is much less than the landlord could realize with custom farm or cash rent operating arrangements.

Suppose the landlord recognized that the 50/50 share results in a non-economic rent for his farm, but he still wants to share 50/50 in changes during the lease period in costs, yields, prices, or government programs. How can he create the right base rent?

One answer to the question can be developed by observing past performances of landlords and operators. On low-quality land, landlords offer to pay operators for some of the services operators perform, such as harvesting. On high-quality land, tenants offer to pay for half the lime, perhaps all the harvesting, hauling, and/or spraying.

Parties can also exchange money in the form of privilege rent to adjust the rent to economic conditions existing at the beginning of the lease period. Given the significant changes in economic conditions that have occurred in the past three years, changes may occur in terms of 50/50 leases.

In dollar amounts, these changes will be more on high-quality land than on low-quality land. Why? As shown in Tables 1-3, total contribution margin has increased more on high-quality land than on low-quality land.

Some persons may remember the large number of tenants who lost their 50/50 leases in the 1973-75 period. What happened? Some 50/50 tenants neglected to offer to pay more privilege rent so as to adjust their lease to the new economic conditions. Neighboring prospective tenants offered to pay landlords significantly higher rents, in the form of

cash rent operating arrangements. Many landlords accepted these offers. These occurrences illustrate the point that rents are set by neighboring tenants. In these instances, landlords had many opportunities for realizing higher rents.

## Adjusting Cash Rents

Landowners who cash rent their farms annually with the expectation of renegotiating their leases prior to the beginning of each new lease period likely realize rents that more nearly reflect theoretical economic conditions. Of course, some operators reduce their cash rent bid because they realize the same farm will be advertised for rent again next year.

Lease adjustments for the next year to recognize unexpected tenant losses last year are not a part of the calculation of theoretical rent for next year. Landowner costs for mortgage payments or for property taxes or for family living needs are not a part of the calculation of a theoretical economic rent. These costs must be met even if the farm is not rented.

In a cash rent situation, the landlord bears no risk for changes in variable input costs, yields, prices, or government programs. The tenant realizes 100% of the changes which occur after the beginning of the lease period. Other than concerns about meeting possible conservation plans, the landlord has no responsibility for:

- a. Deciding what crop, how much seed, fertilizer, etc., unless specified in the lease.
- b. Purchasing variable cost items.
- c. Deciding how, where, when to market the crops.

If the cash rent contract is renegotiated each year, the amount of the rent is likely to change to reflect economic conditions when the negotiation occurs. Terms can also be included to adjust for changes during the lease period in costs, yields, price, and/or government program. If no adjustors are included, the tenant realizes 100% of the changes in total contribution margin. As illustrated in Table 5, if 100% adjusters are included for all four types of changes in contribution margin, the landlord realizes 100% of the changes in total contribution margin. The tenant is then the equivalent of a custom operator, since the tenant knows the amount of his contribution margin as soon as the lease terms are agreed upon. If the cost, yield, price, and government program changes are shared 50/50, the resulting lease is similar to a 50/50 crop share.

In Table 5, the budgeted total rotation contribution margin is \$204, and the budgeted cash rent is \$117. If

the landlord accepts 100% of all four outside the farmgate adjusters, the actual cash rent is \$125.

Suppose the parties were to agree to the same budgeted cash rent, but were to share equally in all four adjusters. Then, instead of increasing \$8, the cash rent would increase \$4.

In Table 6, find the calculations for 1997 for a 50/50 crop share lease, including both a budgeted and an actual rotation contribution margin. Note the budgeted total rotation contribution margin is \$204 in Table 5 and Table 6. Note the actual total rotation contribution margin is \$212 in both tables. Note each party splits the \$8 difference in contribution margin in both tables.

What's the difference between the numbers in Table 5 and Table 6? In Table 5, the tenant's machinery, labor, and management contribution are subtracted from the total rotation contribution margin, leaving the residual as the land rent.

In Table 6, the rotation contribution margin is the returns to each party's contribution, i.e., the returns to each party's resources. In the Table 6 budget, the tenant's contribution margin is \$93, as compared to \$87 (\$37 for personal opportunity cost + \$50 for machinery) in Table 5. Thus on the average yielding Crosby soil for 1997, there is not much difference between the budgeted cash rent and 50/50. However, as will be illustrated in Table 7 for low productivity soil, the 50/50 rent budget results in the tenant's contribution margin being only \$75.

In the *Purdue Crop Guide*, ID-166, the author uses \$37 for personal opportunity cost and average annual replacement cost for machinery of \$46, \$50, and \$55 for the three soil types in 1997 and \$2 higher for each soil in 1998. For a 1000-acre farmer, the \$37 per acre for labor is \$37,000, perhaps comparable to an off-farm salary or to a full-time job paying \$18.50 per hour.

Inside specific farmgates, we have fewer resident operators. With operators farming several farms each, they increasingly face the challenge of how to satisfy the timeliness of multiple landlords. In addition, both tenants and landlords have concerns about how to best keep track of crop inputs and production by farm.

Negotiating the right budget amount is important in both the budgeted cash rent as in Table 5 and the budgeted share rent as in Table 6. Perhaps landlords and prospective tenants should consider using a common budget as they negotiate rental terms. As discussed later in this publication, a common budget

becomes the benchmark for calculating "outside-the-farmgate" adjusters for changes in costs, yields, prices, and government programs.

Perhaps budgeted yields and costs should be for good operators, not the best performing or worst performing operator in the area. Then, the best performing operator will realize extra returns in addition to those shown in the budget. The worst performing operator won't be able to pay the rent, unless he is somehow subsidizing his crop business.

In Tables 7, 8, and 9, per acre budgeted cash rent, with no adjustment for the extra price risk, is compared to 50/50 share rent for low, medium, and high productivity soils for 1998. These calculations are summarized in Table 10.

Farmers who supply timely conventional tillage machinery, labor, and management likely expect more than \$75 or they exit the industry when their machinery wears out. As shown in Table 7 and summarized in Table 10, on the low-yielding eroded Miami soil, the tenant realized more returns to his labor, management, and machinery resources with the budgeted cash rent contract @ \$85 than with the 50/50 share contract @ \$75. If the assumptions about personal opportunity costs and machinery replacement presented in this publication are correct, the tenant won't be able to provide for these needs using a 50/50 share contract on Eroded Miami type soil, even with corn priced at \$2.63 and beans at \$6.70. For the tenant to realize the \$85 allowance for labor and machinery, the landlord needs to pay the tenant \$10.00 or corn prices need to be \$.09 higher and soybean prices need to be \$.29 higher.

On the medium-productivity Crosby and high-productivity Brookston type soils, the tenant realizes more returns on the 50/50 lease. However, when expected year-end carry-over supplies increase significantly, prices will likely fall significantly. With \$2.28 corn and \$5.62 bean prices substituted in Table 8 average yielding Crosby soil, the 50/50 share tenant's contribution margin is only \$75.

For 1998, how much privilege payment, so as to increase their rent, will landlords ask for on the Brookston soil? Note that the landlord gets \$181 as budgeted cash rent versus \$148 as 50/50 share rent.

Refer again to question marks in Table 4. How much is the extra price risk in the cash rent contract? Landlords and prospective tenants negotiate this value when they agree on their lease types and terms.



**Table 5. 1997 Per Acre Cash Rent Calculation, Crosby Type Soil,  
Budgeted Rent Versus Rent Adjusted for Costs, Yields, Prices, and Government**

	<i>Budgeted Rent</i>		<i>Actual Rent if Adjusted</i>									
			Variable Costs		Yield		Price		Government		All Four	
	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield	131.4	41.9	131.4	41.9	120	44	131.4	41.9	131.4	41.9	120	44
Price	\$2.50	\$6.53	\$2.50	\$6.53	\$2.50	\$6.53	\$2.62 <sup>1</sup>	\$6.85 <sup>1</sup>	\$2.50	\$6.53	\$2.62	\$6.85
Sales	\$329	\$274	\$329	\$274	\$300	\$287	\$344	\$287	\$329	\$274	\$314	\$301
Government	43		43		43		43		45		45	
Total revenue	\$372	\$274	\$372	\$274	\$343	\$287	\$387	\$287	\$374	\$274	\$259	\$301
Less variable costs <sup>2</sup>	144	93	144	93	144	93	144	93	144	93	144	93
Contribution margin <sup>4</sup>	\$228	\$181	\$228	\$181	\$199	\$194	\$243	\$194	\$228	\$181	\$215	\$208
Rotation contribution margin	\$204		\$204		\$197		\$219		\$205		\$212	
<b>Less allowance for:</b>												
Tenant's labor, management <sup>2</sup>	\$37		\$37		\$37		\$37		\$37		\$37	
Tenant's machinery replacement <sup>2</sup>	50		50		50		50		50		50	
Equals "rent"												
Budget cash rent	\$117											
Rent with variable costs adjustor			\$117									
Rent with yield adjustor					\$110							
Rent with price adjustor							\$132					
Rent with government adjustor									\$118			
Rent with all four adjustors											\$125	

<sup>1</sup> The actual prices are the average Chicago Board of Trade futures closing prices for November, 1997 beans and December, 1997 corn on the last two Wednesdays in October, 1997 and the first two Wednesdays in November, 1997 less basis of \$0.25 for beans and \$0.20 for corn.

<sup>2</sup>Based on estimates used in the Purdue Crop Guide, ID-166 by Doster, D.H., et.al.

**Table 6. 1997 Per Acre 50/50 Crop Share Rent Calculation Crosby Type Soil  
Budgeted Rent Versus Actual Rent**

	<i>Budget 50/50</i>				<i>Actual 50/50</i>			
	<b>Landlord</b>		<b>Tenant</b>		<b>Landlord</b>		<b>Tenant</b>	
	<b>Corn</b>	<b>Beans</b>	<b>Corn</b>	<b>Beans</b>	<b>Corn</b>	<b>Beans</b>	<b>Corn</b>	<b>Beans</b>
Yield	65.7	20.95	65.7	20.95	.60	22	60.	22
Price	\$2.50	\$6.53	\$2.50	\$6.53	\$2.62	\$6.85	\$2.62	\$6.85
Sales	\$164	\$137	\$164	\$137	\$157	\$151	\$157	\$151
Government	22		21		23		22	
Total revenue	\$186	\$137	\$185	\$137	\$180	\$151	\$179	\$151
Less variable costs	63	38	81	56	63	38	81	56
Contribution margin	\$123	\$99	\$104	\$81	\$117	\$113	\$98	\$95
Rotation contribution margin	\$111		\$93		\$115		\$97	

## Negotiations

### Establishing Rental Terms

Landlords and prospective tenants use various procedures as they create their expectations about likely costs, yields, prices, and government program payments for their farms.

The information in the following paragraphs is written as if it pertains only to cash rents. However, the same procedures can be used for share rents. Suppose, for example, a landlord decides to have tenants bid for the lease on his farm as described later. Suppose the landlord wants a share lease with the tenants paying a privilege rent in addition. The landlord can write the terms for the share lease in his bid announcement and then ask tenants to bid the amount of privilege rent they are willing to pay in addition to the rent the landlord receives via the share rent terms.

### Asking Procedure

One way both landlords and prospective tenants can estimate likely rent is to ask other landlords the amount of rent they are receiving and to ask other tenants the amount of rent they are paying. To discover local rental rates and terms, also ask Extension educators, lenders, professional farm managers, and rural appraisers.

Advantages of this procedure include:

1. It's simple. There's no need to estimate costs, yields, or prices.

2. It's typical for the community. A comparable rent for comparable property appears to indicate the market clearing price for use of this real estate for the terms of the lease.

Disadvantages of the asking procedure include:

1. By asking different parties, landlords and tenants may get different estimates of the typical rent. Leases between family members or other favored parties may have much lower rents than otherwise found in the market.
2. A typical rent will lag behind current economic conditions. Why? Some persons seldom change the terms in their lease. Therefore, when their rents are averaged with persons who do change lease terms as economic conditions change, the resulting rental amount will be different than if only rents negotiated to reflect current conditions were included.
3. Persons who set their rents according to average rents will always be behind the current situation. This lag may not be perceived to be serious in stable economic times. In highly variable times or when a major change in economic conditions occurs, this lag may not be as acceptable either to landlords or to tenants.
4. The subject farm may not be typical for the community. If rental terms in a community tend to be similar regardless of soil quality, field size, location, etc., the rent will tend to reflect the productivity of the typical farm. The resulting

**Table 7. 1998 Per Acre Budgeted Rent, Eroded Miami Soil<sup>1</sup>**  
**Cash Rent and 50/50 Crop Share**  
**Corn/Soybean Rotation**

	<i>Budgeted Cash Rent</i>		<i>Budgeted 50/50 Share</i>			
	Tenant		Landlord		Tenant	
	Corn	Beans	Corn	Beans	Corn	Beans
Yield	107.1	34.3	53.55	17.15	53.55	17.15
Price	\$2.63	\$6.70	\$2.63	\$6.70	\$2.63	\$6.70
Sales	\$282	\$230	\$141	\$115	\$141	\$115
Government	28		14		14	
Total revenue	\$310	\$230	\$155	\$115	\$155	\$115
Less variable costs	124	83	54	34	70	50
Contribution margin	\$186	\$147	\$101	\$81	\$85	\$65
Rotation contribution margin		\$167		\$91		\$75
<b>Less allowance for:</b>						
Tenant's personal opportunity cost		37				
Tenant's machinery		48				
Budgeted cash rent		82				

<sup>1</sup>Based on estimates used in the Purdue Crop Guide, ID-166 by Doster, D.H., et al.

rent on low-quality land will likely be too high. On high-quality land, the resulting rent will likely be too low when compared to rent based on the way described next.

### **Budgeting Procedure**

A second way landlords and tenants negotiate rent is to create a base or benchmark budget of expected contribution margin using expected costs, yields, prices, and government programs.

Advantages of this procedure include:

1. Assuming the numbers are realistic, it reflects current economic conditions.
2. Once a base budget is agreed upon by both parties, it can be easy to keep current by recognizing changes in costs, yields, prices, and government payments.

Disadvantages of the budget procedure include:

1. Landlords and tenants, even if knowledgeable about current economic conditions, may disagree on what number to use. For example, both

parties may know about expected yields by soil type on the farm as estimated by USDA NRCS (formerly SCS) professionals. Based on many informal farmer surveys it appears that the range of farmer skills causes at least a 15-bushel corn yield variation between the next-to-best and next-to-worst farmer in any community on the same soil type. Landlords may want to use the yields, costs, and sales prices of the best farmers. Prospective tenants, particularly those tenants who are not the best performers, may want to use lower yields, higher variable costs, and lower sales prices.

The problem associated with this budget procedure can be solved. To re-emphasize points made earlier in this publication, consider the following statements. If the budget is for expected performances by a good tenant, the best tenants will be able to realize extra contribution margin returns to their resources. Conversely, poor tenants will have to pay more rent than implied by their performance. Unless they

**Table 8. 1998 Per Acre Budgeted Rent, Crosby Soil<sup>1</sup>  
Cash Rent and 50/50 Crop Share  
Corn/Soybean Rotation**

	<i>Budgeted Cash Rent</i>		<i>Budgeted 50/50 Share</i>			
	<b>Tenant</b>		<b>Landlord</b>		<b>Tenant</b>	
	<b>Corn</b>	<b>Beans</b>	<b>Corn</b>	<b>Beans</b>	<b>Corn</b>	<b>Beans</b>
Yield	132.6	42.4	66.3	21.2	66.3	21.2
Price	\$2.63	\$6.70	\$2.63	\$6.70	\$2.63	\$6.70
Sales	\$349	\$284	\$174	\$142	\$174	\$142
Government	34		17		17	
Total revenue	\$383	\$284	\$191	\$142	\$191	\$142
Less variable costs	144	94	63	38	81	56
Contribution margin	\$239	\$190	\$128	\$104	\$110	\$86
Rotation contribution margin	\$215		\$116		\$98	
<b>Less allowance for:</b>						
Tenant's personal opportunity cost	37					
Tenant's machinery	52					
Budgeted cash rent	126					

<sup>1</sup> Based on estimates used in the Purdue Crop Guide, ID-166, by Doster, D.H., et al.

somehow subsidize their crop operation, poor tenants will be forced to exit the industry when they are unable to replace their machinery.

When prices for the budget year change greatly in just a few days, expected contribution margins and thus the residual rents change greatly. Therefore, unless one party is assuming 100% of the price change, the amount of the rent will vary greatly, depending on the futures prices on the date the base rent is calculated.

### **Bidding Procedure**

A third way landlords can determine rent is to ask prospective tenants to bid for the lease. Landlords can indicate the tillage and crop for each field, as well as other terms they want in the lease. Landlords can choose between an auction and a sealed bid negotiation. With the sealed bid negotiation, landlords can more easily pick a tenant they like.

Advantages for having tenants bid for the lease include:

1. The resulting rent presumably reflects current economic conditions in the community.

2. By including terms in the bid announcement, there is no need for further negotiation.

Disadvantages include:

1. Considerable skill and time may be required to create an appropriate bid announcement.
2. Partly because it's not yet a common practice, some prospective tenants may not bid. Others may not offer competitive bids.
3. Even though the landlord controls the terms of a lease until it is signed, the landlord must find a suitable tenant who agrees to the terms.

### **Changing Rental Terms**

Landlords have various options for changing rents. These include the following.

First, a lease can be written to continue on, say, an annual basis, until either party gives appropriate notice to terminate. An advantage of this lease is that it is simple. A disadvantage of this lease is that the terms in the lease may soon no longer reflect current economic conditions. This disadvantage may be of more concern when economic conditions are more variable than when they are more stable.

**Table 9. 1998 Per Acre Budgeted Rent, Brookston Soil<sup>1</sup>**  
**Cash Rent and 50/50 Crop Share**  
**Corn/Soybean Rotation**

	<i>Budgeted Cash Rent</i>		<i>Budgeted 50/50 Share</i>			
	Tenant		Landlord		Tenant	
	Corn	Beans	Corn	Beans	Corn	Beans
Yield	163.2	52.2	81.6	26.1	81.6	25.75
Price	\$2.63	\$6.70	\$2.63	\$6.70	\$2.63	\$6.70
Sales	\$429	\$350	\$215	\$175	\$214	\$175
Government	41		20		21	
Total revenue	\$470	\$350	\$235	\$175	\$235	\$175
Less variable costs	166	104	73	42	93	62
Contribution margin	\$304	\$246	\$162	\$133	\$142	\$113
Rotation contribution margin	\$275		\$148		\$127	
<b>Less allowance for:</b>						
Tenant's personal opportunity cost	37					
Tenant's machinery	57					
Budgeted cash rent	\$181					

<sup>1</sup>Based on estimates used in the Purdue Crop Guide, ID-166, by Doster, D.H., et al.

**Table 10. 1998 Per Acre Budgeted Cash Rent and 50/50 Share Rent**  
**Eroded Miami, Crosby, Brookston Type Soils**  
**Corn/Soybean Rotation**

	<i>Budgeted Cash Rent</i>		<i>Budgeted 50/50 Share</i>	
	Tenant	Landlord	Landlord	Tenant
Eroded Miami	\$82	\$85	\$91	\$75
Crosby	126	89	116	98
Brookston	181	94	148	127

A second method for providing for changes in lease terms is to identify some standard or representative number and change the lease as this number changes. Three examples of this method are cited next.

The USDA reported state average rent is one such standard. Both parties to the lease might agree that their rent changes as the reported state average rent changes. An advantage of this lease term is that it is simple.

Disadvantages of this lease term include:

1. The number will lag current economic conditions because some rents included in the state average have not changed for many years.
2. Local economic conditions may change differently from other areas of the state, and thus the state average rent will not reflect local changes in current economic conditions.

Another standard could be the expected contribution margin budget described above. Given an agreed-upon base budget, the parties can agree to change the cash rent or the privilege rent in a share budget to reflect changes in costs, yields, prices, and/or government payments.

Finally, changes in the base rent can be made to reflect changes in costs, yield, prices, or government payments that occur outside-the-farmgate. Because this procedure is potentially quite useful, it is described in more detail.

## Cash Rent Adjustors Based on Outside-the-Farmgate Measures

In a cash rent situation, adjustors for cost, yield, price, and government program change can be included without considering the operator's actual performance. Why might this be done? First, it can be quite simple to create and monitor, as illustrated in Table 5. It can quickly reflect changes in economic conditions, thus reducing the pressure on either party to terminate the lease.

Second, the landlord may not want to worry about monitoring the operator's actual performance. The landlord may not want to be dependent on the operator's decisions about when, where, how to purchase seed, etc., or when to plant or harvest or when, where, how to market the actual crops. The landlord can avoid these concerns by using measures collected outside-the-farmgate to estimate the changes in costs, yields, prices, and/or government programs.

Third, the tenant may not want to be pressured by

the landlord about when, where, how to buy inputs, produce, and market the crops. The tenant may appreciate the opportunity to make these decisions for both this rented farm and other farms he operates without having to satisfy landlords regarding when work is done on each farm. Highly skilled operators may prefer to receive 100% of the benefits of their work, while not risking the changes of outside-the-farmgate effects of costs, yields, prices, and government programs.

In this situation, the operator is similar to a custom operator in that he knows the amount of his contribution margin supplied by the landlord. His situation is different from a custom operator's because he also gets to realize 100% of any outstanding performance over and above what's happening outside the farmgate in terms of costs, weather, prices, and government payments, and over or under what's included in the budgeted rent.

To effect this type of lease, the following adjustors are representative of ways to account for these changes.

- For variable costs, landlords can use the percentage change during the lease period in the USDA index of prices paid by farmers.
- For yields, landlords can use the percentage change in USDA published county average yields during the lease periods.
- For prices, landlords can use Chicago Board of Trade next year November beans and December corn futures prices at the time the lease is negotiated, less a normal harvest basis for a local elevator, and then adjust prices by the amount of the price change at the same elevator during harvest.
- For government program, only a slight change is expected after the lease is negotiated because payments are now known through 2002. Since different amounts will be paid each year, the rent can be adjusted accordingly.

Partly to reduce risk and partly to simplify their management, operators may prefer to have different operating arrangements on the several farms where they produce crops. By understanding the implications of each arrangement, the operator increases the likelihood of presenting either a present or a prospective landlord with the arrangement that best fits the landlord while also allowing the operator to maximize his returns. In the process, together they can create a win-win situation.

## Revising Outside-the-Farmgate Rent Adjustor Budgets

When should the original rent budget be revised? The answer is whenever one party thinks something in the rent budget needs to be revised. This revision could occur during the summer of the last year of a lease period.

At that time, one party might request a change in the percentage of one or more of the adjustors he will assume in the new lease period. Also, one party might request a change in the kind and/or amount of the variable cost items included in the rent budget.

As long as both parties think the correct variable cost items are included in their present rent budget, the costs for these items can be changed using the year-to-year percentage change in the USDA index for input prices paid by farmers.

Initially, the parties might agree to automatically include the correct annual government payment amounts already announced for the years through 2002. The parties might also agree to automatically increase the expected yields in the budget and to increase the budgeted fertilizer amounts accordingly.

Suppose both parties agree to use the USDA reported county yields to set the actual farm yields. Suppose they agree on the expected yield for the county and for the farm. Suppose they agree on the expected annual increase for the county and for the farm.

Suppose for 1998, they decide the expected county yields are 125 bushels for corn and 40 bushels for beans and the expected farm yields are 132.6 bushels for corn and 42.4 bushels for beans. Suppose they agree that both the county and the farm annual yield increase will be 1.1% per year for both beans and corn. These amounts are used in Table 11 to calculate expected yields for 1998, 1999, and 2000.

Once they learn the actual county yields, they can fill in the actual yield section as in Table 11. To find the percentage change between actual and expected yield, divide the actual yield by the expected yield for the county. Then to find the actual yield for the farm, multiply this percentage by the expected farm yield.

If both parties share in any price adjustment which occurs after the base budget is calculated, price changes will be only partly reflected in the final rent calculation. In this situation, both parties may agree to use prices on a pre-specified date, or dates, such as the average of last two Wednesdays in October

and the first two Wednesdays in November each year to calculate the final rent for that year.

## Making the Final Adjustments in the Rent

Suppose a lease is made using the outside the farmgate adjustors discussed in this paper. Partial rent payments can be made as agreed to by the parties. When can the final rent be determined?

1. Government payments are now known through 2002.
2. Actual harvest prices will be known in the fall.
3. The USDA Index of Annual Input Price Changes will be available the next April.
4. County yield reports, published the next May, will likely be the last information to become available.

After considering this information, parties might decide to make a final rent settlement during the following summer. At that time, they can also consider making any changes in their lease.

## Summary Statement on Outside-the-Farmgate Rent Adjustors

Earlier, it was stated that some landlords and tenants hesitate to change rental terms for a number of reasons, including the complexity and stress of frequent negotiations. A simple, almost automatic, way to adjust rents both during the lease period and between lease periods is described in this publication. Once the initial terms are agreed upon, the lease can continue until one party wishes to change something. While the negotiations likely will require considerable effort initially, the effort to monitor performance will be quite small.

This publication includes more precise calculations than generally used in the leasing process. Why? We now have more precise information about soil types and expected yields. Also, we now have more information about costs, future market prices, and government payments. Spreadsheets can be written for doing the budgeted rent calculations.

A landowner may want or need to keep a tenant but not want to share in his actual performance. The parties could be friends, but the landowner is concerned that the tenant's performances are not as productive as some other tenants in the area. The parties could create a satisfactory budgeted rent and then share in the outside-the-farmgate changes.

Having an outside-the-farmgate adjustor lease might reduce tensions in a number of family-related

**Table 11. Expected and Actual Corn and Soybean Yields, 1997,1999**  
**Expected Annual Yield Increase: Corn 1.5 Bushels; Beans, .5 Bushels**  
**Example County and My Farm**

	<i>Expected Yield</i>				<i>Actual Yield</i>			
	County		My Farm		County		My Farm	
	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans
1998	125	40	132.6	42.4	---	---	---	---
1999	126.4	40.4	134	42.9	---	---	---	---
2000	127.8	40.9	135.5	43.3	---	---	---	---

landlord-tenant cases. On the one hand, the landowner can deal effectively with perceived below-average tenant performance as described in the previous paragraph. On the other hand, a superior performing tenant may prefer the outside adjustor lease because he gets 100% of his performance.

As is true with all leases, the significant negotiations occur prior to the signing of the lease. With this lease, changes in economic environment and much of the farm's weather conditions if you use county average yields, can be reflected automatically within the current lease period.

Many tenants can satisfy many landlord concerns by offering leases which include a budgeted cash rent with outside-the-farmgate adjustors as agreed to by both parties. Once leases are in place, tenants can operate their various rental farms as if they were one unit. They can plant and harvest each field on the dates that maximize the tenant's contribution margin.

Many landowners can benefit from reduced stress of not worrying about when the operator is planting or when he is going to harvest, or when the crops should be sold.

## In Conclusion

Now is an exciting time! Many leases will be rewritten, and many rental farms will change operators in the coming months.

Tenants and landowners who plan to make changes in their leases for next year should take

appropriate measures to ensure that both parties understand that the current lease or lease terms will not continue in effect.

In new leases, both landlords and tenants may want to consider using outside-the-farmgate adjustors to account for changes in costs, yields, prices, and government payments. These terms can be simple to create and to monitor. The landlord does not need to worry about the operator's actual performance, and the operator does not need to feel pressured to plant or harvest this farm on the best plant/harvest date. Finally, outstanding operators may prefer to receive 100% of the benefits of their work, while not risking the changes of outside-the-farmgate effects of costs, yields, prices, and government programs.

Landlords, do you want to negotiate new leases for next year? Give your present tenants the first opportunity to rent the farm again. While you're doing these things, get your lease in writing.

Tenants, if you want more land, this is a good time to offer a prospective landlord a higher rent and/or better services than he now has. You might want to reduce your risk. Offer to pay higher base or current rent except include adjustors for some or all of the actual changes in costs, yield, price, and/or government programs.

If you want to keep your present farm, do your budgeting homework, make an appointment with your landlord, and get your lease signed for next year as soon as possible.



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