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Weekly Farm Economics: Variable Cash Rental Arrangements in 2023

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Large cost increases call into question whether rent factors on variable cash rental arrangements require adjustments, as variable leases do not consider costs in rent determinations. At current projections of 2023 harvest prices, variable cash leases will have higher payments to landowner than 1) traditional share rents and 2) cash rents set at regional averages. Variable cash rent leases are projected to leave farmers with positive returns when payment factors are near those that have resulted in the same average levels as share rent, 32% for corn and 42% for soybeans in northern and central Illinois. Variable leases with higher rent factors — for example, 40% for corn and 45% for soybeans — have projected negative returns to farmers.

Historic Rental Returns

Figure 1 shows operator and land returns for high-productivity farmland in central Illinois given a 50-50 corn-soybeans rotation. A summary of revenues, costs, and returns for corn and soybeans is shown in the farmdoc publication entitled Revenue and Costs for Illinois Costs. Appendix Table 1 shows revenue and costs for 2021 and projections for 2022 and 2023. The operator and land return provides returns to both the farmer and landowners. For example, if the operator and land return is $400 and a $350 cash rent is paid to the landowner, the farmer has a $50 net return.

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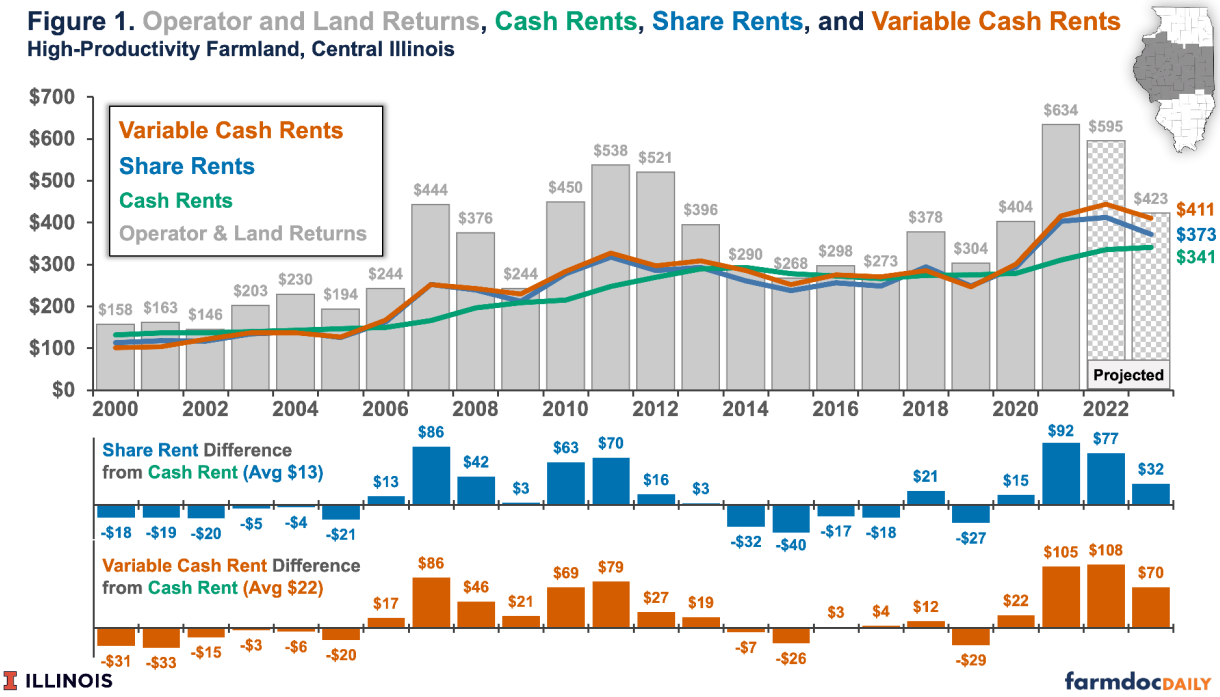
Figure 1. Operator and Land Returns, Cash Rents, Share Rents, and Variable Cash Rents
High-Productivity Farmland, Central Illinois



Three leases also are shown in Figure 1:

1. Cash rent. The cash rents shown in Figure 1 are the yearly averages for high-productivity farmland in central Illinois. From 2000 to 2012, cash rents averaged $220 per acre. The cash rent is a cost to the farmer for using the farmland, and a return to the landowner. Cash rents tend to lag changes in farmland return. For example, cash rents did not increase as much as share rents and variable cash rents during the high return period from 2010 to 2013. However, cash rents continued to grow in 2014 after operator and land returns came down.

2. Share rent. Under a share rent, the farmer and landowner share in gross revenue and direct costs. In central and northern Illinois, typical sharing is 50% to the farmer and 50% to the landowner. Figure 1 shows the traditional share rent as applied to high-productivity farmland in central Illinois. Like the cash rent, a share rent represents a cost to the farmer for using the farmland, and a return to the landowner. From 2000 to 2021, share rents averaged $229 per acre, $9 per acre higher than the average cash rent. By design, share rents react more quickly to economic conditions. Share rent levels were above cash rents from 2003 to 2012, when operator and land returns were high. Share rents where then below cash rents from 2013 to 2018. From 2020 onward, share rents have been above cash rents.

3. Variable cash rent (*farmdoc daily*, August 10, 2021). Variable cash rents have a minimum cash rent, with additional payments with "high" crop revenue (see *farmdoc daily*, September 22, 2022). The additional payment is based on a rent factor times crop revenue. The rent factor is a percentage negotiated between the farmer and landowner. The levels shown in Figure 1 are based on rent factors of 32% for corn and 43% for soybeans, factors that result in a variable cash lease having the same levels as the other leases over time (see farmdoc Daily, September 22, 2022). From 2000 to 2022, share rent and variable cash rent levels followed each other closely, having a .99 correlation coefficient.

Projected 2022 and 2023 Returns

Share rents and variable cash rents diverge in 2022 and continue to diverge in 2023 (see Figure 1). In 2022, share rents are projected at $413 per acre compared to $444 per acre for variable cash rent, resulting in variable cash rents having $31 per acre higher return than share rents. In 2023, variable cash rents are projected to have a $38 higher return: $373 for share rents compared to $411 for variable cash rent.

This divergence occurs because of large cost increases in 2022 and 2023. Direct costs for corn increased from $415 per acre in 2021 to $582 per acre in 2023, a $167 per acre increase (see Appendix Table 1). Direct costs for soybeans increased from $192 per acre to $288 in 2023, a $96 per acre increase. Share rents reflect that increase in its level, while variable cash rents do not vary rent level based on direct costs.

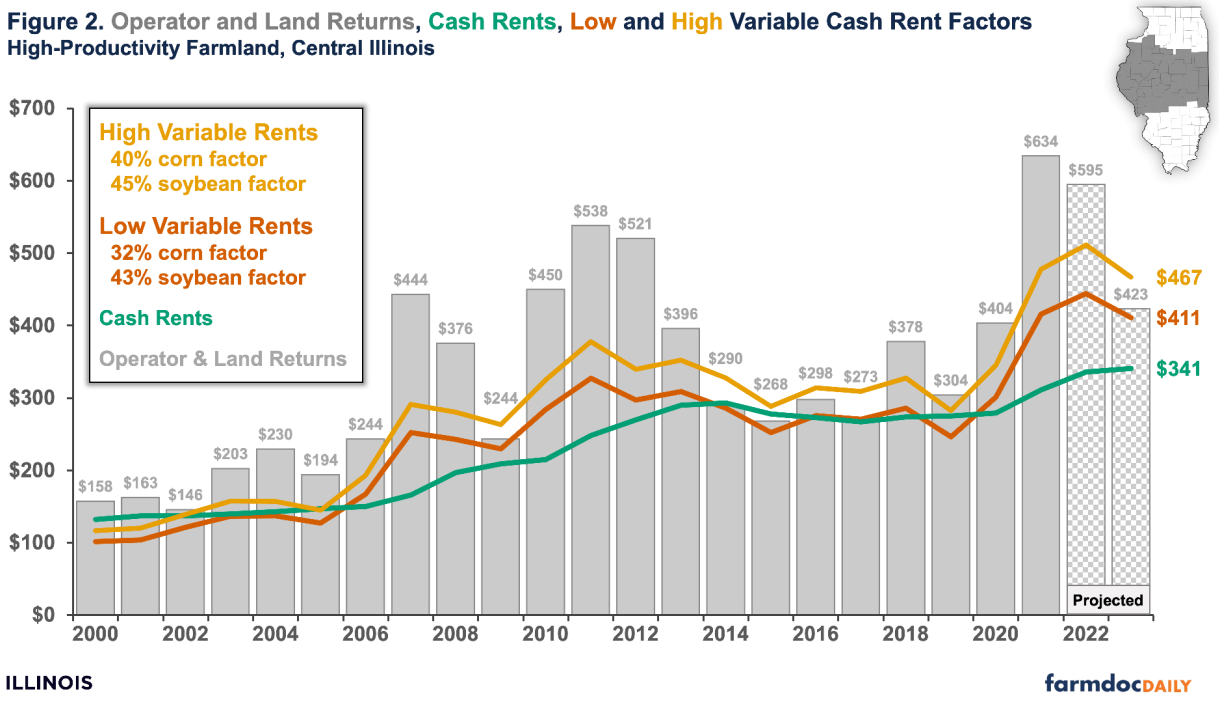
That divergence may not signal issues for 2023, as operator and land return is still projected above the variable cash rent, thereby leaving funds available for a farmer return (see Figure 1). Still, farmers would have $38 lower return using a variable cash rent than with a share rent. Moreover, the rent factors used to produce Figure 1 are lower than may exist in many leases.

Leases with Higher Rent Factors

Many variable cash leases have higher rent factors than 32% for corn and 42% for soybeans. Figure 2 shows two variable leases:

- Low variable cash rent has a 32% factor for corn and 42% for soybeans. These factors are used in the variable cash lease shown in Figure 1.
- High variable cash rent has a 40% factor for corn and 45% for soybeans.

Figure 2. Operator and Land Returns, Cash Rents, Low and High Variable Cash Rent Factors
High-Productivity Farmland, Central Illinois



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From 2000 to 2021, the "high" variable cash lease had average payments $34 per acre higher than the "low" variable lease. In 2023, the high variable lease is projected at $467 per acre, $56 higher than the $411 for the low variable lease. The $467 high level is $44 per acre higher than the $423 projected operator and land return.

Even at prices of $5.50 for corn and $13.40 for soybeans, leases with the high variable cash rent factors have the potential to generate negative returns for the farmers.

Prospects for Adjustments in Future Years

Prospects are for continued high prices and higher costs of production in 2023. Projections are based on a $5.50 corn price and a $13.40 soybean price, near current fall delivery bids. A return to lower prices likely will require lease adjustments. For example, prices averaged close to $4.00 per bushel for corn and $10.00 per bushel for soybeans between 2013 to 2019. At those levels, the 2023 operator and land return would be $119 per acre, well below any level from 2000 to 2021 (see Figure 2). The share rent would be

at $254 per acre, and the variable cash leases would be at $300 level, well above the $119 operator and land return.

The operator and land return of $119 per acre is based on costs staying at 2023 projected levels. Some declines are possible but are not guaranteed. In fact, history would suggest that cost adjustment would be slow and not back to levels before the increases (*farmdoc daily*, November 22, 2022). As a result, lower prices likely will require adjustments in terms of all leases if costs do not show commensurate declines.

Summary

Returns have been relatively high in recent years, leading to farmer profitability under most lease arrangements. Variable cash leases with moderate rent factors still are expected to yield farmers profitability. Variable cash leases with “high” rent factors are projected to leave negative farmer returns in 2023. Leases will need to be adjusted in the future if prices are lower and costs do not decrease.

References

Coppess, J., J. Janzen, K. Swanson, N. Paulson, C. Zulauf and G. Schnitkey. "Mulling Over Margin, Part 2: the “Elusive” Cost of Production." *farmdoc daily* (12):146, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 22, 2022.

Lattz, D. “Cash Rent Leasing Fact Sheet.” Illinois Farm Management Handbook, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, published April 4, 2017.

Lattz, D. “Share Rent Leasing Fact Sheet.” Illinois Farm Management Handbook, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, published April 4, 2017.

Schnitkey, G. and K. Swanson. “Revenue and Costs for Illinois Grain Crops.” Illinois Farm Management Handbook, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, published December 5, 2022.

Schnitkey, G., C. Zulauf, K. Swanson and N. Paulson. "A Straight-Forward Structure for a Variable Cash Rent." *farmdoc daily* (11):117, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 10, 2021.

Schnitkey, G., C. Zulauf, N. Paulson, J. Coppess and J. Baltz. "Historic Cost Declines After Price Declines." *farmdoc daily* (12):177, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 22, 2022.

Appendix Table 1. Corn and Soybean Returns, Central Illinois with High-Productivity Farmland.

	Corn			Soybeans		
	2021	2022P	2023P	2021	2022P	2023P
Yield per acre	221	225	227	72	71	72
Price per bu	$5.90	$6.40	$5.50	$13.40	$14.00	$13.40
Crop revenue	$1,304	$1,440	$1,249	$965	$994	$965
ARC/PLC	0	0	0	0	0	0
Ad hoc Federal payments	0	0	0	0	0	0
Crop insurance proceeds	14	0	0	5	0	0
Gross revenue	$1,318	$1,440	$1,249	$970	$994	$965
Fertilizers	154	210	250	45	85	95
Pesticides	90	113	123	54	68	74
Seed	114	120	130	72	78	84
Drying	20	26	34	0	2	4
Storage	6	6	6	5	5	5
Crop insurance	31	39	39	16	26	26
Total direct costs	$415	$514	$582	$192	$264	$288
Machine hire/lease	16	18	20	14	16	18
Utilities	5	6	7	5	6	7
Machine repair	32	38	41	28	34	37
Fuel and oil	19	29	34	16	24	26
Light vehicle	2	2	2	1	1	1
Mach. depreciation	69	75	79	60	66	70
Total power costs	$143	$168	$183	$124	$147	$159
Hired labor	22	23	25	20	21	22
Building repair and rent	6	7	8	5	6	7
Building depreciation	12	13	14	10	11	12
Insurance	11	12	13	11	12	13
Misc	11	12	13	11	12	13
Interest (non-land)	14	12	20	12	10	18
Total overhead costs	$76	$79	$93	$69	$72	$85
Total non-land costs	$634	$761	$858	$385	$483	$532
Operator and land return	$684	$679	$391	$585	$511	$433
Land costs (cash rent)	$311	$336	$341	311	336	341
Farmer return	$373	$343	$50	$274	$175	$92

Gross revenue - Total non-land costs = Operator and land return
Operator and land return = Land costs (cash rent) + Farmer Return
Data source is Illinois FBFM

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