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Farmland Rental Rates and Arrangements

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Abstract

This paper examines the rental rates that tenants can afford to pay given alternative price and yield conditions. Over the last several years, harvest prices and yields have generally tended to be higher than their expected values when rates were negotiated with landlords. The benefits have accrued to the tenants if the farmland rental contract was a fixed, cash rental arrangement. Since the downside risk in net returns is likely greater than the upside risk, the paper also looks at alternative share arrangements that minimize the downside risk to tenants and allow landlords to enjoy an increase in returns if prices move higher than expected.

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Farmland Rental Rates and Arrangements

Farmland prices have replaced weather as the main point of casual conversation in the coffee shops and curling rinks of rural Ontario. People shake their heads in amazement when discussing the rapid increases in the prices for both purchased and rented farmland over the last several years.

While the increase in the selling price may include long-term considerations, such as expectations of future growth over many years, the rental rate should reflect the value that the farmer can generate from the land for a single year. Can the increase in net returns to cropping explain the approximate 50% increase in rental rates over the last several years? What might be the projected rental rates this coming crop year? And what rates can farmers afford to pay?

The maximum rental rate that can be paid should be no more than revenues less non-land variable costs. This net return is the amount that can be split between the tenant and landowner. We have listed net returns per acre for growing corn under different price and yield scenarios in Table 1.

The four corn prices in Table 1 represent a range of potential prices that may occur in 2013. The \$5.50 corn price is roughly the forwarded contracted price for delivery in the fall of 2013 and sets the most likely scenario. Given the tight stock to use ratios, difficult weather conditions next year could push prices up to \$6.50 and beyond as we have seen in 2012. However, prices in the \$4.50 are also possible if yields are high on the record acreage of corn expected to be planted in 2013.

The four sets of yield conditions reflect either difference across the province or across time. Soil quality and heat units vary across the province and thus so will yield. However, corn yields can also vary significantly between years for a given location. For example, parts of southwestern Ontario enjoyed record high corn yields in 2012 while nearby farms on sandy soils with little rainfall suffered from yields well below average.

While revenue changes with price and yield, it is assumed that the variable costs of growing corn remain the same across the scenarios at \$540 per acre. This projected cost is from Publication 60 by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA 2012). The actual cost will vary by operator but do not differ significantly across regions due to similar input prices across the province.

The revenue less non-land variable costs (\$540 per acre) given in Table 1 represent the maximum rental rate that can be paid by the tenant under the respective price and yield conditions. This rent would leave nothing to cover mortgage payments or returns to the farmer's labour and management. However, rental rates in an area are often set by the maximum amount that one individual pays. Adjustments to this maximum rate must be made by the individual tenant depending on factors such as yield and debt load as we will see below.

Table 1. Revenues less Non-Land Variable Costs for Corn under Alternative Price and Yield Conditions (\$/acre)

Price (\$/bu)	Yield (bu/acre)			
	120	150	180	210
4.50	0	135	270	405
5.50	120	285	450	615
6.50	240	435	630	825
7.50	360	585	810	1,035

Variable costs are \$540 per acre and do not include principal and interest on long-term debt. The net returns represent returns to the tenant's labour and management.

Given the current expected price in 2013 of \$5.50, rental rates per acre would then vary from \$120 under low yield conditions to \$615 with yields of 210 bushels per acre. With yields of 120 bushels per acre, the tenant could not afford to rent land with a price of \$4.50 while the maximum that could be paid is \$360 with the most optimistic price condition. In contrast, tenants with yields of 210 bushels per acre could afford \$400 per acre rental rates even with low price conditions.

The actual returns to tenants from paying three alternative rental rates (\$250, \$300, and \$350) under alternative price and yield conditions are listed in Table 2. The last column provides the break-even rental rates, which can also be seen from Table 1. A farmer offering \$300 per acre for rent in the spring based on booking an expected output of 210 bushels per acre at \$5.50 per bushel will generate a return of \$315 per acre for returns to labour and management. However, the tenant will not cover variable expenses and lose \$15 per acre if actual yields are less than expected at 150 bushels per acre.

Given rental rates have moved into the \$300 range and above in many regions of the province, the values in Table 2 highlight that both price and yield need to be solid in order for the tenant to cover expenses. In making their bids, tenants should consider back to last year at this time when expected harvest prices were in the same range. Farmers with an average yield of 150 bushels offering \$250 for cash rent would have expected to make a small positive return with an anticipated price of \$5.50. However, the drought in the US Midwest sent CBOT prices for corn around \$8 in the summer and current local cash prices for corn are around \$6.75. The increase in actual prices that are over \$1 higher than expected resulted in a profitable return to the rental arrangement.

Prices will not always continue to be higher than what are expected in the spring. The past few years have been anomalies and should be considered as such when making rental bids. For example, Schnitkey at the University of Illinois has estimated there is a 20% chance of CBOT prices falling below \$5 from the current expected level of \$6 on the basis of historical price changes. The chance of falling prices and its effect on the net returns should be accounted for by the individual tenant when making rental bid offers.

Table 2. Net Returns to Tenant for Corn under Alternative Corn Price and Yield Conditions and Cash Rental Rates

Price (\$/bu)	Yield (bu/acre)	Cash Rental Rates (\$/acre)			Break-Even (\$/acre)
		250	300	350	
4.5	150	-115	-165	-215	135
	210	155	105	55	405
5.5	150	35	-15	-65	285
	210	365	315	265	615
6.50	150	185	135	85	435
	210	575	525	475	825

Cash versus Share Contracts

Farmland rental contracts have moved from share arrangements to fixed cash rental agreements in which the tenant pays a portion of the rent in the spring and the remainder at fall harvest. We recently found that over 80% of Ontario's farmland is rented on a cash basis. Why the change? Would landlords have been better off with a share arrangement?

The benefits of share contracts arise from the sharing of risk between the landlord and tenant. These contracts tend to dominate in a developing country context due to poor, tenant farmers being very risk averse relative to the landowner who are generally significantly wealthier than the farmer renting the land. In Ontario, farmers are entrepreneurs and are often both more willing and able to take on risk compared to landowners. The owners of rented farmland typically do not want to face the wrath of commodity markets and are happy to receive a cash payment for the use of their asset.

The other reason that both the tenant and landowners generally prefer cash rental arrangements is the measurement costs of at least the output from the rented land, and possibly the inputs if it is profits that are shared. The larger the operator, the greater the hassle of measuring yields for each individual property. Our recent study on farmland rental markets found that farmers renting land dealt with an average of 3 landlords. Similarly, the landlord may not have the interest nor the ability to market the crop received from the tenant.

The net result is that cash rents have become the primary farmland rental arrangement in Ontario. However, would landlords have been better off with a share arrangement? Could tenants use this information to obtain land in a competitive farmland rental market?

The returns to cash rent versus share rental arrangements are given in Table 3 for different crop revenue conditions. Revenue of \$750 per acre can arise from a yield of 150 (120) bushels per acre and a corn price of \$5 (\$6.25) per bushel. If selling price is at the current 2013 expected price of \$5.50 per bushel, yield of 227 bushels per

Table 3. Net Returns to Tenant and Landowner under Alternative Cash and Share Crop Arrangements for Different Crop Revenue Conditions (\$ per acre)

Crop Rental Arrangement		Revenue per Acre (\$/acre)			
		750	1000	1250	1500
<u>Cash Rent</u>					
\$250	Tenant	-40	210	460	710
	Landowner	250	250	250	250
\$300	Tenant	-90	160	410	660
	Landowner	300	300	300	300
\$350	Tenant	-140	110	360	610
	Landowner	350	350	350	350
<u>Share Rent</u>					
50% Profit	Tenant	105	230	355	480
	Landowner	105	230	355	480
33% Output	Tenant	250	333	416	500
	Landowner	-40	127	293	460

Variable costs are \$540 per acre and do not include principal and interest on long-term debt. The tenant pays these non-land costs except in the 50% profit share arrangement in which both revenues and costs are split equally between the tenant farmer and landlord.

acres would result in a crop revenue to \$1250 per acre. This revenue could also result from a price of \$6.50 per bushel and a yield of 192 bushels per acre. Thus, revenues greater than \$1250 are associated with very favorable conditions for both price and yield.

Cash rent options give the landowner a fixed amount per acre regardless of the revenue scenario. The tenant farmer bears the risk of revenue variability. From the revenue generated on the farmland, the farmer must deduct the nonland variable expenses of \$540 and the rental payment. For example, the farmer has \$210 per acre available to pay for rent after production costs if the revenue is \$750 per acre. Thus, the farmer loses \$40 per acre if the cash rent is \$250 per acre and the loss increases with every dollar increase in rent paid.

Increases in crop revenue go to the tenant under fixed cash rental arrangements. If crop revenue increases \$500 from \$750 per acre to \$1,250 per acre, the farmer goes losing \$40 to receiving \$460 for a cash rent of \$250 per acre. If the revenue per acre was \$1,040 (\$1,140), then the farmer and landlord would have received the same amount if the cash rent was \$250 (\$300). Beyond that revenue level, the landlord would have generated more income through a share arrangement.

The equal split of profit between the tenant and landowner means that the transacting parties share the downside and upside of the markets. In the worst-case

scenario in Table 3 with a revenue of \$750 per acre, the net revenue of \$210 is split between the two parties. In the case of the tenant, the resulting returns of \$105 are higher than any of the cash rental options. In the case of the landlord, this return is significantly less than the fixed cash rental payment. In contrast, high revenues of \$1250 per acre or higher result in lower returns to the farmer than the cash rental option whereas the returns are higher for the landlord.

An alternative to the splitting of revenue and costs is an arrangement in which the landlord receives one-third of the output. This option offers greater downside protection to the farmer as compared to the 50% profit share without curtailing returns as crop revenue increases. However, it is less attractive to the landlord than the other share arrangement.

The main point to come away with from Table 3 is that the tenants have benefited from crop revenues higher than that expected at the time when cash rents were established. The opposite could have happened. While farmers reap the benefits from upside risk, they also bear the costs of any downside risk. The potential for falling prices should be accounted for in the rental contracts. Using the comparison of share and cash rent for the landlord under high revenue scenarios may be a way to mitigate that risk for tenants.

Variable Cash Lease Arrangements

Rental rates are correlated with crop revenues but the rate of increase in cash rates has lagged behind crop prices. The jump in crop prices in a given crop year raises the ability and the expectation about net returns in the next crop year. Tenants are then prepared to offer more (and landlords expect more) based on what happened in the past.

The steady increase in prices over the last several years has benefited tenants; returns have often exceeded initial expectations when rents were set. What happens to the financial situation if crop prices fall rather than increase? Are there rental arrangements to mitigate this risk with methods other than price and/or yield insurance?

The potential for prices to fall should be considered when making rental decisions. One approach would be to lower cash rates based on expected prices but these price projections will vary by tenant and the landlord will accept the highest cash rate, which will come from the farmer with the most optimistic price forecast. You could be left out of the rental market.

An alternative to the fixed cash rental is a share arrangement or a mixture of a cash and share agreement. The use of a cash rent with bonus contract is increasing in the US Midwest as it offers downside protection to the tenant but also allows the landlord to enjoy higher returns if the upside potential of revenues are reached.

A variable cash lease involves a fixed cash rental rate that must be paid by the tenant regardless of revenue but also includes a bonus for the landlord if revenues

exceed a target. The negotiations are more complex for such a rental contract as the farmer and landlord must agree on: 1) the base rent, 2) the revenue trigger that kicks in the bonus, and 3) the landlord share of revenue above the trigger.

An example of a variable cash lease and the returns it offers to the tenant and landlord is given in Table 4. The minimum cash rent that must be paid by the farmer is \$200 per acre in this example. A crop revenue target is established at \$750 per acre, which just covers the land cost of \$200 and non-land expenses of \$540 per acre. Revenue is measured by actual yield from the land being rented and price, which can be measured as the local harvest price or a 6-month average of new crop prices for the period leading up to harvest. The revenue share to the landlord going to the landlord for returns above this target is set at 40%.

At the target revenue of \$750, the landlord receives the guaranteed rent of \$200 and the tenant receives the remainder after non-land costs (\$540) and rent (\$200) are covered, which is \$10 per acre. If revenues increase to \$1000, the landlord gets the \$200 but also a bonus payment. The bonus is equal to 40% of the difference between actual and target revenue ($1000 - 750 = 250$), which is \$100. Thus, the landlord receives a total of \$300 equal to the base rent of \$200 plus the bonus of \$100. From the \$1000 revenue, the farmer must cover his expenses of \$540 and pay a rent of \$300, which leaves a net of \$160.

As revenues increase, the amount going to both parties increases. For every \$250 increase in revenue above the target, the rent going to the landlord increases by \$100 (40% of \$250). The return to the farmer increases by \$150 for every \$250 increase in revenue about \$750.

The advantage of the variable cash rental arrangement is that it partially shares both the downside and upside risks of the commodity markets between the tenant and landlord without going into a complete profit share agreement. The contrast with a fixed cash rent of \$300 is illustrated in Table 4. The return to both parties is the same as with the fixed and variable cash rent options if revenue is \$1,000 per acre. This revenue can be obtained under current expected harvest prices of \$5.50 per bushel and a yield of 182 bushels per acre. If prices or yields fall below these expectations and actual revenue is \$750, the farmer would lose \$90 under a fixed cash rent of \$300 but have a small surplus with the variable cash lease. However, if harvest conditions exceed expectations and revenues are \$1250 per acre, then the landlord receives \$400 under the bonus scheme as opposed to \$300 with the fixed cash rent. The return to the farmer would drop by the \$100 from \$410 to \$310 but the returns are still healthy and may be worth the downside protection.

These parameters are interrelated and cannot be negotiated separately. For example, the tenant may want a lower base rent but the landlord will seek a lower trigger and/or higher bonus share in return. An alternative variable cash lease arrangement is listed in Table 4 with the base rent increased to \$250 and the share above the target lowered to 30%. The University of Illinois offers a spreadsheet to estimate the returns to each party with alternative parameters and revenue conditions (FAST 2012).

Table 4. Net Returns to Tenant and Landowner under Fixed and Variable Cash Rental Arrangements for Different Crop Revenue Conditions (\$ per acre)

Crop Rental Arrangement		Revenue per Acre (\$/acre)			
		750	1000	1250	1500
<u><i>Fixed Cash Rent</i></u>					
\$300	Tenant	-90	160	410	660
	Landowner	300	300	300	300
<u><i>Cash Rent with Bonus</i></u>					
\$200 base	Tenant	10	160	310	460
40% share > \$750 target	Landowner	200	300	400	500
\$250 base	Tenant	-40	135	310	485
40% share > \$750 target	Landowner	200	325	400	475
Non-land variable costs of \$540 per acre are paid by the tenant and do not include principal and interest on long-term debt.					

Farmland rental markets have become more competitive over the last several years due to the increase in commodity crop prices. Since rents have lagged behind crop prices, the returns to renting have exceeded expectations. This has fed the optimism in the market by both tenants and landlords. However, 2013 prices are expected to fall from those for the current crop year and rental rates offered by tenants should carefully consider likely prices, yields and costs when making a bid. Alternative rental arrangements may offer a means to protect the downside risk to farmers but also allow landlords to earn some of the returns from upside risk.

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