An Examination of the Installment Land Contract

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Background:

Much of the earliest work focused on the ability of seller financing to facilitate entrance into farming. Studies indicated that the ILC typically carried lower downpayments and had terms more easily tailored to individual circumstances. However, the typical lower equity position of the borrower increases the riskiness of these contracts. On the other hand, ILCs are often implemented between parties that have family or business relationships. These relationships may provide additional bonding functions to reduce the risks of contract nonperformance.

The legal characteristics of seller-financed transactions have received much study. In particular, the view of the state courts toward equitable interests in the event of default have led to differing forms of seller financing. Some states will uphold a forfeiture clause which terminates the buyer's interest in the property for violation of any contract terms. Other states force a resolution of equity interests through foreclosure procedures. For example, Missouri treats ILCs as a mortgage-in-kind and, hence, the advantages of ILCs relative to seller mortgages are less material. As a consequence, the seller mortgage is more common than the ILC in Missouri.[1]

Prior to the Tax Reform Act of 1986, there was an incentive to alter the terms of an ILC in order to realize returns as capital gains. Sellers might reduce the interest rate in exchange for a higher selling price because the difference between acquisition cost and sales price was taxed at a lower rate than the income from interest payments. Although the Tax Reform Act largely eliminated the tax-driven preference for capital gains, individuals with particular preferences for the schedule, timing and magnitude of payments could still benefit from a customized ILC.

Several studies examined the financial implications of using various sources of financing. Barry and Levi use NPV and internal rate of return (IRR) measures to examine impacts of changes in downpayment, taxable income, interest rate, repayment period, capital gains, balloon payment amount, and inflation rates. Their model demonstrated the impact of changes in each of these variable on the financial positions of the participants, and could be used to compare various "packages" of terms.

Thompson and Kaiser indicate that prices paid for seller-financed land are higher than prices paid for land financed through other sources. They controlled for land characteristics and financial terms including interest rate, downpayment, and term. They concluded that the remainder of the premium paid under seller financing was partly attributable to the "risk" premium for the seller lending to a borrower who likely could not qualify for other financing sources. However, they did not account for transactions costs, or specific balloon or interest-only provisions which could also help explain their findings.

Eberle and Fiske hypothesized that buyers would bid the value of an installment land contract into the price of farmland, if a competitive market existed. After controlling for differences in yield, tract size, and timing of sales, they found that the differential value of the interest and amortization terms is bid back into the sales price of farmland. Hence, a buyer's total position in a property is invariant to the source of financing, and roughly reflects the capitalized value

acres. Acres operated ranged from 0 to 3,700 acres; the acres owned ranged from 7 to 1,980 acres.

The total purchase price for the parcels sold under land contract averaged $136,909. The downpayment ranged from $0 to $190,000 representing 0 to 92% of the total cost. The average downpayment of 17.5% is considerably lower than the downpayments with either commercial banks or the Farm Credit System (Ellinger, Barry, and Mazzocco). This finding is consistent with previous studies which indicate that the downpayment percentage under ILCs is lower.

The buyers were also asked about the purchase price of the property under land contract and the interest rate charged by the seller. Eight percent felt that the price they paid was higher than it would have been under other financing sources. Most (59%) believed the price was the same as it would have otherwise been and 33% felt that the price was lower. With regard to interest rate charged, 76% felt that they paid a lower rate than they would have under alternative sources, 22% felt they had paid the same rate, and only 2% felt that they had paid a higher interest rate.

The interest rate charged ranged from 5-11.5% with an average value of 8.8%. This average rate is lower than the average rate from other sources over the same time period. For example, FCS and commercial bank mortgage rates over the period were on average 10.5% (USDA 1992) and 11.1% (Walraven and Rosine), respectively. The average repayment period was 11.4 years and ranged from 2-30 years.

The respondents were also asked to rate the importance of several factors in using the land contract to purchase farm real estate. In order of ranking, the reasons cited were: (1) favorable payment schedule; (2) low interest rate; (3) less complicated than working with financial institution; (4) low downpayment; (5) only method of farm transfer that the seller would accept; (6) easy means for family farm transfer; (7) only available credit source was the seller; and (8) family previously purchased land on contract.

Financial Implications of an Installment Land Contract:

Two models were developed to assess the financial impacts of using an ILC, First, a net present value model (NPV) was constructed to examine the profitability of an investment in an identical parcel under various financing alternatives. The model was also used to assess the impacts on profitability of changing the terms of financing within each of the alternative sources. Second, a recursive farm-level simulation model was employed to examine the impacts through time on farm performance of using various sources of financing. To test the sensitivity of the results to the model specification, several scenarios were constructed that reflected various initial conditions and assumptions about earnings rates.

In cases when the after-tax discount rate (cost of equity) exceeds the after-tax interest rate (cost of debt), the NPV of the investment moves inversely with downpayment percentage. This relationship reflects a decrease in the leverage in which higher cost equity capital is substituted for lower cost debt capital. In cases when the after-tax interest rate exceeds the after tax discount rate, investors can improve the NPV by using their own equity rather than credit (i.e., by increasing the downpayment). When the discount and interest rates are equal, there is no advantage to substituting debt capital for equity capital or extending the repayment period.

By increasing the discount rate to 11%, the NPV decreases to $137; a drop of 57.9%. This value is found in the corresponding position of section I of table 2 where the loans terms include an interest rate of 8.8%, a 17.5% downpayment, and a 10-year repayment period. When the discount rate is increased to 12%, the NPV drops to a negative $15 (table 3). The negative NPV indicates that the investment is unprofitable and should not be undertaken.

Moving between the sections of each table illustrates the differences in NPVs from changing the repayment period. Given the assumptions of the model, as the repayment period increases, so will the investment's NPV as long as the after-tax discount rate is greater than the after-tax interest rate. If the after-tax discount rate is greater than the after-tax interest rate, then the investor benefits from paying the loan off over a longer period. Moving from section I to section II, extending the repayment period from 10 to 20 years increases NPV from $325 to $365. In this case, the after-tax cost discount rate is 7.2% and the after-tax interest rate is only 6.336%. Thus, the investor can place his or her equity in another investment which earns 7.2% after-taxes and make payments on a loan which has an interest cost of only 6.336%. Increasing the repayment period further, to 30 years, raises the NPV to $375, a 2.7% increase over the 20 year alternative.

NPV Model Sensitivity:

The sensitivity of this model was examined by changing the capital gains rate, the tax rate, the earnings growth rate, and the cash return. This type of analysis broadly demonstrates the directional impact on profitability of changes in various characteristics of land purchase. These results are compared over a wide range of parameter values that reflect the data observed from several financing sources.

For example, the model indicates that when the rate of capital gains is decreased by one percent, the NPV is reduced, all other financing terms held constant. Further, the investor is better off in all cases when the tax rate is lowered. In general, the effect is greater as the after-tax interest rate and downpayment are increased and less as the repayment period is increased. The NPV model is also negatively related to the rate of growth of the investment's earnings. Similarly, a decrease in the cash returns from the investment reduces NPV.

An extension of this analysis determines how land price or the interest rate on a loan must be lowered under FCS and commercial bank financing to equate the NPVs with that of the land

repayment plan. For this model only a fixed total payment plan is used. The repayment periods under land contract, commercial bank, and FCS financing are 10, 20, and 30 years respectively. The repayment term under a land contract was 10 years, consistent with the survey findings. If the reserve fund balance does not meet or exceed the downpayment requirement, then no additional land or machinery is purchased.

The model farm consists of 700 tillable acres of which 140 are owned and 560 acres are cash rented, yielding a tenure ratio of 20%. Based on IFBFM data, the owned land is assigned an initial value of $292,880 or $2,092/acre. If we further assume that farmland accounts for roughly 35% of a farm's total assets, then total assets are $836,000. At the beginning of year 1, the farm holds $25,104 in cash and equivalents, $33,472 in stocks of large companies, and $108,784 in current farm assets which are primarily crop inventories. The beginning balance of the reserve fund is zero. Intermediate farm assets are valued at $251,040 and the intermediate financial account balance is $20,920. Farm buildings and long-term financial assets are valued at $66,944 and $20,920, respectively. The farm buildings value remains constant over the 15-year period because depreciation and repairs will balance out any appreciation in value.

The farm has a beginning debt-to-asset ratio of 25 percent with short-term, intermediate-term, and long-term liabilities accounting for 40, 10, and 50% of the total debt, respectively. Thus, total liabilities are $209,200 composed of $83,680 current, $20,920 intermediate, and $104,600 long-term. The initial current debt is carried throughout the 15-year period. Any additional operating credit attributed to growth in farm size is repaid within the year of borrowing. Initial intermediate-term debt is also carried for 15 years under the assumption that maintenance of machinery and equipment is offset by depreciation. The beginning long-term loan is repaid over a 20 year period.

The allocations of assets and liabilities are based on information from the 1989-1990 *Financial Characteristics of Illinois Farms* (Ellinger, Koenigstein, Barry, and Frey). One of the tables in this publication reports financial measures for farms by tenure level. Because the model farm has a beginning tenure ratio of 20%, data from the 11-25% tenure level are selected. The current, intermediate, and long-term assets accounted for around 25%, 30%, and 45% of total assets, respectively, in 1989 and 1990. The values used in this study's simulation model approximate this distribution.

Historical interest rates were collected for the 1970-1990 period from various editions of the *Agricultural Finance Databook* (Melichar; Walraven and Rosine). Annual interest rate data on the Farm Credit System were collected from various issues of the *Agricultural Income and Finance: Situation and Outlook Report*. Although many farms have loans from other sources, the model assumes that the farm's current and intermediate-term outstanding debt is through a commercial bank with interest rates of 11.17% and 10.52%, respectively. The existing long-term loan is assumed to be through the Farm Credit System with an interest rate of 9.86%.

a tenure ratio of 28.21%. Under the third financing alternative (section I of table 7), the end of horizon net worth is 84.41% greater than the original level. The model again buys land twice, but the first purchase is in the sixth year rather than the seventh and the second purchase occurs in the eleventh year. The same return-to-equity patterns occur.

Analyzing the debt-to-asset-ratio after a land purchase provides insight into the relative riskiness of undertaking the investment. Comparing the alternatives under the base model scenario, after the first land purchase is made the debt-to-asset ratio increases to 26.43% under land contract financing, an increase of 25.20%. This level is the highest debt-to-asset observed in the base model for any of the alternatives.

When the initial debt-to-asset ratio is increased to 40% (section II of each table), the conditions are such that the farm never accumulates enough reserves to purchase land. Therefore, there are no differences in the structure of the firm's assets and, hence, the farm generates the same returns under each financing option. The net worth increases 78.19% over the 15-year period and the debt-to-asset ratio decreases to 17.54%. Return on equity increases each year from 2.87% in the first year to 5.66% in the final year. The tenure ratio remains at 20% because no additional land is purchased.

Section III of each table shows that decreasing the initial debt-to-asset ratio from 25% to 10% improves farm performance under all financing alternatives. Under land contract financing, the cumulative net worth increase is 91.85% and a total of 160 acres of land are acquired with the first purchase occurring in the second year. These land acquisitions increase the tenure position to 34.88%. Under FCS financing, net worth increases 89.50% over the 15-year horizon. The farm buys its first tract of land in the third year and makes three subsequent purchases. When commercial bank financing is selected, net worth increases by 89.77%. The farm again purchases land four times with the first acquisition occurring in the third year of the model.

Section IV of each table summarizes the results of the model when the current rate of return on farm assets and the capital gain rate of return on farm assets are decreased to 5% and 4.5%, respectively. Net worth increases by 65.04% under land contract financing. Land is purchased in the ninth year, so the tenure ratio increases to 24.32%. Farm Credit System financing performs slightly worse than the land contract method, ending the period with a 63.73% improvement in net worth. Land is purchased only once (in the thirteenth year) so the tenure position increases to 24.32%. Commercial bank financing performs slightly better than FCS under these conditions. The difference in ending net worth is about $2,800 dollars. The commercial lender terms allow the farm to purchase the same 40-acre tract two years earlier than under FCS financing.

In section V, the current rate of return on farm assets is increased to 7% and the capital gains rate on farmland is increased to 6.5% reflecting more prosperous farm sector conditions. Under the land contract alternative, net worth improves a total of 109.05%. The farm purchases 120 acres of land with the first acquisition occurring in the third year. The tenure ratio rises to 31.70% and the ending debt-to-asset-ratio is 13.35%. Using the FCS to purchase land allows

245

Endnotes

[1] For more complete discussions of the legal characteristics of seller financed contracts see Grossman, Danielson, Grimm, Mann, or Nelson and Whitman.

[2] The counties included Brown, Cass, Champaign, Christian, Coles, DeWitt, Douglas, Logan, Mason, McLean, Menard, Moultrie, Piatt, Schuyler, and Vermillion.

Table 2.
Base Model NPV -- 11% Discount Rate

I. Repayment Period = 10 yrs.							
Interest Rate	Downpayment Percentage						
	0.0%	10.0%	17.5%	20.0%	27.0%	30.0%	35.0%
8.8%	173	153	137	132	118	111	101
9.0%	155	136	122	117	104	99	89
10.0%	62	52	45	43	36	33	29
10.5%	15	10	7	5	2	1	(2)
11.0%	(32)	(32)	(32)	(32)	(32)	(32)	(32)
11.1%	(42)	(41)	(40)	(40)	(39)	(39)	(38)
12.0%	(127)	(118)	(111)	(108)	(102)	(99)	(94)

II. Repayment Period = 20 yrs.							
Interest Rate	Downpayment Percentage						
	0.0%	10.0%	17.5%	20.0%	27.0%	30.0%	35.0%
8.8%	253	224	203	196	176	167	153
9.0%	227	201	182	175	157	149	137
10.0%	99	86	76	-73	64	60	53
10.5%	34	27	22	20	16	14	11
11.0%	(32)	(32)	(32)	(32)	(32)	(32)	(32)
11.1%	(46)	(44)	(43)	(43)	(42)	(42)	(41)
12.0%	(166)	(153)	(143)	(139)	(130)	(126)	(119)

III. Repayment Period = 30 yrs.							
Interest Rate	Downpayment Percentage						
	0.0%	10.0%	17.5%	20.0%	27.0%	30.0%	35.0%
8.8%	272	242	219	211	190	181	166
9.0%	245	218	197	190	170	162	148
10.0%	108	94	84	80	70	66	59
10.5%	38	31	26	24	19	17	14
11.0%	(32)	(32)	(32)	(32)	(32)	(32)	(32)
11.1%	(47)	(45)	(44)	(44)	(43)	(42)	(42)
12.0%	(176)	(162)	(151)	(148)	(137)	(133)	(126)

Table 4.
Price and Interest Rate Changes Needed to Equate NPVs

Discount Rate 10%	NPV	Equal NPV Price	Equal NPV Interest	% Decrease Price	% Decrease Interest	Bid Price
Land Contract	325	2,000	8.8000	n.a.	n.a.	2,558
Farm Credit System	181	1,780	9.0020	(11.00)	(14.27)	2,276
Commercial Bank	118	1,698	9.0436	(15.10)	(18.53)	2,171
Discount Rate 11%						
Land Contract	137	2,000	8.8000	n.a.	n.a.	2,224
Farm Credit System	14	1,817	9.1249	(9.15)	(13.10)	2,020
Commercial Bank	(42)	1,745	9.2166	(12.75)	(16.97)	1,940
Discount Rate 12%						
Land Contract	(15)	2,000	8.8000	n.a.	n.a.	1,976
Farm Credit System	(123)	1,843	9.2077	(7.85)	(12.31)	1,820
Commercial Bank	(171)	1,781	9.3631	(10.95)	(15.65)	1,760

Table 6. Annual Results under Alternative Rates of Return and Beginning Leverage Positions: Farm Credit Services Financing

Farm Credit Services, 35% downpayment, 10.5% interest. 30-year amortization, 30-year repayment period

Section I. D/A 25% — *Land values 5.5% ROFA 6%*

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net Worth	627.6	657.4	689.2	723.3	759.6	797.6	840.0	884.4	935.5	990.2	1048.7	1111.2	1178.2	1249.8	1331.6	1419.3
NW % change		4.75	9.58	14.53	19.55	24.67	29.87	35.16	40.93	46.78	52.69	58.65	64.68	70.75	77.30	83.89
ROE %	3.60	3.77	3.97	4.13	4.30	4.46	4.61	4.43	4.57	4.68	4.79	4.89	4.98	4.78	4.87	
D/A %	25.00	23.68	22.38	21.11	19.86	18.65	17.47	22.12	20.79	19.50	18.25	17.04	15.88	20.57	19.23	17.94
Acres Purch.		0	0	0	0	0	40	0	0	0	0	0	40	0	0	

Section II. D/A 40% — *Land values 5.5% ROFA 6%*

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net Worth	502.1	523.7	547.0	572.1	599.1	628.1	659.5	693.3	729.6	769.0	811.3	857.0	906.0	958.6	1015.1	1075.7
NW % change		4.31	8.76	13.34	18.06	22.91	27.90	33.02	38.27	43.66	49.17	54.80	60.52	66.33	72.22	78.19
ROE %	2.87	3.13	3.37	3.62	3.85	4.09	4.31	4.52	4.74	4.94	5.12	5.26	5.41	5.54	5.66	
D/A %	40.00	38.70	37.35	35.96	34.52	33.03	31.48	29.89	28.26	26.62	25.01	23.43	21.89	20.39	18.94	17.54
Acres Purch.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Section III. D/A 10% — *Land values 5.5% ROFA 6%*

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net Worth	753.1	791.1	831.4	874.1	922.1	973.3	1027.8	1089.2	1154.6	1224.4	1302.8	1386.8	1476.6	1572.8	1680.5	1796.0
NW % change		5.04	10.13	15.27	20.77	26.32	31.92	37.89	43.90	49.94	56.35	62.79	69.27	75.78	82.63	89.50
ROE %	4.08	4.21	4.31	4.16	4.27	4.37	4.21	4.29	4.38	4.21	4.30	4.38	4.46	4.28	4.35	
D/A %	10.00	9.35	8.73	13.94	13.11	12.31	16.89	15.90	14.95	18.98	17.85	16.76	15.71	19.38	18.16	16.99
Acres Purch.		0	40	0	0	40	0	0	40	0	0	0	40	0	0	

Section IV. D/A 25% — *Land values 4.5% ROFA 5%*

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net Worth	627.6	650.4	674.7	700.4	727.8	756.8	787.6	820.4	855.2	892.1	931.3	972.9	1017.0	1063.7	1115.9	1171.3
NW % change		3.64	7.37	11.18	15.09	19.07	23.14	27.30	31.55	35.87	40.26	44.72	49.26	53.86	58.76	63.73
ROE %	2.95	3.16	3.35	3.55	3.73	3.91	4.09	4.27	4.43	4.58	4.73	4.87	5.00	4.77	4.89	
D/A %	25.00	23.87	22.75	21.65	20.55	19.48	18.42	17.38	16.37	15.38	14.42	13.49	12.59	18.22	17.17	16.14
Acres Purch.		0	0	0	0	0	0	0	40	0	0	0	40	0	0	

Section V. D/A 25% — *Land values 6.5% ROFA 7%*

Year:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Net Worth	627.6	664.4	703.9	746.5	792.2	841.5	899.3	961.8	1028.9	1101.3	1185.8	1277.0	1375.6	1482.1	1605.4	1738.9
NW % change		5.86	11.81	17.85	23.98	30.20	37.08	44.02	51.00	58.04	65.71	73.40	81.12	88.87	97.18	105.50
ROE %	4.24	4.40	4.57	4.71	4.85	4.73	4.84	4.92	5.01	4.87	4.94	5.01	5.07	4.90	4.95	
D/A %	25.00	23.49	22.02	20.59	19.20	23.37	21.82	20.33	18.89	22.92	21.31	19.78	18.31	22.12	20.48	18.92
Acres Purch.		0	0	0	40	0	0	0	40	0	0	0	40	0	0	

253

Appendix A: **INSTALLMENT LAND CONTRACT IN ILLINOIS**
                              Survey Summary

1.   *Borrower Age (at time of contract inception)*
        Average: 41.3 years   Range: 21-78 years
2.   *Farm Management Experience*
        Average: 19.3 years   Range: 0-51 years
3.   *Acres Operated*
        Average: 823   Range: 0-3,700
4.   *Acres Owned*
        Average: 344   Range: 7-1,980
5.   *Acres Purchased under Land Contract (total)*
        Average: 167   Range: 20-1,120
6.   *Acres purchased under most recent Land Contract*
        Average: 103.1   Range: 20-320
7.   *Education Level:*

            Some High School or less 2%
            High School Graduate 33%
            Some College/Vocational Training 33%
            College Graduate 22%
            Advanced Degree/coursework 11%

8.   *Plans for future farming operation*

            Increase size 43%
            Remain Constant 52%
            Decrease size 1%
            Retire 4%

9.   *The respondents were asked to rate each of the following characteristics of land contracts
        according to its importance in their decision to use the Land Contract as a means of
        purchasing farm real estate. The rating scale ranged from 1 (very important) to 5
        (completely unimportant). The average rating is listed next to each characteristic.*

	Score	Rank	
Only method of farm transfer that the seller would accept.		2.93	(5)
Family previously purchased land on contract		4.06	(8)
Only available credit source was the seller		4.03	(7)
Low interest rate available through land contract	2.10	(2)	
Favorable payment schedule available through land contract		2.04	(1)
Low downpayment required by land contract		2.49	(4)
Easy means for family farm transfer		3.70	(6)
Less complicated than working with financial institution		2.41	(3)

21. *Was the interest rate charged higher lower or nearly the same as it would have been had the property been financed in some way other than through a land contract?*

Higher 2%
Lower 76%
Same 22%

22. *Balloon payment provision included in terms*

Yes 17%
No 81%
Uncertain 2%

23. *Prepayment clause contained in contract*

Yes 72%
No 28%

24. *Acceleration clause included in contract?*

Yes 19%
No 77%
Uncertain 4%

25. *Is there an "equity returned upon default" clause in the contract?*

Yes 4%
No 87%
Uncertain 10%

26. *How likely are buyers to use a land contract in the future?*

Very Likely 71%
Somewhat Likely 20%
Not Likely 2%
Not at all 7%

27. *How satisfied are buyers with the use of the land contract?*

Very satisfied 76%
Somewhat satisfied 17%
Neutral 4%
Somewhat dissatisfied 4%
Very dissatisfied 0%

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