Land Returns and Farm Real Estate Values[1]

By Albert A. Montgomery and
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FARM REAL ESTATE values have risen almost steadily over the past decade despite the apparent lack of a supporting upward trend in commodity prices and farm incomes. To some extent the farmland price rise reflects the spatial encroachment of urban activities upon agriculture and the growing demand for land by higher priority uses than agriculture. But in many areas of the Nation, including the wheat-pea region of the Pacific Northwest,[2] the main market force is the growing demand for land by farmers themselves. Thus the apparent paradox of the divergent trends in farm returns and land values has awakened the interest of economists and others in the significance of this phenomenon for valuation theory and agricultural policy.[3] If current discussions have identified the range of most probable causes for the national paradox, much remains to be explained by microeconomic study of the relationship between the farm real estate market and the farm economy. This paper presents the results of such a study and, subject to the obvious limitations of data from a small sample in a single region, attempts to make general inferences about the causes and social implications of this phenomenon.

Method of Study

The trends of land prices and farm returns in the region are examined and a simplistic explanation for the observable disparity is given in this paper. In the study we adopted, as a working hypothesis, Scofield's speculation that land prices may be high or rising relative to the average of farm returns in a region but this average may understate the prospective returns from land investment by a few large, wealthy, and better than average farmers who comprise the effective demand for land.[4] Cross-sectional data from two samples of wheat-pea farmers were utilized to test this hypothesis and to generate answers to several questions concerning the economic implications of the region's low rate of current land return.

One sample consisted of 47 persons who responded to a survey of the region's 48 public land transactions during an 18-month period from 1963 to 1964.[5] This survey gave interesting insights into the nature of the operations of actual investors but obviously it was not representative of all wheat-pea farmers who were

[1] Credit is due Michael G. Vance, a Master's candidate in Business Administration at Washington State University, for his work as Research Assistant for the project.

[2] The wheat-pea region is located in southeastern Washington and northern Idaho. For a description of the region's agriculture see USDA's annual bulletin, Farm Costs and Returns--Commercial Farms by Type, Size, and Location (Agr. Inf. Bul. 230).

[3] See Walter E. Chryst, "Land Values and Agricultural Income: A Paradox?" Jour. Farm Econ., 47:1265-73, Dec. 1965.

Editor's note: The research reported in this paper was carried on at Washington State University by business economists. The analysis was based on a working hypothesis suggested by William H. Scofield of the Economic Research Service, it was supported in part by funds from the Washington State Agricultural Experiment Station, and it was aided by farm real-estate cost data developed in the Economic Research Service. Although working relationships were largely informal, the circumstances involved a close community of interest in related research in the Economic Research Service.

[4] William H. Scofield, "Land Prices and Farm Earnings," Farm Real Estate Market Developments, U.S. Dept. Agr., Oct. 1964.

[5] An unpublished survey conducted by Jesse Davis, Research Assistant for the Department of Agricultural Economics at Washington State University.

potential land buyers, much less the universe of wheat-pea farmers. Because of this limitation and the fact that the survey did not provide income and wealth data for the investing farmers, our findings were obtained mainly from a second sample of 35 wheat-pea farmers. These farmers volunteered financial and operating data, enabling an accurate calculation of income, wealth, and net rent for 1962-64.

For reasons given below, the study assumes that this small nonrandom sample is representative of the universe of full-time family farms in the region. The sample does not include representatives from the numerous very small part-time farms in the region, nor any of the region's several very large operations. For that matter, reflecting the relative infrequency of land transactions, this second sample does not contain any farmers who purchased land in 1963-64. However, if the sample is representative of the universe of the region's family farms, it will contain a subset of farm operators with operating and financial characteristics similar to those of farmers who were bidding for or actually bought land in this period. Thus a comparison of this subset with the remainder of the sample will constitute a valid test of the hypothesis.

Trends in Land Prices and Farm Returns

Land prices in the wheat-pea region increased from $233 per acre in 1953 to $320 in 1964 (chart 1).[6] Net farm income and net rent per acre evidenced virtually no trend over this period if 1962, a year of particularly good earnings, is ignored.[7] Therefore, as in the Nation, farm income and the return to land itself declined relative to the average market price of farmland.

The decline in the rate of return, from about 5 percent in 1953 and 1954 to about 3-3/4 percent in 1963 and 1964, suggests that land buyers in this region have been willing to capitalize prospective land returns at decreasing rates. However, it is significant that $56 of the $87 per acre increase in land price over the 12-year period occurred after 1960. In this more recent period farmers of the region came to expect a sharp increase in wheat yield because of the development of a new variety.[8] Because 1962 was the first year of this new wheat's general use as well as being an exceptionally good growing year, it is not proper to slight its importance in the visual examination of past trends.

If that year is included in the end-of-period average of net rents, a 3.9 percent return was being earned on the 1964 price of $320. Although smaller than the rate of return being earned at the beginning of the period, it approximates the average rate earned from 1955 through 1959 on a stable price of about $255. In other words, if the 1962-64 average net rent of $12.35 per acre more closely approximates the post-1960 expectation of future land returns than the average for the 12-year period, much of the land price rise in the past decade could be explained simply by the fact that farmers expected rising land returns in the long run.

In support of this classical explanation, wheat-pea farmers were aware of the possibility in the more recent years that wheat production controls would be lessened in the not too distant future. And it was apparent to all regional farmers--given the existing price structure and the choice of feasible crops to substitute for the high-yielding new wheat--that the return to land and its value would be markedly increased in this event. From the study's sample of farm operators it was determined that if a farm wheat price of $1.80 could have been sustained without acreage control in 1962-64, existing farm practices in the region would have

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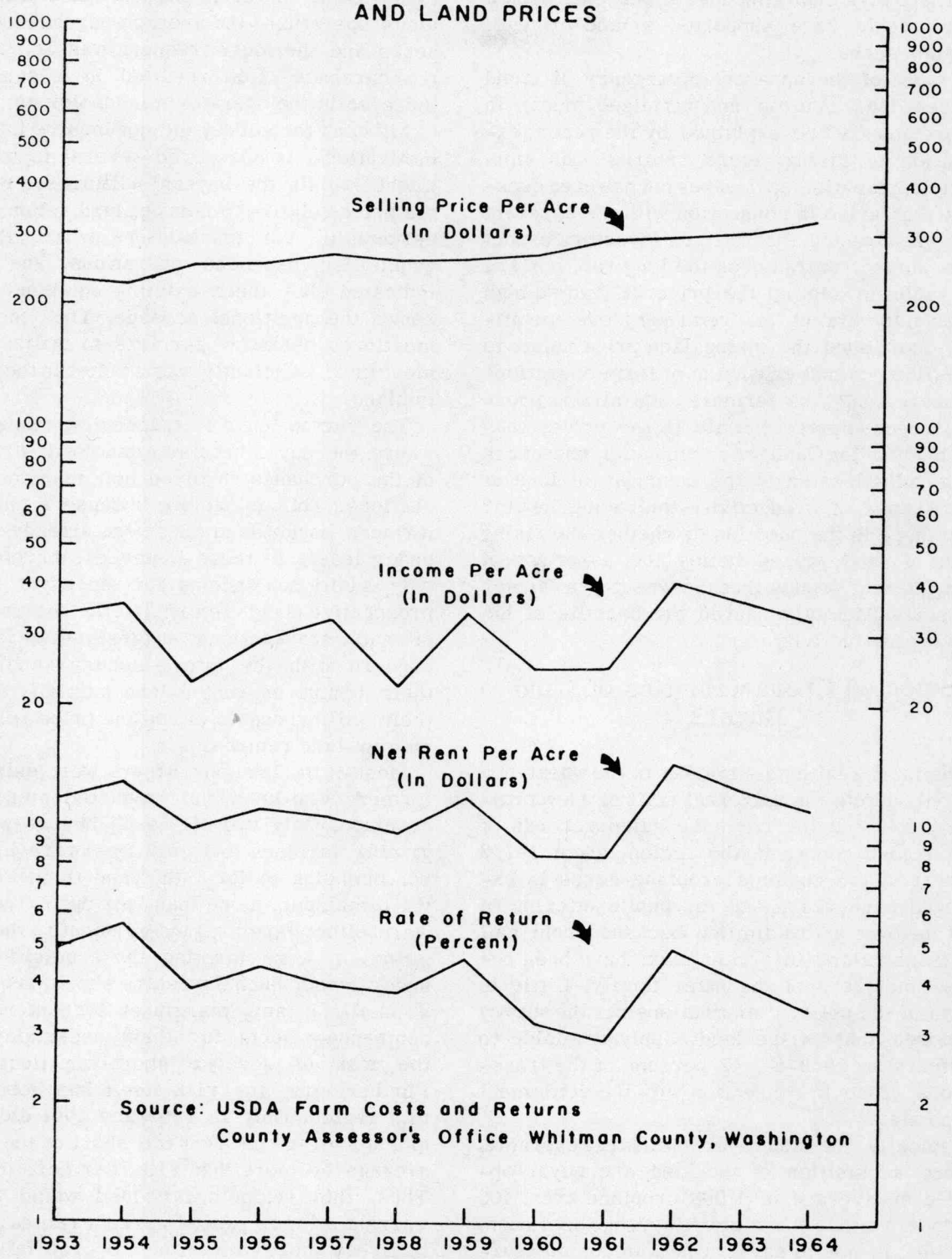
6 The selling prices shown in chart 1 are weighted averages of annual transactions in Whitman County, Wash.

7 The source of the historical series of returns is the USDA's Farm Costs and Returns. Net rent is computed to be 1/3 of crop revenue and Government payments minus 1/3 of the crop expenses (i.e., seed, fertilizer, and weed spray) and all property taxes on the land. This is an approximation of the standard lease in the region which allocates grain revenue and expenses on a 1/3-2/3 basis and pea revenue and expenses on a 1/4-3/4 basis.

8 According to Farm Costs and Returns estimates, the average wheat yield increased from 46.8 bushels per acre during 1957-59 to 55.6 bushels for 1962-64. Much of this increase resulted from use of the Gaines wheat variety.

Chart 1

HISTORICAL TRENDS OF WHEAT-PEA FARM RETURNS AND LAND PRICES



Source: USDA Farm Costs and Returns
County Assessor's Office Whitman County, Washington

produced an average net rent of approximately $23 per acre. At the then prevailing land price, this would have been a 7 percent average return. Alternatively, capitalized at 4 percent, such a return would have supported a land price of $570 per acre.

If most of the apparent divergency of trend between land returns and farmland prices in this region can be explained by the recent expectation of rising future returns, this simplistic explanation still leaves unanswered questions that arise in connection with the apparent paradox. Granted that farmer investors expect rising future returns over the long run, how are they able to bid up the price of land so high relative to current land returns? More specifically, how does the rising land price relate to the efficiency and expansion of farm operations in the region? Are farmers capitalizing prospective economies of scale in the prices they are bidding for land? Are financial resources being misallocated to the purchase of land at the expense of productivity-improving inputs? Then there is the question of whether the rising trend of land prices belies the assertion of farm interest groups that the wheat-pea farmer has not sufficiently shared the benefits of his growing productivity.

Selected Characteristics of Land Buyers

The farm real estate market in the wheat-pea region exhibits the universal trait of a low turnover rate. Judging from the sales records of the largest county in the region, about 1-1/2 percent of the region's cropland acres is exchanged each year. And the public offering of land is even more limited because about half the transactions in recent years have been between members of the same family. Little is known of the sellers' motivations but the survey disclosed that of the land supply available to outsiders in 1963-64, 42 percent of the transactions arose in connection with the settlement of an estate.

Typically, the land buyer was a large operator. Before acquisition of the land, the buyer operated an average of 1,000 cropland ares, 400 acres more than the region's average operation. But this is not to say that he was commensurably more wealthy than the typical wheat-pea farmer because, on average, 560 acres of the 1,000 acres were operated under lease. Therefore, even though the acreage acquired tended to be small in relation to the scale of his previous operation--the average purchase was 246 acres and the most frequent was 160 acres--the purchase often resulted in a substantial increase in the operator's landholdings.

Although the survey did not inquire into buyer motivations, it uncovered several factors that might explain the buyers' willingness to bid up the price relative to current land returns. In 80 percent of the transactions where the land acquisition expanded operations, the buyers indicated that their existing equipment would serve the additional acreage. Thus the often-mentioned desire of farmers to utilize equipment more efficiently was a factor in the demand for land.

The survey found that, including transactions where the buyer became a landlord, 40 percent of the purchases involved no expansion of operations. This is simply because a number of farmers bought land they were already farming under lease. In these instances, therefore, the only additional income for the buyer was the prospective land return itself. The frequency of such transactions suggests that farmers' concern with the future security and cost of their tenure on rented land partially explains their willingness to bid up the price relative to current land returns.

Most of the land purchasers were established farmers who knew the productivity of the land acquired. Only two of the 47 buyers were beginning farmers and only five were investors not intending to farm the land themselves. Of the remainder, more than four out of five buyers were either farming land adjacent to the acquisition or were farming the acquisition itself under lease. Such investors should require but a small, if any, margin of current return to compensate them for their uncertainty as to the risk of adverse short-run fluctuations. Furthermore, the risk itself has been low in this region. Only in 1960 and 1961 did the region's average net rent fall short of the 12-year average by more than $1.66 per acre (chart 1). Thus, this region's farmland would seem to warrant a lower rate of current return than land in areas more vulnerable to crop failure and price declines.

Test of Scofield's Hypothesis

In view of the relative infrequency of land offerings to the public, the sample of actual buyers just discussed is but a small fraction of wheat-pea farmers who would have been financially able to acquire land parcels of similar acreage and price during this period. The second sample of 35 farmers was utilized to determine the characteristics of the subset of the wheat-pea farmer universe that includes both the actual and potential demand for land parcels of the value offered. This sample is partitioned according to several rules to determine which of the sample farmers belong to the effective demand or potential investor subset of the universe. The hypothesis is tested by comparing the characteristics of this sample subset of 11 farmers with those of the remainder of the sample, which represents the region's farmers who are not effectively in the current market for land.

The assertion that the sample is representative of the region's family farm operations has its most tangible basis in the fact that averages of the sample farmers' operating characteristics compare closely with USDA's description of the region's representative farm. The following table compares 3-year averages of data from Farm Costs and Returns with corresponding 3-year averages from the sample. A direct comparison is somewhat misleading because the USDA average farm is assumed to be wholly owned while the sample average cropland acreage consists of leased as well as owned acres. Thus, even though the sample farm is 83 acres larger, its total revenue is smaller because it does not include the landlord's share. Similarly, the total investment is smaller because only acres owned by the operator are included. USDA data are adjusted to reflect a similar ratio of leased to total acres to minimize this distortion.

The sample can be used to verify the regional net rent--$12.35 per acre--estimated from data in Farm Costs and Returns. The 1962-64 average net rent for the sample, as determined from knowledge of each farm's income and leasing arrangement, is $12.04 per acre. By the same token, if the net rent of each sample farm is capitalized at the regional rate of return, 3.9 percent, the resulting average of sample land values, $308, is a close approximation of the recent average of actual market prices in the region.

The distribution of sample net rents is shown in chart 2. In part the sample variation reflects individual differences in the terms of lease. The distribution of leases computed with the terms of the region's standard lease is superimposed upon the original distribution to exhibit this effect. The distributions of other sample economic characteristics are exhibited

Item	USDA Farm Costs and Returns 1962-64 average	USDA adjusted for comparability	Sample 1962-64 average
Farm size	600 acres	--	683 acres
Acres owned	not available	--	289 acres
Acres leased	not available	--	394 acres
Percent fallow	28%	--	30%
Wheat yield per acre	55.6 bu.	--	53.5 bu.
Crop revenue--total	$27,346	$25,158	$25,768
Composition of revenue:			
Wheat	56%	--	60%
Peas	30%	--	25%
Barley	14%	--	15%
Total cash receipts	$30,052	$27,648	$30,165
Cash farm income	$16,884	$15,533	$15,814
Total investment in land, buildings, and equipment	$198,073	$104,550	$108,300

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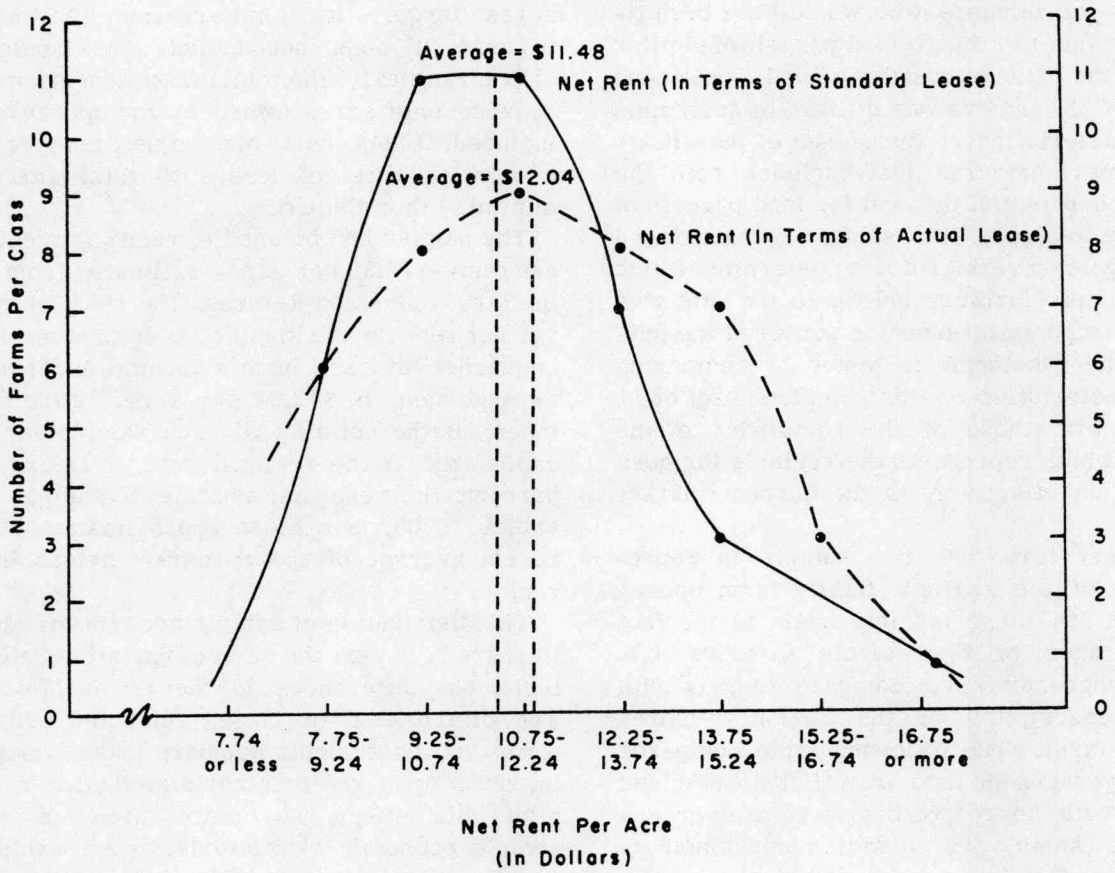
Chart 2

FREQUENCY DISTRIBUTION OF 1962-1964
AVERAGE NET RENTS IN THE WHEAT-PEA REGION



Source: Author's computations

in tables 1 and 2. Included is an estimate of the value of off-farm investments, determined by capitalizing each farmer's average 1962-64 income from such investments at 4 percent, and an assumed level of family consumption spending. With these and other generally available data it is possible to reconstruct the study's experiment. Alternatively, the sample may be partitioned on the basis of different assumptions from those used here.

A direct method is used to partition this sample. The net worth of each farmer is examined to determine his ability to make a 30 percent downpayment on a 250-acre purchase at the 1964 average market price of $320. Next a test is made of each operator's ability to carry the annual payment of a 6 percent, 20-year loan under the assumption that the purchase does not expand his operations. This test is repeated under the assumption that expansion occurs and unit costs decrease. Income and self-employment tax effects of the acquisition are taken into account and an allowance is made for family consumption.

Table 3 exhibits the results of these partitioning tests for the 35 farm operators in the sample. Twenty-five of the 35 farmers could make the $24,000 downpayment if they were

Table 1.--Selected economic characteristics of a representative sample of wheat-pea family farms [1]

Farm No.	Book value of machinery, equipment, and buildings	Off-farm investments[2]	Land at $320 per acre owned	Farm debt[3]	Net worth[4]
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*
1.....	59,041	2,175	172,800	152,302	81,714
2.....	32,724	105,100	396,160	218	533,766
3.....	12,156	0	25,920	19,472	18,604
4.....	16,617	2,101	120,960	92,850	46,828
5.....	22,894	950	246,400	57,507	212,737
6.....	13,423	1,975	76,800	26,272	65,926
7.....	20,330	76,900	0	73	97,157
8.....	5,466	11,025	256,640	27,853	245,278
9.....	17,357	12,600	23,360	19,363	33,954
10.....	15,545	125	0	8,691	6,979
11.....	13,032	189,850	208,000	1,454	409,428
12.....	20,822	23,625	171,520	11,799	204,168
13.....	17,640	30,525	0	0	48,165
14.....	9,860	2,925	0	9,800	2,985
15.....	13,329	775	62,400	17,817	58,687
16.....	18,043	118,400	221,760	39,980	318,223
17.....	26,597	4,150	25,600	28,817	27,530
18.....	11,127	4,625	88,320	34,417	69,655
19.....	15,628	26,900	57,600	4,545	95,583
20.....	14,643	8,075	31,680	0	54,398
21.....	22,142	86,700	178,880	1,364	286,358
22.....	21,879	0	85,760	34,871	72,768
23.....	23,531	3,105	106,560	98,705	34,491
24.....	2,700	1,350	0	5,527	-1,477
25.....	812	4,675	0	9,454	-3,967
26.....	5,807	1,725	82,880	26,162	64,250
27.....	8,147	150	89,280	27,799	69,778
28.....	22,807	4,925	76,800	11,799	92,733
29.....	9,940	29,325	76,800	0	116,065
30.....	9,141	0	148,800	49,089	108,852
31.....	11,835	350	81,920	727	93,378
32.....	13,251	0	0	0	13,251
33.....	5,154	23,975	12,800	0	41,929
34.....	8,693	7,950	106,240	8,018	114,865
35.....	11,599	0	0	5,618	5,981

[1] Data on 1962-64 averages.
[2] Investment income capitalized at 4 percent.
[3] Interest payments capitalized at 5 1/2 percent.
[4] Book value of machinery, buildings, equipment, off-farm investment, and land at $320 per acre, less farm debt.

Table 2.--Selected economic characteristics of a representative sample of wheat-pea family farms

Farm No.	Cropland			Family income and savings		
	Owned	Leased	Total	Average farm income 1962-64[1]	Assumed consumption	Assumed savings or dissavings
	Acres	*Acres*	*Acres*	*Dollars*	*Dollars*	*Dollars*
1	540	862	1,402	4,645	8,000	-3,355
2	1,238	0	1,238	33,386	9,500	23,886
3	81	1,030	1,111	11,511	17,500	-5,989
4	378	800	1,178	15,952	6,000	9,952
5	770	158	928	13,369	3,500	9,869
6	240	515	755	9,406	8,500	906
7	0	916	916	15,775	10,500	5,275
8	802	81	883	9,229	6,000	3,229
9	73	761	834	8,787	3,500	5,287
10	0	767	767	7,436	7,000	436
11	650	200	850	28,395	9,500	18,895
12	536	228	764	16,468	13,000	3,468
13	0	716	716	13,989	8,000	5,989
14	0	671	671	6,940	8,000	-1,060
15	195	522	717	7,206	9,000	-1,794
16	693	0	693	23,196	9,000	14,196
17	80	695	775	7,776	7,500	276
18	276	390	666	6,065	7,500	-1,435
19	180	480	660	16,075	8,000	8,075
20	99	550	649	5,325	3,500	1,825
21	559	96	655	17,396	8,500	8,896
22	268	337	605	9,335	8,500	835
23	333	100	433	2,423	6,500	-4,077
24	024	516	516	7,107	7,500	-393
25	0	515	515	6,530	6,000	530
26	259	179	438	7,905	8,500	-595
27	279	201	480	6,534	8,000	-1,466
28	240	162	402	986	7,000	-6,014
29	240	236	476	5,806	3,500	2,306
30	465	0	465	4,530	8,000	-3,470
31	256	153	409	5,507	7,000	-1,493
32	0	396	396	4,452	6,000	-1,548
33	40	267	307	10,973	7,000	3,973
34	332	0	332	6,050	6,000	50
35	0	312	312	3,699	7,000	-3,301

[1] Farm income after self-employment tax and Federal income tax.

Table 3.--Sample farmers' ability to finance a land purchase

Farm No.	Financial data per acre of land acquired				Ability to make down payment	Ability to carry contract	
	Principal and interest payment[1]	Net rent[2]	Family savings or dissavings	Additional income with expansion		Net rent and savings	Income from expansion & savings
	Dollars	*Dollars*	*Dollars*	*Dollars*			
1.....	27.14	8.02	-13.42	19.13	**Yes**	No	No
2*.....	19.53	20.52	95.54	26.76	**Yes**	Yes	Yes
3.....	27.90	10.31	-23.96	23.40	**No**	No	No
4*.....	27.17	15.14	39.81	31.64	**Yes**	Yes	Yes
5*.....	27.57	10.08	39.48	21.86	**Yes**	Yes	Yes
6.....	27.21	13.09	3.62	25.20	Yes	No	Yes-No
7*.....	19.53	8.10	21.10	18.97	Yes	Yes	Yes
8.....	24.06	9.66	12.92	18.01	Yes	No-Yes	Yes
9.....	27.90	9.26	21.15	21.73	No	Yes	Yes
10.....	27.90	12.41	1.74	26.62	No	No	Yes-No
11*.....	19.53	14.06	75.58	26.35	Yes	Yes	Yes
12*.....	19.66	13.49	13.87	30.04	Yes	Yes	Yes
13*.....	19.53	11.15	23.96	24.80	Yes	Yes	Yes
14.....	27.90	11.81	-4.24	24.40	No	No	No
15.....	27.63	7.67	-7.18	18.97	Yes	No	No
16*.....	19.53	15.72	56.78	29.74	Yes	Yes	Yes
17.....	27.90	11.63	1.10	26.43	No	No	No-Yes
18.....	26.29	8.90	-5.40	19.55	Yes	No	No
19*.....	19.53	14.66	32.30	32.25	Yes	Yes	Yes
20.....	25.08	8.64	7.30	17.83	Yes	No	No-Yes
21*.....	19.53	13.52	35.58	28.67	Yes	Yes	Yes
22.....	27.90	10.61	3.40	28.20	Yes	No	Yes
23.....	27.90	10.64	-16.31	25.25	No	No	No
24.....	27.90	12.09	-1.57	28.47	No	No	No-Yes
25.....	27.90	10.14	2.12	18.05	No	No	No
26.....	27.30	11.51	-2.38	26.87	Yes	No	No
27.....	27.85	9.57	-5.86	23.98	Yes	No	No
28.....	26.19	10.95	-24.06	21.10	Yes	No	No
29.....	19.53	9.25	9.22	20.80	Yes	No-Yes	Yes
30.....	27.90	8.81	-13.88	23.51	Yes	No	No
31.....	27.78	11.60	-5.97	17.12	Yes	No	No
32.....	27.90	11.57	-6.19	23.85	No	No	No
33*.....	19.53	12.08	15.89	27.30	Yes	Yes	Yes
34.....	25.13	9.82	.20	26.24	Yes	No	Yes-No
35.....	27.90	10.34	-13.20	21.36	No	No	No

* Member of 11-farm potential investor subset.

[1] Average per acre payment $24.96 (interest $10.65 and principal $14.31).

[2] Adjusted to standard lease and shown before income and self-employment taxes.

able to borrow as much as 50 percent of the book value of their fixed assets to apply to this amount. Ten of the 25 had sufficient off-farm investments to make the downpayment without borrowing against fixed assets. Indeed, five of the 10 could finance the entire $80,000 acquisition by liquidating off-farm investments.

In other columns of the table the annual per acre payment on a loan ranging from $56,000 for those who could make the downpayment to $80,000 for those who would have to borrow the entire amount may be compared with each farm's net rent per acre, adjusted to terms of the standard lease, and with family savings expressed relative to the acres of land to be acquired. The comparison of these three columns reveals which farmers would be part of the effective demand for land where the downpayment is not a factor and no expansion occurs. Only one farm yielded a net rent sufficient to carry the annual payment and it was a marginal case. On average, the landlord's share of farm income on 250 acres would just carry the interest payment. Thus family savings would have to be used to accumulate an equity in the land acquired.

Significantly, more than two-fifths of the farm operators had negative savings. In these instances the existing net income after taxes was not enough to support a level of consumption that was assumed to be $3,500 for a single person, $6,000 for a couple, and $400 for each child. Few operators with less than 700 acres had savings by these criteria and several larger farms did not because they were partnerships or because large families were involved. Moreover, only 12 of the 20 farms with positive savings had enough to make up the difference between the annual payment and the net rent from 250 acres. Two more families with positive savings could carry the payments if they were to cut consumption spending $1,000 below the assumed level.

Included among these 14 farmers are 10 who could make the downpayment without borrowing against fixed assets. Only three of the remaining 15 who could make the downpayment could carry the payment with existing savings and the additional income from the landlord's share. But one of the 10 farmers who could not make the downpayment could carry the annual payment on a 100 percent loan.

Since a majority of land transactions in this period resulted in an expansion of the investing farmer's operations, a test is made of the farm operator's ability to carry the annual payment with existing savings and the additional income from expansion. Crop revenue and variable expenses per acre were assumed to be constant over the expanded acreage and it was assumed that no additional investment in buildings and equipment was required. The resulting addition to net income after taxes, including net rent as well as returns to other productive factors, is shown in the fourth column of table 3. Including six marginal cases, 21 of the 35 farm operators could carry the payments of the land acquisition if they could augment personal savings with the additional income from expansion under conditions of decreasing unit costs.

The 21 include the 14 farmers who could carry a nonexpansion land loan with savings and net rent. The two farmers who were marginal cases in that test can easily carry the payments under these assumptions. The seven additional farmers include four who would have to borrow against fixed assets to make the downpayment and three who could not make the downpayment even by borrowing. Moreover, all but one of the seven are marginal cases in this test. Therefore, if these six are rejected as prospects for a loan, the group that could afford to finance an expansion investment is virtually the same group that could afford to buy land they are already operating under lease.

Combining the results of the three tests, one of the 15 farmers who could carry the loan with the additional income from a 250-acre, decreasing-cost expansion, could not make the downpayment. Moreover, only 11 of the remaining 14 could make the downpayment and carry the loan on a nonexpansion acquisition without impairing consumption, if not the effectiveness of the farm operation. By a stringent application of the financial criteria set forth here, then, less than one-third of the sample farm operators are unequivocal prospects for the purchase of a 250-acre land parcel at the average market price of 1964.

A comparison of this 11-farm subset with the remainder of the sample reveals striking differences that tend to confirm Scofield's hypothesis. In common with the actual investors surveyed, the 11 potential investors farm an

above-average acreage. The subset averaged 810 cropland acres, about two-fifths of which farmed under lease. Although this average is almost 200 acres smaller than the 1,000-acre average for the farm investors surveyed, the average wealth and incomes of the 11 farms probably was not much, if any, less than that of the actual investors, whose operations included 560 acres under lease.

In contrast, the remaining farms of the sample averaged 625 cropland acres.

The disparity in wealth between the 11-farm subset and the remainder of the sample is even greater than the difference in farm size would indicate. The average net worth for the 11-farm group is approximately $209,000 while that of the remaining 24 operators is $60,000. This difference exists in part because the 11 farmers owned an average of 459 acres while the remainder averaged 211 owned acres. Moreover, the average investment in buildings and equipment for the 11 large farms was $3,201 greater and the outstanding debt averaged about $6,000 a farm less than for operators not effectively in the market for land. Perhaps the most interesting difference is the fact that the potential investor group had an average of $62,000 in off-farm investments compared with $4,200 for the remaining farmers.

The greater wealth of the potential investor subset is accompanied and possibly explained by greater than average farming success. The 1962-64 average net rent, as adjusted to terms of the standard lease, is $13.50 per acre. The remaining 24 operators averaged $10.34 per acre.[9] Judging from this sample, farmers who were effectively in the market for land at the 1964 price level could expect a slightly above average current return of 4.2 percent. The 24 farmers who were not in the market had a current return of only 3.3 percent.

[9] A test of the statistical significance of the difference between the two average net rents was made. The $3.16 difference is significant at the 5 percent level of confidence. The difference is explained by higher crop revenue per acre and by lower crop expenses per acre. Property taxes per acre vary little from farm to farm because of assessment practices. The crop revenue of the 11-farm subset was $6 per acre higher and their crop expenses were $3 per acre lower than those of the remaining farmers. Both component differences are statistically significant at the 5 percent level.

Because of their farming success, greater wealth, and larger scale of operations, the 11-farm subset had much higher incomes. The average cash income per farm for the 3 years was $27,884 for this subset and $10,282 for the remaining operators. Net farm income after taxes averaged $18,634 and $6,466 respectively. Given the assumed level of consumption spending, the average annual flow of savings generated by the 11 farms was a remarkable $10,200.[10] For the remaining 24 operators the average income, net of capital depreciation and taxes, annually fell short of the assumed consumption level by more than $800.

These financial contrasts are so marked that they tend to justify the partitioning assumptions of the study as well as confirming Scofield's hypothesis. If it were assumed that the offering price of land were lower, the terms of financing easier, or the size of parcel offered smaller, many more of the sample operators might be included in the potential investor subset. But as a matter of fact, the effective demand for land in this region is probably limited to farmers with the characteristics of the chosen subset. This is simply because the supply of land for public sale is so limited that any parcel is apt to have several farmers bidding for it. And though only a minority of wheat-pea farmers are wealthy, these potential investors are sufficiently numerous that one or more of them would be operating in the immediate locality of sale.

Summary and Conclusions

In the wheat-pea region as in the Nation, there has been a disparity between the trends of land prices and farm returns. But much of the land price rise has occurred in recent years when the expectation emerged that future land returns would increase markedly because of improved yields and the lessening of production controls. Moreover the use of regional averages to depict these trends is misleading. As Scofield surmised, the average market price of this region's farmland reflects the competitive bidding of a minority of wheat-pea farmers who are larger, wealthier, and more successful than average.

[10] Three of the 11 farms are partnerships. Even so the average saving per family is $8,300 annually.

The disparity of income between this small group and the majority of the region's family farms, not to mention part-time farms, is so great that land value cannot be viewed as a valid indicator of the region's general economic welfare. For that matter, it is not a valid indicator of the average wealth of regional farm operators because they lease so much of the land they operate. At the same time the region's low current rate of land return does not signify a general misallocation of resources to the bidding up of the price of land. If the large investing farmers are not spending enough for other productive inputs, the sheer magnitude of their off-farm investments and annual savings argues that the deficiency can seldom be attributed to the budgetary constraint imposed by a land purchase. For the majority of farmers not in the effective demand for land, however, the close competition of funds for operational and consumption needs may signify that they are not spending sufficient amounts for equipment, fertilizer, and other productivity-increasing inputs. Indeed, the significantly lower land returns being earned by these farmers may reflect such a deficiency.

Finally, the findings suggest that the desire of farmers to reap the additional income and prospective economies from expansion is not an important reason for the land price being so high relative to current returns. In the first place, as attested to by both samples, most of the expansion of operations in this region has been accomplished with leased land. Secondly, of the land transactions surveyed, 40 percent involved no expansion of operations. Moreover, the partitioning of the second sample revealed that the subset of the wheat-pea farmer universe that is effectively bidding for land offerings at current prices can well afford to buy land on the basis of its return alone. To put it more forcefully, the subset of potential farmer investors cannot be enlarged significantly by assuming that a farmer can meet his annual loan payment with the additional income from expansion under decreasing costs. If the wheat-pea farmer cannot afford to buy land he is presently operating under lease he cannot afford to expand his operation with a land purchase.