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## A NEW APPROACH IN FARM BUSINESS ANALYSIS TO FIT A CHANGING FARMLAND INVESTMENT MARKET

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### Abstract

*Increasing non-farm demand for land in developed countries is changing the farmland market and the business dynamics of owning it. Farmland's value is now based less on the economic value of farm products it can produce and more on the non-farm characteristics and uses it can provide. This change has implications for farm business management decisions leading to the need for a new approach to the economic analysis of the farm business. This new approach calls for treating farmland as part of an investment portfolio, profit centre, rather than as a production cost input. This changes the traditional approach to cost budgeting and analysis of farm enterprises. Managers need to view the land ownership decision more as an investor in the land than as a producer on the land. This may have implications for developing countries in the future as well.*

*Key Words: farmland, cost analysis, cash rent, capital gains*

Farmland, for most types of production agriculture, is the single largest asset in a farm business. In the United States agricultural sector as a whole, statistics from the US Department of Agriculture (USDA) reveal that farm real estate accounted for 85% of the value of total farm assets in 2006. (1) That percentage has steadily increased over time; in 1950 for example it was 62%, in 1970---73%, in 1990---74%. Similarly debt on real estate dominates the liability side of the balance sheet, constituting 55% of total farm debt in 2006. However, the debt percentage has not risen significantly over time, being 48% in 1950, 56% in 1970, and 54% in 1990. It is not surprising then to find that real estate is increasingly the primary placeholder for equity, accounting for 89% of total farm equity in 2006.

By virtue of farmland's dominant financial position, any management and analysis of a farm business must pay close attention to the effect the farmland asset has upon the balance sheet, net income and cash flow.<sup>2</sup> This effect has not been examined closely enough, as Oltmans points out in his explanation of why farmland cannot and should not pay for itself. *"...there is no long term farm income (profitability) problem, but there is a persistent cash flow problem. The cash flow difficulty is not the result of low returns or high asset costs....Rather, the difficulty is the natural result of the land ownership problem. It is the natural economic nature of land that is a primary cause of the persistent 'farm cash flow problem'.....Farm policies....will never solve the inherent cash flow difficulty of a land-based industry."*

(2) Land ownership activity causes severe cash flow and current income problems that, without proper separation from production activities, can distort the economic/financial flow of information, which in turn can cause an incorrect analysis and management of the farm business.

With recent market developments, this distortion is becoming more pronounced and a more serious issue. Increasing non-farm demand for land in developed countries is changing the farmland market and the

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<sup>2</sup> Farm real estate includes both farmland and non-land capital assets (buildings, fences, other capital improvements). Farmland has comprised 85-90% of total real estate valuation over the time frame cited above. Thus, farmland alone accounts for approximately 75% of assets and equity.

business dynamics of owning it. Farmland's market value due to the economic value of the products it can produce, i.e., the net profit land can generate in the short run, is diminishing; more of its value is being derived from the non-farm characteristics and uses it can provide. In the U.S. market of the last 4-5 years, for example, farmland prices have been driven upward by an increasing demand to own land for recreation, lifestyle enhancement, development, investment (portfolio diversification), tax deferral, speculation ("safe haven"), and environmental amenities (scenery, viewscape, open space, water and air quality), and other values or uses that individual buyers hold which are exclusive from using the land to produce (i.e., to farm). Land has "place value" as well as productive value. This place value may exceed the productive value, as witnessed in numerous local markets across the U.S. where lower quality, in terms of productivity, land sells at a higher price than land of higher productive quality.

One result of this market change has been a lower rate of current return on investment for farmland. Using cash rent paid as an approximation of the amount of current net income that can be earned from production (i.e. "farming" the land), one can examine this effect. The 2006 farmland survey by the USDA revealed that the average rent-to-value ratio for cropland in the U.S. was 3.3% and for pastureland 1.1%. This author's own state of North Carolina has even lower ratios of 1.4% and .5% respectively. (3)

Inverting the rent-to-value ratio yields a type of price-earnings ratio commonly used in stock market analysis. Thus, the P-E ratio for U.S. farmland in 2006 was 33 for cropland and 91 for pastureland, with North Carolina land at 71 and 200. Stock market investments with these high P-E ratios and/or low dividend yields would clearly be looked upon as growth stocks rather than income stocks and would be managed and invested in as such. Such stocks would be looked upon not for their short term cash dividends return above holding costs but for their long term growth potential above long term costs. Farmland, as an asset owned by the farm business, with these levels of earnings or P-E ratios must also be managed and invested in with a similar view.

But perhaps these ratios represent a recent speculative bubble in the U.S. farmland market and not the long term relationship of rent-to-value. While there may be some recent abnormal market activity, a look over time shows that the rent-to-value ratio has steadily declined from the 6-9% levels of 40-50 years ago. However, the long term total rate of return to farmland, when both current earnings and capital gains are combined as the income generated by farmland, has not declined. This total rate of return has consistently been in the 10-12% range. Thus, over time, the return to farmland has shifted, more of it coming in the form of capital gains (recently at 8-10% per year) and less in the form of current earnings (recently at 2-4% per year).

This shift towards higher capital gains and lower current income has major management implications for purchasing and owning farmland. The economic analysis of farm businesses must now employ a new approach that treats farmland as a profit centre in itself, as part of an investment portfolio, rather than a production cost input only. This changes the traditional approaches to whole farm and enterprise cost analysis and budgeting. Managers need to view the land ownership decision more as an investor in the land and less as a producer on the land. While the numerical technique for doing this is not a difficult adjustment to make, the change in thinking---from a producer (farmer) to an investor---is major. The results can yield entirely new insights. In hindsight this new approach should have been used long ago since farmland ownership has always presented a "problem" in production analysis. The current and future dynamics of the farmland market simply makes the case for this new approach now even more compelling.

Fundamentally, this proposed new approach calls for removing the ownership costs of land, primarily interest and property taxes, in any farm business analysis, and replacing those costs with a market rate of cash rent opportunity cost. These ownership costs would be assigned to the farmland investing business instead so that the economics of farm production can be clearly separated, seen and analysed apart from the economics of land investing. Farmland investment earnings would be credited with the cash rent as

well as the unrealized capital gains that accrue. All of this would be done for both profitability and cash flow analysis.

A simple illustration of a hypothetical farm business shows how this can be implemented. Assume the following set of financial information on a 500 acre grain farm for a given year:

Assets (other than farmland)	\$500,000	
Farmland (500 acres at \$4,000/acre)	\$2,000,000	
<b>TOTAL ASSETS</b>		<b>\$2,500,000</b>
Debt (other than farmland)	\$200,000	
Debt on farmland	\$1,500,000	
<b>TOTAL DEBT</b>		<b>\$1,700,000</b>
Equity (other than farmland)	\$300,000	
Equity in farmland	\$500,000	
<b>TOTAL EQUITY</b>		<b>\$800,000</b>

Market rate of cash rent---3% or \$120/acre---\$60,000 total

Rate of capital gain appreciation on farmland---7%---\$140,000

Table 1 shows a condensed profit analysis of this farm, using a traditional approach inclusive of all costs associated with the “farm” business. With a net farm income of (\$-30,000), a negative return to labour and management of (\$-90,000) and an ROA of only 3.6%, the profitability of the business looks bleak. Neither of the two major enterprises show a profit, and the prices (not shown) received for corn and soybeans are apparently below the cost of production. A cash flow analysis is not shown, but it is not a stretch to surmise that the net cash flow would be negative as well. The overall economic picture, though dismal, would not be all that unusual for an owner-operator farm in U.S. agriculture, as continual calls for governmental income support over the past 60-plus years indicate. “*You just can’t make any money farming.*” is an all-too-familiar refrain. Yet, farms keep being farmed, farm life continues, farms expand, and new farms come on board.

**Table 1: Traditional Analysis of Hypothetical Farm**

	Whole Farm	Farm Enterprises	
		Corn (300 acres)	Soybeans (200 acres)
Income: Products Sold	\$215,000	\$150,000	\$65,000
Expenses: (except for land)	110,000	85,000	25,000
Net Income before Land Charges	\$105,000	\$65,000	\$ 40,000
Land Charges: Property Tax	\$ 15,000	\$ 9,000	6,000
Interest on Debt (8%)	120,000	72,000	48,000
Net Farm Income	(-\$30,000)	(-\$16,000)	(-\$14,000)
		(-\$53/acre)	(-\$70/acre)
less Interest on Equity (8%)	\$64,000	\$38,400	\$25,600
Return to Labour and Management	(-\$94,000)	(-\$54,400)	(-\$39,600)
		(-\$181/acre)	(-\$198/acre)
Return on Assets (ROA)	3.6%		

But is money really being lost in the farming operation? Are commodity prices below the cost of production? Is this a case of sub-par production or poor farm management? Or, is this a case of mixed analysis that does not adequately reveal the true economic process at work in this farm operation? The answer is “Yes” to only the latter question, as further analysis reveals.

Table 2 expands on the information in table 1 by including a column for analysing the land investment as a business activity separate from the farm business. It implies that the costs and returns from the decision to own farmland is not a direct part of the farming business. The economic implications of owning land are analysed and justified within the context of an investment decision rather than a production decision. Table 2 establishes land as a profit centre in itself with the costs properly assigned to both “land” and “farming”.

**Table 2: “New” Analysis of Hypothetical Farm**

	Whole Farm	Farm Enterprises		Land Investment
		Corn (300 acres)	Soybeans (200 acres)	
Income: Products Sold	\$215,000	\$150,000	\$65,000	----
Cash Rent Value	----	----	----	\$ 60,000
Expenses (Except for Land)	110,000	85,000	25,000	----
Net Income before Land Charges	\$105,000	\$65,000	\$40,000	\$ 60,000
Land Charges: Cash Rent	\$60,000	\$36,000	\$24,000	----
Property Tax	----	----	----	15,000
Interest on Debt	----	----	----	120,000
Net Farm Income	\$45,000	\$29,000	\$ 16,000	----
		<i>\$96/acre</i>	<i>\$80/acre</i>	
Net Land Income				(- \$75,000)
less Interest on Equity	\$24,000	\$14,400	\$9,600	\$40,000
Return to Labour and Management	\$21,000	\$14,600	\$6,400	(-\$115,000)
		<i>\$49/acre</i>	<i>\$32/acre</i>	
Return on Assets (ROA)	9%			2.25%
Unrealized Capital Gain				\$140,000
Total Net Return to Land				\$ 25,000
Total ROA on Land Asset				9.25%
Total ROE on Land Equity				13%

In this process only the amount of cash rent that could be received on the land is charged to the farm operation as a land cost. This rent becomes income to the land investment, which in turn incurs the costs of property tax and interest. This allows the farm business operator to see the profitability of production without being encumbered by a non-production decision to own instead of rent the land. On this basis, one can clearly see that the farm operation, as a whole as well as by enterprise, is indeed profitable with a

net farm income of \$45,000, a return to labour and management of \$21,000, and an ROA of 9%. A cash flow analysis, while not presented here, would reveal a similar pattern. There is not a farm profitability problem; rather, the profit problem in table 1 was the result of a decision to own land. Commodity prices for corn and soybeans are above the cost of production, and the production management of the farm could be judged as “good”. The distinction between a decision to produce (to farm) on the land and a decision to own the land is huge and vitally important to make.

As the last column of table 2 shows, the return from land ownership in the form of cash rent (or alternatively the current earnings that could be expected from production) does not cover the cost of ownership, resulting in a Net Land Income of \$-75,000 and a low ROA of 2.25%. The current income loss of owning land however is just that---a current loss while holding an investment---not a loss on farming with that land asset. The stock market investment analogy would be that the dividends earned from a stock are not enough to cover the interest cost (or carrying cost) of owning/holding the stock. However, that is not unusual, and it does not negate the economic wisdom of investing, nor does it imply that the use of assets held by the stock’s underlying business operation is unprofitable. There is one last but major piece of the puzzle to consider.

If the only return to land is the current income it can extract from production, or rent, the economic decision to own land, at least in this representative case, is simple. Don’t! Land ownership is unprofitable! And the question of whether or not owning land will cash flow is even more simple. It won’t! Land ownership will result in negative cash flow. (*Note: this is not the same thing as incorrectly stating that “farming” is unprofitable or that the “farm business” will not cash flow.*) However, the return to land ownership also includes an unrealized capital gain in value. The capital gain component is now more than the amount of current return in the U.S. farmland market, on average twice as much.

With capital gain “income” of \$140,000 in this example the net return to land switches to a positive \$25,000 above expenses for a respectable ROA of 9.25%. With debt leveraging, the ROE, Return on Equity, is even higher at 13%. The greater economic motivation for owning land is the potential long term increase in value rather than the short term income it can earn. It is to hold land as an investment more than to farm it. Any analysis of the total business should properly reflect this motivation and assign both the costs and income to their proper economic activity and decision point.

The example used in this paper shows a situation where all of the land is owned with a high level of debt on the land. Numerous other examples could be made with varying mixes of the percentage of owned land and different levels of debt. In the case where the land has no debt, for example, a traditional approach where no interest is charged to the farm operation would understate the true cost of production; a debt-free land asset would be subsidizing, numerically, the farm operation, leading to inaccurate production management analysis. In the new approach, debt-free land would not change the farm analysis since it would be charged with a current cash rental rate regardless of the type of financing used on the land. The land investment would show the same ROA whether or not it has debt financing since ROA is not affected by the interest on debt. Thus, a clearer picture can emerge for both the farm business and the land investment business. The same would be true of other examples where the amount of owned land is less than 100% of the land base or where other debt-equity mixtures are in place.

This expanded new approach to farm business analysis more accurately reflects the profitability (and cash flow) of its distinct components. It shows the economics of farm production without the cost burden of a separate and differently motivated decision to own the land, allowing better production management decisions to be made about the farm operation. It highlights and properly assigns to the land investment decision the burden of low returns from farming, allowing better management decisions about investing in farmland, about whether to own or rent. And it reveals the importance of long run as well as short run considerations in evaluating the economic situation of farm operator-owners. For governmental farm policy makers, it could more clearly show where the problems of net income and cash flow truly exist.

Only with the proper identification of the problem(s) can effective policy actions be determined to deal with the economic challenges of the farm sector.

While this analysis has been presented as applicable to U.S. agriculture in particular, it may be equally valid for other countries where the market for farmland includes increasing demands for non-farm use of land and for holding land as an investment. It may also have implications for developing countries, where the value of land is still tied mostly to its current earnings rather than capital gains, but where that may be changing in the future.

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