PORTFOLIO STRATEGY

FOR THE

NEBRASKA BOARD OF EDUCATIONAL LANDS AND FUNDS

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EXECUTIVE SUMMARY

The Nebraska Permanent School Trust is a perpetual endowment composed of Nebraska farmland, US stocks and bonds. **The objectives of this particular endowment are to provide as much support as possible for the benefit of all generations of K-12 public education in perpetuity without favoring one generation over another.** Constraining investment flexibility is a distribution policy requiring the distribution of all current income and the retention of all capital gains.

The purpose of this study is to project future returns from the asset classes currently held by the Nebraska Permanent School Trust and to model optimal mixes based on these forecasts which can be used to adjust or fine tune the portfolio to maximize returns and limit risk. Forecasts are based on historical returns and adjustments that reflect both recent and projected changes. Historical returns are based on data for the period of 1946-1996 from Ibottson and Associates and USDA.

All asset returns have some amount of uncertainty (risk). Investors choose investments that provide the greatest return for a given amount of risk, or the lowest risk for a given amount of return. The sources of uncertainty for each asset return can vary among assets. By combining assets that have different sources of uncertainty, the group of assets provides more stable returns than the individual assets. Therefore, investors choose to combine assets with different sources of uncertainty to lower portfolio risk.

Background on Farmland Fundamentals

Since 1960, world production of grains has doubled. Area under cultivation has not changed but productivity of each acre has increased as the result of improved technology. At the same time, consumption has doubled. Demand growth for agricultural products is not driven solely by increases in population. **People with low incomes have a very high marginal demand for agricultural products.** Most of world population is in this range where the marginal demand for improving diet quality and increasing protein consumption is greatest. It is only quite recently (last 20 years) that this group has begun to experience rapid economic growth. Coupled with a rapidly integrating international economy, the prospects for agricultural product demand growth are bright.

In agricultural commodities, small changes in carryover produce large changes in price. This is because consumption changes very little with price changes. The difference between "surplus" and "shortage" is not very large but results in very significant changes in prices and producer profitability. Currently, carryover supplies are small and prices are relatively high. Weather can accelerate or slow producer response but cycles are likely to continue. Even though only 12% of

US total grain production is exported, commodity prices are determined in the last part of supply and demand balance. Beef trade is small internationally so prices have been determined domestically where a decline in per capita consumption has been occurring for 20 years.

Producers respond to price changes but there is a time lag. Grain production has a relatively short response time while beef has a relatively long response time because of biological requirements. US government farm programs have provided a floor to certain agricultural commodities while attempting to control supply. The result distorted market forces in agriculture and undoubtedly sustained certain inefficiencies and extended periods of oversupply. Since 1985, the farm programs have been phasing out to end in 2002. Most production constraints have been removed and only some income supports remain.

In commodity production, the low cost producers are the strongest participants. In grain production, these are usually the producers with the highest yield per acre because the per acre costs are spread over more bushels resulting in the lowest cost per unit produced. In 1991, half the corn produced in the US had a cash cost of $1.66 per bushel or more. The average Nebraska (NE) producer irrigates more and gets larger and more consistent yields than the average US producer. NE production average cost is about equal to the US because of higher operating costs (due to irrigation expense) offsetting the yield improvements. NE corn costs of production fall in the mid-range of the US, which is a solid position.

In pasture, rent levels indicate the relative strength of the producer. Most areas in the West have lower rental rates than NE and they are therefore more marginal producers of calves for beef.

Historical Returns

Total returns are the sum of both current income, net of expenses (including real estate taxes), and the percentage change in value of the asset base. Risk is measured as one standard deviation.

Over the period of 1946-1996, NE farmland as an asset class provided a current net income of 4.9% and increased in value by 5.6% per year compounded for a total return of 10.5%. The 10.8% variability of total return was mostly due to value changes with the current income being far more stable. US farmland and NE farmland were very close in all return aspects and very highly correlated indicating that **owning only NE farmland is not significantly different from owning farmland in many states.** Farmland value has shown a very consistent uptrend over the entire period studied except for the boom-bust period of 1973-1987. This asset class has provided a balance between current income and stable appreciation.

NE farmland can be broken down into three major categories, 1) non-irrigated cropland, 2) irrigated cropland, and 3) pasture. Historically, pasture has provided a lower current income, lower appreciation, and more volatility, indicating less desirable return characteristics, than the two types of cropland. In the early part of the period studied, irrigated cropland was a very small percentage of the total. Now, irrigated cropland represents 13.2 % of NE farmland acres and 33% of value.

Stock returns are based on the Standard and Poors Composite Index. This index represents a broad base of the largest stocks, 90 companies from 1946 to 1957 and then 500 companies thereafter. If

a company declines, it is de-listed and replaced with another large company. Stock dividends are assumed re-invested instead of distributed which adds about 0.20% to the total return.

Long term bonds are those of 20 year maturity. Government bonds are used because they have had the lowest default risk. Other bonds could be compared with these bonds by adjusting returns for the additional default risk. The annual bond returns represent a new 20 year bond each year that was held for one year and sold. Current income return was the coupon yield at a new issue price of par. Appreciation return was calculated based on the change in the bond value.

Average Annual Returns to Stocks, Bonds & NE Farmland - 1946 to 1996

	Current Income	Appreciation	Total Return
S & P Composite	4.3% (Risk 1.6%)	7.8%	12.1% (Risk 16.5%)
20 Year Gov't Bonds	5.5% (Risk 3.4%)	-0.3%	5.2% (Risk 10.5%)
1/2 S&P, 1/2 Bonds	5.2% (Risk 1.8%)	3.8%	9.0% (Risk 10.7%)
NE Farmland	4.9% (Risk 1.4%)	5.6%	10.5% (Risk 10.8%)

The table above shows that stocks have provided the greatest total return and the lowest current income. Bonds have provided some additional current income but at the price of much lower total returns. **Although total return to NE farms is between stocks and bonds, farmland returns have been far greater than bonds and much closer to stocks.** This is to be expected because farmland is an equity, an ownership interest like stocks, while bonds are loans with fixed interest. Farmland returns have also been more stable than stock returns and nearly as stable as bond returns. Current income volatility was greatest with bonds.

Over the period studied, inflation as measured by the CPI increased at a rate of 4.4% . Farmland showed the greatest correlation with inflation. The table below shows the total returns for each asset class after adjusting each annual return for that year's inflation. The risk (standard deviation) of real (constant dollar) returns is higher for stocks and bonds than in the previous table (without the inflation adjustment) and the risk for inflation adjusted farmland returns is lower.

Real Inflation Adjusted Returns - 1946 to 1996

Asset Class	Total Return	Risk
S & P Composite	7.4 %	18.1 %
Long Term Government Bonds	0.7 %	11.8 %
1/2 S&P, 1/2 Bonds	4.4 %	12.5 %
Nebraska Farms (Weighted Ave.)	6.3 %	10.4 %

All asset returns fluctuate. Some asset returns fluctuate in a manner similar to others and some asset returns fluctuate in an offsetting manner. Risk reduction comes from mixing assets that are offsetting. Correlation is a statistical measure of the degree to which the returns to two assets fluctuate in a similar or offsetting manner. A correlation of +1.0 means the two asset returns fluctuate in a perfectly similar manner, i.e. when one is up, the other is up all the time and vice versa. A correlation of -1.0 means that the two asset returns fluctuate in a perfectly offsetting manner, i.e. when one is up, the other is down all the time and vice versa. Correlations between -0.9 and 0.0 represent offsetting returns, but only partially; while correlations between +0.9 and 0.0 are similar, but only partially. **The goal of portfolio management is to combine assets that provide offsetting returns, not just more assets.**

The following table of return correlations indicates the extent to which the total return of one asset class has matched the total return of another For example, the boldface "**.205**" shows that roughly 20% of increases or decreases in S & P returns correspond to similar moves in long term government bonds. The "-.159" found in the cell just below the boldface .205 is the correlation between the returns from farmland with stocks. It shows that roughly 16% of the increases or decreases in S&P returns correspond to offsetting moves in farmland. These numbers have been calculated from the historical observations.

Return Correlations - 1946 to 1996

	S & P Composite	***Long Term Gov't Bonds***	***NE Farmland***
S & P Composite	1.000	.205	- .159
Long Term Gov't Bonds	**.205**	1.000	- .319
NE Farmland	- .159	-.319	1.000
CPI	- .349	- .193	.237

Forecasting Future Returns

Farmland returns of the future will be effected by:

- production increases in Eastern Europe and Argentina, response to recent high prices, and improving productivity, while production decreases in the EC and Japan result from reductions in subsidies there.
- consumption increases in China and less-developed countries from economic growth, growing industrial uses, and freer trade.

Cropland returns will benefit more than pasture but cattle herd rebuilding is expected and the extent of beef demand growth internationally may change the outlook for pasture later on. Advances in cattle disease control in other countries could result in demand growth benefiting those countries more than the US.

Assuming a farmland mix of roughly half crop acres and half pasture acres (80% cropland and 20% pasture by value), farmland returns are forecast to be 4.5% current income (net of property taxes and other expenses) and appreciation 2.0% greater than the 3.0% forecast inflation (2.0% real appreciation + 3.0% inflation = 5.0% total appreciation). This would provide a total return of 9.5% without an inflation adjustment, slightly below historical non-inflation adjusted terms. Forecast volatility for farmland is 14.0%, higher than the historical data indicate but adjusted for data quality and the expectation of greater fluctuations resulting from termination of the government programs.

The near term prospects for stocks are not as great as the long term, with a lower performance adjustment to historical long term trends expected sometime in the next 3-8 years. The long term total return forecast for stocks is 10.0% (2.5% current income and 7.5% appreciation) with a risk (standard deviation) of 17.0%. This forecast incorporates an adjustment in conformance with the long term trend and also adjusts for the 3.0% forecast inflation rate which is lower than the historical 4.4% inflation rate over the last 51 years.

Forecast Annual Returns to Farmland, Stocks and Bonds - Long Term

	Current Income	Appreciation	Total Return
NE Farmland	4.5%	5.0%	9.5% (Risk14.0%)
S & P Composite	2.5%	7.5%	10.0% (Risk 17.0%)
20 Year Gov't Bonds	6.5%	0.0%	6.5% (Risk 7.5%)

Bond returns are forecast to be higher than historical in both real and non-inflation adjusted terms at 6.5%. All of this return is current income. There is no appreciation as bonds are assumed held to maturity. Risk (standard deviation) of the bond returns is lower than historical as the inflation episode of the '70s is not forecast to recur.

Optimal Asset Mixes

In order to determine the best (most efficient) asset mixes, an optimization model is used which solves for asset mixes providing the lowest possible level of risk for each amount of return (or generating the highest possible return for each level of risk). The inputs for the optimization model are projected returns, standard deviations and correlations for each asset class.

The forecast correlations used in the model are as follows:

	Stocks	Bonds	Farmland
Stocks	1.00		
Bonds	**0.40**	1.00	
Farmland	-0.10	-0.20	1.00

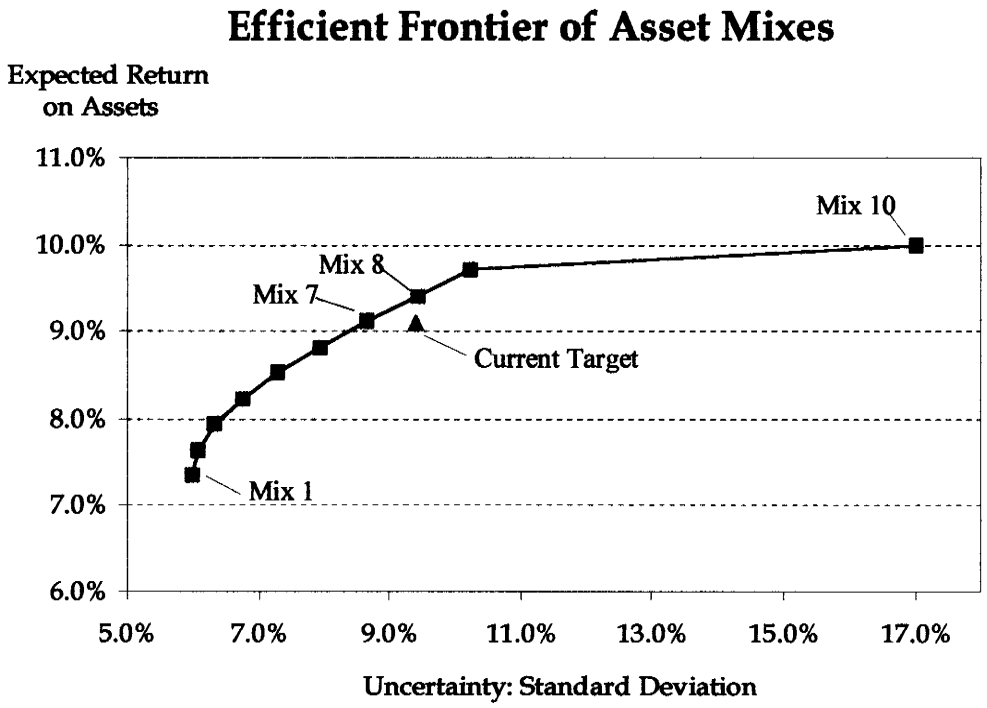
Twenty year rolling average correlations were employed to identify trends. The correlation for NE farmland vs. stocks ranged from -0.35 to 0.00, for NE farmland vs. bonds from -0.50 to 0.05, and for stocks vs. bonds from -0.40 to 0.55 . The correlation between stocks and bonds demonstrated a clear uptrend to higher (more positive) correlations in recent years, which would not be revealed by merely averaging the data. The correlations reflected no other uptrends or downtrends.

Using the forecast inputs in the optimization program, an efficient frontier of asset mixes was generated. Each asset mix is optimal on a risk/reward basis, meaning that the highest return is generated for any given level of risk. Presented in the next table are the proportions of each asset class in the optimal mixes. Below that, are the expected (total) returns, risks (standard deviations), and current income for each mix. At the bottom of the table is the 1 in 6 Worst Case. Total return would be expected to equal or exceed this amount in 5 out of 6 years, and fall below this amount in the remaining 1 out of 6 years. The current target mix is the current percentage of farmland with the 50-50 stock/bond mix objective of the Nebraska Investment Council.

Optimal Asset Mixes for Given Risk Levels

	Limits		*Asset Mix Alternatives*										**Current**
	Min	Max	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	**Target**
Stocks	0%	100%	2%	7%	12%	18%	23%	28%	33%	39%	44%	100%	17%
Bonds	0	100	72	63	54	45	36	27	18	9	0	0	17
Farmland	0	100	26	30	34	37	41	45	48	52	56	0	66
Expected Return, %/yr			7.4	7.6	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0	9.1
Risk (Std. Dev.), %/yr			6.0	6.1	6.3	6.8	7.3	7.9	8.6	9.4	10.2	17.0	9.4
Current Income, %/yr			5.9	5.6	5.3	5.0	4.8	4.5	4.2	3.9	3.6	2.5	4.4
1 in 6 Worst Case, %/yr			1.4	1.5	1.6	1.4	1.2	0.9	0.5	0.0	- 0.5	- 7.0	- 0.3

The graphical representation of the efficient frontier is shown below. All other asset mixes are inside the frontier (and inefficient) because they generate less return for each level of risk (or require accepting more risk for each level of return).



This analysis displays that the current target mix is inside the efficient frontier, meaning that it offers less than optimal expected return for the given level of risk. Mix 8 offers 0.3% more in expected return for the same risk level as the current target, while Mix 7 offers the same expected return with a lower level of risk. Any movement towards the efficient frontier would be an improvement.

In addition to risk tolerance, adopting a new asset allocation target requires taking into account the current asset allocation and the costs to change. The expected cost of implementing a new asset mix must be considered relative to the expected benefit of the mix.

In the alternative, if one were to assume a future rate of inflation of 4.0% rather than 3.0%, then projected long term bond interest rates would be 7.5% (still 3.5% real); and both farmland and stock would increase in value an additional 1.0% over the long term due to the diminished value of money (again, without changing the real inflation adjusted returns). Optimal mixes would not change but would reflect an additional 1.0% total return without additional risk.

The current target mix is not optimal in terms of return for the risk taken. Mix 7, which offers the same expected return as the current target with a lower level of risk, should be considered. As a more aggressive allocation, Mix 8 offers a higher expected return for the same risk level as the current target mix. With the Nebraska Investment Council stated strategy of 50-50 stocks to bonds, Mix 6 would be optimal. If that strategy changes and risk tolerance is high, then Mix 9 would be the highest return alternative within reason.

Conclusions and Recommendations

Farmland is an equity asset that provides equity premium returns. It has been more stable and provided more current income than the S&P Composite. It has provided greater total return than a 50-50 mix of S&P stocks and long term government bonds while yielding an equivalent current income with a total return volatility virtually the same as, and current income volatility slightly lower than, the 50-50 mix. Of the three asset classes, only farmland showed a positive correlation with the CPI indicating a lower inflation risk. The negative correlation between farmland and both stocks and bonds makes combined portfolios superior.

The present portfolio mix of the Permanent School Trust contains too much farmland and is inefficient. Optimum mixes 6, 7 & 8 vary from 45% to 52% farmland. Even Mix 9, the highest return alternative within reason, is only 56% farmland. **Reducing farmland to approximately half of the total portfolio is recommended.**

In addition, pasture represents too large a portion of the farmland portfolio. Pasture has underperformed cropland and is expected to continue to do so. **It is recommended that the Board sell pasture and keep cropland to accomplish both:**

1) **the reduction of pasture in the land portfolio, and**
2) **the reduction of land in the overall portfolio.**

By selling pasture and keeping cropland, the land portfolio will be improved as it becomes more similar to the state average mix. This will increase the return and reduce the risk of the land portfolio and also improve the total portfolio. Pasture with cropland potential should be retained.

Selling the pasture that is in the lower half of the expected return range of the pasture portfolio is recommended. To oversimplify, if every parcel had the same appreciation prospects, property taxes, and other expenses (which they don't), one would sell the properties that have an income to value percentage less than the BELF pasture average. Where these factors are not equal, adjustments can be made to the income ratios to make the relative comparisons for ranking purposes. Future prospects are likely to be best for properties that are not isolated, have access, and experience competitive pressure on lease rates.

Sell $100 million (current value) of the pasture. This would make the land portion of the overall portfolio an optimal asset mix consistent with mix 6 where stocks and bonds are equally represented and farmland is 45% of the overall portfolio. This represents approximately one-half of the pasture value but may be more than one-half of the pasture acres as there are very different per acre values of pasture in the portfolio. This is a large amount of land acres and value; and these properties should be sold on an opportunistic basis as existing leases terminate. Pasture land sale proceeds of this magnitude that are re-deployed in a 50-50 stock bond mix, as the Nebraska Investment Council currently suggests, would be a positive step. Keeping the better half of the pasture portfolio selects for pasture that is closer to the returns for cropland. To sell more pasture would reduce farmland to too small a portion of the overall portfolio unless cropland could be purchased with the proceeds.

The current distribution policy of the Nebraska School Trust should be carefully evaluated. The present legal requirements of distributing all income and retaining all capital gains may have a significant adverse effect on future total return. With many corporations pursuing stock repurchase programs instead of increased dividend payments, this distribution policy becomes more constraining than it was without these programs.

So long as investment policy also determines distributions (through the specific mix of income and appreciation targeted), multi-generational fairness requirements may also constrain investments. That is, targeting significantly unequal proportions of income and appreciation may be avoided as favoring either the present or future generations. On the other hand, decoupling the investment and distribution policies would permit the Trust to target higher returns (mixes 7, 8 or 9) while adjusting distributions as necessary to treat all generations fairly.

An assessment of the Trust's risk/reward tradeoff tolerance should also be undertaken. The importance of year to year fluctuations diminishes as the duration of the investment increases and the Nebraska School Trust obviously has the longest possible time horizon of any investor. Decoupling the investment and distribution policies would facilitate higher risk tolerance, consistent with this very long time horizon.

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INTRODUCTION

The Nebraska Permanent School Trust is a perpetual endowment which presently contains Nebraska farmland, US stocks and US bonds. The composition of this endowment portfolio as of September 30, 1997 was approximately as follows:

Nebraska farmland	=	$361,500,000.	62.1%
US Stocks	=	123,300,000.	21.1%
US Bonds	=	98,000,000.	16.8%
TOTAL	=	$582,800,000.	100.0%

The objectives of this particular endowment are to provide as much support as possible for the benefit of all generations of K-12 public education in perpetuity without favoring one generation over another. Constraining investment flexibility is a distribution policy requiring the distribution of all current income and the retention of all capital gains.

The land portion of the portfolio is what remains from original statehood after various parcels were sold over time. Land was the only equity permitted in this portfolio for more than 100 years. Acquisition of common stock as an alternative equity has been allowed only very recently. For comparison with other "similar" endowments, the educational Trusts of the same origin (in other states) would be the appropriate measure.

The land portion is managed by the Nebraska Board of Educational Lands and Funds (BELF) while the stock and bond portion of the portfolio is managed by the Nebraska Investment Council. Each has prepared a report explaining their respective strategy for the management of their portion of the portfolio. The purpose of this study, and report, is to provide projected future returns from the asset classes and model the expected returns of optimal multi-asset class portfolios which can be used to adjust or fine tune the portfolio to maximize returns and limit risk.

In forecasting future returns from various asset classes, historical returns are used as a starting point. The time period studied is from the beginning of 1946 to the end of 1996 as this captures a 51 year range of economic circumstances, long enough to qualify as a long term sample. The data used is primarily from two sources which are of the best quality and most consistent methodology available: 1) Ibottson and Associates for stocks, bonds, and inflation, and 2) USDA for farmland. Some statistical terminology is defined and used in this report to summarize certain observations. These definitions are not intended to be technical and therefore may be imprecise but certainly useful for the purposes of this report.

BACKGROUND

ABOUT RISK

Since market prices for assets are determined by buyers and sellers, it is useful to consider a model of rational investor behavior and to measure "risk". The most prevalent model is "Modern Portfolio Theory" which is predicated on the following basic observations:

- greater return is necessary to offset additional risk as investors are risk averse.
- when assets are combined into a portfolio, unmatched return timing from among the various assets lowers the risk of the whole portfolio to below the risk of any one of the assets alone.

From these basic observations, it can then be logically derived (known as the Capital Asset Pricing Model) that buyers and sellers in a market place for assets will bid each asset to a price that reflects not only its individual expected return for its individual risk, but also its contribution to reducing the overall risk of a portfolio. These models explain a great deal of investor behavior and the primary objective of portfolio management. These ideas are well known and accepted by most investment professionals. The auction nature of markets allows investors to build portfolios consistent with their own risk/reward objectives.

The most relevant risk is the risk of not achieving the objectives of the investor. In an attempt to quantify risk, the most common measure of risk is variability of total return. The statistical measure called "standard deviation" is typically used as a quantifiable estimate of future risk. One standard deviation defines the range above and below the expected result that will occur 66% of the time. An expected return less one standard deviation is the return expected to occur or be exceeded 5 out of 6 times.

Though standard deviation is most often used as a measure of risk because it is readily quantifiable, other risk components are considered when making assumptions about the future such as:

- ***Default risk*** - where a fixed income security becomes uncollectable in interest, principal, or both. This is reflected in total return.
- ***Inflation risk*** - the erosion of purchasing power that results from general price inflation. Real inflation adjusted returns consider this risk by correcting for changes in purchasing power. Long term bonds have the greatest exposure to inflation risk, stocks have some exposure, although over time they will adjust to changes in inflation, and land has the least exposure as its value will quickly reflect changes in inflation expectations.
- ***Interest rate risk*** - where increases in market interest rates reduce the value of assets and vice versa. Interest rates are the rental rates for the use of money for a period of time as determined by the supply of and demand for the temporary use of money. This is reflected in standard deviation of returns.

- ***Market risk*** - the risk that expected returns on a broadly diversified market portfolio will not be achieved due to effects from overall economic factors. This is reflected in standard deviation of returns.
- ***Specific risk*** - the risk that a specific asset will not achieve its return objective, not contribute to portfolio risk reduction as expected, or both. This type of risk can be controlled by effective diversification.
- ***Liquidity risk*** - the risk that the time and difficulty of converting an asset into cash will result in reduction in value. This risk only exists when the majority of portfolio assets are illiquid and has little relevance in situations such as this endowment where current law does not allow principal to be distributed.

In this report, "risk" is used as shorthand terminology for variability of one standard deviation. Other risk components will be specified when applicable.

BACKGROUND ON FARMLAND FUNDAMENTALS

Most of the farmland return data utilized in this report and in the models was provided by USDA Economic Research Service - National Agricultural Statistics Service. World data is provided by the Foreign Agriculture Service with offices all over the world. This data is used because of its consistent methodology over the time period studied and because it covers the longest time period. The domestic data is based on two primary sources: the Census of Agriculture and field reporters. The Census of Agriculture is a comprehensive survey done every 5 years. Land owners are asked questions, the answers to which are then aggregated by the Service. Studies that have looked at the accuracy of this method of data collection have shown that over time, the information is quite accurate, but in short time periods, changes may be somewhat lagged and somewhat smoothed. In many ways, it is probably as accurate as appraisal based data. If there was a consistent bias in the data, it would grow larger over time but this has not been shown to be the case when checked by actual transaction based data. The field reporters are quite knowledgeable in their area and they provide interim data.

Some adjustments to the data were necessary to improve comparability from one data series to another. For example, the USDA rent to value ratios do not include certain ownership costs such as leasing fees and maintenance. The requisite adjustments have been made based on personal knowledge in the field and by ascertaining the experience of others.

Global Production, Supply, and Demand

Early in the Post War period, markets for US agricultural commodities were almost entirely domestic. Population growth obviously increased demand. In the US, demand for more meat products also drove the growth of demand for grains. This is because 8 pounds of grain are required to produce one pound of beef, so more beef in the diet means more grain consumption. It takes 4 pound of grain to produce a pound of pork and 2 pounds of grain to produce one pound of chicken. The vigor of the economy meant that there was sufficient income to pay for more meat.

Elsewhere in the world, there were still food supply problems. An underdeveloped country was one that could not feed itself. As industrial economies recovered from the devastation of war, they were able to export goods and trade for food. Increases in productivity meant that countries with abundance could trade food for goods and the export market began to grow.

Since 1946, the area of US land in farms has declined 20%, while Nebraska land in farms has declined only 2%. Even though this indicates a declining US production base, production has increased dramatically due to productivity gains. For example, the 3 year average US corn yield has increased from 56.7 bu./ac in 1959-1961 to 126.4 bu./ac. in 1994-1996 (123% increase). The US soybean 3 year average yield increased from 24 bu./ac. in 1959-1961 to 38.1 bu./ac. in 1994-1996 (59% increase).

Since 1960, annual world consumption of grains has doubled. During this time, grain exports have quadrupled. The market for grains has become much more globalized. With the US government decoupling its farm programs from production and pricing (see next section), it is the world market that determines the price of grain in the US and Nebraska. The dynamics of supply and demand determine the profitability of US agriculture.

On the demand side, the dynamics are partly driven by increasing population in some countries though this factor is gradually declining in significance. Far more significantly, **there is a very large portion of the world's population that has low income and is experiencing very rapid income growth. People with low incomes have a very high marginal demand for agricultural products.**

The following table shows the share of world population for several key countries and the forecasted population growth rate for the years 1990-2000.

Table 1 - GLOBAL DEMOGRAPHICS

Country	% of World Population	Forecast Population Growth Rate 1990-2000	GDP Growth Rate	Current Income per Capita
US	4.6 %	1.0 %	1.4 %	$25,810
China[1]	20.1	1.0	7.3	1,860
India	16.5	1.7	2.9	312
Indonesia	3.6	1.6	5.8	838
Japan	2.2	0.2	2.8	37,000
Russia	2.6	0.0	?	5,216
Brazil	2.8	1.2	0.7	3,655

1 China population includes Taiwan but GDP growth and income do not.

China, India, and Indonesia represent over 40% of the world's total population and are still growing. The per capita incomes for these three countries are all less than $2,000 and the per capita GDP growth rates are good (2.9% for India) to excellent (5.8% for Indonesia and 7.3% for China) . This huge segment of the world is greatly increasing their effective demand for agricultural products. Of course, India is not demanding beef due to religious constraints, but the

demand for pork and poultry will help drive demand for grain. **The US and Japan have very mature economies and at these levels of per capita GDP, the marginal demand for agricultural products is low. These were the economies, along with the European Community, that drove the demand for agricultural products over the early post-war period, but now emerging economies drive the demand.** Russia and Brazil could become large consumers of beef as their diet prefers beef, as opposed to the preference for poultry in Asia, and both of their economies are potentially poised for significant growth.

The desire to add meat to the diet and improve protein consumption translates into growth in demand for grains. Coupled with a rapidly growing income, emerging economies finally have the ability to pay for improving diet quality.

Agricultural commodities have very low price elasticity. This means that large price changes can occur with small changes in consumption. Production is much more sensitive to price changes than consumption. Therefore, carryover inventories have a large effect on price. Low prices occur in time of surplus and high prices occur in times of shortage. For example, since 1960/61, the world has gone through at least two major cycles of surplus to shortage. In 1960/61, the world total grain stocks-to-use ratio was 25.4% (that is the ratio of ending stocks to annual consumption) with carryover of 110 million metric tonnes. At that time, the US government was dumping grain in the ocean to reduce surplus and support domestic grain prices. By 1972/73, the ending stocks had dropped to 80 million metric tonnes and had become only 12.2% stock-to-use as annual consumption had grown almost 42%. This was a time of severe food shortages and then Secretary of Agriculture Earl Butz called for American farmers to plant "fence row to fence row". And they did.

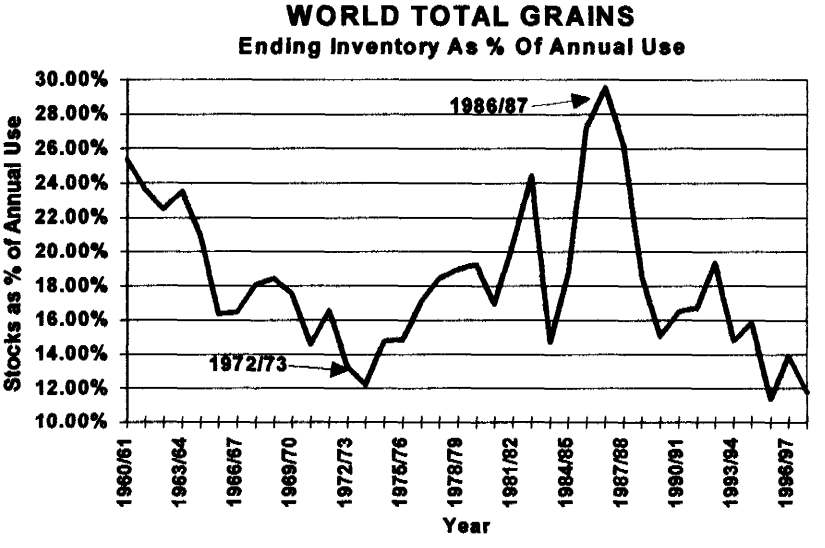


Figure 1

By 1986/87, world ending stocks of total grains had increased to over 235 million metric tonnes and represented 29.5% of annual consumption. Annual consumption had increased by another 30%, yet the world was once again in a surplus situation. Currently (1996-1997), ending stocks are estimated to be 105 million metric tonnes and 11.7% of the 898 million metric tonnes of consumption this year (97/98). It is also interesting to note that the area planted to grains is

essentially the same in 1997/98 that it was in 1960/61 while yields have doubled. Technology and ever more intensive agricultural practices have increased the productivity of farmland. A balanced carryover would be in the range of 16-20%.

The market for pasture is strictly dependent on cattle population which, in the long term, reflects the total demand for beef. Domestically, demand for beef has been declining for some time. Per capita domestic beef consumption peaked in 1976 at 127.5 pounds. As of 1995, it had fallen to 97.1 pounds or a decline of 24%. This is primarily due to the health concerns surrounding high levels of beef consumption. As a result, domestic poultry consumption has grown considerably.

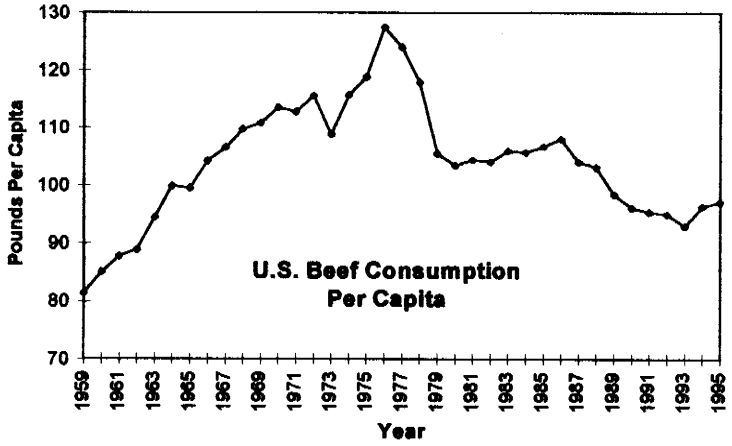


Figure 2

The export market for beef, however, is growing rapidly. In 1976, the US was exporting 80 million pounds or only .3% of total production; while in 1995, beef (and veal) exports had grown to 1,310 million pounds or 5.2% of production. This reflects a substantial growth rate of 15% per year, but from a very small starting point. Total US beef production has remained essentially flat over the last 20 years with exports making up for the decline in US per capita consumption.

The key points to be drawn from this historical perspective are:

1. there is a very small difference between surplus and shortage,
2. consumption has continued to grow for the entire period, with only a few reductions due to a short world production,
3. the current situation is one of shortage and relatively high prices, even higher in export markets where the US dollar has strengthened,
4. cycles are likely to continue in the future.
5. even though only 12% of US total grain production is exported, commodity prices are determined at the margin, or in the last part of supply and demand balance.

US Government Farm Programs

For most of the post-war period US government farm programs were intended to stabilize incomes for farmers. This was a reasonable objective because:

- commodity prices can be very volatile resulting in large changes in income to farmers
- farmers had almost no economic or financial flexibility because the rural community was so dependent on agricultural production
- there was a very small but growing international market for agricultural products.

This objective was met by a mechanism of target prices for commodities and fallowing acreage. Fallowing both reduced commodity supply and helped to preserve future land productivity. Growers were assured a minimum price for their product in exchange for idling the required amount of land from production. Government programs were established for corn, wheat and other small grains. There was no program for soybeans, alfalfa, or livestock though they were also effected indirectly. For example, when corn prices were low and growers were required to idle some land, that land was kept from producing soybeans or alfalfa.

The effect on the livestock industry was more indirect and complex. When the government was reducing the supply of grains to support grain prices, the cost of producing meat from grain was artificially held up. This both reduced the demand for cattle going into feedlots and increased the value of meat produced on pasture. Pigs and chickens do not have the pasture for feed option, so higher grain prices made the cost of producing these competing meats higher.

As international trade of agricultural commodities grew in significance during the 60's and 70's, it became increasingly difficult for US government programs to meet their objectives. The prices that the US government was paying for grain to go into storage were essentially establishing the world price at a level that was stimulating expansion of foreign production. If US farmers could get a better price for their grain from the US government than the world price, that is where it went. Foreign producers would sell their grain all over the world for just under the US government price. Government support prices were so high as to stimulate marginal land into production even while the government was idling land. Global inventories expanded (mostly in the US), storage facilities became filled, and at times, the US government dumped grain into the ocean. As larger areas of US farmland were idled to control the huge over-supply, foreign producers expanded and took increasing shares of international trade.

As a result, the US farm program took a major shift with the 1985 farm bill. The program started to change from a supply control mechanism to an income stabilization program. Growers were now selling their product on world markets instead of into government storage. If the world price did not produce a profit, growers could choose to idle more land than the government was requiring for program participation. Growers would receive a payment from the government that reflected the difference between the world price and the US target price whether they produced the commodity or not. The payment was limited to $50,000 per year per producing entity. The objective was for US products to once again be competitive on world markets and let the free market system control supply. The 1985 farm bill still had some land idling requirements but in the farm bill of 1996, production and payments were completely decoupled. Growers can now grow any crops on as many acres as they wish. Gradually declining payments are scheduled to stop after 2002. This 17 year transition from a government supported agricultural industry to a free market is the most significant change in agricultural finance since the stabilization program was begun in 1933.

One government farm program that will survive the changes is the Conservation Reserve Program (CRP). This is a program where owners submit bids to the USDA for the payment they would accept for idling certain land for a period of 10 years. Typically, the marginal (less productive) land is bid to participate in the program because it is the lowest bidder that gets accepted. To qualify, the land has to be classified as Highly Erodible. The purpose of the program is to keep marginal land in reserve and not only preserve its productive capacity, but also reduce the amount of topsoil that annually erodes into natural waterways. Recently, CRP objectives have been taking on an increasing environmental orientation, i.e. providing additional wildlife habitat. Nationally, about 30 million acres are enrolled in the program and the CRP is expected to stay at that level or rise to the 36 million acre legal ceiling.

Relative Costs of Production

In commodity production the low cost producers are the strongest participants. When a particular commodity is in over supply, prices begin to decline. The high cost producers find that at these lower price levels, they are no longer profitable and either shift to producing another commodity which generates a profit, or cease to produce the first commodity. As production declines due to cutbacks by high cost producers, supply is reduced. Low cost producers experience reductions in profit margins but are still able to profit from production. Since farming has a significant proportion of total costs that are fixed, such as equipment and land, it is the variable cost that determines whether or not price levels are sufficient to result in contributions to fixed cost coverage. In the short run, when prices drop below variable cost levels, production is reduced. Then when commodity supplies are reduced and prices recover, there is a lag to production increasing as fixed asset capacity has to be brought back into service. It is the ability of low cost producers to continue to profit even when commodity prices are low that gives these producers great advantage. This is important to the land owner leasing land as **low cost producers can afford to continue to pay relatively higher rent.**

Relative Costs of Production - Cropland

Now that the government stabilization programs are decoupled from production and scheduled for termination, the relative cost of production becomes the key determinant of land quality. The cost of production inputs varies from one parcel of farmland to another but what is the most significant determinant of cost of production is yield where **typically the highest yield results in the lowest cost of production per unit produced.**

To understand how this factor affects the commodity production industry in the US, it is extremely useful to look at a Cumulative Distribution of Variable Cash Production Costs. The most recent presentation of this information from USDA shows that about 60 percent of the 1991 total corn harvest was produced at or below the average variable cost of $1.25 per bushel. It also shows that about 10% of US production was produced at a variable cost of over $1.75 per bushel. If prices decline to that level, these high cost producers will stop producing. Certainly some of these producers were high cost because of isolated and unexpected yield failures, and future production decisions will be based on expected yields rather than these past failures.

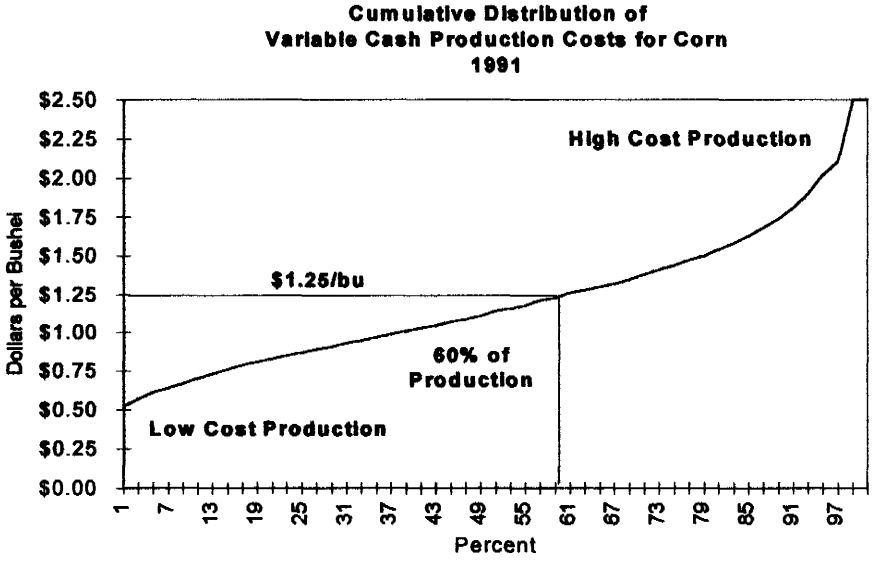


Figure 3

Over a period of 3-5 years, total costs of production (including fixed costs) will affect production decisions. When a large piece of equipment must be replaced, growers must consider multi-year profitability in determining that particular fixed asset acquisition.

The average total cash cost (variable and fixed cost combined) of producing corn in the US in 1991 was $183 per acre (or $1.66 per bushel). A majority of NE corn growers irrigate and follow corn with corn. The average NE crop producer has higher power costs for irrigation than the US as a whole. However, higher and more consistent yields offset that higher cost. The average NE corn farm produced 132.25 bushels per acre with a cash cost of $1.72 per bushel. Of course, there is a range of costs of production in Nebraska and averages vary from year to year. The point is that as a state, **Nebraska tends to be in the middle of the range for corn cost of production per bushel. This is a solid industry.**

Relative Costs of Production - Pasture

There is a wide range of pasture types in the US. Very arid regions are typical in the West where rainfall is scarce and as a result, the grass is scarce. The vegetation that does grow in these areas is often of low feed value. As a result, large areas are required to provide sufficient grazing. This increases the cost of operation per animal. An important share of this land borders Bureau of Land Management (BLM) land that can be rented for grazing. A long standing debate over the value of the leases with BLM is currently being resolved with an increase in rents of as much as 50%. Where these BLM leases are favorable and captive by the contiguous properties, a capital value has been attached to the fee land that is sold with a BLM lease. Those operations in the lower range of quality in this type of pasture land category would be considered high cost producers and therefore in the most vulnerable position if beef demand declines or other suppliers increase production.

Small pasture parcels intermixed with cropland are typical throughout the midwest. These tend to be the marginal croplands for one reason or another. They can be very productive in terms of grass and feed value, but the logistics of small units hinders efficiencies of larger scale operations.

Then there is the in-between area that is not quite suited to crop production but far better than the arid regions. North and western Nebraska farmland is mostly within this category. The grass is good and has high feed value. The ranches are large and capture economies of scale.

Other parts of the US have some attributes of these three major categories. In Nebraska, the rental rate per animal unit month (AUM) is at the higher end of the range in the US. This means that the value of Nebraska pasture is higher than many other areas. In many cases, higher AUM value relates to more AUMs per acre making handling of the livestock easier and less expensive. Fence maintenance can be an important cost in using pasture so more cattle per acre spreads fence costs for a lower cost per head. The development of rest-rotation grazing systems is motivated partially by improving economics and partially by improved environmental sustainability.

Over the time period studied, there have been some productivity gains in the industry. The feedlot business improved gains with diethylstilbesterol (DES) implants. Breeding for better calving, feed conversion efficiencies, and rate of gain have provided slow but steady improvements. However, the progress has not been as dramatic as in grain production.

HISTORICAL RETURNS

Asset returns have two major components: 1) value change and 2) current income. Total return is the sum of both current income (net of expenses including real estate taxes) and the percentage change in value of the asset base. Current income is the net cash flow from rents, dividends, or interest which is distributed to present beneficiaries. Appreciation (the portion of total return reinvested) determines the ability of the Trust to provide benefits in the future. Both are presented here. Risk means one standard deviation as the measure of variability in the annual returns.

Historical Farmland Returns

Farmland is a different kind of asset than stocks and bonds and it is often misunderstood by the financial community. **Farmland is best thought of as a renewable resource. Properly maintained, it can continue to produce forever.** Another aspect of farmland is that it captures solar energy and converts that energy into useful products. In many ways, farming is an extractive industry, such as mining, except that its productive capacity is not depleted. Pure renewable resource assets are frequently misunderstood precisely because they are so uncommon. Most investment professionals will freely admit that they do not understand farmland; and even those professionals who specialize in other kinds of real estate are often unfamiliar with farmland investment characteristics. This lack of understanding, together with limitations on corporate ownership, causes farmland to be under-represented in many investment portfolios. Residents of Nebraska are generally more familiar with farmland as an asset class.

Farmland is a significant asset. In 1996, US farm real estate represented 968 million acres with a value of $859 billion (including about 5% in buildings). Nebraska had 47.0 million acres of land in farms with a value of $30 billion.

The table below shows that over the last 51 years, US and NE farmland produced similar total returns of 10.4 - 10.5% but with NE being more volatile. The NE returns are a weighted average of the three major types of NE farmland: non-irrigated cropland, irrigated cropland, and pasture.

Table 2 - FARMLAND RETURNS - 1946 through 1996

	Current Return[1]	Change in Value	Total Return[2]
US Farmland	4.5%	5.9%	10.4% (Risk 9.1%)[3]
NE Farmland	4.9%	5.6%[4]	10.5% (Risk 10.8%)[3]

1) Geometric mean after real estate taxes and expenses.
2) Correlation of 0.9 between US and NE. Geometric mean.
3) Risk is the same as one standard deviation.
4) NE weighted appreciation geometric mean.

The correlation between US farmland value changes and NE farmland value changes is 0.9 . Correlation is a statistical measure of how different series (returns in this case) synchronize with each other, or how often one is up (or down) in the same period as the other. Another way of

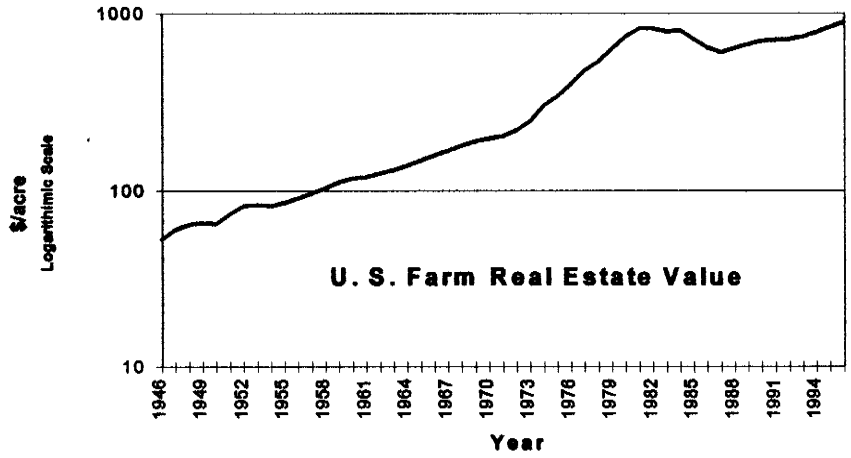
saying this is that NE land value changes are 90% the same as changes in US land value. This is not unexpected because NE is a significant component of US and because both are largely impacted by the same factors. **Therefore, owning only NE farmland is not significantly different from owning farmland in many states.** Correlation is a very important concept in portfolio construction. Diversification is not just adding more assets to a portfolio, but adding assets that have low correlations.

The variability of these annual returns becomes important as a quantifiable measure of "risk". NE was more volatile than the US because the midwest in general, and midwest pasture in particular, were most effected by the boom and bust of the 70's and 80's. More details about Nebraska farmland follow in the next section. This volatility accounted for higher risk (10.8 NE vs. 9.1 US) and also explains the slightly higher total return and current income as higher risk usually demands higher return. Most of the total return volatility was due to land value changes, and most of that resulted from the run-up of values and the decline that followed in the 1976-1987 time period, with income being far more stable.

NE appreciation, being less than the US, may be partially explained by the recently enacted NE prohibition against corporate ownership of farms holding down appreciation. Conversion to irrigated and non-irrigated cropland from pasture in NE has been adjusted out by the calculation methodology, to show how static property types have performed, because this conversion represents one time gain (appreciation) which is unlikely to recur in the future.

Figure 4 shows the long term growth in US farmland value per acre. The scale of this graph is logarithmic so that the percentage change from 90 to 100 is represented by the same vertical distance as the percentage change from 900 to 1000. This graph demonstrates the steady growth experienced by US farmland value except for the boom-bust period of 1976-1987. Steady growth is less risky than growth that occurs occasionally but in spurts.

Figure 4



Current income from US farmland rented for cash was 4.5% after property taxes and expenses. This current income rate is higher than most other equities. The NE data (1946-1996) showed a weighted average (by the three property types) rent-to-value ratio after expenses (property tax,

management fees, maintenance, amortization, etc.) of 4.9%, slightly higher than the US as a whole. In the early '80s, land value declined by as much as 50% while rental income only declined about 20%, which is to say that the income stream was much more stable than the value movements. This is important to the beneficiaries because distributions are effected by income changes and not short term value changes.

Focus On Nebraska Farmland

Precipitation in North and western Nebraska is not adequate to support cropping but it is sufficient to provide for very good quality pasture and as a result supports a highly developed cow-calf industry. Combined with the grain production in eastern and southern Nebraska, there is a competitive advantage in beef production in the state. As a result, Nebraska tends to be somewhat more dependent on beef than the US as a whole. Farm marketings for the state of Nebraska are 60% from livestock and products and 40% from crops as compared with the US at 47% from livestock and products and 53% from crops.

According to 1992 USDA statistics, Nebraska farmland was composed of 22.0 million acres used for crops (6.6 % of US cropland), 20.9 million acres used as grassland pasture (3.6% of US pasture), and 4.1 million acres idle and other.

Table 3 - Land in Farms - 1992

	US	Nebraska (NE)	NE as % of US
Total Land in Farms (acres)	978.0 million	47.0 million	4.8%
Irrigated land in farms (acres)	49.4 million	6.2 million	12.6%
% Irrigated	5.1%	13.2%	

Note* USDA acreage figures may vary from other data sources such as UNL.

Nebraska is more heavily irrigated than the US because it has a large area of high quality soils that are moisture limited which overlay a large aquifer that is being tapped into economically. As of 1992, Nebraska irrigated 13.2% of its land in farms while the US irrigated 5.1%. Irrigated agriculture is more energy dependent than non-irrigated agriculture adding to expense but also improving yield consistency.

The next table shows the property type weightings of Nebraska farmland based on 1996 values.

Table 4
1996 Value Based Weightings of Nebraska Farmland by Property Type

	Non-Irrigated Crop	Irrigated Crop	Pasture
Nebraska	54.1%	33.0%	12.9%
BELF	27.5%	15.2%	57.3%

Note* USDA figures may vary from other data sources such as UNL.

Table 5 shows the returns for the three property types separately. The three types were all very highly correlated with each other (0.8 to 0.9), with the weighted average, and with US farmland.

Table 5 - Nebraska Farmland Returns
Detailed by Property Type - (1946-1996)

	NE Non-Irrig. Cropland	NE Irrigated Cropland	NE Pasture
Current Income[1]	5.2 % (1.2% Risk)	4.9 % (1.4% Risk)	4.7 % (2.5% Risk)
Land Value Change[2]	5.3 % (14.2% Risk)	5.7 % (14.5% Risk)	5.1 % (16.8 Risk)
Total Return[3]	10.5 % (10.5% Risk)	10.6 % (11.5% Risk)	9.8 % (12.8% Risk)

1 - Current Income is after property taxes and expenses.
2 - One time gain (appreciation) from converting pasture to cropland has been eliminated.
3 -Total return is the sum of current income and land value change.

Returns to irrigated and non-irrigated cropland are both higher than pasture returns and more stable. The NE weighted average returns shown earlier reflect the increasing significance of irrigated cropland since the 70's. The lower return to pasture can be explained by the decline in domestic demand for beef, just offset by increasing export demand, with no net growth in the cattle industry over the last 20 years.

Historical Stock and Bond Returns

The stock data referred to in this report is the Large Company Stock series from Ibbotson's "Stocks, Bonds, Bills, and Inflation 1997 Yearbook". It is based on the S&P Composite Index, market-value-weighted series. Currently the Composite includes 500 of the largest (market value) stocks. Prior to 1957, it consisted of 90 of the largest stocks. Both a capital appreciation return and a total return series are provided. The current income return was derived by subtracting the capital appreciation return from the total return. Only annual returns were utilized. Dividends are assumed reinvested which adds about 0.20% to the total return. Also, when a particular company in the composite weakens, it is de-listed and replaced with another large company. There is a practical cost of operating and maintaining an index fund of about 0.05% - 0.10% that is not reflected in the return series.

The bond data referred to in this report is the Long-Term Government Bonds series, also from Ibbotson. A new single 20 year bond was priced at the beginning and end of each year and the return on that bond was then computed. Current income return was the coupon yield based on an issue price at par. Capital appreciation return was calculated based on the change in bond value. All bonds were 19 years to maturity at the end of the period. The market changes in coupon yield for new issue 20 year maturity bonds are reflected in each year's current income return. The data for this series comes from the *Wall Street Journal* for the period of 1977-1996 and from the Center for Research in Security Prices (CRSP) at the University of Chicago Graduate School of Business for the earlier years. The Government Bond series was selected for two reasons. First, Ibbotson provided both components of total return separately, capital appreciation and current income, which is relevant because the volatility of the income stream (caused by changes in

interest rates) directly impacts Trust distributions. Second, this particular bond series is representative of the general characteristics of the Lehman Aggregate index except that government bonds have historically had a lower default risk and consequently slightly lower returns.

The next table shows returns from stocks and bonds over the same period.

Table 6
Annual Returns to Stocks and Bonds - 1946 through 1996

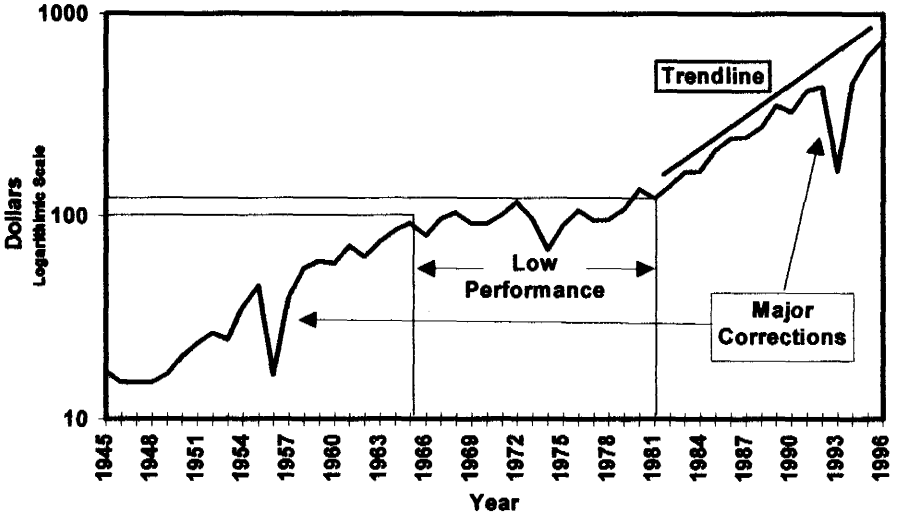
	Current Income	Appreciation	Total Return
S & P Composite	4.3% (Risk 1.6%)	7.8%	12.1% (Risk 16.5%)
20 Year Gov't Bonds	5.5% (Risk 3.4%)	-0.3%	5.2% (Risk 10.5%)
1/2 S&P, 1/2 Bonds	5.2% (Risk 1.8%)	3.8%	9.0% (Risk 10.7%)

The table above shows that stocks have provided the greatest total return and the lowest current income. Bonds have provided some additional current income but at the price of much lower total returns. **Although total return to NE farms is between stocks and bonds, farmland returns have been far greater than bonds and much closer to stocks.** This is to be expected because farmland is an equity, an ownership interest like stocks, while bonds are loans with fixed interest. Farmland returns have also been more stable than stock returns and nearly as stable as bond returns. Current income volatility was greatest with bonds.

Stock appreciation has had an above average performance over the last 15 years. This is not unprecedented as stocks also had a 16 year below average return from 1965-1981, when earnings continued to grow while stock prices remained flat, and an above average period before that. Figure 5 depicts this historical apprecation, and shows the two major value corrections, on a logarithmic scale so that equal percentage changes are represented by the same vertical distance on the graph.

Figure 5

Annual Change in S & P Composite Value



Equities have historically displayed more volatility and substantially more total returns than bonds. The most significant effect of bonds in the portfolio is the extent to which they reduce total volatility. Bonds also provided some additional current income but at the expense of decreased total return. The longer the investment time horizon, the more significant total return becomes relative to variability, thereby favoring equities over bonds.

Real Historical Returns - Inflation Adjusted

Ibbotson's data series for inflation is the Consumer Price Index for All Urban Consumers not seasonally adjusted. The annual data is used in this report mainly to adjust nominal returns to a constant dollar basis. This provides a measure of the returns in terms of their purchasing power. All inflation measures used are constructed by the U.S. Department of Labor, Bureau of Labor Statistics, Washington. Over the 1946-1996 time period, the CPI increased at the compound annual rate of 4.4 % .

The table below shows the real inflation adjusted returns for the subject asset classes to demonstrate their performance on a constant dollar basis. Inflation adjustments were made annually and the total return and risk were then calculated using the adjusted series. Farmland had the lowest inflation adjusted risk of any of these asset classes.

Table 7
Real Inflation Adjusted Returns - 1946 through 1996

Asset Class	Real Total Return	Risk (Standard Deviation)
S & P Composite	7.4 %	18.1 %
Long Term Government Bonds	0.7 %	11.8 %
Nebraska Farms (Weighted Ave.)	6.3 %	10.4 %
1/2 S&P, 1/2 Bonds	4.4 %	12.5 %

It is these real returns that would be available for distribution or growth while still maintaining the constant purchasing power of the Trust. **Because the Trust must contribute to the education of future generations as well as the current one, it is important that distributions, and total asset value, grow over time at least as fast as the cost of providing K-12 public education.**

Historical Return Correlations

All asset returns fluctuate. Some asset returns fluctuate in a manner similar to others and some asset returns fluctuate in an offsetting manner. Risk reduction comes from mixing assets that are offsetting. Correlation is a statistical measure of the degree to which the returns to two assets fluctuate in a similar or offsetting manner. A correlation of +1.0 means the two asset returns

fluctuate in a perfectly similar manner, i.e. when one is up, the other is up all the time and vice versa. A correlation of -1.0 means that the two asset returns fluctuate in a perfectly offsetting manner, i.e. when one is up, the other is down all the time and vice versa. Correlations between -0.9 and 0.0 represent offsetting returns, but only partially; while correlations between +0.9 and 0.0 are similar, but only partially. **The goal of portfolio management is to combine assets that provide offsetting returns, not just more assets.**

For demonstration, consider two assets that have average returns of 10%, each fluctuating between 20% and 0%. If the correlation of their returns is 1.0 (perfectly similar), then the combination will return 20% in some years and 0% in other years. They will provide an average return of 10%, but with lots of year to year variation. However, if the correlation of their returns is -1.0 (perfectly offsetting), then the combination will return exactly 10% every year and all variations will be eliminated. **Risk reduction is achieved by combining assets with offsetting returns.**

The following "correlation matrix" indicates the extent to which the total return of one asset class has matched the total return of another For example, the boldface "**.205**" shows that roughly 20% of increases or decreases in S & P returns correspond to similar moves in long term government bonds. The "-.159" found in the cell just below the boldface .205 is the correlation between the returns from farmland with stocks. It shows that roughly 16% of the increases or decreases in S&P returns correspond to offsetting moves in farmland. These numbers have been calculated from the historical observations.

Table 8
Return Correlations 1946-1996

	S & P Composite	***Long Term Gov't Bonds***	***NE Farmland***
S & P Composite	1.000	.205	- .159
Long Term Gov't Bonds	**.205**	1.000	- .319
NE Farmland	- .159	-.319	1.000
CPI	- .349	- .193	.237

Harry Markowitz developed a method of modeling portfolio performance improvements from combining assets that produce returns which are not correlated, or only partially correlated, with each other. By combining these kinds of assets, the portfolio returns are less volatile overall without sacrificing total return. The results of the optimization calculations are the portfolio asset combinations which achieve the highest return for each given level of risk. This method is used in the later section of this report entitled "Optimal Asset Mixes".

FORECASTING FUTURE RETURNS

Farmland

Going forward, there are expected to be cross-currents affecting farmland values in general.

These are:

1) an increase in global production in response to recently high commodity prices
2) a continuing reduction in production subsidies in Europe and Japan resulting in declining production
3) increases in consumption in less-developed countries as their economies continue to expand in spite of continuing volatility in some of their equity markets and the frailty of their banking systems
4) continuing productivity gains
5) further development of industrial uses for agricultural commodities.
6) freer trade in agricultural commodities
7) a continuing slow decline in US per capita beef consumption while US exports of beef continue to grow in volume and in significance to the market.

Even though the US government grain support programs are being ended, commodity equilibrium prices will support the crop industry, while more volatility and quicker adjustments will take place. Prospects for improved incomes will offset increased volatility. A temporary pause in Asian economic growth will slow the demand growth rate there, but overall growth will continue. China will still be the long-term trend setter, although its potential demand growth will be tempered by political control with a desire to not become too dependent on outside sources of food. Long-term, global effective grain demand will continue to put pressure on grain prices. Production will continue to expand through increases in Eastern Europe and Argentina, and new technological improvements in productivity, but it will take time for new infrastructure to be built and new technology to be adopted. Demand for grain is expected to grow faster than production resulting in increased prices and higher land values.

The outlook for pasture is different than cropland. Recently, cattle herds have been in liquidation as the corn price to beef price ratio reduced demand for calves. 1997 may have marked a turning point in herd liquidation as harsh weather helped reduce cattle numbers and grain prices declined from recent record highs. Calf prices are up offering hope to the cow/calf industry and may, with some still lower grain prices, cause cattle ranchers to hold back heifers to build herds, further constraining the supply of feeder calves. So far, growth in beef exports has only been enough to offset the decline in domestic consumption. If future beef export growth exceeds domestic consumption declines, then higher prices would stimulate herd rebuilding for an extended period of time and increase pasture demand. Pasture returns are forecast to be less than cropland and more volatile, as they have been historically, because of the broader range of crop options versus the narrow dependence of pasture on cattle population.

Assuming a farmland mix of roughly half crop acres and half pasture acres (80% cropland and 20% pasture by value), farmland returns are forecast to be 4.5% current income (net of property taxes and other expenses) and appreciation 2.0% greater than the 3.0% forecast inflation (2.0% real appreciation + 3.0% inflation = 5.0% total appreciation). This would provide a total return of 9.5% without an inflation adjustment, slightly below historical non-inflation adjusted terms. Forecast volatility for farmland is 14.0%, higher than the historical data indicate but adjusted for data quality and the expectation of greater fluctuations resulting from termination of the government programs. The forecast real return of 6.5% is slightly higher than the historical inflation adjusted return of 6.3% but will be subject to somewhat greater variability.

Stocks and Bonds

The near term prospects for stocks are not as great as the long term, with a lower performance adjustment to historical long term trends expected sometime in the next 3-8 years. The long term total return forecast for stocks is 10.0% (2.5% current income and 7.5% appreciation) with a risk (standard deviation) of 17.0%. This forecast incorporates an adjustment in conformance with the long term trend and also adjusts for the 3.0% forecast inflation rate which is lower than the historical 4.4% inflation rate over the last 51 years.

Bond returns are forecast to be higher than historical in both real and non-inflation adjusted terms at 6.5%. All of this return is current income. There is no appreciation as bonds are assumed held to maturity. Risk (standard deviation) of the bond returns is lower than historical as the inflation episode of the '70s is not forecast to recur. However, since that inflation episode, markets appear to demand higher real returns for debt and perceive more risk than they did prior to that time. Aging populations will save for future needs while emerging and growing economies will require capital for growth. Market globalization will help to balance these factors. Default premiums will continue to fluctuate as always.

Table 9
Forecast Long Term Returns to Farmland, Stocks and Bonds

	Current Income	Appreciation	Total Return
NE Farmland	4.5%	5.0%	9.5% (Risk 14.0%)
S & P Composite	2.5%	7.5%	10.0% (Risk 17.0%)
20 Year Gov't Bonds	6.5%	0.0%	6.5% (Risk 7.5%)

Inflation

Over the period studied, inflation averaged 4.4% (adjusted for compounding) and ranged from a low of -1.3% to a high of 18.2%. At this time, it appears inflation is under control and will continue to be so. The forecasts assume a 3% annual inflation rate as considered in the above total returns for all asset classes.

A tightening labor market in the US does threaten higher inflation driven by wage increases. Also, in a growing global economy, it may become much more difficult to supply the necessary natural resources. The easiest natural resources to locate and extract are already gone and obtaining more continues to become more expensive and difficult. However, productivity gains have carried the global economy so far and continuing high productivity will help to prevent inflation. The forecast long term real (inflation adjusted) returns are shown in Table 10. Nominal returns will adjust to inflation variations over time with land continuing to have the most positive correlation and fastest response.

Table 10
Forecast Real (Inflation Adjusted) Returns - Long Term

	Total Return	Standard Deviation
Real S&P	7.0 %	17.0 %
Real Long Term Gov't Bonds	3.5 %	7.5 %
Real Nebraska Farms	6.5 %	14.0 %

An alternative assumption set could also be used which would forecast future inflation of 4.0% rather than 3.0% . Real returns for the asset classes would not change from those in Table 10. However, the nominal returns shown in Table 9 would be adjusted upwards. Specifically, bond current income (interest rates) would become 7.5%, and appreciation (market value) of both farmland and stock would increase by 1.0%, all due to the diminished value of money resulting from the higher rate of inflation.

OPTIMAL ASSET MIXES

In order to determine the best (most efficient) asset mixes, an optimization model is used which solves for asset mixes providing the lowest possible level of risk for each amount of return (or generating the highest possible return for each level of risk).

The inputs for the optimization model are projected returns, standard deviations, and correlations for each asset class. Projections are based on the historical data and explanations set forth earlier in this report, research provided by the firm of Dorn, Helliesen and Cottle, Inc., projections by outside sources and judgment. Inputs were evaluated as a whole to insure their reasonableness as a set. A comparison of the risk-return characteristics of each asset class relative to the other asset classes was made as a check on the inputs and the view of the relative attractiveness of the asset classes.

Below are the projections of expected returns and risk for each asset class based on a 3.0% inflation assumption as explained in the previous section:

	Expected Return	Risk (Std.Dev.)	Expected Current Income
Stocks	10.0%	17.0%	2.5%
Bonds	6.5	7.5	6.5
Farmland	9.5	14.0	4.5

The following correlation matrix indicates the extent to which an increase in the return of one asset class is projected to match an increase in the return of another. For example, the boldface **"0.40%"** shows that roughly 40% of increases or decreases in domestic stock returns correspond to similar moves in domestic bonds. The forecast correlations used in the model are:

CORRELATIONS

	Stocks	Bonds	Farmland
Stocks	1.00		
Bonds	**0.40**	1.00	
Farmland	-0.10	-0.20	1.00

These correlation projections are derived from the historical observations with conservative adjustments based upon analyses. Twenty year rolling average correlations were employed to identify trends (Appendix A4 - A6). The correlation for NE farmland vs. stocks ranged from -0.35 to 0.00, for NE farmland vs. bonds from -0.50 to 0.05, and for stocks vs. bonds from -0.40 to 0.55 . The correlation between stocks and bonds demonstrated a clear uptrend to higher (more positive) correlations in recent years, which would not be revealed by merely averaging the data. The correlations reflected no other uptrends or downtrends.

Using the above projections as inputs into the optimization program, the efficient frontier of asset mixes was generated. The efficient frontier identifies the asset mixes that are optimal on a risk/reward basis, meaning that the highest return is achieved for any given level of risk, or the lowest possible level of risk is provided for each amount of return. The computer program

calculates all possible mixes and objectively solves for those which are optimal. The efficient horizon of asset mixes ranges from a low risk/low return mix to a high risk/high return mix.

Presented in the table below are the proportions of each asset class in the optimal mixes. Below that, are the expected (total) returns, risks (standard deviations), and current income for each mix. At the bottom of the table is the 1 in 6 Worst Case. Total return would be expected to equal or exceed this amount in 5 out of 6 years, and fall below this amount in the remaining 1 out of 6 years. The current target mix is the current percentage of farmland with the 50-50 stock/bond mix objective of the Nebraska Investment Council.

Table 11
Optimal Asset Mixes for Given Risk Levels

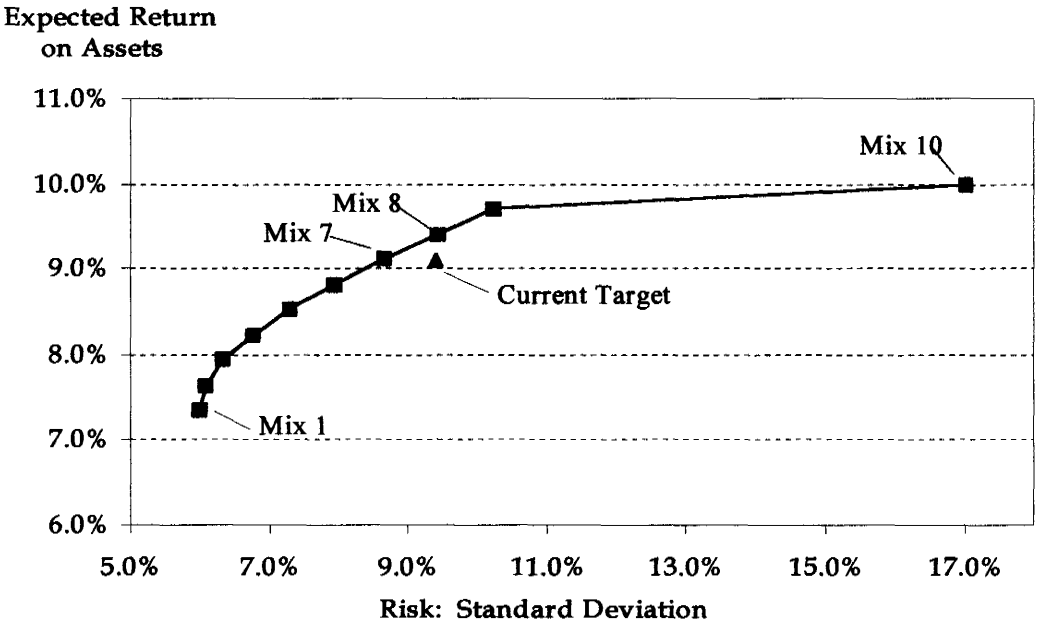
	Limits		*Asset Mix Alternatives*										**Current**
	Min	Max	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	**Target**
Stocks	0%	100%	2%	7%	12%	18%	23%	28%	33%	39%	44%	100%	**17%**
Bonds	0	100	72	63	54	45	36	27	18	9	0	0	**17**
Farmland	0	100	26	30	34	37	41	45	48	52	56	0	**66**
Expected Return, %/yr			7.4	7.6	7.9	8.2	8.5	8.8	9.1	9.4	9.7	10.0	**9.1**
Risk (1 Std. Dev.),%/yr			6.0	6.1	6.3	6.8	7.3	7.9	8.6	9.4	10.2	17.0	**9.4**
Current Income, %/yr			5.9	5.6	5.3	5.0	4.8	4.5	4.2	3.9	3.6	2.5	**4.4**
1 in 6 Worst Case, %/yr			1.4	1.5	1.6	1.4	1.2	0.9	0.5	0.0	- 0.5	-7.0	**- 0.3**

Mixes 1–10 in this table comprise the range of optimal portfolio mixes (the efficient horizon or efficient frontier). Each of the ten mixes offers the highest possible expected return for a given level of risk (expressed as 1 standard deviation of uncertainty), or provides the least possible risk for each level of return. These range from Mix 1, the most conservative (lowest risk, lowest expected return) to Mix 10, the most aggressive (highest risk, highest expected return). The least-uncertain asset mix (Mix 1) is mostly bonds with a limited allocation to farmland and virtually nothing in stocks, while the highest-return mix (Mix 10) is 100% stocks which is the highest returning asset class and also the most uncertain. Mix 10 has substantially more risk, but 2.6% per year higher expected return, than Mix 1.

If a return of 9.1% is desired, then Mix 7 will provide it with the least risk. Other mixes can also provide 9.1% of return, but only with more risk. If risk greater than 9.4% is not acceptable, then Mix 8 will provide the greatest expected return. The Current Target Mix has the same risk as Mix 8, but with a lower expected return.

The graphical representation of the efficient frontier is shown on the next page. All other asset mixes are inside the frontier (and inefficient) because they generate less return for each level of risk (or require accepting more risk for each level of return).

Figure 6
Efficient Frontier of Asset Mixes



In Figure 6, the 10 optimal asset mixes are displayed on a risk/return graph along with the Current Target Mix. This depiction shows that the current target mix is inside the efficient frontier, meaning that it offers less than optimal expected return for the given level of risk. Mix 8 offers 0.3% more in expected return for the same risk level as the current target, while Mix 7 offers the same expected return with a lower level of risk. Any movement towards the efficient frontier would be an improvement.

In determining which asset mix makes sense, the client's risk tolerance must be considered. Return in any given year has a 67% probability of falling within the one standard deviation either side of the expected return. For example, Mix 8 has an expected return of 9.4% and a standard deviation of 9.4%. Therefore, a one standard deviation confidence band for Mix 8 would be 0.0% (9.4%-9.4%) on the low side and 18.8% (9.4%+9.4%) on the upper side. Return would be expected to exceed 18.8% in 1 out of 6 years, range between 18.8% and 0.0% in 4 out of 6 years, and fall below 0.0% in the other 1 out of 6 years. The 1 in 6 Worst Case is not greatly different for Mixes 1-9 (varying from -0.5% to 1.6%, or roughly the same as the 2.3% total return difference between Mix 1 and Mix 9). Although no absolute worst case can be defined, a range roughly twice the size of the indicated confidence range would cover 95% of the likely outcomes. For Mix 8, a two standard deviation confidence band would range from -9.4% to 28.2%.

In addition to risk tolerance, adopting a new asset allocation target requires taking into account the current asset allocation and the costs to change. The expected cost of implementing a new asset mix must be considered relative to the expected benefit of the mix.

The current target mix is not optimal in terms of return for the risk taken. Mix 7, which offers the same expected return as the current target with a lower level of risk, should be considered. As a more aggressive allocation, Mix 8 offers a higher expected return for the same risk level as the current target mix. With the Nebraska Investment Council stated strategy of 50-50 stocks to bonds, Mix 6 would be optimal. If that strategy changes and risk tolerance is high, then Mix 9 would be the highest return alternative within reason.

At the request of the Board, another set of forecast returns was used to generate optimal mixes. Specifically, the Board requested a set of assumptions that was consistent with a bond yield of 7.5% as the Nebraska Investment Council has utilized. This required the inflation projection to be increased from 3.0% to 4.0% because long term real rates of return for bonds cannot reasonably be expected to exceed 3.5%.

Alternative Assumption Set

	Expected Return	Standard Deviation	Expected Current Income
Stocks	11.0%	17.0%	2.5%
Bonds	7.5	7.5	7.5
Farmland	10.5	14.0	4.5

In turn, this greater inflation caused an upward adjustment of 1.0% in the expected total return of both farmland and stocks as their values would increase faster due to the diminished value of money. Risk and correlations were not changed. The results are presented below.

Table 12

Optimal Asset Mixes for Given Risk Levels
Alternative Assumption Set

	Limits		*Asset Mix Alternatives*										Current
	Min	Max	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	**Target**
Stocks	0%	100%	2%	7%	12%	18%	23%	28%	33%	39%	44%	100%	**17%**
Bonds	0	100	72	63	54	45	36	27	18	9	0	0	**17**
Farmland	0	100	26	30	34	37	41	45	48	52	56	0	**66**
Expected Return, %/yr			8.4	8.6	8.9	9.2	9.5	9.8	10.1	10.4	10.7	11.0	**10.1**
Risk (1 Std. Dev.),%/yr			6.0	6.1	6.3	6.8	7.3	7.9	8.6	9.4	10.2	17.0	**9.4**
Current Income, %/yr			6.6	6.3	5.9	5.5	5.1	4.8	4.3	4.0	3.6	2.5	**4.7**
1 in 6 Worst Case, %/yr			2.4	2.5	2.6	2.4	2.2	1.9	1.5	1.0	0.5	-6.0	**0.7**

The optimal mixes did not change. Expected returns increased by 1.0% in all mixes without additional risk. Current income increased in proportion to the portion of each mix represented by bonds while the equity portion of each mix appreciated faster. Mix 6, with the 50-50 stock to bond ratio, continued to provide a current income equal to approximately one-half of the total return.

CONCLUSIONS AND RECOMMENDATIONS

Farmland is an equity asset that provides equity premium returns. It has been more stable and provided more current income than the S&P Composite. It has provided greater total return than a 50-50 mix of S&P stocks and long term government bonds while yielding an equivalent current income with a total return volatility virtually the same as, and current income volatility slightly lower than, the 50-50 mix. Of the three asset classes, only farmland showed a positive correlation with the CPI indicating a lower inflation risk. The negative correlation between farmland and both stocks and bonds makes combined portfolios superior.

The present portfolio mix of the Permanent School Trust contains too much farmland and is inefficient. Optimum mixes 6, 7 & 8 vary from 45% to 52% farmland. Even Mix 9, the highest return alternative within reason, is only 56% farmland. **Reducing farmland to approximately half of the total portfolio is recommended.**

In addition, pasture represents too large a portion of the farmland portfolio. Pasture has underperformed cropland and is expected to continue to do so. **It is recommended that the Board sell pasture and keep cropland to accomplish both:**

1) **the reduction of pasture in the land portfolio, and**
2) **the reduction of land in the overall portfolio.**

By selling pasture and keeping cropland, the land portfolio will be improved as it becomes more similar to the state average mix. This will increase the return and reduce the risk of the land portfolio and also improve the total portfolio. Pasture with cropland potential should be retained.

Selling the pasture that is in the lower half of the expected return range of the pasture portfolio is recommended. To oversimplify, if every parcel had the same appreciation prospects, property taxes, and other expenses (which they don't), one would sell the properties that have an income to value percentage less than the BELF pasture average. Where these factors are not equal, adjustments can be made to the income ratios to make the relative comparisons for ranking purposes. Future prospects are likely to be best for properties that are not isolated, have access, and experience competitive pressure on lease rates.

Sell $100 million (current value) of the pasture. This would make the land portion of the overall portfolio an optimal asset mix consistent with mix 6 where stocks and bonds are equally represented and farmland is 45% of the overall portfolio. This represents approximately one-half of the pasture value but may be more than one-half of the pasture acres as there are very different per acre values of pasture in the portfolio. This is a large amount of land acres and value; and these properties should be sold on an opportunistic basis as existing leases terminate. Pasture land sale proceeds of this magnitude that are re-deployed in a 50-50 stock bond mix, as the Nebraska Investment Council currently suggests, would be a positive step. Keeping the better half of the pasture portfolio selects for pasture that is closer to the returns for cropland. To sell more pasture would reduce farmland to too small a portion of the overall portfolio unless cropland could be purchased with the proceeds.

The current distribution policy of the Nebraska School Trust should be carefully evaluated. The present legal requirements of distributing all income and retaining all capital gains may have a significant adverse effect on future total return. With many corporations pursuing stock repurchase programs instead of increased dividend payments, this distribution policy becomes more constraining than it was without these programs.

So long as investment policy also determines distributions (through the specific mix of income and appreciation targeted), multi-generational fairness requirements may also constrain investments. That is, targeting significantly unequal proportions of income and appreciation may be avoided as favoring either the present or future generations. On the other hand, decoupling the investment and distribution policies would permit the Trust to target higher returns (mixes 7, 8 or 9) while adjusting distributions as necessary to treat all generations fairly.

An assessment of the Trust's risk/reward tradeoff tolerance should also be undertaken. The importance of year to year fluctuations diminishes as the duration of the investment increases and the Nebraska School Trust obviously has the longest possible time horizon of any investor. Decoupling the investment and distribution policies would facilitate higher risk tolerance, consistent with this very long time horizon.

APPENDIX 1 - Optimal Asset Mixes

Assumption Sensitivity Analysis

In order to observe the sensitivity of optimal asset mixes to changes in the assumptions, several iterations of optimization were run. From each change in assumptions, a new efficient frontier was generated. The optimal mix of one assumption set was then compared with an optimal mix of another assumption set that provided the same expected current income.

Assumptions:	Expected Returns	Correlations		
		Stocks	Bonds	Farms
Baseline				
Stocks	10.0 %	1.00		
Bonds	6.5	0.40	1.00	
Farms	9.5	-0.10	-0.20	1.00
Scenario 1				
Stocks +1.0%	11.0 %	***Correleations same as above		
Scenario 2 - Changes the Baseline by changing the correlation between stock and farms to 0.1				
Stocks	10.0 %	1.00		
Bonds	6.5	0.40	1.00	
Farms	9.5	0.10	-0.20	1.00
Scenario 3 - Incorporates both Scenario 1 and Scenario 2 changes simultaneously				
Stocks	11.0 %	1.00		
Bonds	6.5	0.40	1.00	
Farms	9.5	0.10	-0.20	1.00
Scenario 4 - Changes the Baseline only by changing the bonds expected return to 6.0%				
Stocks	10.0 %	1.00		
Bonds	6.0	0.40	1.00	
Farms	9.5	-0.10	-0.20	1.00
Scenario 5 - Incorporates both Scenario 2 and Scenario 4 simultaneously.				
Stocks	10.0 %	1.00		
Bonds	6.0	0.40	1.00	
Farms	9.5	0.10	-0.20	1.00

Table A-1.1 shows the optimal asset mix sensitivity to various assumption changes at the same level of risk. In Scenario 1, the assumptions are changed from the Baseline by increasing expected returns from stocks 1.0% per year to 11.0%. The resulting optimal asset mix became 41% stocks, 11% bonds, and 48% farmland with the same level of risk as Baseline mix 8 (39% stocks, 9% bonds, and 52% farmland). The Scenario 1 expected return rises from 9.4% to 9.8% by shifting 4% out of farmland and splitting it equally between stocks and bonds.

Table A-1.1 Optimal Asset Mix Sensitivity to Various Assumption Changes at Same Risk Level

	Stocks	Bonds	Farmland	Expected Return	Risk
Baseline Mix 8	39 %	9 %	52 %	9.4 %	9.4 %
Scenario 1	41 %	11 %	48 %	9.8 %	9.4 %
Scenario 2	32 %	19 %	49 %	9.1 %	9.4 %
Scenario 3	35 %	22 %	43 %	9.4 %	9.2 %
Scenario 4	38 %	10 %	52 %	9.3 %	9.3 %
Scenario 5	31 %	20 %	49 %	9.0 %	9.3 %

In Scenario 2, the Baseline assumptions are changed by increasing the correlation between stocks and farmland from -0.1 to 0.1. The resulting optimal mix with the same standard deviation as Baseline Mix 8 was 32% stocks, 19% bonds, and 49% farmland with an expected return of 9.1%. Here the result is a significant shift from stocks to bonds, and a modest shift from farmland to bonds, as well as a decline in expected return.

In Scenario 3, both assumptions of Scenario 1 and Scenario 2 are incorporated. Here, the resulting optimal mix with comparable standard deviation to Baseline Mix 8 (9.2% vs. 9.4%) was composed of 35% stocks, 22% bonds, and 43% farmland. The combination of assumption changes results in a modest shift from stocks to bonds and a significant shift from farmland to bonds. Expected return is unchanged.

In Scenario 4, the only change in Baseline assumptions is that the expected return from bonds is reduced by 0.5% to 6.0%. The resulting optimal mix is then just slightly changed by shifting 1% from stocks to bonds. Expected return and standard deviation are only slightly reduced.

In Scenario 5, the assumption changes of both Scenario 2 and Scenario 4 are incorporated. The result is similar to Scenario 2 with a significant shift from stocks to bonds, a modest shift from farmland to bonds, and a decline in expected return.

Table A-1.2 shows the sensitivity of optimal asset mixes to the same assumption changes when the stock-bond mix is held equal (as in Baseline Mix 6). Here the expected returns vary from 8.6% to 9.0% while the risk ranges from 7.7% to 8.6%.

Table A-1.2 Optimal Asset Mix Sensitivity to Various Assumption Changes with Nearly Equal Stock-Bond Mix

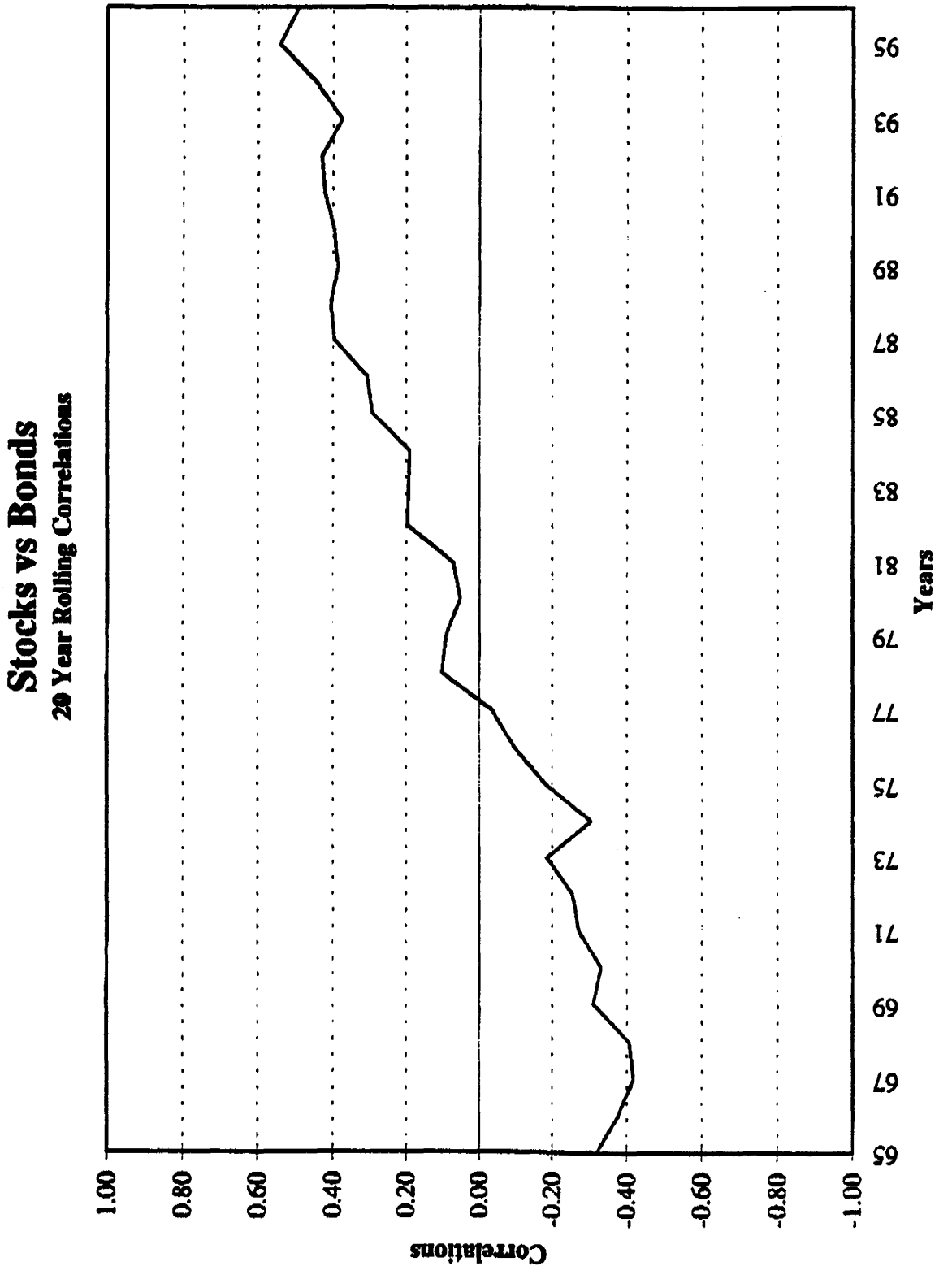
	Stocks	Bonds	Farmland	Expected Return	Risk
Baseline Mix 6	28 %	27 %	45 %	8.8 %	7.9 %
Scenario 1	28 %	31 %	41 %	9.0 %	7.7 %
Scenario 2	26 %	28 %	46 %	8.8 %	8.6 %
Scenario 3	27 %	32 %	40 %	8.9 %	8.2 %
Scenario 4	28 %	28 %	45 %	8.7 %	7.9 %
Scenario 5	26 %	29 %	46 %	8.6 %	8.5 %

In all these sensitivity analyses, farmland ranges from 40% to 52% of the total portfolio.

APPENDIX 2 - World Total Grains

Year	Area 000 Hectares	Yield MT/ha	Total Production 1,000 Mts	Total Consumption 1,000 Mts	Exports	Ending Stocks
1960/61	316,279	1.39	439,386	432,402	25,600	109,765
1961/62	315,569	1.37	432,259	438,553	34,015	103,597
1962/63	314,541	1.43	448,634	450,819	32,736	101,412
1963/64	319,724	1.42	455,167	450,520	36,322	106,059
1964/65	315,339	1.46	460,596	468,553	37,721	98,102
1965/66	313,486	1.51	472,471	490,254	47,333	80,319
1966/67	315,341	1.61	508,889	505,925	43,724	83,283
1967/68	319,067	1.67	533,493	522,402	44,204	94,374
1968/69	317,754	1.68	533,897	530,465	40,728	97,806
1969/70	322,615	1.73	558,080	557,975	48,264	97,911
1970/71	323,299	1.73	559,241	573,425	54,282	83,727
1971/72	324,483	1.90	617,439	601,395	58,150	99,771
1972/73	317,538	1.87	594,243	612,716	69,012	81,300
1973/74	334,836	1.97	659,384	659,980	81,637	80,704
1974/75	332,729	1.87	622,656	612,891	69,936	90,469
1975/76	339,376	1.89	641,025	636,711	87,056	94,783
1976/77	342,026	2.02	692,048	671,875	88,473	114,956
1977/78	343,547	2.01	691,067	680,608	94,700	125,415
1978/79	340,844	2.18	744,196	730,864	98,940	138,747
1979/80	340,943	2.16	735,514	732,845	107,091	141,416
1980/81	340,613	2.12	723,320	739,262	118,749	125,506
1981/82	348,589	2.18	758,741	733,908	109,555	150,339
1982/83	338,052	2.29	775,206	743,710	96,338	181,835
1983/84	332,989	2.04	677,734	749,157	104,247	110,412
1984/85	334,762	2.41	806,253	772,611	111,682	144,054
1985/86	340,245	2.45	833,728	768,387	94,589	209,395
1986/87	336,630	2.45	824,480	798,138	96,906	235,734
1987/88	323,847	2.43	786,033	809,450	103,292	212,453
1988/89	323,910	2.23	721,999	787,214	112,260	147,238
1989/90	321,395	2.47	792,387	816,568	116,515	123,066
1990/91	315,711	2.62	827,482	815,917	101,914	134,810
1991/92	320,845	2.52	809,131	808,787	107,175	135,151
1992/93	322,293	2.70	869,893	841,845	106,548	163,093
1993/94	315,935	2.52	797,331	836,589	99,062	123,835
1994/95	321,905	2.71	871,232	858,842	103,394	136,225
1995/96	311,294	2.57	798,653	839,327	107,596	95,551
1996/97	319,739	2.82	902,883	876,477	101,449	121,957
1997/98e	316,410	2.79	881,749	898,053	103,531	105,653

APPENDIX 3


Stocks vs Bonds
20 Year Rolling Correlations
Correlations
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
65
67
69
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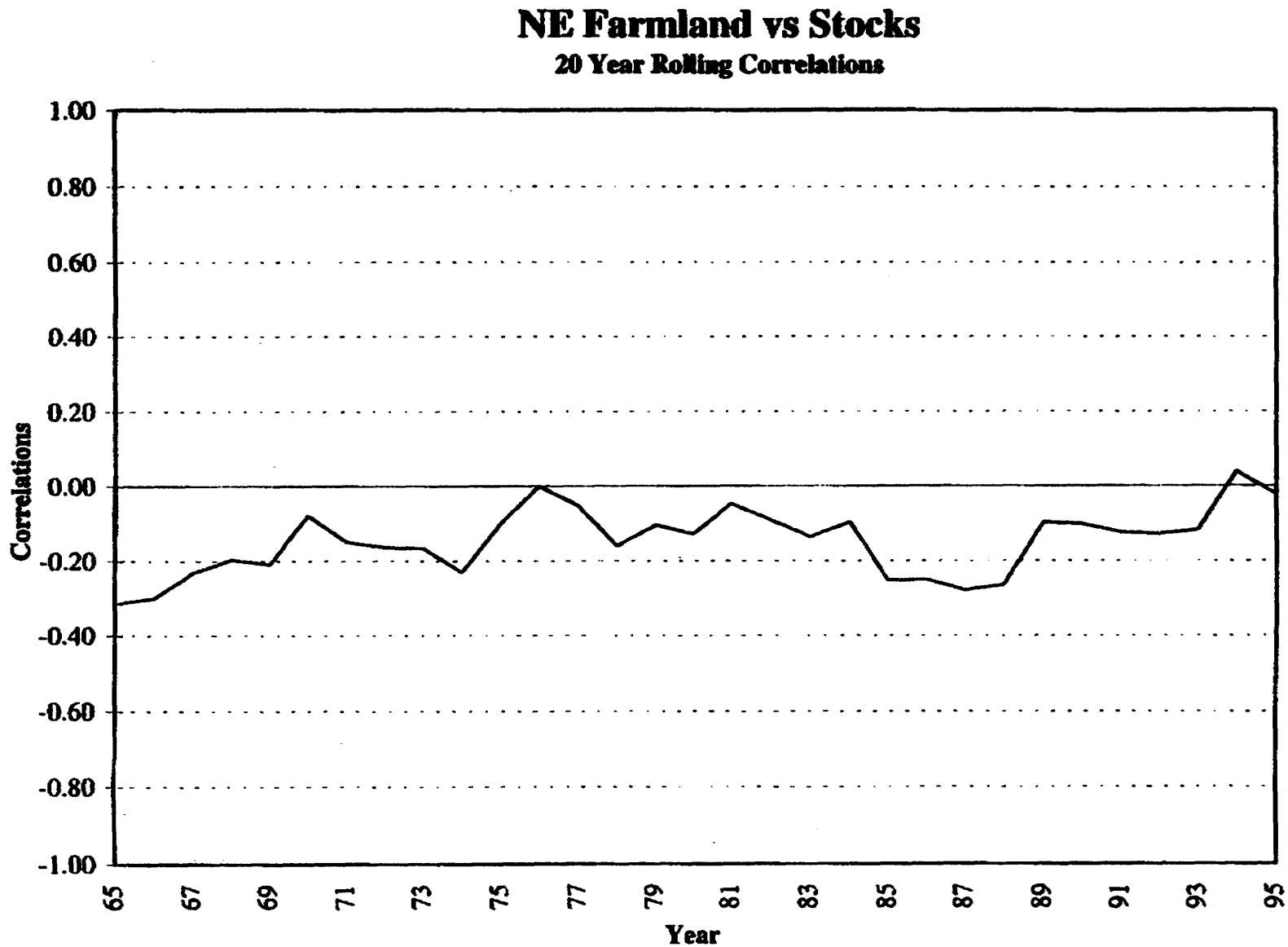
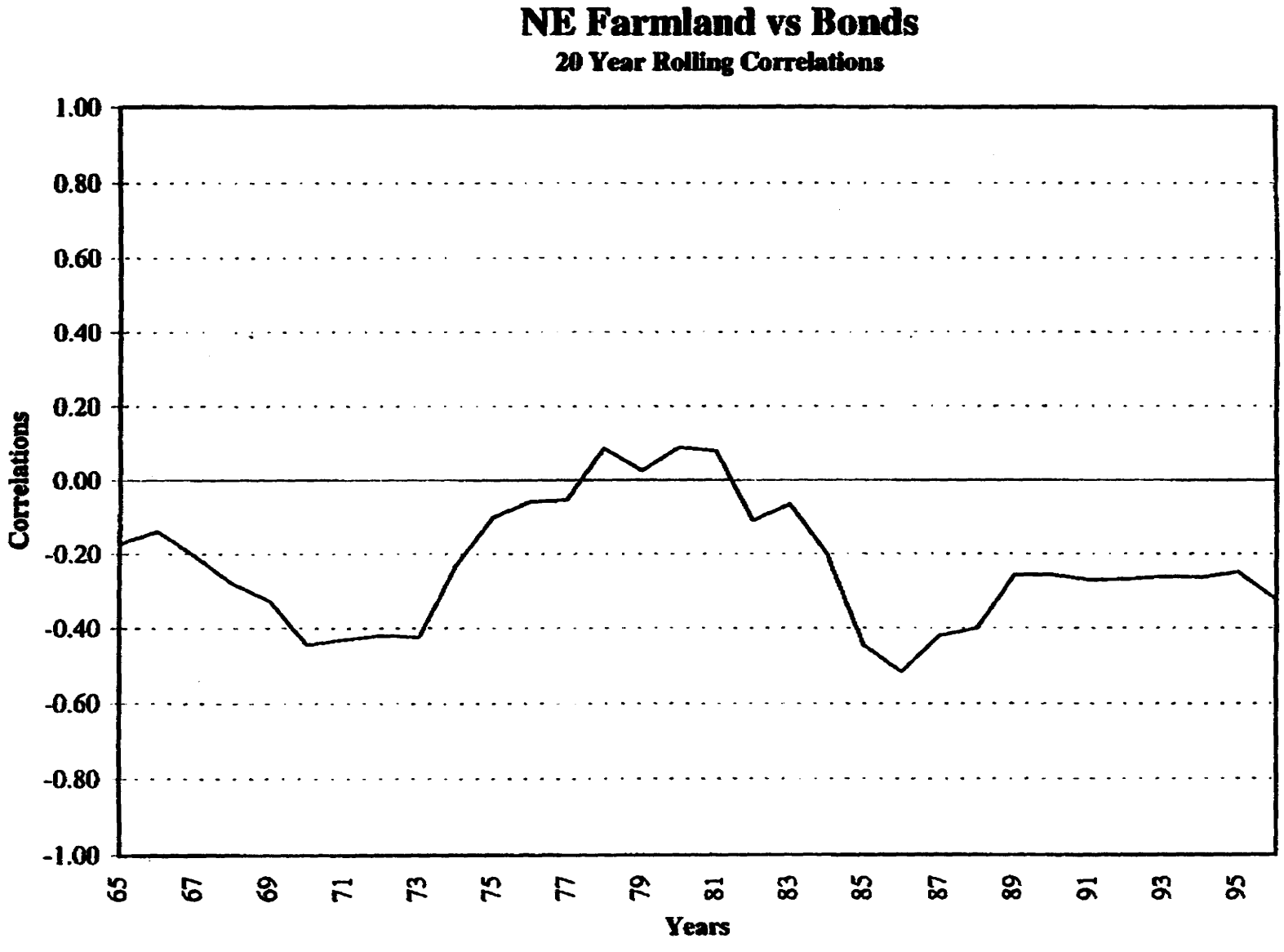
93
95
Years


NE Farmland vs Stocks
20 Year Rolling Correlations
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
Correlations
65
67
69
71
73
75
77
79
81
83
85
87
89
91
93
95
Year


NE Farmland vs Bonds
20 Year Rolling Correlations
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-0.40
-0.60
-0.80
-1.00
Correlations
65
67
69
71
73
75
77
79
81
83
85
87
89
91
93
95
Years