

Land Ownership and Retirement*

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Abstract

Ownership of Kansas nonirrigated cropland is evaluated as a source of retirement income during the past 30 years. To provide perspective on land ownership as a retirement strategy, sale of the land and purchase of stocks or U.S. government bonds is compared to retaining ownership of the land. In addition to the 30-year analysis, 15-, 10-, and 5-year time periods are also analyzed. Portfolios of nonirrigated cropland, stocks, and bonds are also considered. Results are shown in 52 tables and figures at the end of this manuscript. A list of tables and figures with page numbers is provided at the front on the manuscript. Readers may want to review the list and preview tables and figures on their computer screen before deciding which ones to print.

Caveat

This study is based on data from the most recent 30-year time period, 1975-2004. Results provide information and perspective about what has happened during the last 30 years. However, past results do not necessarily represent future performance. No one knows whether or not history will repeat itself.

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Land Ownership and Retirement

The age distribution of U.S. farmers (Allen and Harris) suggests that a large proportion of farm operators will retire in the near future. Census data indicate that the average age of farmers in 2002 was 55.3 years. The average age of farm operators who do not have other occupations was 57.0 and almost 1 out of 3 of these farmers were 65 and over. The Center for Rural Affairs predicts that “half of all current farmers are likely to retire in the next decade.”

Using data from the 2001 Agricultural Resource Management Survey, Mishra, Johnson, and Morehart found that for farm households planning to retire “in the next 5 years,” 20% plan to sell the farm and 22% plan to rent it out. Rented land is very important to U.S. agriculture. U.S. census data for 2002 indicate that 37.6% of land in farms was rented. As farmers retire, they may rent out their owned farmland as a source of retirement income. Moreover, when older farmers and their surviving spouses pass away, owned farm land in their estates could be a source of retirement income for their heirs.

The purpose of this manuscript is to evaluate the desirability of farmland ownership as a source of retirement income. The focus is on debt-free farm land. Whether an individual is a farmer or not, he or she may inherit debt-free farm land. Inherited land may be owner-farmed, sold, or rented to generate income. A farmer may choose to retire and rent his or her debt-free farm land instead of selling it. A person who is able to pay cash may invest in debt-free farm land.

Debt-free farm land may be sold and the proceeds invested in alternative investments. To provide perspective on farm land ownership as a retirement strategy, farm land ownership is compared to ownership of stocks and U.S. government securities as a source of retirement income. Also, various portfolios of farm land, stocks, and bonds are considered.

Procedures and Data

Criteria that may be used to evaluate an investment in farm land or other assets such as stocks and bonds include net present value (NPV), retirement income (annual net cash flows), and the terminal value of the investment. When a long-term investment is held with annual income reinvested to maximize long-term return, the NPV is the most important criterion for evaluation. In contrast, when an investment is held to generate retirement income, then annual net cash flows and the maintenance of annual net cash flows at an acceptable level are the more important criteria for evaluation.

In order to capture the variability in farm land values as well as major variability in stocks and bonds, a 30-year time period (1975-2004) was chosen. Life expectancy at age 65 is 16.6 years for a man and 19.5 years for a woman (U.S. Dept. of Health and Human Services). To provide perspective on shorter time periods, 15-year time periods, 10-year time periods and 5-year time periods between 1975 and 2004 are also analyzed. The analysis is completed in both nominal and real dollars. The focus is on nonirrigated Kansas cropland because nonirrigated accounts for 90% of all cropland in Kansas (KAS).

Because estate taxes are undergoing changes (Herman and Silverman) and will vary across individuals, estate tax is not considered. Because Kansas local intangibles tax (Kansas Department of Revenue) varies by county and may not exist in other states, intangibles tax is not considered. For stock investments, an individual would have to pay capital gains tax whenever stock is sold for a profit. In this analysis it was assumed that capital gains tax was paid on stocks at the end of each time period. Data sources and additional details about how data were processed are shown in the footnotes of Table 1.

The initial analysis involves comparisons of the three alternatives – holding debt-free farm land or selling the land and investing the proceeds in either stocks or bonds.

However, rather than selecting the best alternative based on investment and retirement income criteria, the retiree may want to consider a portfolio of the three alternatives. In order to evaluate portfolios in a risk-return framework a Target MOTAD model was used. The model maximizes real average annual income per acre over the time period modeled while minimizing the average of the annual negative deviations from the target annual income.

The target income is based on the 2003 state family living expenses for couples from the 2003 Kansas Farm Management Associations (Funk). First, the total family living expenses for 2003 were converted to an April 2005 price level using the consumer price index. Then 2002 Agricultural Census data were used to calculate the average number of nonirrigated cropland acres on nonirrigated farms in Kansas. Then the annual family living expenses was divided by the average number of nonirrigated cropland acres and

multiplied by .5, based on the assumption that the retired couple might need to obtain half of their retirement income from their owned nonirrigated cropland. The resulting target income, \$56.47 per acre, was used for all time periods.

For each time period an optimal combination of farm land, stocks and government bonds or notes was sought. However, because there were only three alternatives modeled and one of the three was usually better than the other two, in most cases the optimal solution contained only one alternative. Therefore, in order to consider a range of portfolios, the following portfolios were modeled: (1) an equal amount invested in each of the three alternatives, (2) half invested in one of the alternatives and 25% invested in each of the other two, and (3) investment in only one of the three alternatives. These seven portfolios are compared in terms of average annual income and risk, measured as the average of the annual negative deviations from the target income.

Results

Results are shown in 52 tables and figures at the end of this manuscript. A list of tables and figures with page numbers is provided at the front on the manuscript. Readers may want to review the list and preview tables and figures on their computer screen before deciding which ones to print. Results for each of the time periods and the portfolio analysis are summarized below.

30-Year Period

During the 30-year period 1975-2004, nominal land values and after-income-tax cash rents almost doubled. However, land values and cash rents did not keep up with inflation, and therefore, real values and rents decreased (Table 1). The purchasing power of dollars used to measure retirement income is an important issue for retirees and it increases in importance as the length of the retirement period increases. Nominal and real values of land, stocks, and the bond stayed relatively close together until about 1985. Then the value of the stocks rapidly outpaced the value of land and the bond (Figures 1.1 and 1.2).

The 30-year average (nominal and real, respectively) net cash rent per acre was \$17.15 and \$29.06. If the farm land was sold and the money invested in stocks, the 30-year average annual income (nominal and real, respectively) on a per acre basis was \$31.32 and \$47.05, respectively. Selling the farm land and investing in a 30-year U.S. Treasury bond resulted in a 30-year average annual nominal and real income per acre, of \$21.08 and \$37.03. During the last two decades, as the value of stocks increased the value of dividends also increased (Figure 1.3). The income from stocks “beat” inflation over the 30-year time period, while the income from land and the bond did not keep up with inflation (Figure 1.4).

Risk measures such as standard deviation (SD) and coefficient of variation (CV) reveal what we might expect when nominal dollars are used and provide interesting perspective on the impact of inflation when real dollars are used (Table 1). Based on nominal annual

income, stocks had the largest SD and CV and the bond had zero risk because over the 30-year period the coupon rate was fixed. Based on real annual income, the 30-year bond had the largest SD and CV and the SD and CV for land was larger than the SD and CV for stocks.

Nominal and real NPV was \$731 and \$1,705, respectively. NPV for stocks was significantly higher than NPV for farm land and bonds, indicating that in addition to being the best retirement alternative, stocks were the best investment.

Annual real and nominal rates of return for the three assets were quite variable (Table 2 and Figures 2.1 and 2.2). Annual real rates of return were calculated by adding after-income-tax annual income from each investment to the annual change in value of the investment (calculated as current year value minus previous year value) and then dividing by current year value. Stocks most often had the highest annual rate of return and land most often had the lowest.

15-year Time Periods

Between 1975 and 2004 there are sixteen 15-year time periods (Table 3). During 1975-2004, the 15-year average annual nominal cash rent incomes slightly increased and the 15-year average real incomes decreased (Figures 3.1 and 3.2). For stocks, the 15-year average nominal and real incomes increased through the 1982-1996 time period and then decreased in most of the remaining 15-year time periods. Because a 15-year U.S. Treasury security was not available, investments in three 5-year U.S. Treasury notes

purchased every five years and held to maturity were used to measure investments in U.S. government securities during the 15-year time periods. For 5-year notes, the 15-year average nominal income increased through the 1981-1995 time period and then declined until there was an increase in 1984-1998 and small increases during the last three time periods (Figure 3.1). Average real incomes for the notes had a pattern similar to the pattern for nominal income, except that real income peaked in the 1980-1994 time period (Figure 3.2).

Based on the average of the 15-year average incomes, the three 5-year U.S. Treasury notes offered the highest average 15-year income, \$35.10 in nominal dollars and \$58.22 in real dollars (Table 3 and Figures 3.1 and 3.2). Stocks were second with \$27.88 in nominal dollars and \$44.27 in real dollars. Land had the lowest average of the 15-year incomes with \$17.32 in nominal dollars and \$27.88 in real dollars. Treasury notes had the largest nominal and real income in all of the 15-year time periods. Average 15-year incomes from stocks were larger than those of farm land until the last four 15-year time periods.

Nominal SD and CV were quite variable for stocks and notes, but relatively stable for land (Table 3 and Figures 3.3 and 3.4). Real SD and CV were quite variable for stocks, but relatively stable for notes and land (Table 3 and Figures 3.5 and 3.6). The 5-year treasury notes had the largest average 15-year SD, \$7.80 in nominal dollars and \$19.32 in real dollars. Land had the smallest SD in nominal dollars (\$1.11). In real dollars the SD for land (\$3.99) was slightly larger than the SD for stocks (\$3.95). Nominal SD for

stocks were large during the four 15-year time periods between 1979 through 1996. Nominal and real SD for income from Treasury notes were quite large during the four 15-year time periods between 1981 and 1998. When income variability was adjusted for the size of the mean, stocks had the largest average nominal CV (23.71%). Treasury notes had the largest real average CV (31.63%). Land had the smallest nominal CV (6.48%); while stocks had the smallest real CV (8.27%).

Using years when income was below the 15-year average for land as a “safety first” criterion, U.S. government notes were the safest investment (Table 3 and Figures 3.7 and 3.8). When nominal dollars were used, the annual income from notes did not fall below the average income for land. When real dollars were used, the average income from notes did not fall below the average income for land in 11 of the 15-year time periods. However, during the 1988-2002 time period, annual income from notes fell below the 15-year average income for land 8 times. Based on this safety first criterion, stocks, except for the 1977-1991 time period, were successful in keeping annual real income above the average for land for the first eleven 15-year time periods. However, during the last four 15-year time periods, the annual income from stocks was below the 15-year average income for land in most years.

Based on the NPV investment criterion, stocks were the best 15-year investment and land was the worst (Table 3 and Figures 3.9 and 3.10). For stocks over the sixteen 15-year time periods, the average of the nominal and real NPVs were \$662 and \$1136, respectively. The average nominal and real NPVs for land were both negative. For both

real and nominal dollars, stocks had the largest NPV and farm land had the smallest NPV in all of the 15-year time periods.

Overall for the 15-year time periods, stocks were the best investment and notes provided the best annual income. Stocks were the best investment because the dividends and increases in value over time resulted in stocks having considerably larger nominal and real NPVs than either notes or land. Notes were not as profitable an investment as stocks because the nominal value of the 5-year notes was constant, and therefore, the real value of the notes decreased over time because of inflation. However, notes might be the preferred retirement strategy because they provided the largest annual income over each 15-year time period and they had the fewest years with income below the 15-year average income for land.

10-year Time Periods

Between 1975 and 2004 there are twenty-one 10-year time periods. Income results for the 10-year time periods were similar to those of the 15-year time periods (Table 4 and Figures 4.1 and 4.2). Ten-year Treasury notes had the largest average annual income in all of the 10-year time periods. Land had the lowest average of the 10-year average incomes. However, in the ten most recent 10-year time periods, land had larger 10-year average incomes than stocks.

Stocks had the largest nominal SD and 10-year Treasury notes had the largest real SD (Table 4 and Figures 4.3 and 4.4). However, because the coupon rate on the 10-year note

was constant over the ten years from purchase to maturity, the nominal SD for the treasury notes was zero. The average of the 10-year average nominal and real variability of stocks was greater than the variability for land. When the CV was used to adjust the SD for the size of the average, nominal variability of stocks was larger than that of land; but real variability of stocks was smaller than that of land. Stocks had the largest nominal CV and notes had the largest real CV.

The annual real income for 10-year notes was below the average annual income for land only 1 year (Table 4 and Figures 4.7 and 4.8). Annual income for land was below the average annual income for land 3 to 7 years of the 10-year time periods. During the first eleven 10-year time periods annual income for stocks was below the 10-year average for land only in the first three 10-year time-periods. However, in most of the most recent 10-year time periods the annual income for stocks was below the 10-year average annual income for land in all ten years.

NPV results indicate that for 10-year time periods during the time interval of 1975 to 2004, stocks prove the best of the three investments and land the worst (Table 4 and Figures 4.9 and 4.10).

5-year Time Periods

Between 1975 and 2004 there are twenty-six 5-year time periods. The best investment and retirement alternative for the 5-year time periods were similar to the best for the 10- and 15-year time periods (Table 5 and Figures 5.1, 5.2, 5.7, 5.8, 5.9 and 5.10).

According to the NPV criterion, stocks were the best investment while according to the annual income and “safety first” criteria, 5-year notes were the best retirement strategy. However, the average of the 5-year average incomes for land was greater than the average for stocks (Table 5). Also, in the three most recent 5-year time periods, NPV favored farm land over stocks.

The average of the 5-year SD of stocks and notes is generally close together for the 5-year time periods (Table 5 and Figures 5.3 and 5.4). The average of the nominal CV was largest for stocks; but the average of the real CV was largest for notes (Table 5 and Figures 5.5 and 5.6).

Portfolio Analysis

The Target MOTAD analysis with the 30-year time period indicated that the best retirement strategy is to sell the farm land and invest the proceeds in stocks (Table 6).

Stocks had the highest average annual income (\$47.05) and the lowest risk (\$9.46).

Keeping the farm land had the lowest average annual income (\$29.06) and the largest risk (\$27.41). The second best strategy (income \$40.05 and risk \$16.42) was to keep 25% of the land and invest 50% in stocks and 25% in bonds. Keeping all of the land resulted in less income and more risk than selling some or all of the land. Investing in a combination of the three assets resulted in less income and more risk than investing in all stocks. For example, compared with the all stocks portfolio, investing an equal amount in each of the three assets reduced income by more than \$9.00 per acre and nearly doubled the amount of risk. So the opportunity cost of holding land during the 30-year time period was large.

Because of the large number of 15-, 10-, and 5-year time periods, the portfolio analysis was limited to the best and worst time periods in each group for each of the three alternatives. Average income was the criterion used to determine best and worst.

The best 15-year time periods for land, stocks, and notes were 1975-1989, 1982-1996, and 1980-1994, respectively. The worst 15-year time period for land was the most recent, 1990-2004. For stocks and notes, the worst 15-year time period was 1987-2001. For all of these time periods, the 100% notes portfolio had the largest annual average income, ranging from \$29.35 in 1987-2001 to \$89.12 in 1980-1994. For three out of five of these periods, the 100% bonds portfolio also had the lowest risk and for a fourth one the 100% bonds portfolio was within \$0.02 of having the lowest risk. For three of the time periods 100% farm land had the lowest average annual income and highest risk. But for the 1987-2001 and 1990-2004 time periods 100% stocks had the lowest average annual income and highest risk. In the 1980-1994 and 1982-1996 time periods 100% stocks had relative high average annual incomes (\$65.62 and \$72.74, respectively) and zero risk, indicating that annual income did not fall below the \$56.47 per acre target income during the 15-year periods. As was the case with the 30-year time period, opportunity costs in terms of lower average annual income and higher risk were associated with holding farm land rather than selling it and investing in stocks or bonds. However, during the two most recent 15-year time periods modeled (1987-2001 and 1990-2004), although notes were the most attractive retirement strategy, land had higher average annual income and lower risk than stocks.

The two time periods 1980-1994 and 1987-2001 were the only portfolio analyses for which more than one Target MOTAD solution resulted when the model was allowed to select the optimal combination of land, stocks, and notes. The results for the 1980-1994 time period were not very interesting because the solution that was most different from the 100% notes solution reported in Table 7 had 98% notes and 2% stocks. The return-risk frontier associated with the 1987-2001 was more interesting. Solutions ranged from \$83.22 average annual income and \$4.00 risk with 100% notes to \$79.74 average annual income and \$0.00 risk with 35.8% stocks and 64.2% notes. Thus, in this case risk of annual income falling below the target income could be eliminated by diversification that also reduced average annual income by \$3.48.

The best 10-year time periods for land, stocks, and notes were 1975-1984, 1982-1991, and 1981-1990, respectively. The worst 10-year time period for notes was 1993-2002. For both stocks and land, the worst 10-year time period was the most recent, 1994-2004. For all of these time periods, the 100% notes portfolio had the largest annual average income, ranging from \$37.03 in 1993-2002 to \$157.61 in 1981-1990 and the lowest risk ranging from \$0.00 in both 1981-1990 and 1982-1991 to \$19.45 in 1993-2002. For three of the time periods 100% farm land had the lowest average annual income and highest risk. But for the 1993-2002 and 1995-2004 time periods 100% stocks had the lowest average annual income and highest risk. In the 1981-1990 and 1982-1991 time periods all of the portfolios had essentially zero risk except for 100% farm land that had risk of \$25.69 and \$26.69, respectively. As was the case with the 30-year and 15-year time periods, opportunity costs in terms of lower average annual income and higher risk were

associated with holding farm land rather than selling it and investing in stocks or notes. However, during the two most recent 10-year time periods modeled (1993-2002 and 1995-2004), although notes were the most attractive investment, land had higher average annual income and lower risk than stocks.

The best 5-year time periods for land, stock, and notes were 1975-1979, 1982-1986, and 1981-1985, respectively. The worst 5-year time period for notes was 1993-1997. For both stocks and land, the worst 5-year time period was the most recent, 2000-2004. For all of these time periods, the 100% notes portfolio had the largest annual average income, ranging from \$35.65 in 1993-1997 to \$183.54 in 1981-1985 and the lowest risk ranging from \$0.00 in both 1981-1985 and 1982-1986 to \$20.83 in 1993-1997. For two of the time periods 100% farm land had the lowest average annual income and highest risk. But for the 1993-1997 and 2000-2004 time periods 100% stocks had the lowest average annual income and highest risk. In the 1981-1990 and 1982-1991 time periods all of the portfolios had essentially zero risk except for 100% farm land that had risk of \$22.16 and \$23.35, respectively. As was the case with the 30-, 15-, and 10-year time periods, opportunity costs in terms of lower average annual income and higher risk were associated with holding farm land rather than selling it and investing in stocks or notes. However, during the two most recent 5-year time periods modeled (1993-1997 and 2000-2004), although notes were the most attractive investment, land had higher average annual income and lower risk than stocks.

The most recent 30-year time period the coupon rate on U.S Treasury bonds and notes reached double digit levels in the early 1980s (Table 8 and Figure 8.1). The coupon rate on Treasury securities tend to decrease after peaking in 1981 and tended to be lowest in some of the most recent years.

Conclusions and Implications

Results based on the 1975-2004 time period indicate that a person who had debt-free farm land in 1975 should have sold the farm land and invested in stocks. Although annual income from the 30-year bond was larger than that of stocks for the first 9 years, between 1985 and 2000 the value of stocks increased dramatically, resulting in larger annual income (dividends) and a large terminal value. Stocks were the only investment that increased in real value over the 30-year period. The real value and real net income from both Kansas nonirrigated cropland and the 30-year government bond decreased over the 30-year period. This illustrated the importance of considering the purchasing power of dollars (i.e., inflation) and the anticipated length of the retirement period when planning for retirement. U.S. Treasury securities are often considered “risk free” investments because the discount rate is fixed. However, in the 30-year analysis based on real net income, of the three alternatives the bond had the largest standard deviation and coefficient of variation. This illustrates the importance of inflation risk. In addition to being the best of the three retirement strategies, stocks were also the best investment strategy, having a much larger terminal value and net present value than either land or the bond. The S & P 500 index was used as the source of stocks data. The S&P 500 data

includes an aggregate of leading companies, generally large in size, selected by Standard and Poors. Individual stocks would tend to be more variable than the S&P 500.

The 1975-2004 time period has sixteen 15-year time periods and twenty-one 10-year time periods. Three 5-year U.S. Treasury notes and 10-year Treasury notes are used to represent government securities during the 15-year and 10-year time periods, respectively. For both of these time periods notes provide the best retirement strategy, having the largest average nominal and real net incomes in all of the time periods and the fewest number of years in which annual income fell below the average income for land. However, stocks represented the best investment strategy, having a considerably larger NPV than the other two alternatives in all but one of the time periods. Land was the worst retirement strategy. However, in recent time periods, land was a better retirement strategy than stocks. Land was the worst investment strategy in all of the 15-year time periods and in almost all of the 10-year time periods.

For all of the twenty-six 5-year time periods between 1976 and 2004, 5-year notes were the best retirement strategy, having the largest net income and the smallest number of years (zero) for which net income from the notes fell below the average net income for land. Based on the average of the average 5-year net incomes, farm land was a better retirement strategy than stocks. Stocks were a better retirement strategy than land for the 1977-1981 through 1985-1989 time periods. Land was a better retirement strategy than stocks for the 15 most recent 5-year time periods. The average NPV of the 5-year time

periods was largest for stocks. However, there were several 5-year periods for which either notes or land had a larger NPV than stocks.

The portfolio analysis confirmed the results of the comparisons of the three alternatives. For the 30-year time period the most income and least risk resulted with a portfolio of all stocks. Portfolios of all land, all bonds, and combinations of the three alternatives resulted in less income and more risk than the all stocks portfolio. The 15-, 10-, and 5-year portfolio analyses all favored 100% investment in bonds as the highest income and lowest risk portfolio. In earlier time periods modeled, 100% land tended to be the worst (lowest income and highest risk) alternative while in later time periods modeled stocks tended to be the worst. Portfolios with combinations of land, stocks, and bonds offered intermediated levels of income and risk that may be attractive to retirees who want to hold a more diverse portfolio or who want to retain ownership of some of their land.

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Table 1. Asset Values and Annual Income per Acre if Land Was Retained or Sold to Purchase Stocks or a Bond, 1975-2004^a

Year	Nonirrigated Kansas Cropland ^b				Stocks ^g				30-Year U.S. Treasury-Bond			
	Value of Land		Income Per Acre ^{cd}		Value of Stock		Income Per Acre ^h		Value of Bond		Income Per Acre ^{ijk}	
	Nominal	Real ^e	Nominal	Real ^e	Nominal ^f	Real ^e	Nominal ^f	Real ^e	Nominal ^f	Real ^e	Nominal ^f	Real ^e
1975	\$333.00	\$1,204.49	\$12.03	\$43.50	\$309.69	\$1,120.18	\$10.68	\$38.62	\$309.69	\$1,120.18	\$21.08	\$75.22
1976	385.00	1,316.71	13.49	46.15	366.66	1,253.99	11.06	37.82	309.69	1,059.15	21.08	71.35
1977	451.00	1,448.26	13.26	42.57	352.97	1,133.45	13.05	41.89	309.69	994.48	21.08	66.81
1978	473.00	1,411.75	13.54	40.40	345.13	1,030.10	14.58	43.51	309.69	924.32	21.08	61.75
1979	568.00	1,522.49	14.70	39.39	370.25	992.45	16.20	43.43	309.69	830.11	21.08	55.11
1980	669.00	1,579.94	15.95	37.67	426.94	1,008.28	17.97	42.43	309.69	731.38	21.08	48.56
1981	702.00	1,502.85	16.49	35.31	460.26	985.33	19.15	40.99	309.69	662.99	21.08	44.46
1982	726.00	1,464.04	17.79	35.87	430.28	867.70	20.00	40.33	309.69	624.51	21.08	42.16
1983	688.00	1,344.22	17.92	35.02	576.57	1,126.51	20.30	39.65	309.69	605.08	21.08	40.86
1984	673.00	1,260.50	18.04	33.78	576.75	1,080.23	21.41	40.10	309.69	580.04	21.08	39.25
1985	544.00	983.85	17.48	31.62	671.57	1,214.57	22.83	41.30	309.69	560.09	21.08	37.82
1986	460.00	816.75	16.52	29.34	849.49	1,508.31	23.72	42.11	309.69	549.87	21.08	37.29
1987	415.00	710.91	15.67	26.84	1,030.97	1,766.08	25.40	43.52	309.69	530.51	21.08	35.84
1988	462.00	759.98	16.70	27.47	955.34	1,571.51	27.82	45.76	309.69	509.43	21.08	34.40
1989	473.00	742.30	16.42	25.76	1,160.40	1,821.08	32.03	50.26	309.69	486.01	21.08	32.79
1990	501.00	745.94	18.06	26.88	1,202.64	1,790.61	34.73	51.71	309.69	461.10	21.08	31.12
1991	500.00	714.39	17.70	25.29	1,352.13	1,931.89	35.05	50.07	309.69	442.48	21.08	29.95
1992	513.00	711.55	17.29	23.99	1,494.32	2,072.66	35.74	49.58	309.69	429.55	21.08	29.08
1993	516.00	694.90	17.82	24.00	1,622.53	2,185.08	36.09	48.60	309.69	417.06	21.08	28.27
1994	549.00	720.89	17.58	23.09	1,654.91	2,173.05	37.33	49.02	309.69	406.65	21.08	27.56
1995	595.00	759.76	19.16	24.46	1,947.14	2,486.30	39.88	50.92	309.69	395.44	21.08	26.81
1996	607.00	752.85	17.43	21.62	2,410.02	2,989.10	42.22	52.37	309.69	384.10	21.08	26.02
1997	615.00	745.66	18.49	22.41	3,139.42	3,806.43	44.45	53.90	309.69	375.49	21.08	25.51
1998	620.00	740.20	19.07	22.76	3,901.68	4,658.08	46.51	55.52	309.69	369.73	21.08	25.10
1999	625.00	730.04	18.75	21.90	4,770.90	5,572.73	47.71	55.73	309.69	361.74	21.08	24.53
2000	630.00	711.95	19.03	21.51	5,129.94	5,797.25	47.20	53.33	309.69	349.97	21.08	23.68
2001	635.00	697.75	19.31	21.22	4,292.31	4,716.45	45.33	49.81	309.69	340.29	21.08	23.13
2002	640.00	692.30	19.30	20.87	3,572.58	3,864.50	46.01	49.77	309.69	335.00	21.08	22.74
2003	645.00	682.16	19.28	20.39	3,469.38	3,669.25	49.13	51.96	309.69	327.53	21.08	22.29
2004	665.00	685.07	20.11	20.71	4,063.96	4,186.59	55.92	57.61	309.69	319.03	21.08	21.59
Average Income per Acre			\$17.15	\$29.06			\$31.32	\$47.05			\$21.08	\$37.03
Standard Deviation			\$2.04	\$7.90			\$13.24	\$5.78			\$0.00	\$15.23
Coefficient of Variation			11.91%	27.17%			42.29%	12.28%			0%	41.12%
Years Income was Below 30-Year Average for Land			11	18			5	0			0	12
NPV ^{lm}			\$129.41	-\$106.96			\$730.87	\$1,705.18			\$108.04	-\$156.57

Source of land data: Dhuyvetter, K.C. and T.L. Kastens. "Kansas Land Prices and Cash Rental Rates." Kansas State University Department of Agricultural Economics. MF-1100, October, 2004 and Kansas Agricultural Statistics Service. Internet site: <http://www.nass.usda.gov/ks/landval/landhist.htm> (Accessed February 2005). State nonirrigated price for 1975 was not available. The value for 1975 was estimated by dividing the price of all agricultural land in 1975 by the price of all agricultural land in 1976 (KAS) and multiplying this ratio by the 1976 nonirrigated price.

Source of stock data: Council of Economic Advisors, Joint Committee on the Economic Report. "Common Stock Prices and Yields." Federal Reserve Archival System for Economic Research (FRASER). St. Louis, MO. Internet site: <http://fraser.stlouisfed.org/publications/ei/page/43> (Accessed June 2005).

Source of bond data: The Federal Reserve Board. "H.15 - Selected Interest Rates: Historical Data." Federal Reserve Statistical Release. Washington, DC. Internet site: <http://www.federalreserve.gov/releases/h15/data.htm> (Accessed June 2005).

^a Income is after income taxes. Estate taxes and local intangibles taxes are not considered.

^b The historical nominal value of land and cash rent is the average for Kansas.

^c Property tax rate of .6% of land value (Kastens) was subtracted from annual cash rent.

^d Federal income tax of 35% and state income tax of 5% was deducted from annual cash rent minus property taxes.

^e Nominal values were adjusted to real April 2005 dollars using the "CPI-All Urban Consumers" from the Bureau of Labor Statistics.

^f Initial stock and bond investment is based on the assumption that a 7% sale cost was incurred when land was sold.

^g Stock values and annual incomes (dividends) are based on the historical average annual value of the S&P 500 Index.

^h For stocks the preferential federal income tax rate of 15% combined with a 5% state income tax rate was used.

ⁱ Annual income per acre is based on the coupon rate for a 30-year Treasury bond purchased in 1975 and held to maturity in 2004.

^j Annual income from U.S. Treasury Securities is exempt from state and local income taxes, so a 35% federal income tax rate was used.

^k Annual income for bonds is the sum of the two semi-annual payments per year.

^l A nominal before tax discount rate was based on the third quarter 2004 average fixed annual interest rate on long-term real estate farm loans from the Tenth Federal Reserve District (7.0%). This rate was adjusted for inflation using the 4.28% average inflation rate over the 30 year period. The discount rate was also adjusted for the different tax rates for the three investments.

^m When calculating NPV for land and stocks, income was assumed to be received in the middle of the year. In 2004, a capital gains tax rate of 20% was charged on the change in nominal value from 1975-2004 for land and stocks. Because bond payments are received twice a year, the NPV was computed using semi-annual compounding June 31 and December 31. When calculating NPV, the value of the asset in 1975 is used as the initial cost of the asset.

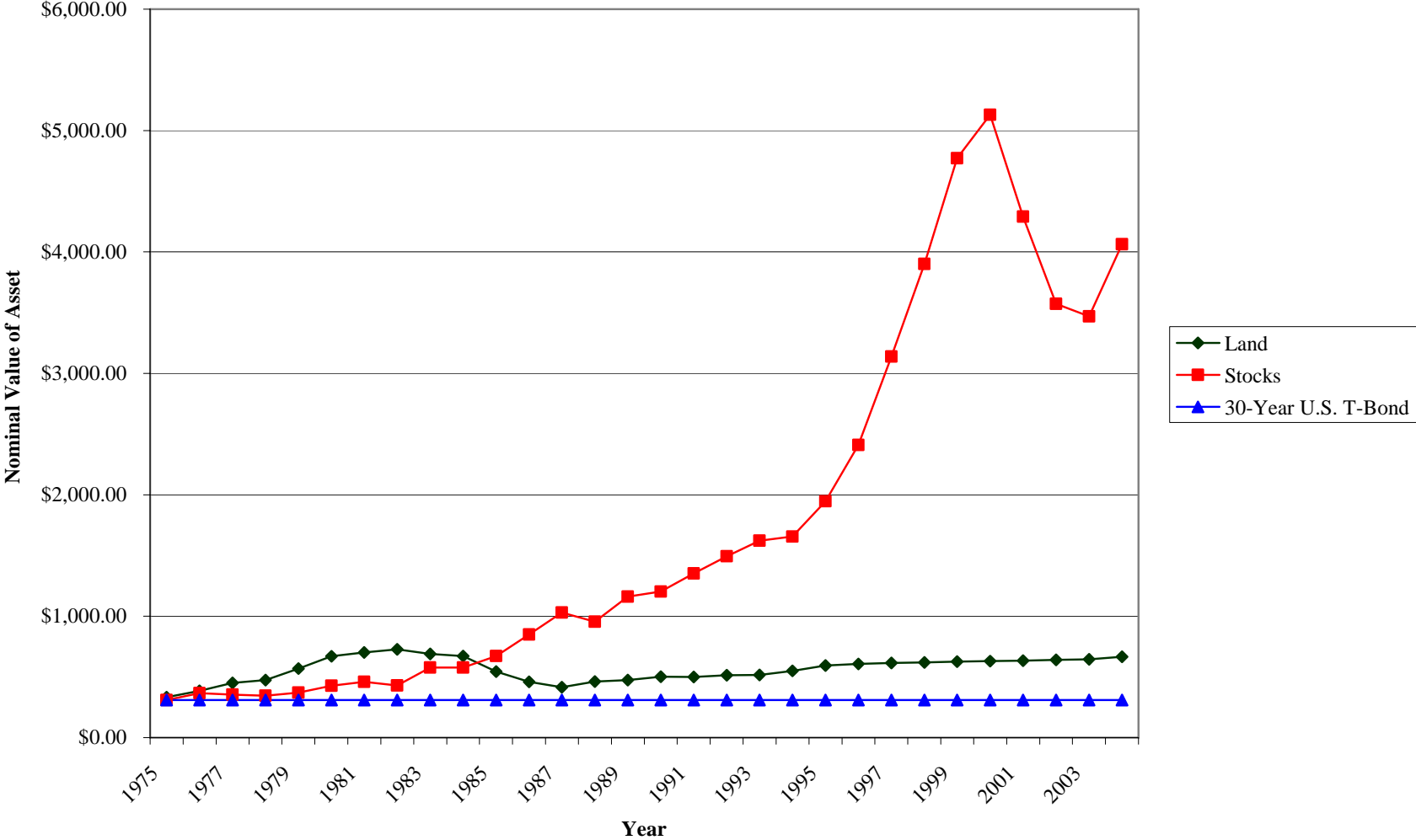


Figure 1.1 Nominal Value of Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond from 1975-2004

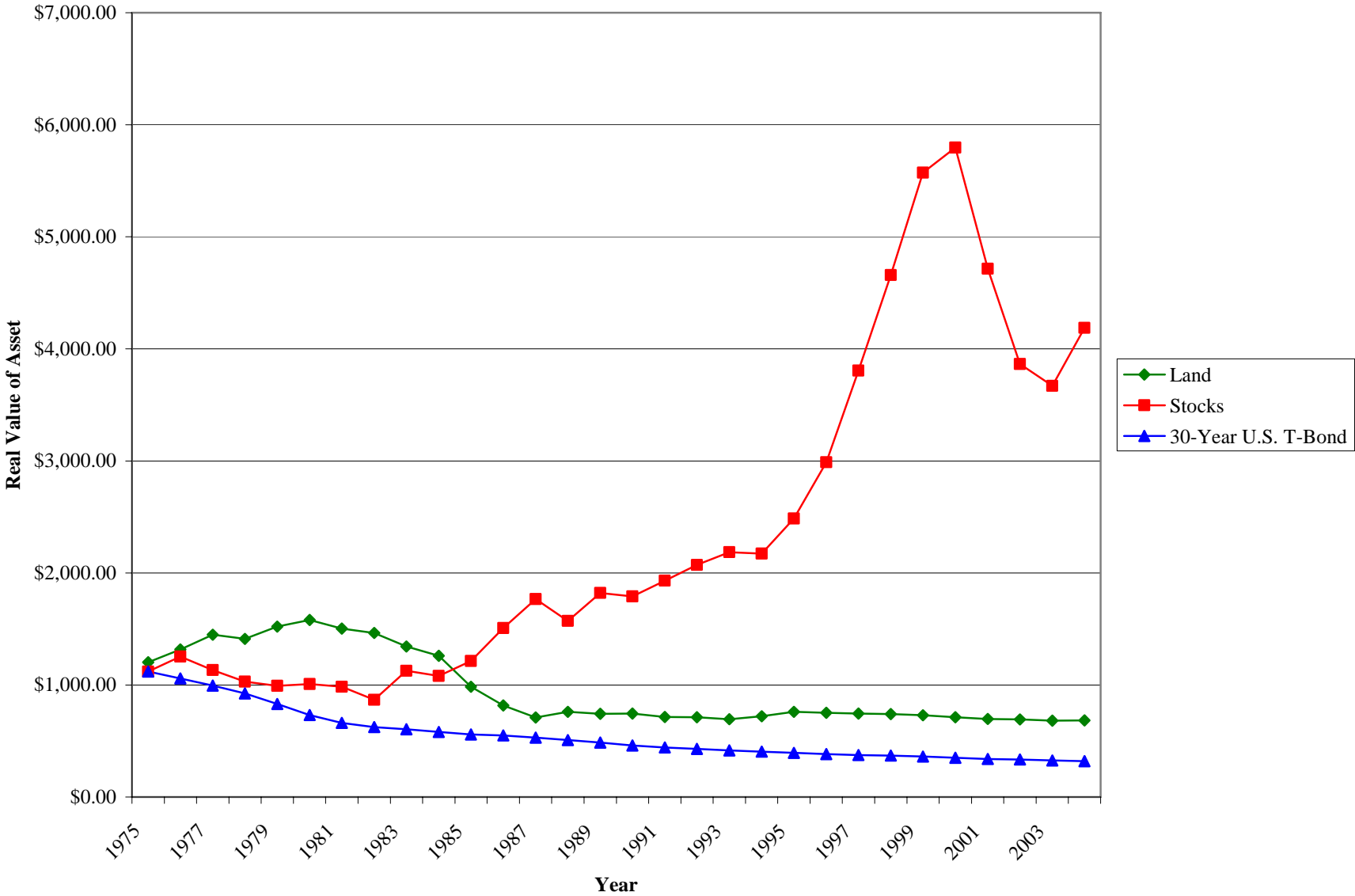


Figure 1.2 Real Value of Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond from 1975-2004

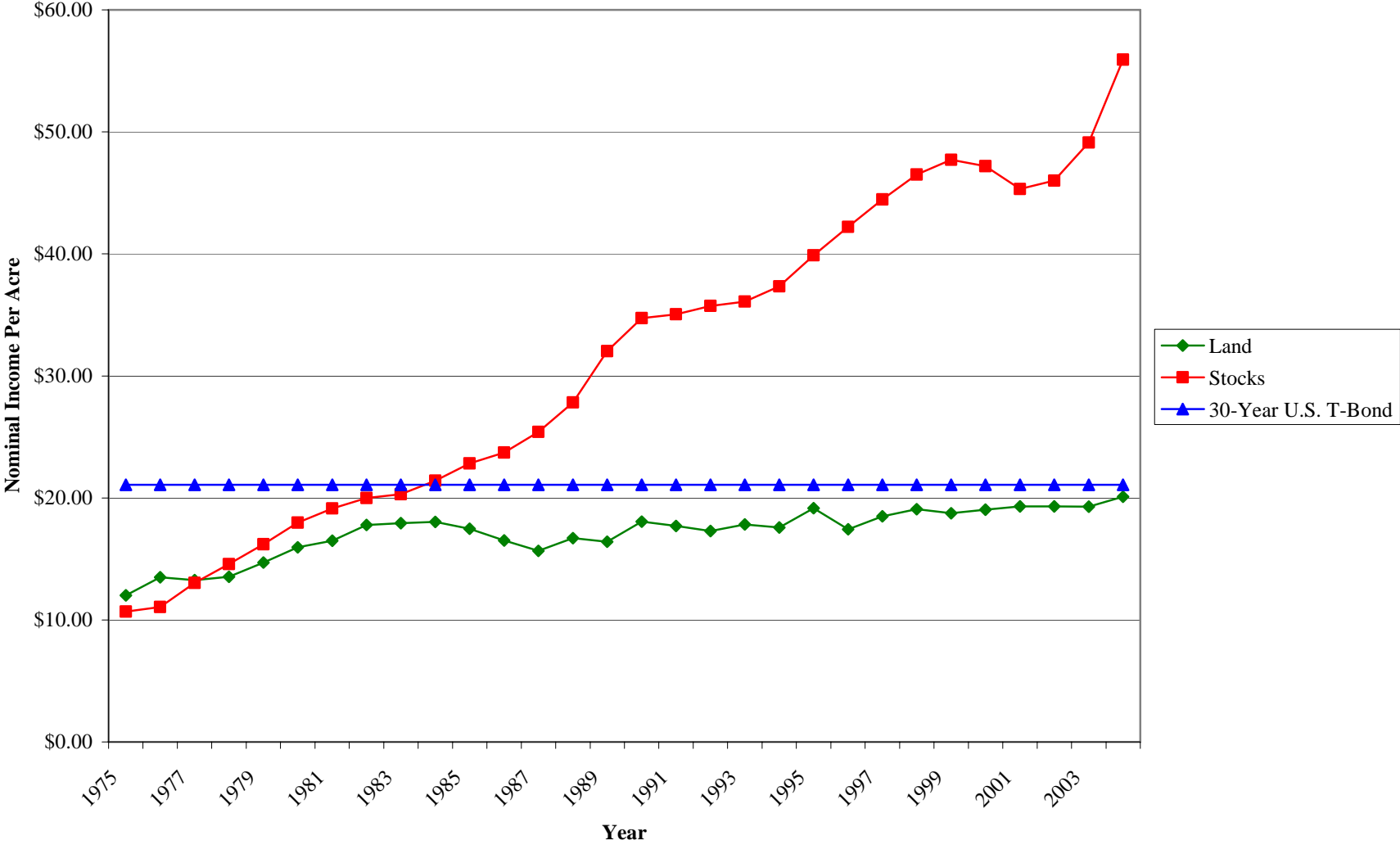


Figure 1.3 Nominal Annual Income per Acre of Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond from 1975-2004

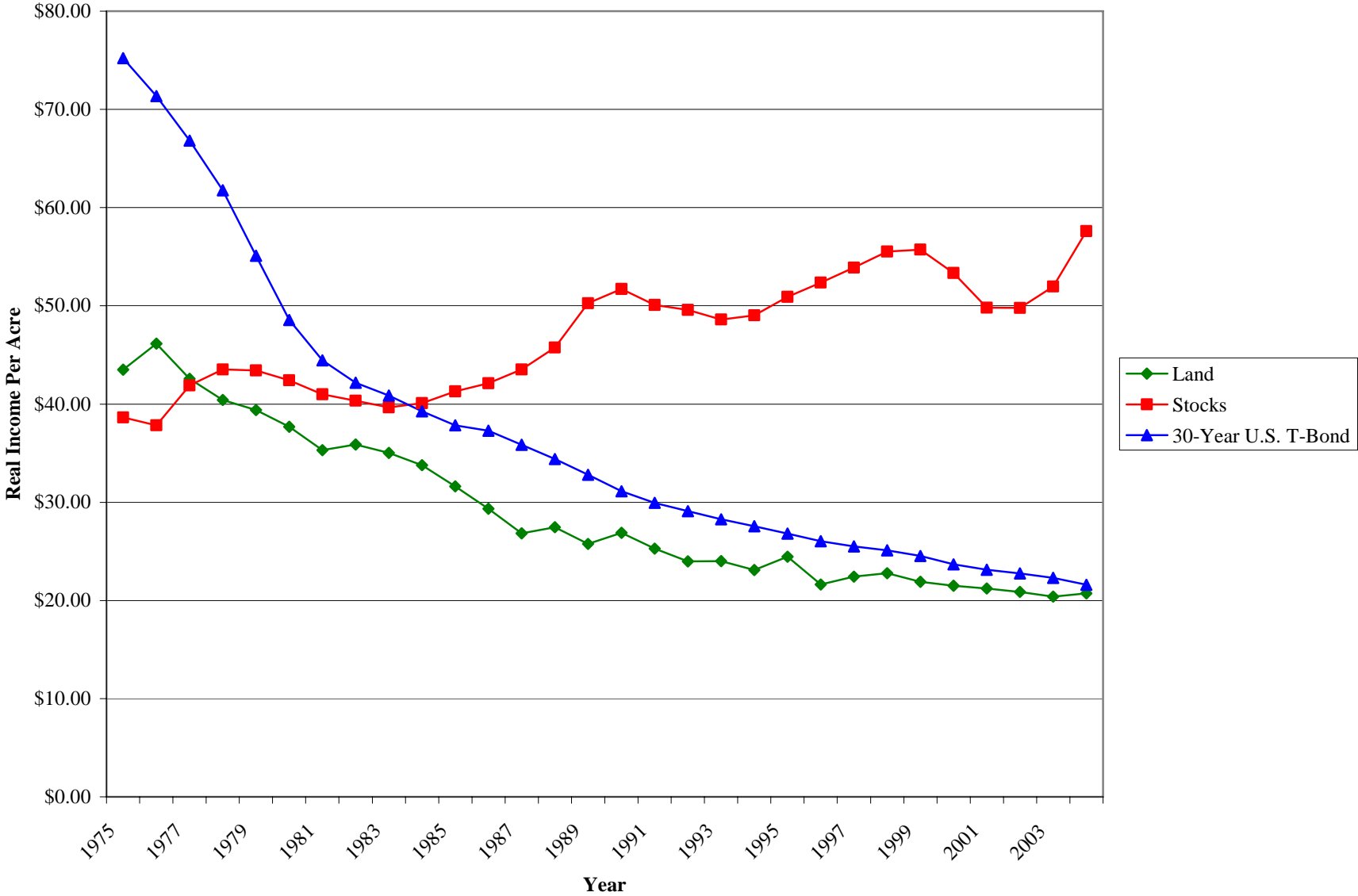


Figure 1.4 Real Annual Income per Acre of Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond from 1975-2004

Table 2. Annual Rates of Return for Kansas Nonirrigated Cropland, Stocks, and a 30-year T-Bond, After Taxes^a

Year	Nonirrigated Cropland		Stocks		30-Year U.S. T-Bond	
	Nominal	Real	Nominal	Real	Nominal	Real
1975	N/A	N/A	N/A	N/A	N/A	N/A
1976	17.01%	12.03%	18.55%	13.69%	6.81%	1.04%
1977	17.57%	12.02%	-0.18%	-6.94%	6.81%	0.30%
1978	7.51%	0.28%	1.95%	-5.81%	6.81%	-0.78%
1979	19.31%	9.86%	11.16%	0.58%	6.81%	-4.54%
1980	17.48%	6.02%	17.48%	5.78%	6.81%	-6.69%
1981	7.05%	-2.78%	11.40%	1.83%	6.81%	-3.51%
1982	5.76%	-0.20%	-2.32%	-8.91%	6.81%	0.65%
1983	-2.92%	-6.31%	28.89%	26.50%	6.81%	3.59%
1984	0.45%	-3.96%	3.74%	-0.57%	6.81%	2.49%
1985	-20.50%	-24.91%	17.52%	14.46%	6.81%	3.25%
1986	-14.67%	-16.87%	23.74%	22.27%	6.81%	4.95%
1987	-7.07%	-11.11%	20.07%	17.06%	6.81%	3.16%
1988	13.79%	10.07%	-5.00%	-9.47%	6.81%	2.67%
1989	5.80%	1.09%	20.43%	16.46%	6.81%	1.99%
1990	9.19%	4.09%	6.40%	1.19%	6.81%	1.40%
1991	3.34%	-0.88%	13.65%	9.91%	6.81%	2.60%
1992	5.91%	2.97%	11.91%	9.18%	6.81%	3.80%
1993	4.04%	1.06%	10.13%	7.37%	6.81%	3.81%
1994	9.21%	6.81%	4.21%	1.70%	6.81%	4.25%
1995	10.95%	8.34%	17.06%	14.65%	6.81%	3.97%
1996	4.85%	1.95%	20.96%	18.57%	6.81%	3.85%
1997	4.31%	2.04%	24.65%	22.89%	6.81%	4.51%
1998	3.88%	2.34%	20.73%	19.48%	6.81%	5.25%
1999	3.80%	1.61%	19.22%	17.41%	6.81%	4.60%
2000	3.81%	0.48%	7.92%	4.79%	6.81%	3.44%
2001	3.83%	1.01%	-18.46%	-21.86%	6.81%	3.96%
2002	3.80%	2.23%	-18.86%	-20.76%	6.81%	5.23%
2003	3.76%	1.50%	-1.56%	-3.91%	6.81%	4.53%
2004	6.03%	3.45%	16.01%	13.73%	6.81%	4.14%
Number of Years Investment had Highest Return						
	6	7	18	17	5	5
Number of Years Investment had Lowest Return						
	15	15	9	9	5	5

^a Annual rate of return is calculated as after income tax annual income plus change in value of the investment (calculated as current year value minus previous year value) divided by current year value. See footnotes for Table 1 for details about data sources and calculations.

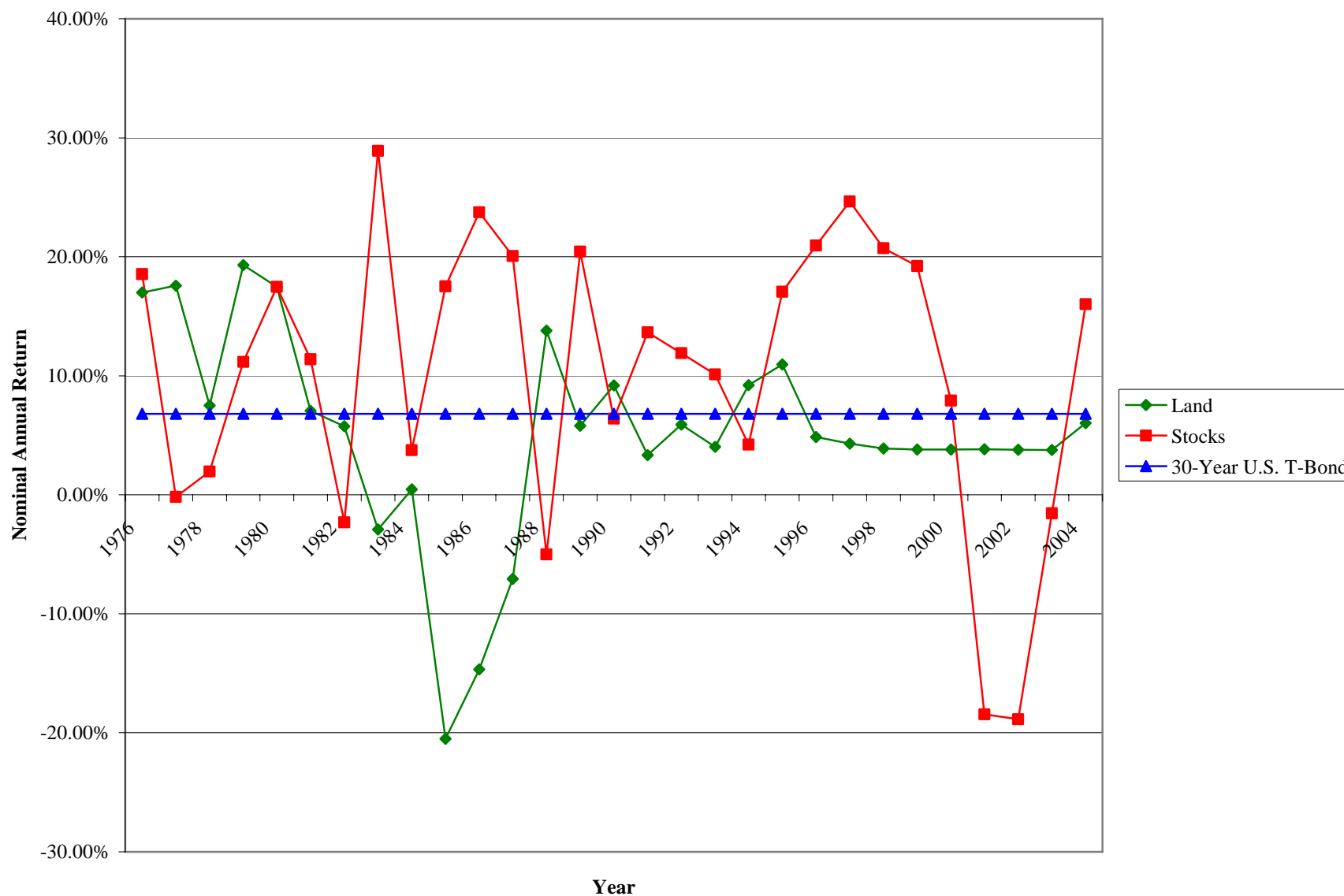


Figure 2.1 Nominal Annual Rates of Return for Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond, After Taxes

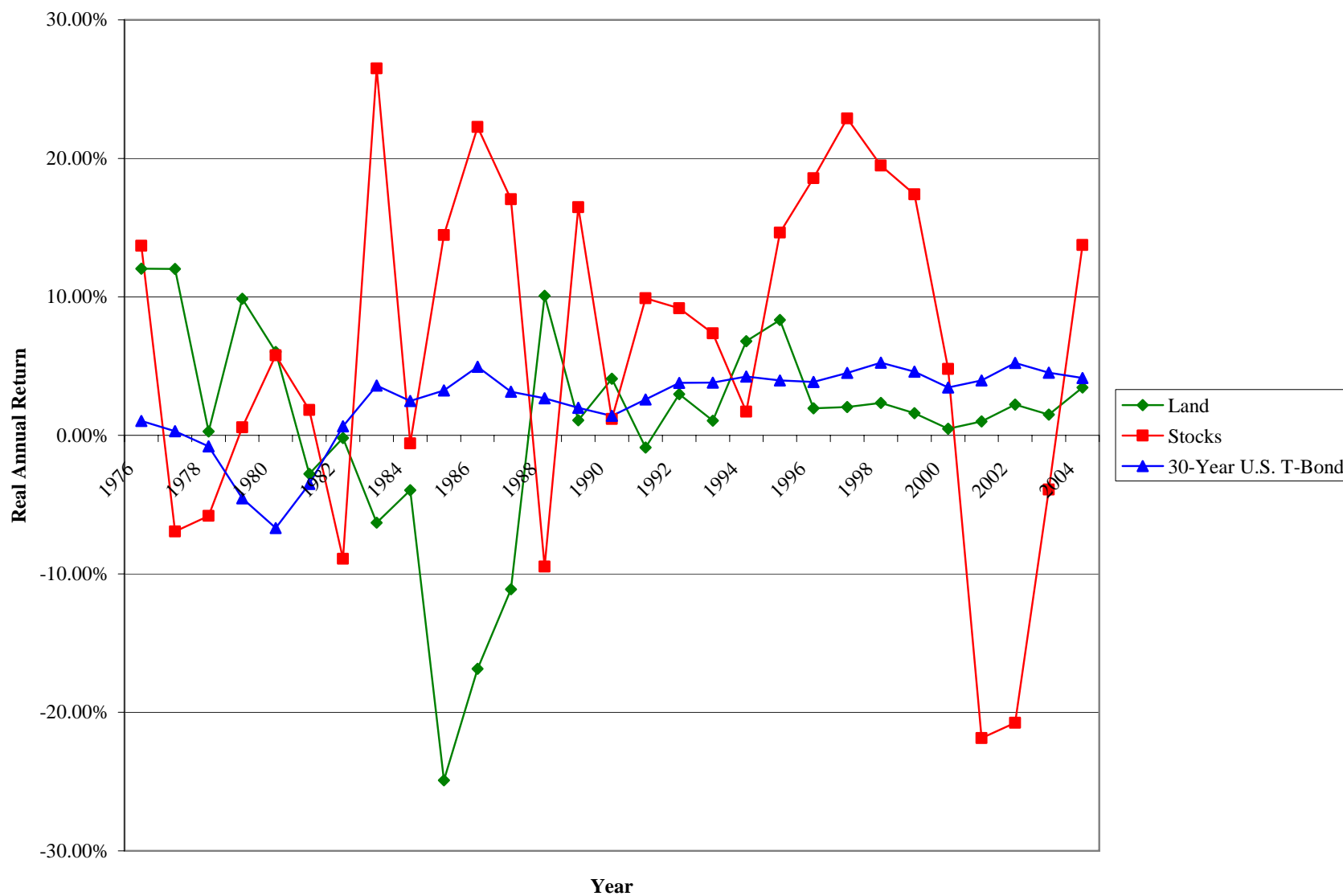


Figure 2.2 Real Annual Rates of Return for Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond, After Taxes

Table 3. Kansas Farmland, Stocks, and Notes: Income Statistics and Net Present Value (NPV) for 15-Year Time Periods

Years	15-Year Average Incomes Per Acre						15-Year Standard Deviations					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Notes ^a		Nonirrigated Cropland		Stocks		5-Year U.S. T-Notes ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1989	\$15.73	\$35.38	\$19.75	\$42.12	\$25.00	\$55.25	\$1.91	\$6.33	\$6.11	\$3.06	\$3.94	\$9.74
1976-1990	16.13	34.27	20.85	41.98	28.29	59.29	1.69	6.27	6.53	3.69	9.93	20.23
1977-1991	16.41	32.88	27.27	52.05	32.23	63.53	1.57	5.73	8.21	4.64	9.30	18.35
1978-1992	16.68	31.64	31.18	56.48	33.38	63.05	1.31	5.49	9.01	5.27	4.17	13.97
1979-1993	16.97	30.55	36.94	63.71	43.97	79.21	1.01	5.25	10.14	6.09	7.04	19.96
1980-1994	17.16	29.46	39.79	65.62	51.23	89.12	0.80	4.97	10.41	6.41	6.58	25.92
1981-1995	17.38	28.58	40.80	64.67	51.92	88.76	0.88	4.57	10.40	6.50	17.86	43.89
1982-1996	17.44	27.67	47.55	72.74	50.39	83.22	0.84	4.49	11.91	7.38	16.39	39.32
1983-1997	17.49	26.77	35.44	52.44	42.95	68.21	0.88	4.06	8.70	5.29	12.45	28.80
1984-1998	17.56	25.95	36.55	52.43	47.25	72.27	0.97	3.47	8.66	5.12	12.18	29.23
1985-1999	17.61	25.16	26.69	37.18	34.60	50.71	1.01	2.86	6.01	3.39	6.49	16.51
1986-2000	17.71	24.49	18.66	25.26	24.53	34.24	1.07	2.38	3.88	2.01	1.96	6.94
1987-2001	17.90	23.95	14.41	18.97	21.60	29.35	1.09	2.11	2.63	1.25	2.65	7.50
1988-2002	18.14	23.55	17.93	22.98	22.18	29.57	0.96	2.09	2.81	1.22	5.67	11.20
1989-2003	18.31	23.08	15.65	19.52	25.09	32.22	0.91	1.93	2.17	0.86	4.48	9.39
1990-2004	18.56	22.74	16.62	20.14	27.07	33.58	0.86	1.87	2.42	1.06	3.67	8.14
Average of 15- Year Periods	17.32	27.88	27.88	44.27	35.10	58.22	1.11	3.99	6.88	3.95	7.80	19.32

Table 3. Continued

Years	15-Year Coefficients of Variation						Years Income was Below 15-Year Average for Land					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Notes ^a		Nonirrigated Cropland		Stocks		5-Year U.S. T-Notes ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1989	12.11%	17.91%	30.92%	7.27%	15.77%	17.63%	6	8	4	0	0	0
1976-1990	10.48%	18.28%	31.31%	8.79%	35.10%	34.12%	6	7	4	0	0	2
1977-1991	9.54%	17.44%	30.12%	8.91%	28.86%	28.88%	5	7	9	11	0	0
1978-1992	7.86%	17.36%	28.91%	9.33%	12.48%	22.16%	7	8	0	0	0	0
1979-1993	5.94%	17.19%	27.44%	9.56%	16.02%	25.20%	7	8	0	0	0	0
1980-1994	4.64%	16.87%	26.16%	9.76%	12.85%	29.08%	6	9	0	0	0	0
1981-1995	5.04%	15.97%	25.50%	10.04%	34.39%	49.45%	6	9	0	0	0	0
1982-1996	4.82%	16.23%	25.04%	10.15%	32.52%	47.24%	6	10	0	0	0	0
1983-1997	5.03%	15.16%	24.55%	10.09%	28.99%	42.22%	7	8	0	0	0	0
1984-1998	5.50%	13.38%	23.69%	9.77%	25.79%	40.45%	7	9	0	0	0	0
1985-1999	5.72%	11.37%	22.52%	9.11%	18.75%	32.57%	8	8	1	0	0	0
1986-2000	6.05%	9.73%	20.80%	7.98%	7.98%	20.28%	8	9	6	4	0	1
1987-2001	6.10%	8.80%	18.25%	6.58%	12.26%	25.55%	8	7	15	15	0	5
1988-2002	5.27%	8.86%	15.68%	5.29%	25.56%	37.87%	8	8	8	10	0	8
1989-2003	4.96%	8.37%	13.84%	4.41%	17.87%	29.15%	7	8	14	15	0	4
1990-2004	4.61%	8.22%	14.58%	5.25%	13.55%	24.24%	7	8	13	15	0	0
Average of 15- Year Periods	6.48%	13.82%	23.71%	8.27%	21.17%	31.63%	7	8	5	4	0	1

Table 3. Continued

Years	15-Year NPVs					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Notes ^a	
	Nominal	Real	Nominal	Real	Nominal	Real
1975-1989	\$85.30	-\$74.94	\$328.24	\$806.04	\$191.77	\$116.13
1976-1990	56.31	-193.00	299.91	653.09	217.71	111.26
1977-1991	0.60	-365.36	463.21	1,022.52	242.48	110.22
1978-1992	-9.63	-367.75	590.99	1,273.97	251.13	128.26
1979-1993	-94.80	-534.94	716.11	1,437.94	351.58	304.38
1980-1994	-175.00	-631.47	694.28	1,261.67	413.77	443.13
1981-1995	-180.35	-567.25	803.74	1,391.88	424.26	491.70
1982-1996	-196.83	-558.23	1,219.23	2,077.74	398.23	449.48
1983-1997	-154.22	-459.27	1,026.32	1,675.09	315.30	295.58
1984-1998	-136.06	-401.32	1,322.83	2,118.96	371.83	392.62
1985-1999	-13.11	-161.08	1,104.61	1,715.07	252.54	227.29
1986-2000	64.70	-24.26	731.29	1,091.12	150.87	75.90
1987-2001	108.96	54.49	374.17	513.03	130.91	66.14
1988-2002	72.31	-5.18	370.11	486.54	126.45	48.78
1989-2003	66.76	-7.53	233.07	273.98	157.42	97.88
1990-2004	53.52	-20.46	312.94	372.83	170.75	109.02
Average of 15- Year Periods	-28.22	-269.85	661.94	1,135.72	260.44	216.74

^a Annual income per acre is based on the coupon rate for 5-year U.S. Treasury notes purchased every five years and held to maturity.

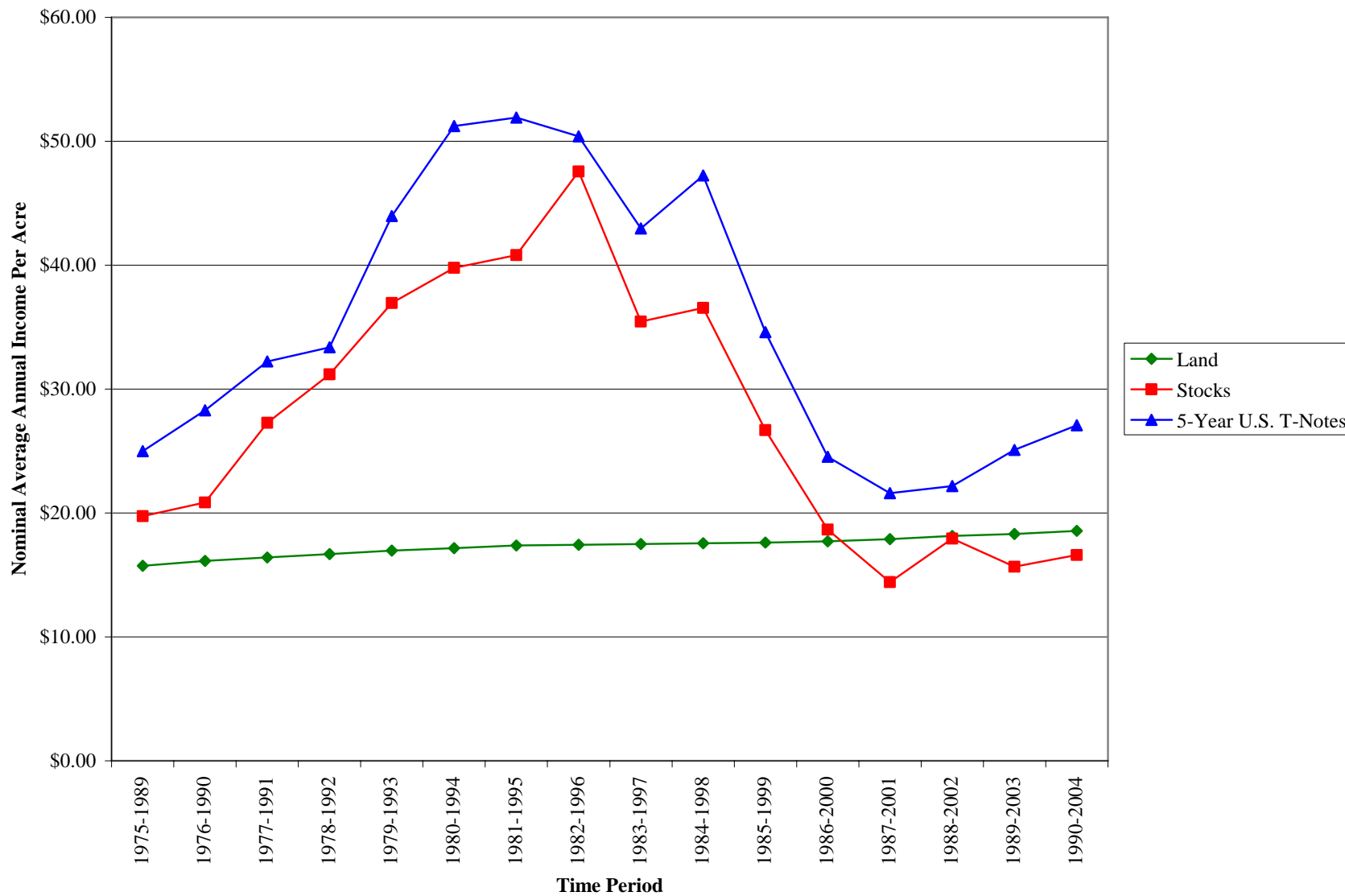


Figure 3.1 Nominal Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

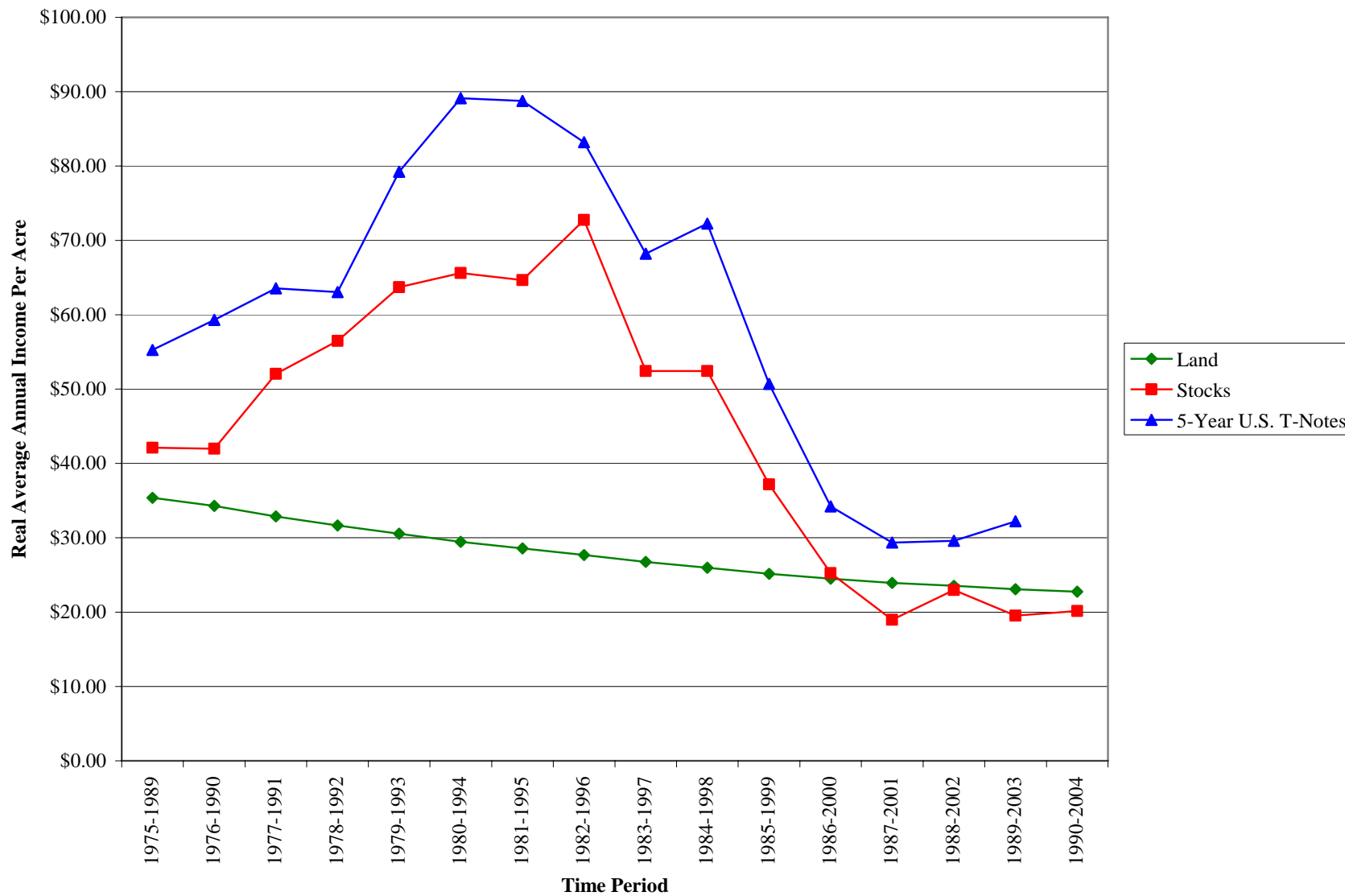


Figure 3.2 Real Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

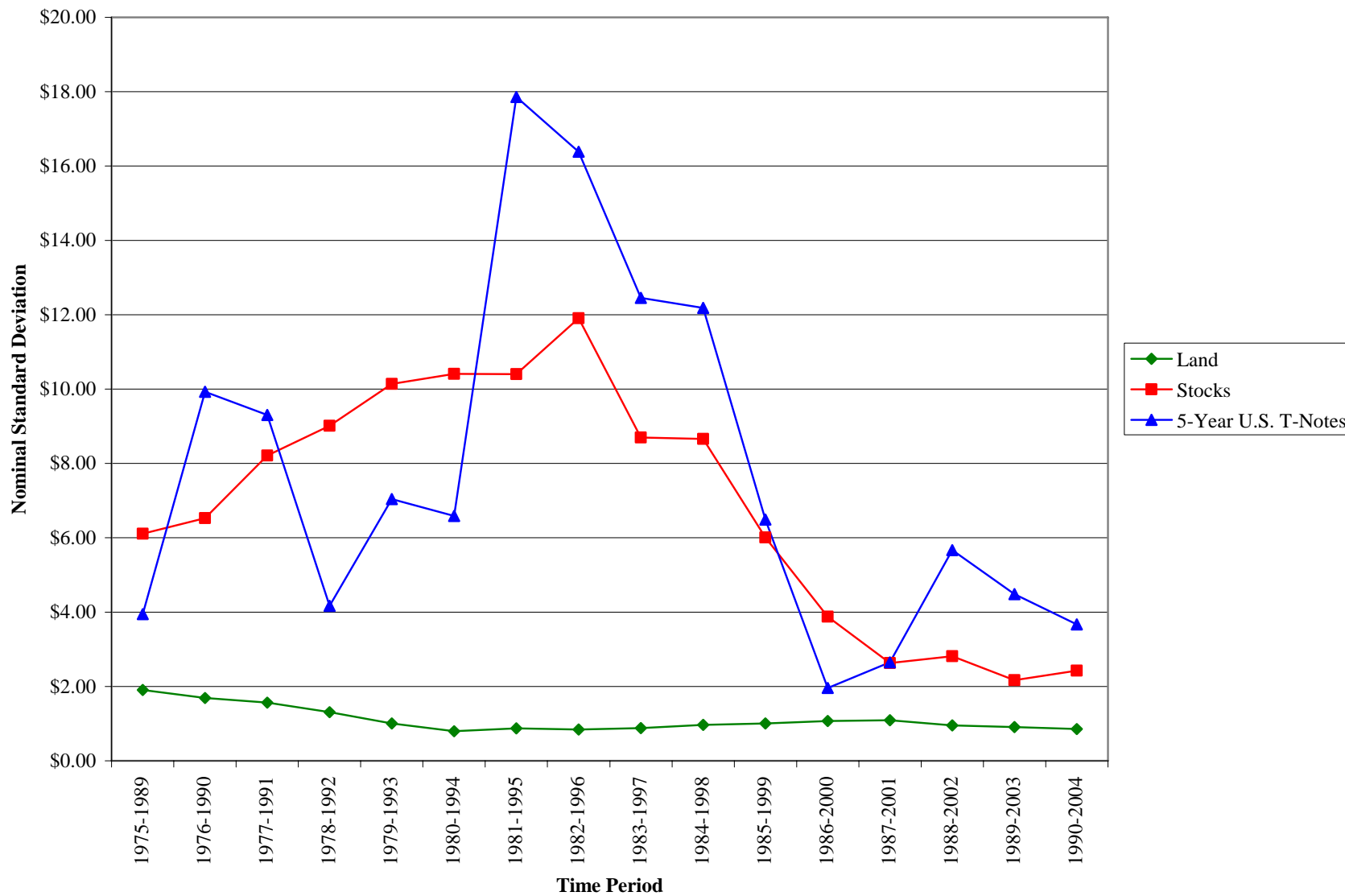


Figure 3.3 Nominal Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

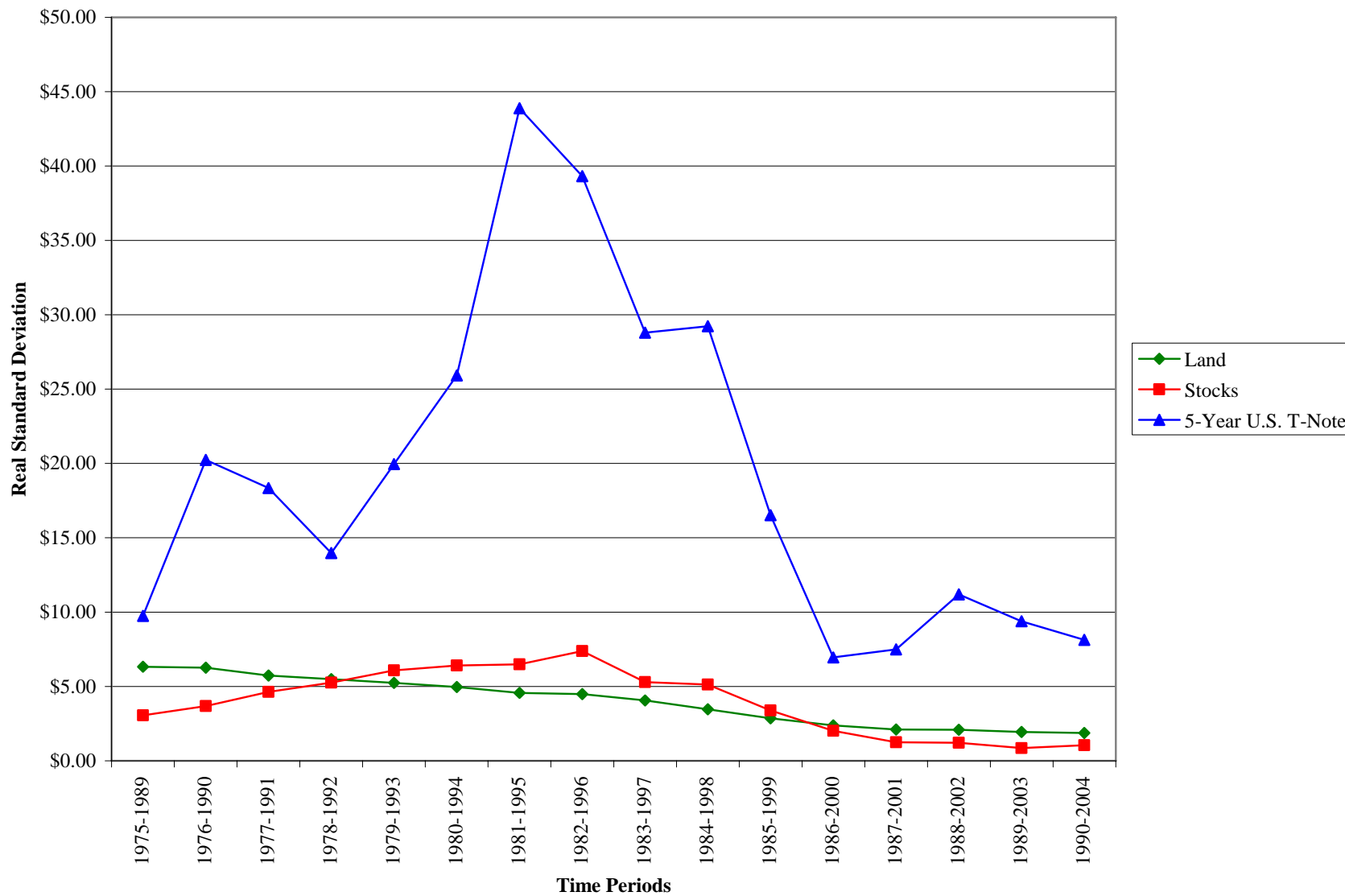


Figure 3.4 Real Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

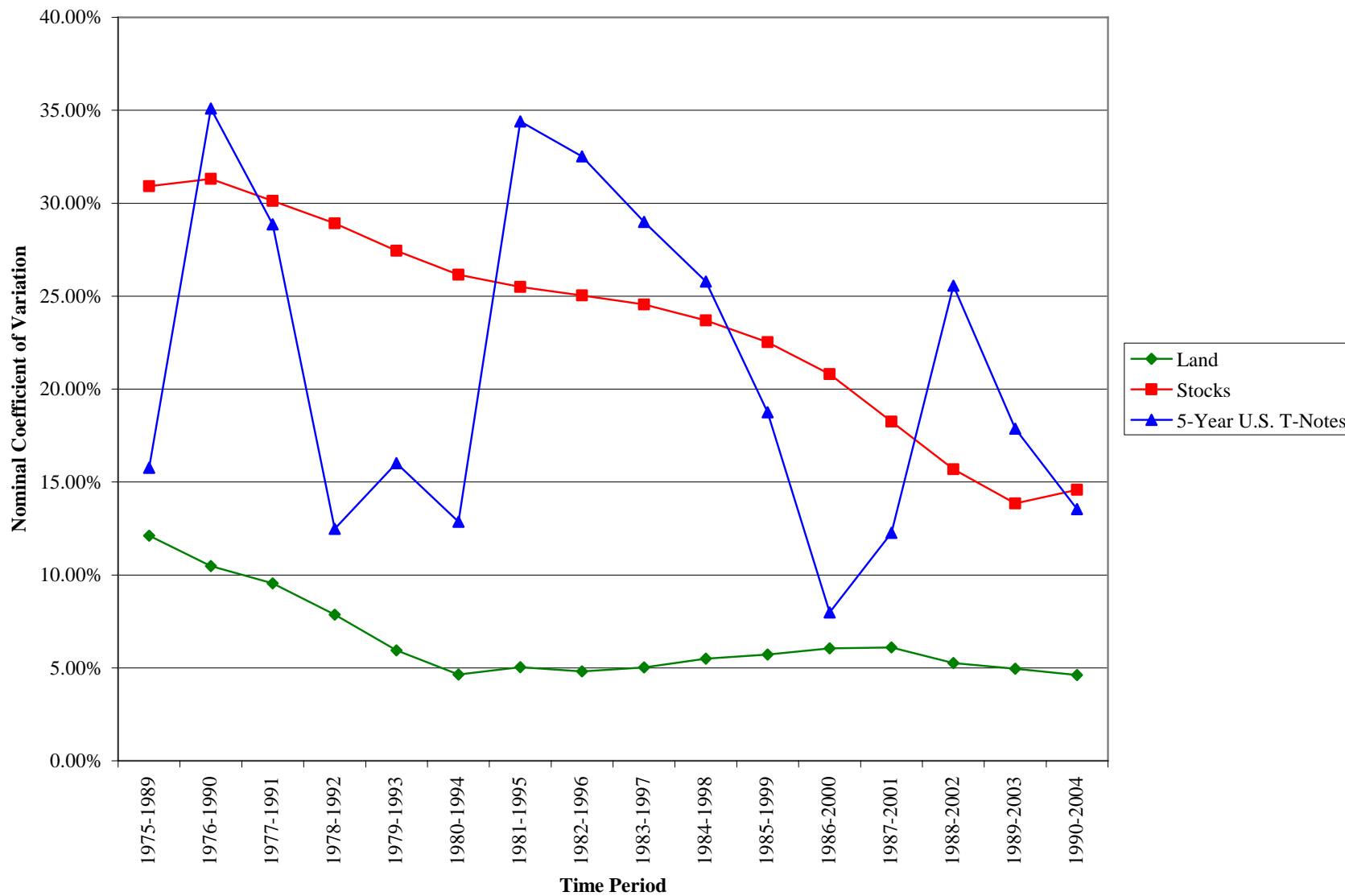


Figure 3.5 Nominal Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

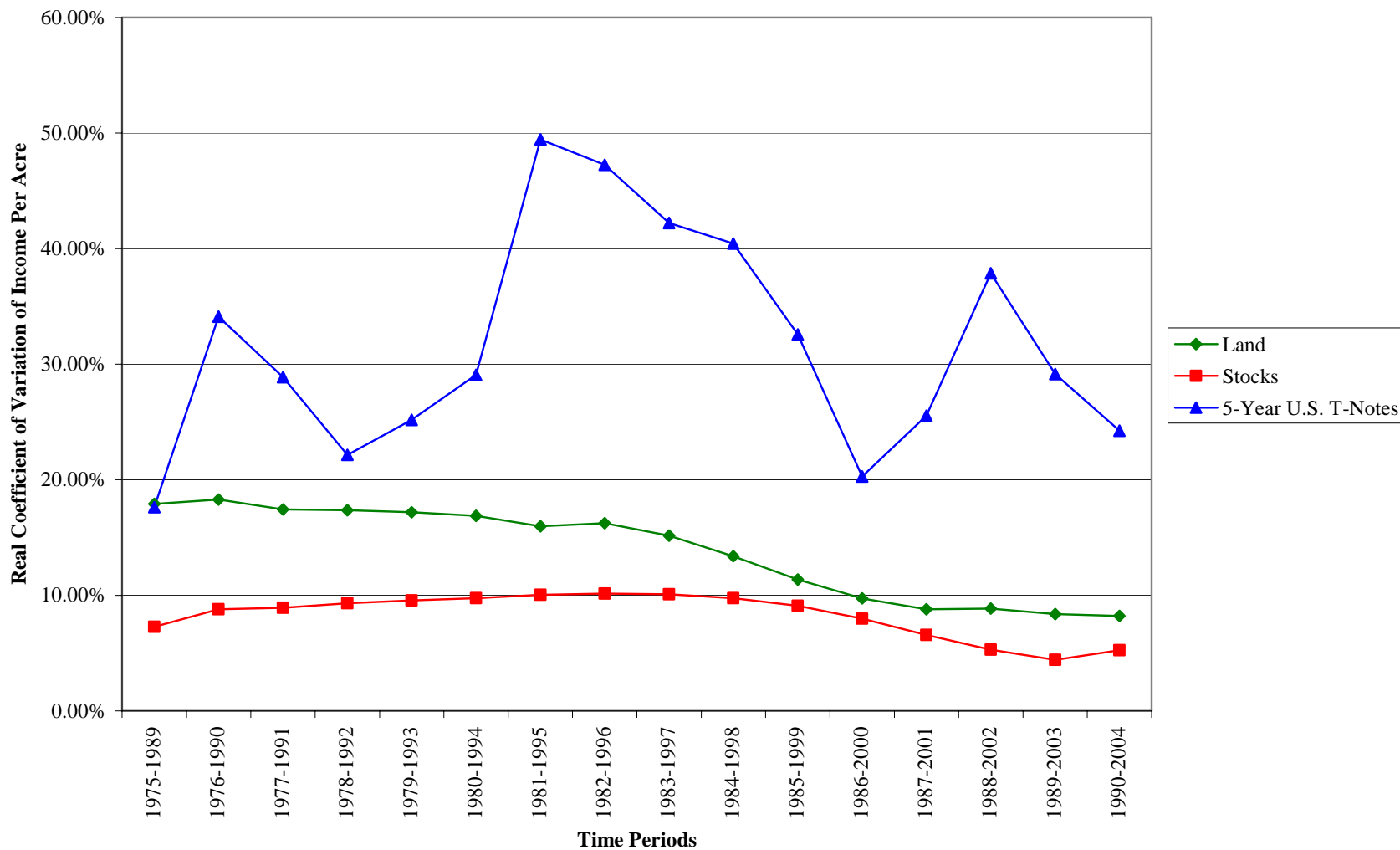


Figure 3.6 Real Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

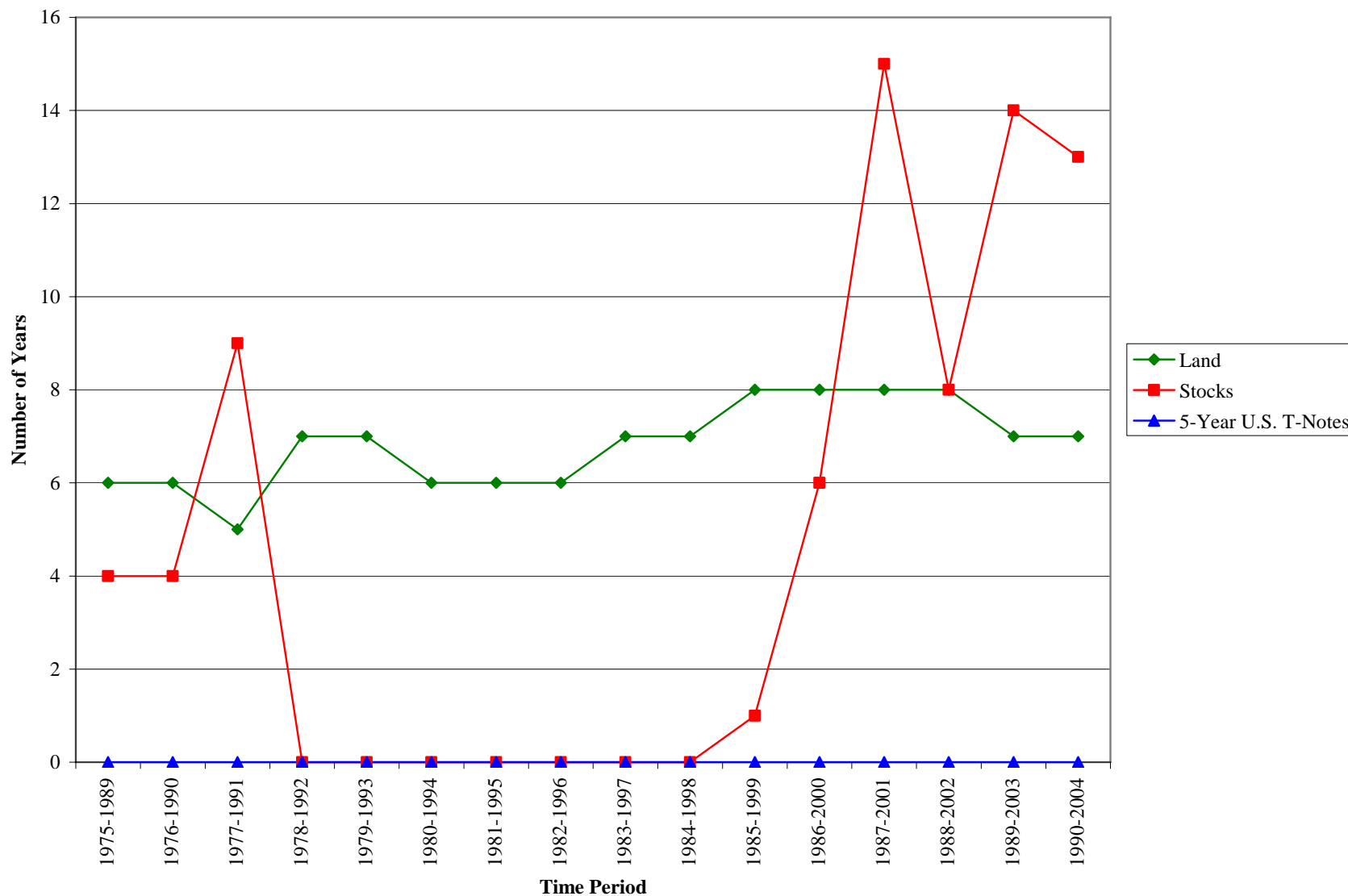


Figure 3.7 Number of Years Nominal Annual Income was Below 15-Year Kansas Nonirrigated Cropland Average Annual Income

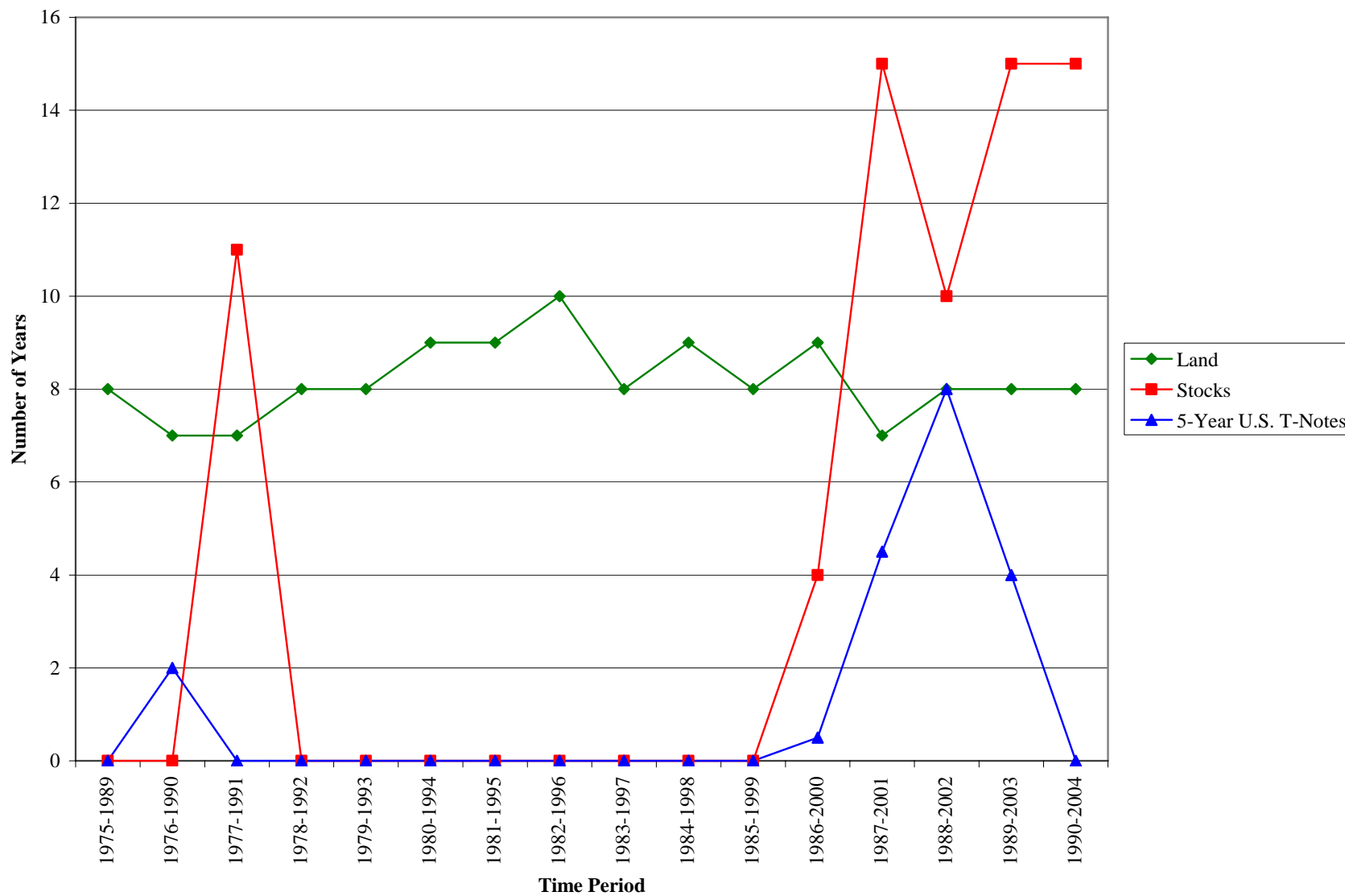


Figure 3.8 Number of Years Real Annual Income was Below 15-Year Kansas Nonirrigated Cropland Average Annual Income

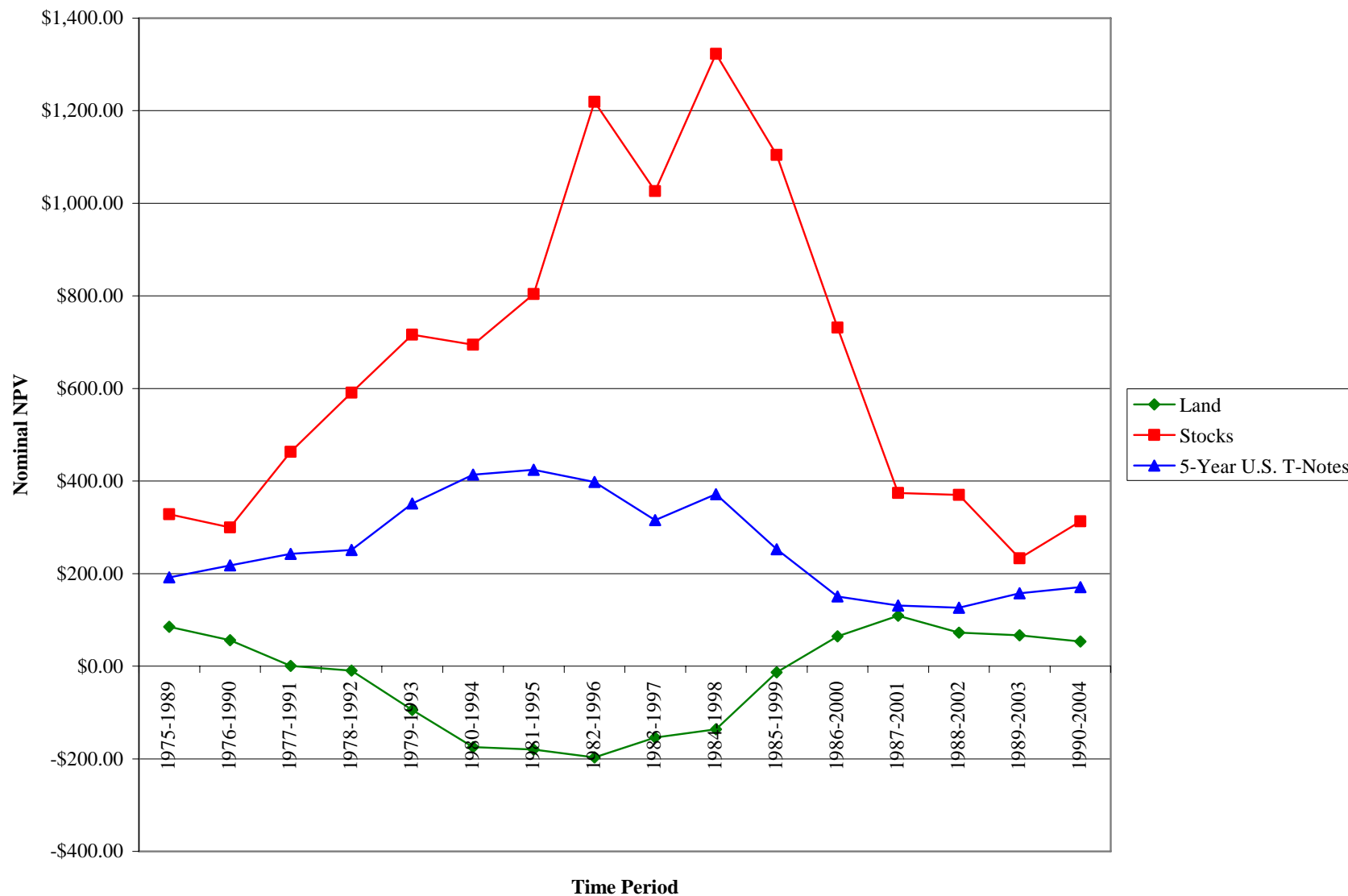


Figure 3.9 Nominal NPVs for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

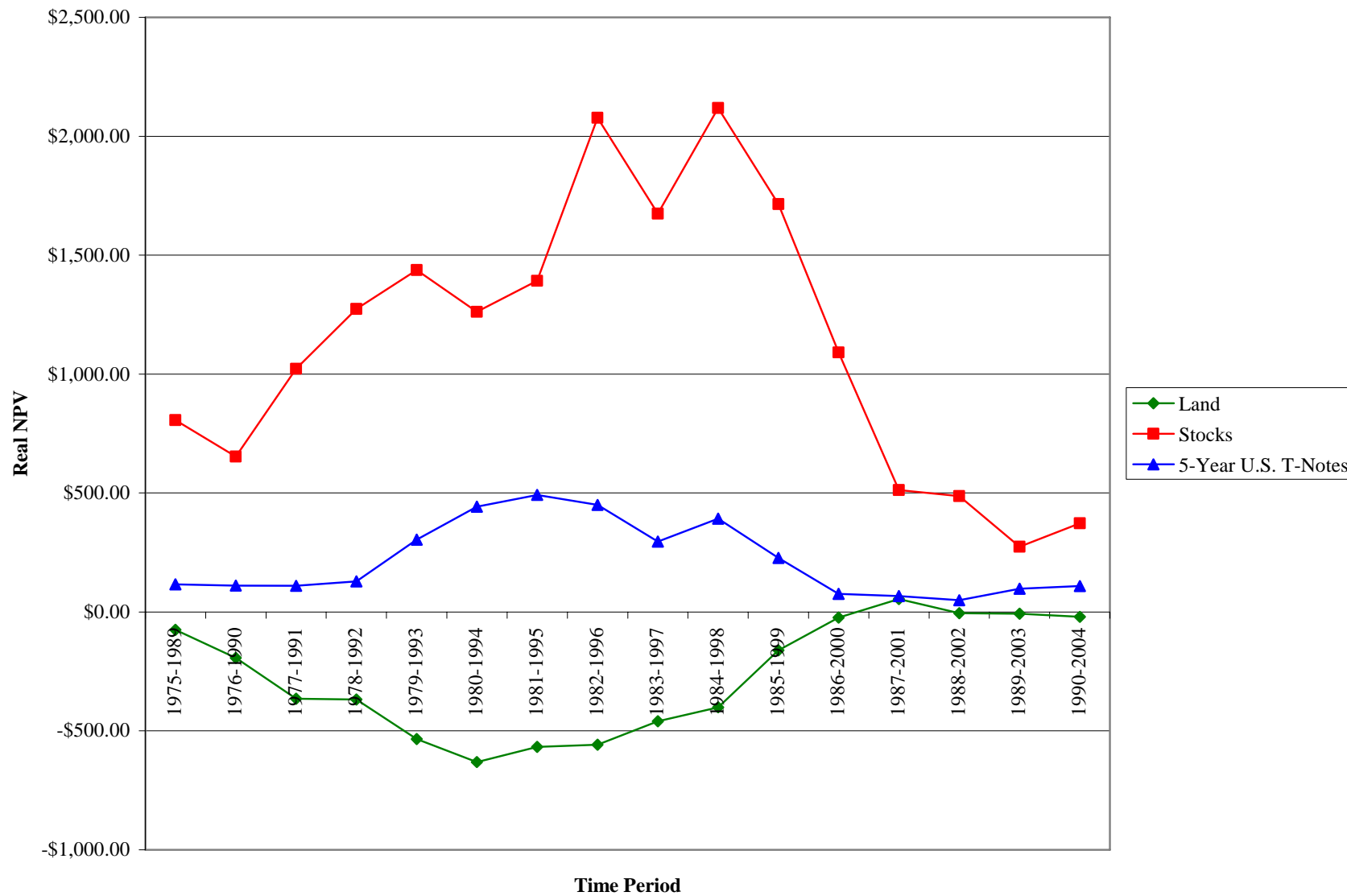


Figure 3.10 Real NPVs for Kansas Nonirrigated Cropland, Stocks, and 5-Year U.S. T-Notes over 15-Year Time Periods

Table 4. Kansas Farmland, Stocks, and Notes: Income Statistics and Net Present Value (NPV) for 10-Year Time Periods

Years	10-Year Average Incomes Per Acre						10-Year Standard Deviations					
	Nonirrigated Cropland		Stocks		10-Year U.S. T-Note ^a		Nonirrigated Cropland		Stocks		10-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1984	\$15.32	\$38.97	\$16.44	\$40.88	\$20.41	\$52.83	\$2.21	\$4.14	\$3.93	\$1.94	\$0	\$12.70
1976-1985	15.87	37.78	17.24	40.18	22.48	56.13	1.97	4.39	3.74	1.73	0	13.36
1977-1986	16.17	36.10	22.48	49.40	25.68	61.90	1.79	4.04	4.14	1.59	0	14.49
1978-1987	16.41	34.52	25.69	53.20	30.52	73.45	1.49	4.29	4.28	1.88	0	17.00
1979-1988	16.73	33.23	30.64	59.87	41.10	92.43	1.10	4.27	5.03	2.69	0	19.90
1980-1989	16.90	31.87	33.61	62.15	58.67	127.58	0.85	4.26	6.33	4.71	0	25.94
1981-1990	17.11	30.79	35.09	61.81	74.97	157.61	0.85	3.99	7.51	6.12	0	29.43
1982-1991	17.23	29.79	41.31	69.80	72.47	147.50	0.84	3.98	9.09	7.31	0	25.02
1983-1992	17.18	28.60	30.96	50.39	58.59	115.57	0.81	3.73	6.68	5.17	0	17.31
1984-1993	17.17	27.50	31.99	50.25	64.34	123.29	0.80	3.22	6.37	4.64	0	16.44
1985-1994	17.12	26.43	23.41	35.55	44.33	82.74	0.76	2.62	4.21	2.81	0	9.89
1986-1995	17.29	25.71	16.51	24.25	27.07	49.37	1.00	1.93	2.71	1.64	0	5.58
1987-1996	17.38	24.94	12.96	18.41	26.71	47.65	0.96	1.86	1.91	1.01	0	5.22
1988-1997	17.66	24.50	16.43	22.59	31.37	54.83	0.80	1.88	2.17	1.01	0	5.99
1989-1998	17.90	24.03	14.56	19.41	30.81	52.84	0.83	1.63	1.78	0.84	0	5.83
1990-1999	18.14	23.64	15.49	20.05	32.87	55.35	0.68	1.63	1.91	1.01	0	6.23
1991-2000	18.23	23.10	14.17	17.85	30.15	49.84	0.74	1.29	1.73	0.91	0	5.64
1992-2001	18.39	22.70	13.49	16.56	27.59	44.77	0.78	1.16	1.49	0.85	0	5.10
1993-2002	18.59	22.39	12.80	15.35	23.24	37.03	0.73	1.19	1.24	0.78	0	4.22
1994-2003	18.74	22.02	13.75	16.11	29.86	46.74	0.70	1.20	1.14	0.74	0	5.34
1995-2004	18.99	21.79	13.20	15.09	29.99	46.12	0.69	1.20	1.22	0.75	0	5.25
Average of 10- Year Periods	17.75	25.61	21.23	32.23	41.44	77.43	0.80	2.30	3.59	2.52	0	11.15

Table 4. Continued

Years	10-Year Coefficients of Variation						Years Income was Below 10-Year Average for Land					
	Nonirrigated Cropland		Stocks		10-Year U.S. T-Note ^a		Nonirrigated Cropland		Stocks		10-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1984	14.44%	10.63%	23.91%	4.74%	0%	24.04%	5	5	4	2	0	1
1976-1985	12.41%	11.63%	21.70%	4.30%	0%	23.80%	4	6	4	1	0	0
1977-1986	11.06%	11.18%	18.42%	3.22%	0%	23.42%	4	6	1	0	0	0
1978-1987	9.07%	12.43%	16.67%	3.53%	0%	23.14%	4	4	0	0	0	0
1979-1988	6.55%	12.86%	16.40%	4.50%	0%	21.53%	6	4	0	0	0	0
1980-1989	5.02%	13.38%	18.85%	7.59%	0%	20.33%	6	5	0	0	0	0
1981-1990	4.96%	12.95%	21.40%	9.91%	0%	18.67%	5	5	0	0	0	0
1982-1991	4.86%	13.37%	22.00%	10.47%	0%	16.96%	4	6	0	0	0	0
1983-1992	4.74%	13.05%	21.56%	10.26%	0%	14.97%	4	6	0	0	0	0
1984-1993	4.69%	11.70%	19.90%	9.23%	0%	13.34%	4	7	0	0	0	0
1985-1994	4.45%	9.90%	17.98%	7.91%	0%	11.95%	4	5	0	0	0	0
1986-1995	5.77%	7.49%	16.44%	6.75%	0%	11.30%	4	5	4	9	0	0
1987-1996	5.52%	7.44%	14.74%	5.50%	0%	10.96%	4	5	10	10	0	0
1988-1997	4.53%	7.68%	13.20%	4.46%	0%	10.92%	5	6	7	10	0	0
1989-1998	4.65%	6.77%	12.22%	4.32%	0%	11.03%	6	6	10	10	0	0
1990-1999	3.77%	6.88%	12.35%	5.02%	0%	11.26%	6	5	9	10	0	0
1991-2000	4.05%	5.58%	12.23%	5.09%	0%	11.32%	5	6	10	10	0	0
1992-2001	4.27%	5.11%	11.07%	5.14%	0%	11.39%	4	5	10	10	0	0
1993-2002	3.90%	5.33%	9.69%	5.10%	0%	11.38%	4	5	10	10	0	0
1994-2003	3.73%	5.43%	8.32%	4.56%	0%	11.41%	3	6	10	10	0	0
1995-2004	3.64%	5.49%	9.23%	4.96%	0%	11.38%	3	6	10	10	0	0
Average of 10- Year Periods	4.53%	8.60%	15.07%	6.64%	0%	13.04%	4.44	5.56	5.63	6.19	0.00	0.00

Table 4. Continued

Years	10-Year NPVs					
	Nonirrigated Cropland		Stocks		10-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real
1975-1984	\$199.88	\$303.49	\$124.44	\$251.02	\$99.68	-\$30.30
1976-1985	89.84	-38.99	125.92	214.99	105.54	-62.19
1977-1986	-9.89	-323.05	280.42	609.11	117.95	-108.72
1978-1987	-58.54	-417.98	432.18	962.78	154.75	-11.37
1979-1988	-118.66	-529.24	415.14	829.87	224.24	53.28
1980-1989	-210.36	-652.26	510.49	960.07	352.82	208.79
1981-1990	-222.67	-602.33	500.75	880.99	486.11	491.95
1982-1991	-246.31	-606.51	725.37	1,258.85	458.93	402.39
1983-1992	-200.03	-500.70	458.28	737.08	347.79	251.27
1984-1993	-183.32	-445.90	527.67	833.43	400.89	404.48
1985-1994	-33.29	-162.99	324.52	480.86	257.69	247.22
1986-1995	65.24	5.78	214.91	295.59	127.93	46.33
1987-1996	111.49	85.67	187.99	248.04	135.23	95.50
1988-1997	77.65	28.39	418.95	587.67	164.63	141.80
1989-1998	72.76	26.86	427.96	580.84	157.26	125.43
1990-1999	53.33	5.25	588.08	782.17	168.56	113.86
1991-2000	57.57	14.65	538.83	688.28	145.35	73.10
1992-2001	50.29	4.32	335.46	402.64	120.22	23.63
1993-2002	52.11	9.31	178.43	194.09	81.93	-36.98
1994-2003	27.51	-23.52	165.43	171.69	131.57	32.87
1995-2004	0.64	-58.31	163.77	162.42	122.08	8.90
Average of 10- Year Periods	-32.96	-179.52	391.68	579.04	228.69	164.41

^a Annual income per acre is based on the coupon rate for a 10-year U.S. Treasury note purchased at the beginning of the period and held to maturity.

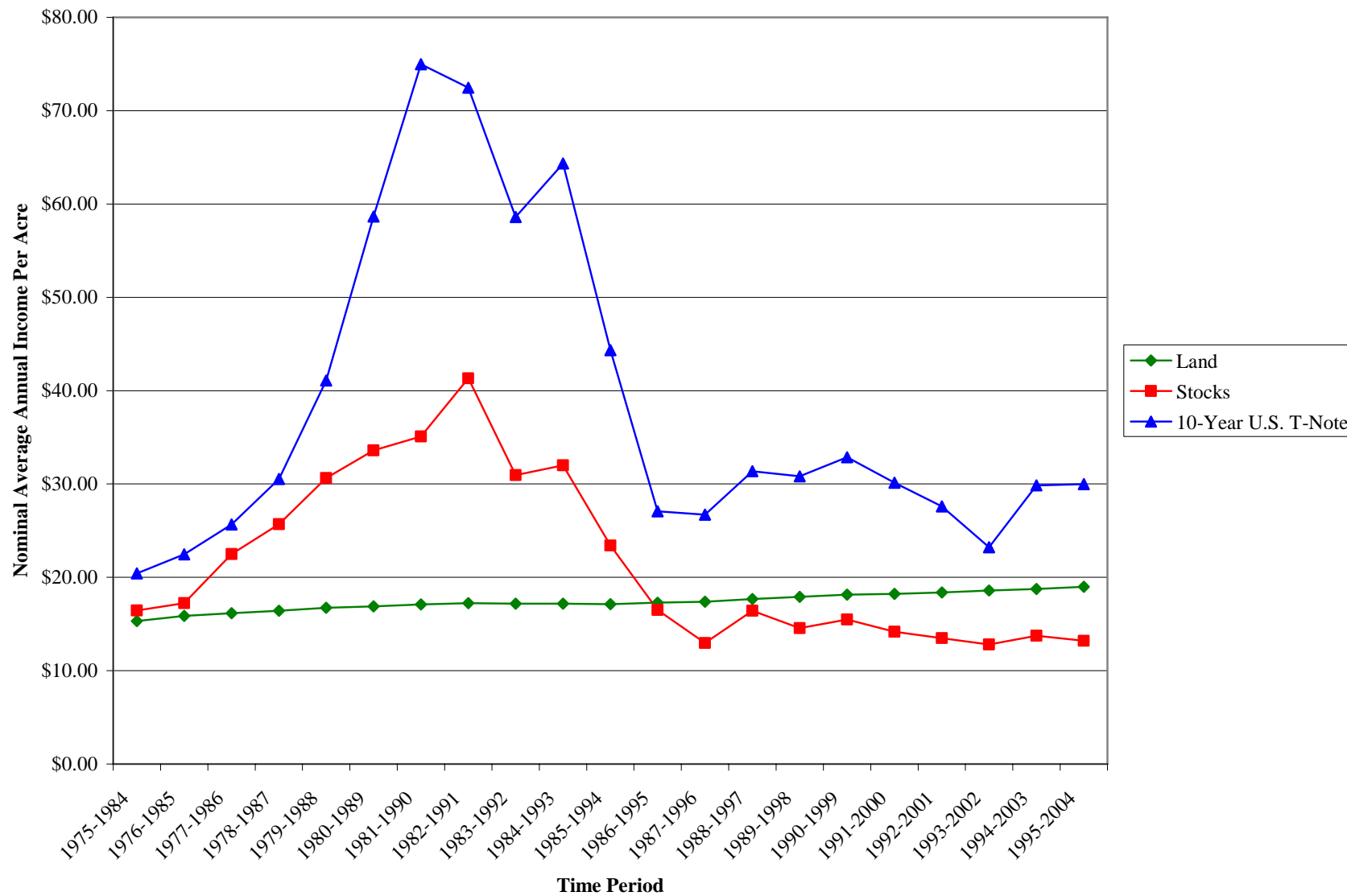


Figure 4.1 Nominal Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

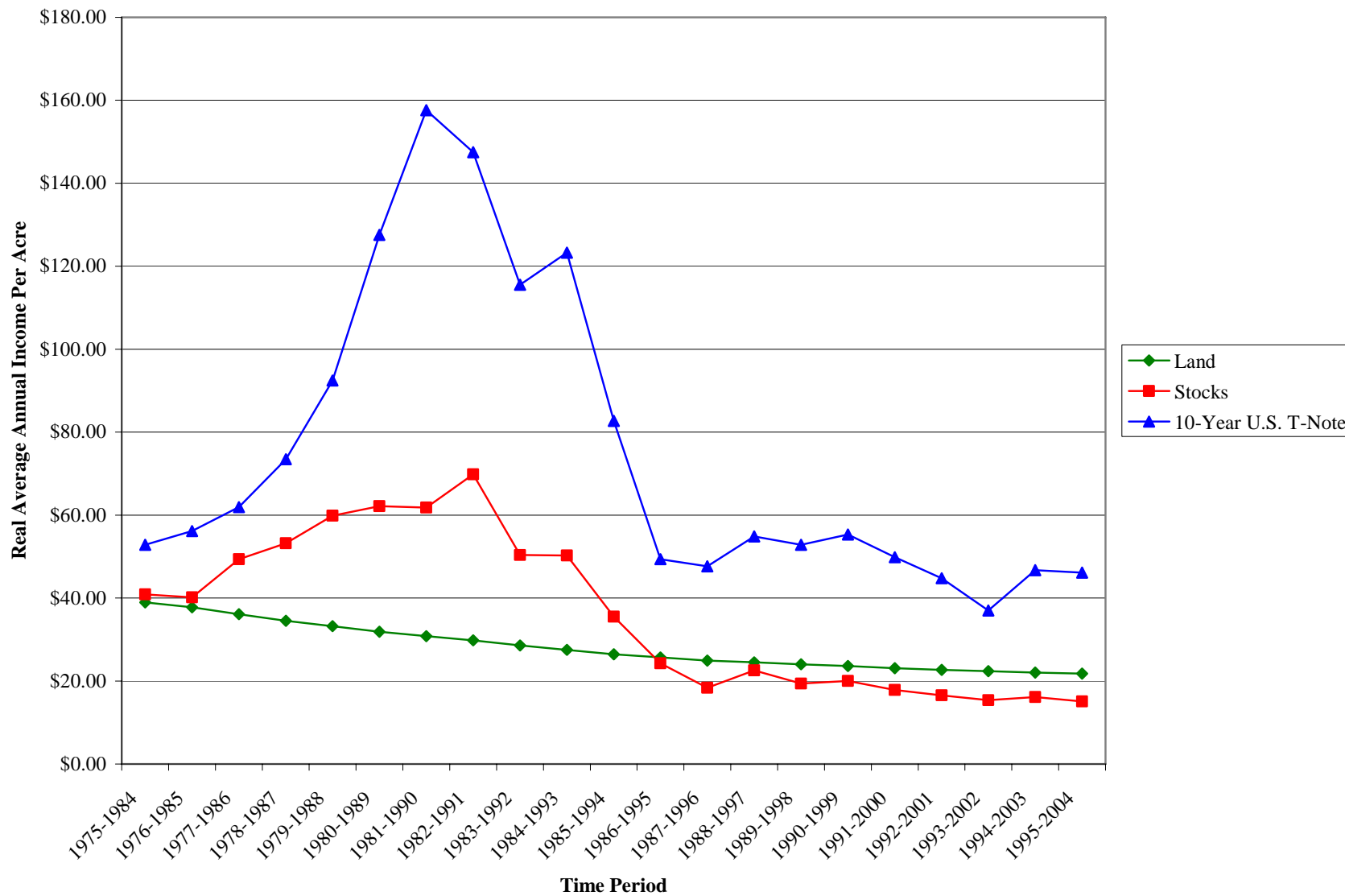


Figure 4.2 Real Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

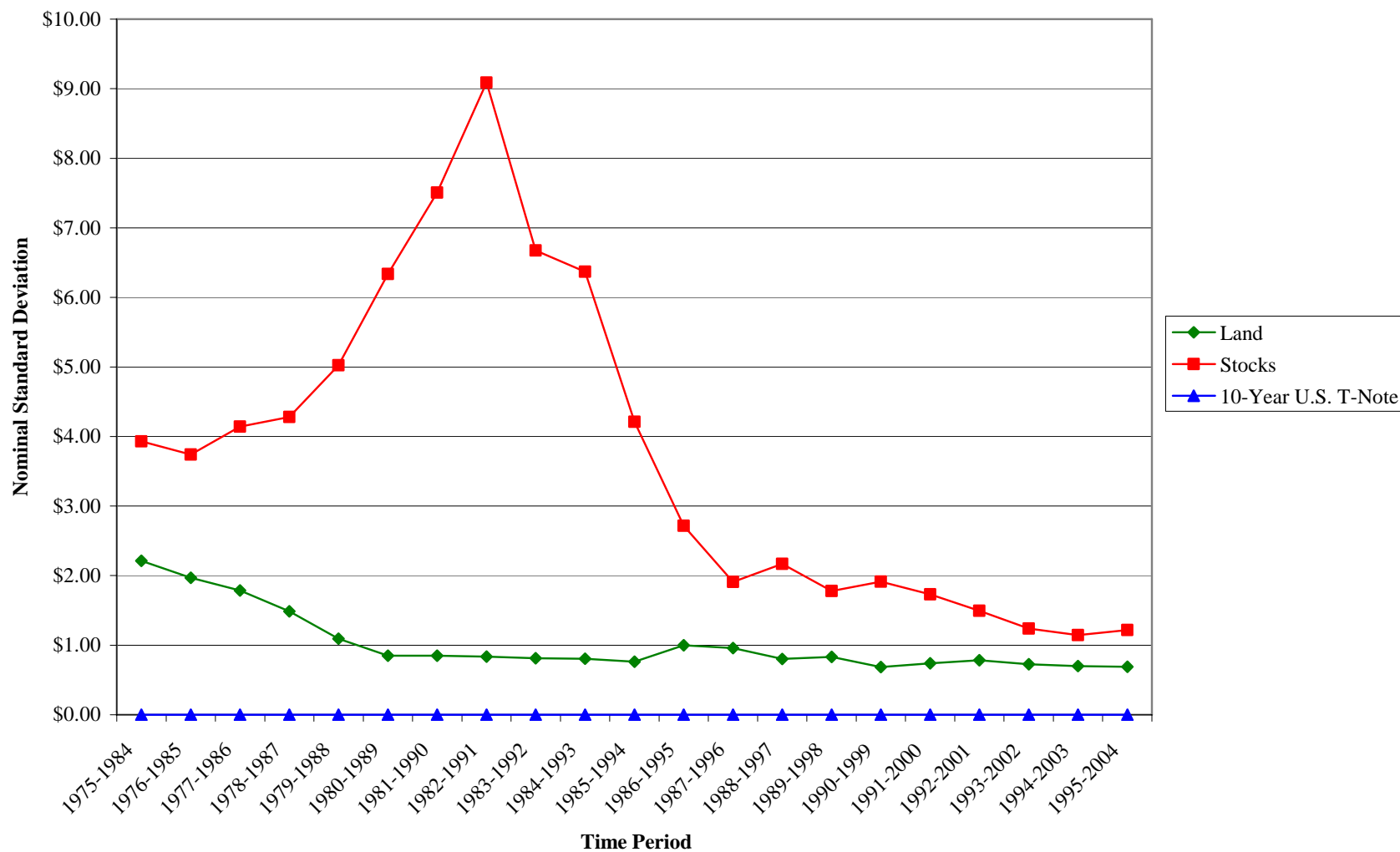


Figure 4.3 Nominal Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

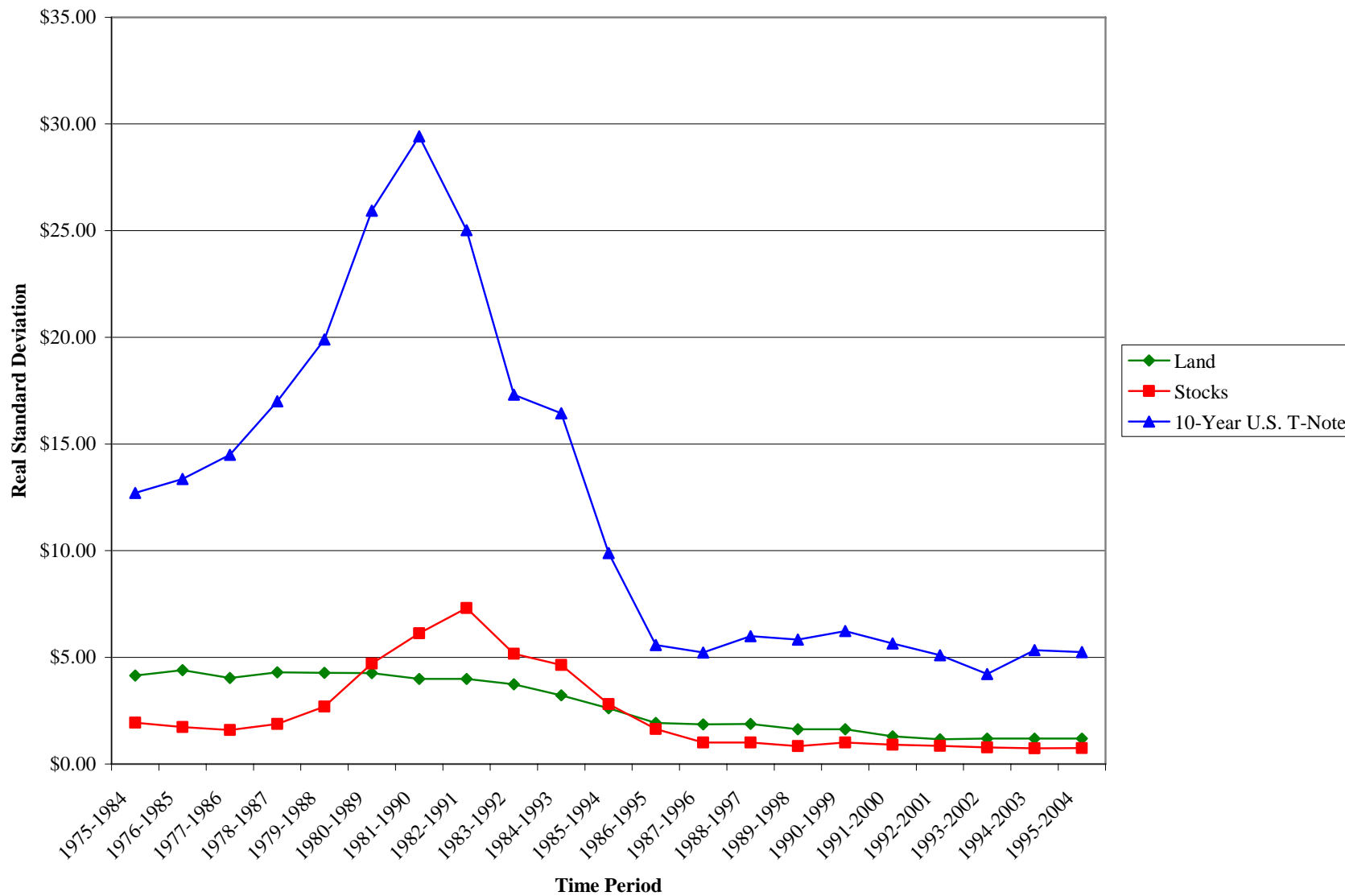


Figure 4.4 Real Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

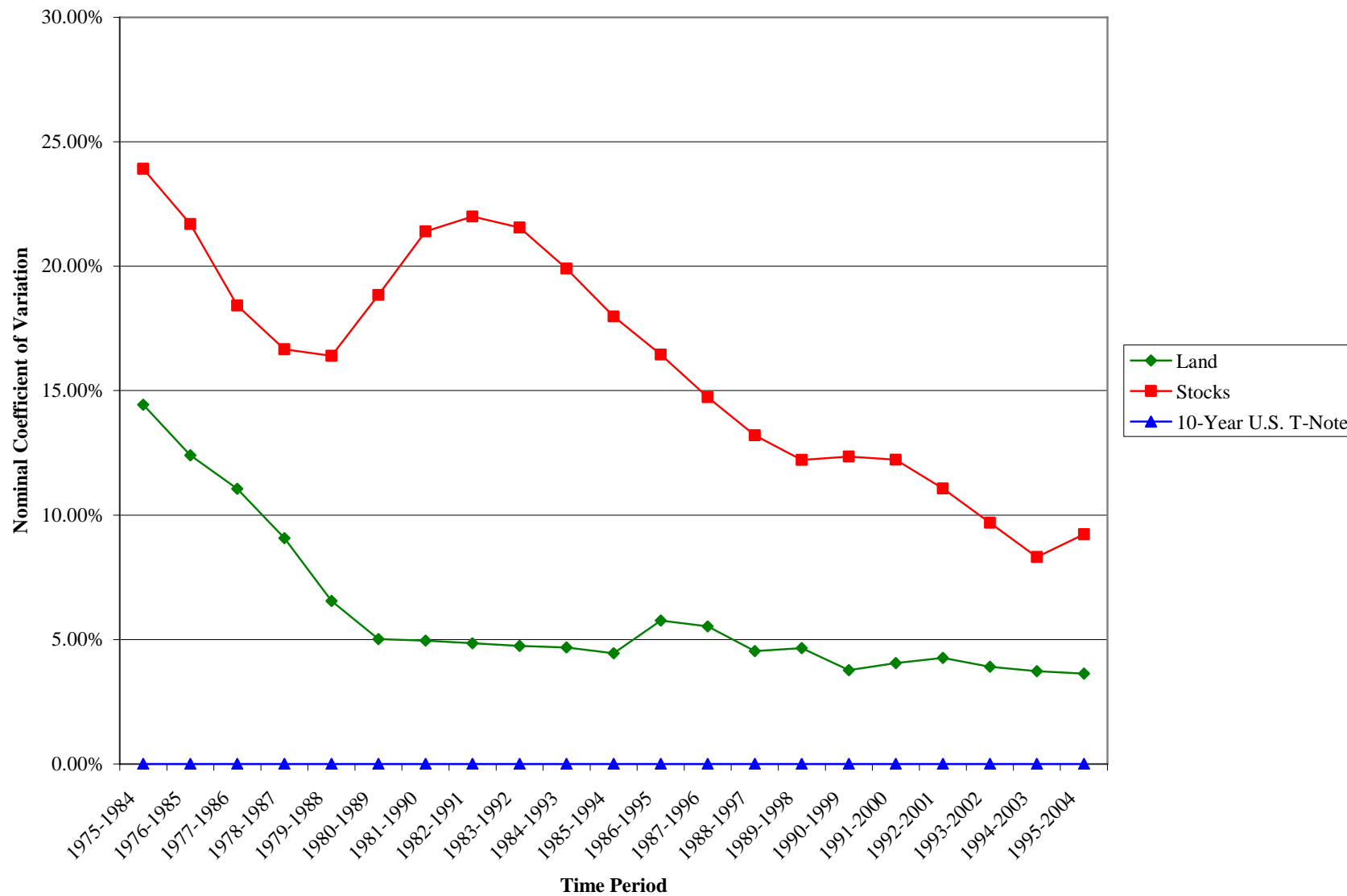


Figure 4.5 Nominal Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

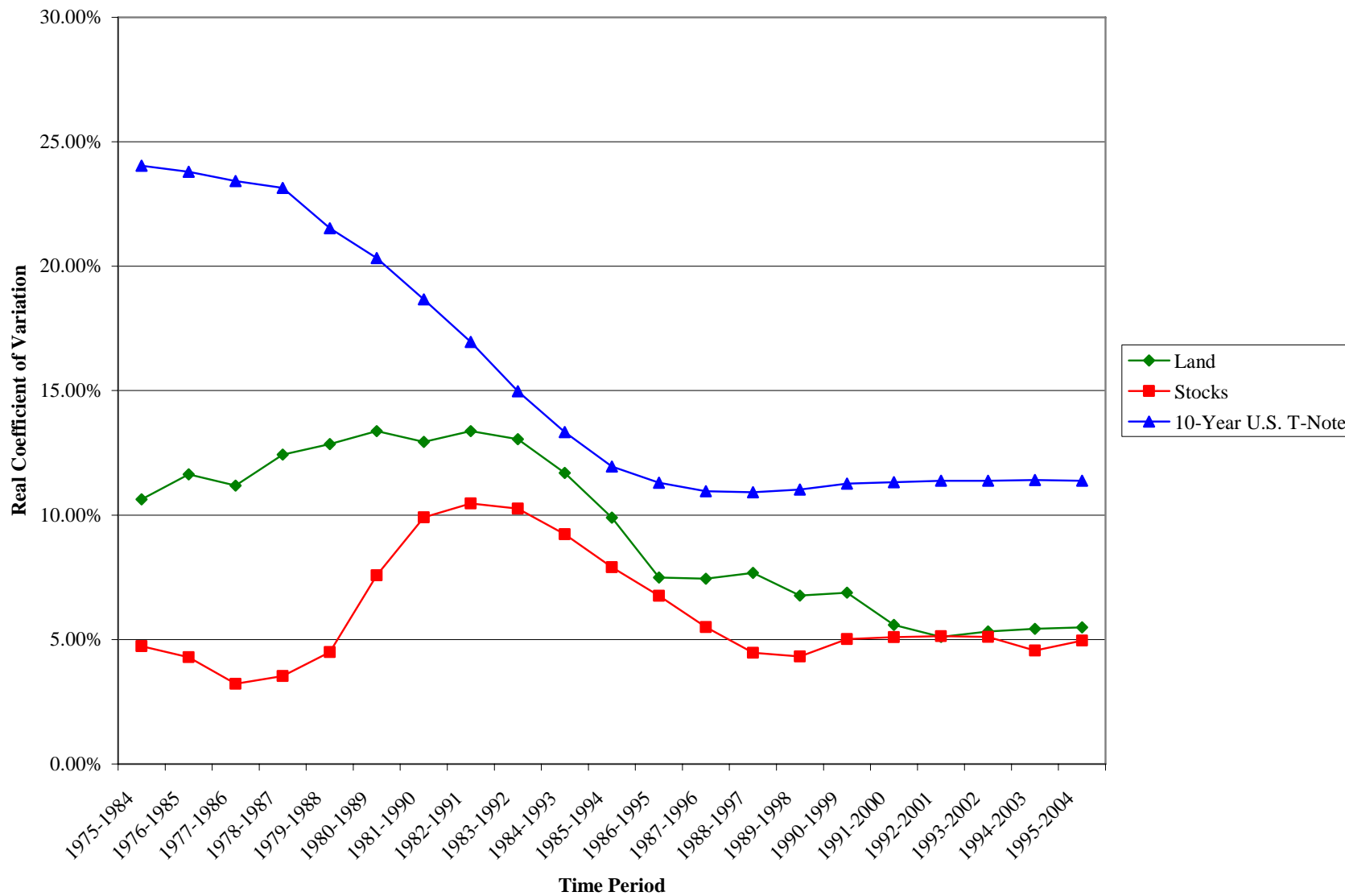


Figure 4.6 Real Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

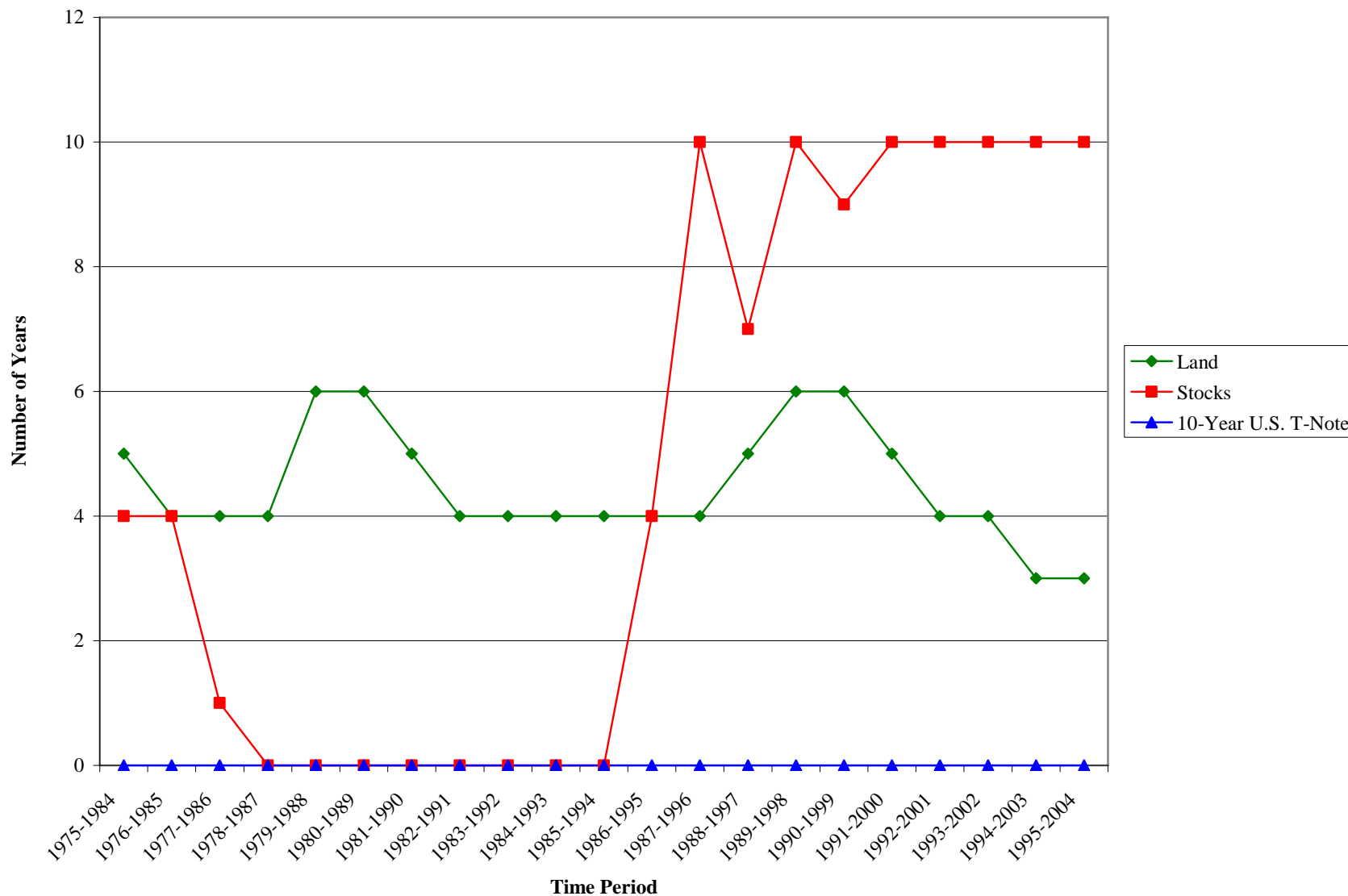


Figure 4.7 Number of Years Nominal Annual Income was Below 10-Year Kansas Nonirrigated Cropland Average Annual Income

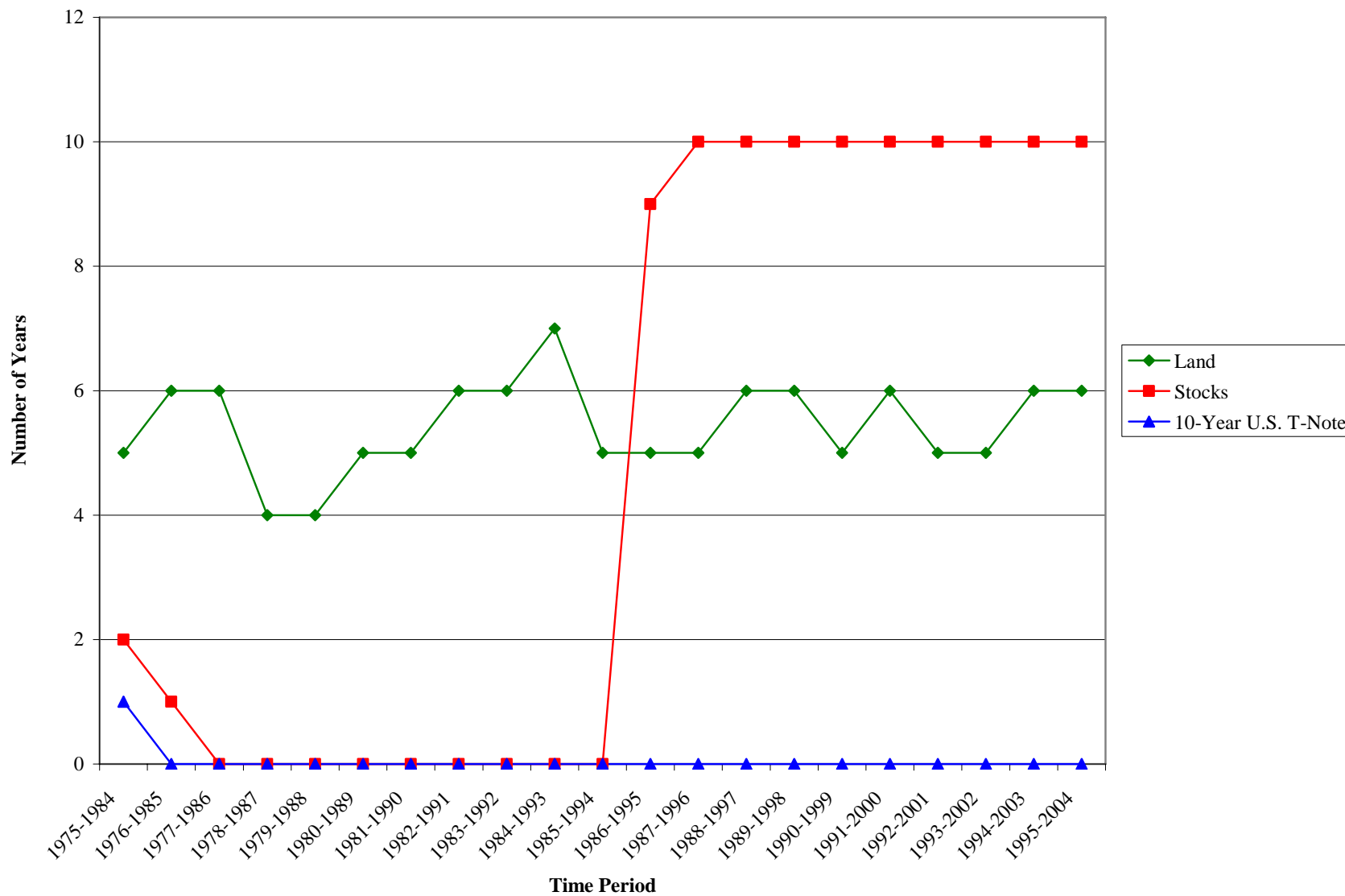


Figure 4.8 Number of Years Real Annual Income was Below 10-Year Kansas Nonirrigated Cropland Average Annual Income

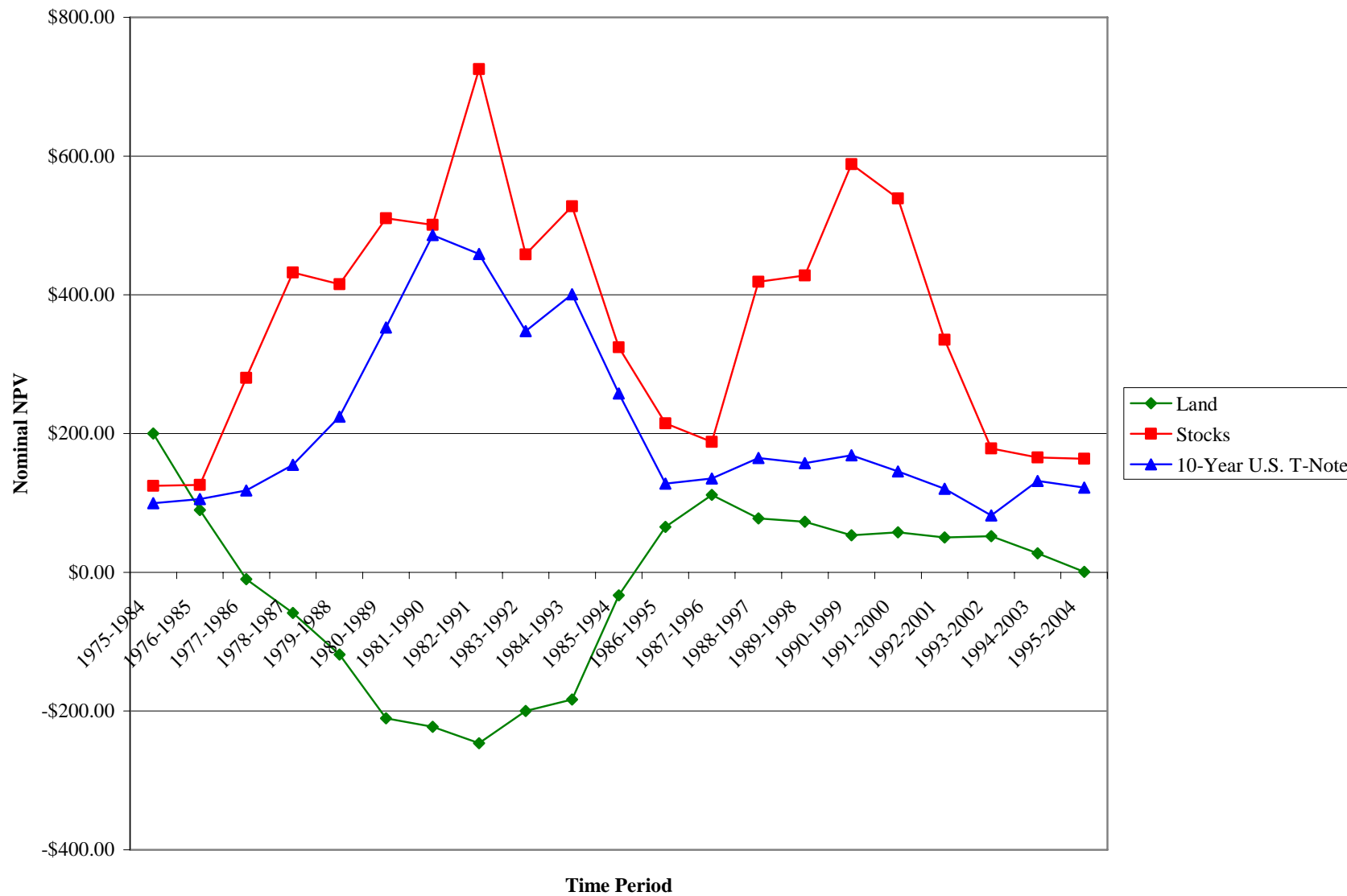


Figure 4.9 Nominal NPVs for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

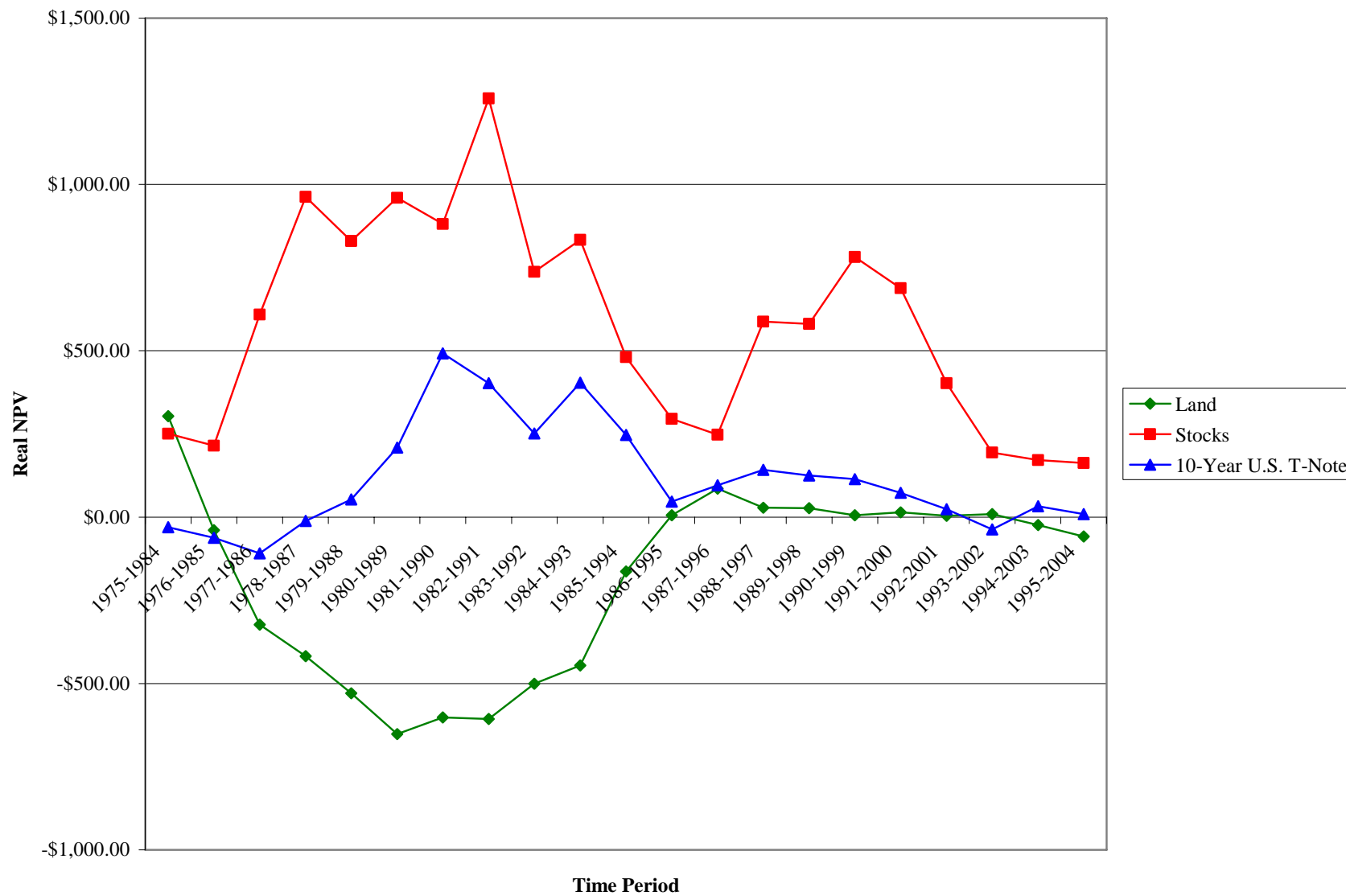


Figure 4.10 Real NPVs for Kansas Nonirrigated Cropland, Stocks, and a 10-Year U.S. T-Note over 10-Year Time Periods

Table 5. Kansas Farmland, Stocks, and Notes: Income Statistics and Net Present Value (NPV) for 5-Year Time Periods

Years	5-Year Average Incomes Per Acre						5-Year Standard Deviations					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Note ^a		Nonirrigated Cropland		Stocks		5-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1979	\$13.40	\$42.40	\$13.11	\$41.06	\$19.88	\$62.28	\$0.95	\$2.66	\$2.34	\$2.68	\$0	\$7.14
1976-1980	14.19	41.24	14.23	40.83	21.21	63.75	1.13	3.27	2.62	2.28	0	8.24
1977-1981	14.79	39.07	19.24	50.44	24.19	69.67	1.43	2.75	2.93	1.26	0	9.93
1978-1982	15.69	37.73	22.40	53.71	30.19	83.12	1.64	2.19	2.80	1.83	0	12.70
1979-1983	16.57	36.65	26.71	59.02	41.44	108.81	1.34	1.85	2.39	2.20	0	17.18
1980-1984	17.24	35.53	28.80	59.31	58.77	147.25	0.95	1.42	1.88	1.57	0	23.58
1981-1985	17.54	34.32	29.41	57.41	76.75	183.54	0.62	1.69	2.02	0.95	0	27.86
1982-1986	17.55	33.12	33.97	63.86	72.47	165.85	0.61	2.65	2.52	1.56	0	23.14
1983-1987	17.13	31.32	25.23	45.87	56.96	124.92	1.01	3.31	2.21	1.73	0	14.93
1984-1988	16.88	29.81	26.30	46.18	63.31	133.68	0.91	2.90	2.68	2.37	0	13.41
1985-1989	16.56	28.20	19.86	33.59	42.24	86.28	0.65	2.31	2.78	2.71	0	6.97
1986-1990	16.67	27.26	14.47	23.50	25.76	51.23	0.87	1.32	2.31	2.10	0	3.58
1987-1991	16.91	26.45	11.61	18.07	25.28	49.07	0.97	0.89	1.60	1.30	0	2.96
1988-1992	17.23	25.88	14.87	22.25	30.06	57.23	0.68	1.37	1.47	1.00	0	3.06
1989-1993	17.46	25.19	13.16	18.97	30.85	57.77	0.64	1.23	0.61	0.43	0	2.85
1990-1994	17.69	24.65	13.87	19.29	32.17	59.32	0.28	1.47	0.39	0.47	0	2.94
1991-1995	17.91	24.17	12.66	17.07	28.27	51.26	0.72	0.80	0.65	0.31	0	2.46
1992-1996	17.86	23.43	12.21	15.99	24.36	43.42	0.75	1.13	0.88	0.49	0	2.07
1993-1997	18.10	23.12	11.83	15.07	20.35	35.65	0.72	1.15	1.02	0.66	0	1.72
1994-1998	18.35	22.87	12.98	16.15	28.18	48.49	0.81	1.04	1.12	0.78	0	2.54
1995-1999	18.58	22.63	12.55	15.26	29.13	49.23	0.69	1.11	0.90	0.59	0	2.73
1996-2000	18.55	22.04	10.69	12.69	28.78	47.76	0.67	0.53	0.53	0.34	0	2.92
1997-2001	18.93	21.96	8.42	9.78	29.35	47.74	0.32	0.63	0.24	0.43	0	3.23
1998-2002	19.09	21.65	6.88	7.81	24.50	39.00	0.23	0.73	0.14	0.43	0	2.74
1999-2003	19.13	21.18	5.74	6.35	26.61	41.44	0.24	0.58	0.18	0.31	0	2.87
2000-2004	19.41	20.94	5.56	6.00	29.78	45.39	0.41	0.44	0.49	0.37	0	3.11
Average of 5-Year Periods	18.03	23.85	11.71	16.12	28.48	50.64	0.60	1.05	0.96	0.79	0	3.05

Table 5. Continued

Years	5-Year Coefficients of Variation						Years Income was Below 5-Year Average for Land					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Note ^a		Nonirrigated Cropland		Stocks		5-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
1975-1979	7.09%	6.28%	17.82%	6.53%	0%	11.46%	2	2	3	3	0	0
1976-1980	7.99%	7.93%	18.43%	5.59%	0%	12.93%	3	3	2	2	0	0
1977-1981	9.67%	7.04%	15.25%	2.51%	0%	14.25%	3	2	0	0	0	0
1978-1982	10.44%	5.81%	12.52%	3.40%	0%	15.28%	2	3	0	0	0	0
1979-1983	8.10%	5.04%	8.94%	3.73%	0%	15.79%	3	3	0	0	0	0
1980-1984	5.52%	4.00%	6.53%	2.65%	0%	16.01%	2	3	0	0	0	0
1981-1985	3.55%	4.93%	6.87%	1.65%	0%	15.18%	2	2	0	0	0	0
1982-1986	3.48%	8.01%	7.41%	2.44%	0%	13.95%	2	2	0	0	0	0
1983-1987	5.90%	10.57%	8.74%	3.77%	0%	11.95%	2	2	0	0	0	0
1984-1988	5.41%	9.72%	10.20%	5.13%	0%	10.03%	3	3	0	0	0	0
1985-1989	3.92%	8.18%	14.01%	8.06%	0%	8.07%	3	3	0	0	0	0
1986-1990	5.21%	4.83%	15.94%	8.96%	0%	6.99%	3	3	4	5	0	0
1987-1991	5.75%	3.37%	13.76%	7.17%	0%	6.03%	3	2	5	5	0	0
1988-1992	3.95%	5.28%	9.85%	4.49%	0%	5.35%	2	3	5	5	0	0
1989-1993	3.69%	4.89%	4.61%	2.27%	0%	4.92%	2	2	5	5	0	0
1990-1994	1.60%	5.98%	2.84%	2.43%	0%	4.96%	2	3	5	5	0	0
1991-1995	4.04%	3.32%	5.16%	1.83%	0%	4.80%	4	3	5	5	0	0
1992-1996	4.21%	4.81%	7.19%	3.08%	0%	4.77%	4	2	5	5	0	0
1993-1997	3.96%	4.99%	8.59%	4.38%	0%	4.83%	3	3	5	5	0	0
1994-1998	4.40%	4.56%	8.62%	4.83%	0%	5.24%	2	3	5	5	0	0
1995-1999	3.73%	4.92%	7.19%	3.84%	0%	5.55%	2	3	5	5	0	0
1996-2000	3.60%	2.42%	4.97%	2.65%	0%	6.11%	2	3	5	5	0	0
1997-2001	1.68%	2.88%	2.89%	4.45%	0%	6.77%	2	3	5	5	0	0
1998-2002	1.21%	3.36%	2.02%	5.55%	0%	7.04%	3	3	5	5	0	0
1999-2003	1.27%	2.74%	3.15%	4.83%	0%	6.93%	2	2	5	5	0	0
2000-2004	2.10%	2.08%	8.78%	6.16%	0%	6.85%	4	3	5	5	0	0
Average of 5- Year Periods	3.40%	4.29%	7.47%	4.69%	0%	5.95%	2.69	2.75	4.63	4.69	0.00	0.00

Table 5. Continued

Years	5-Year NPVs					
	Nonirrigated Cropland		Stocks		5-Year U.S. T-Note ^a	
	Nominal	Real	Nominal	Real	Nominal	Real
1975-1979	\$160.31	\$370.89	\$27.27	\$13.71	\$50.90	-\$43.13
1976-1980	187.61	364.46	20.47	-36.65	50.64	-79.80
1977-1981	157.13	202.48	71.91	89.11	56.28	-108.72
1978-1982	158.78	185.51	69.50	69.41	81.36	-82.44
1979-1983	58.35	-59.56	185.60	343.54	121.70	-69.15
1980-1984	-32.72	-222.88	126.87	191.59	189.42	-38.69
1981-1985	-170.75	-445.48	173.82	292.39	268.55	145.78
1982-1986	-264.33	-582.42	412.93	755.58	245.77	57.54
1983-1987	-265.52	-563.43	286.29	493.35	178.68	-0.55
1984-1988	-212.63	-443.86	235.42	384.69	209.91	124.22
1985-1989	-76.05	-185.77	206.64	325.21	128.34	81.64
1986-1990	24.71	-17.32	80.97	101.84	62.47	3.60
1987-1991	62.57	46.86	41.67	35.92	65.79	49.87
1988-1992	33.60	-2.36	123.01	160.04	82.09	96.17
1989-1993	27.46	-7.35	71.46	78.11	84.38	109.72
1990-1994	27.21	-1.25	68.94	74.68	87.07	82.88
1991-1995	59.47	46.96	82.22	92.80	69.14	45.96
1992-1996	56.43	40.96	132.48	157.02	49.45	3.91
1993-1997	60.34	46.67	227.98	278.26	30.50	-30.00
1994-1998	37.23	17.24	379.40	465.59	62.66	7.69
1995-1999	3.31	-25.11	436.70	524.46	61.37	-0.15
1996-2000	-3.58	-33.80	322.71	370.53	58.29	-17.39
1997-2001	-5.16	-36.70	43.96	32.23	59.93	-39.33
1998-2002	-5.25	-37.27	-133.31	-174.27	36.87	-85.77
1999-2003	-5.92	-37.90	-225.39	-275.27	46.04	-59.47
2000-2004	4.40	-23.35	-198.44	-236.03	60.05	-40.87
Average of 5- Year Periods	18.80	-13.09	103.81	125.70	65.28	13.03

^a Annual income per acre is based on the coupon rate for a 5-year U.S. Treasury note purchased at the beginning of the period and held to maturity.

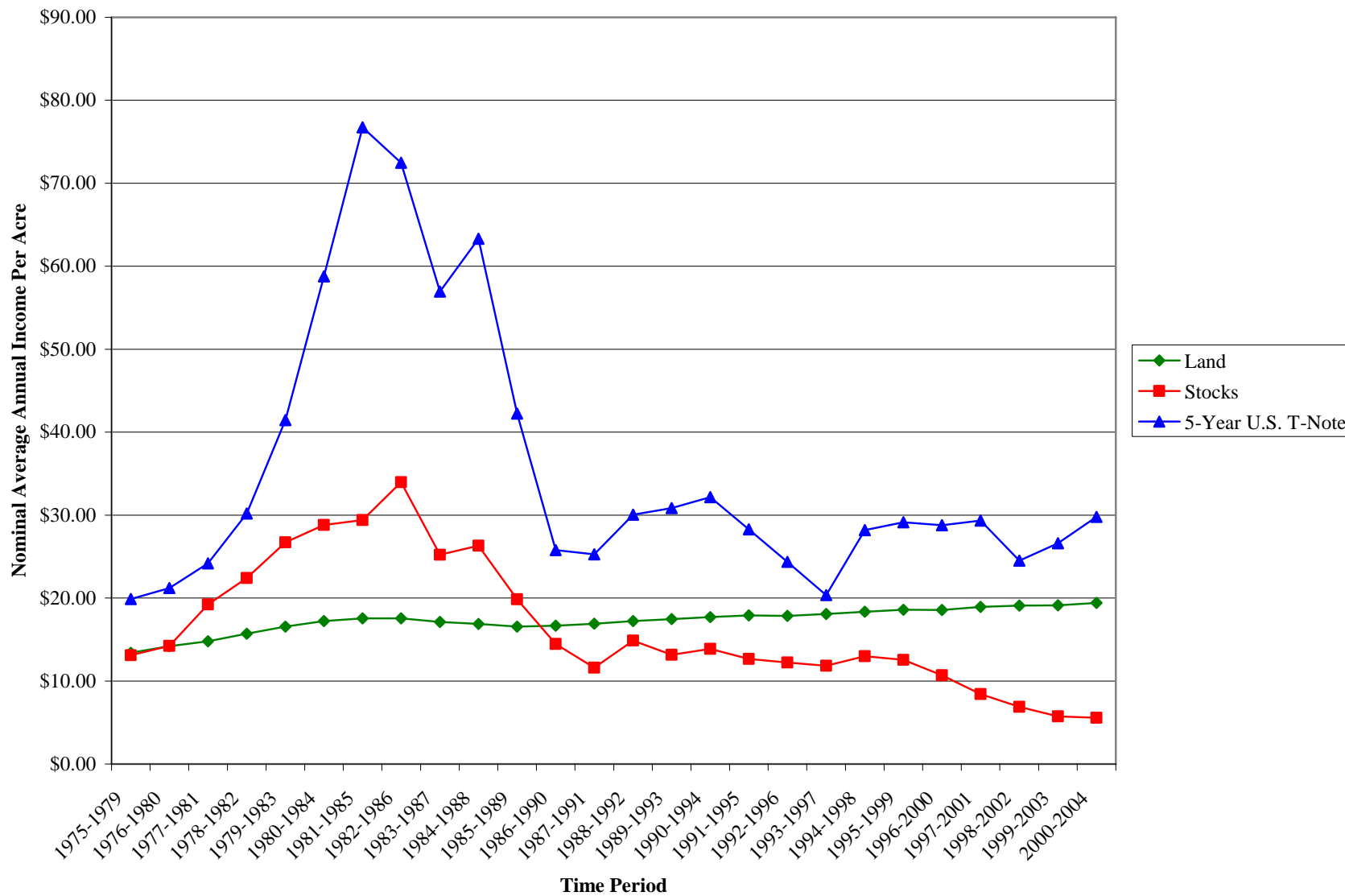


Figure 5.1 Nominal Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

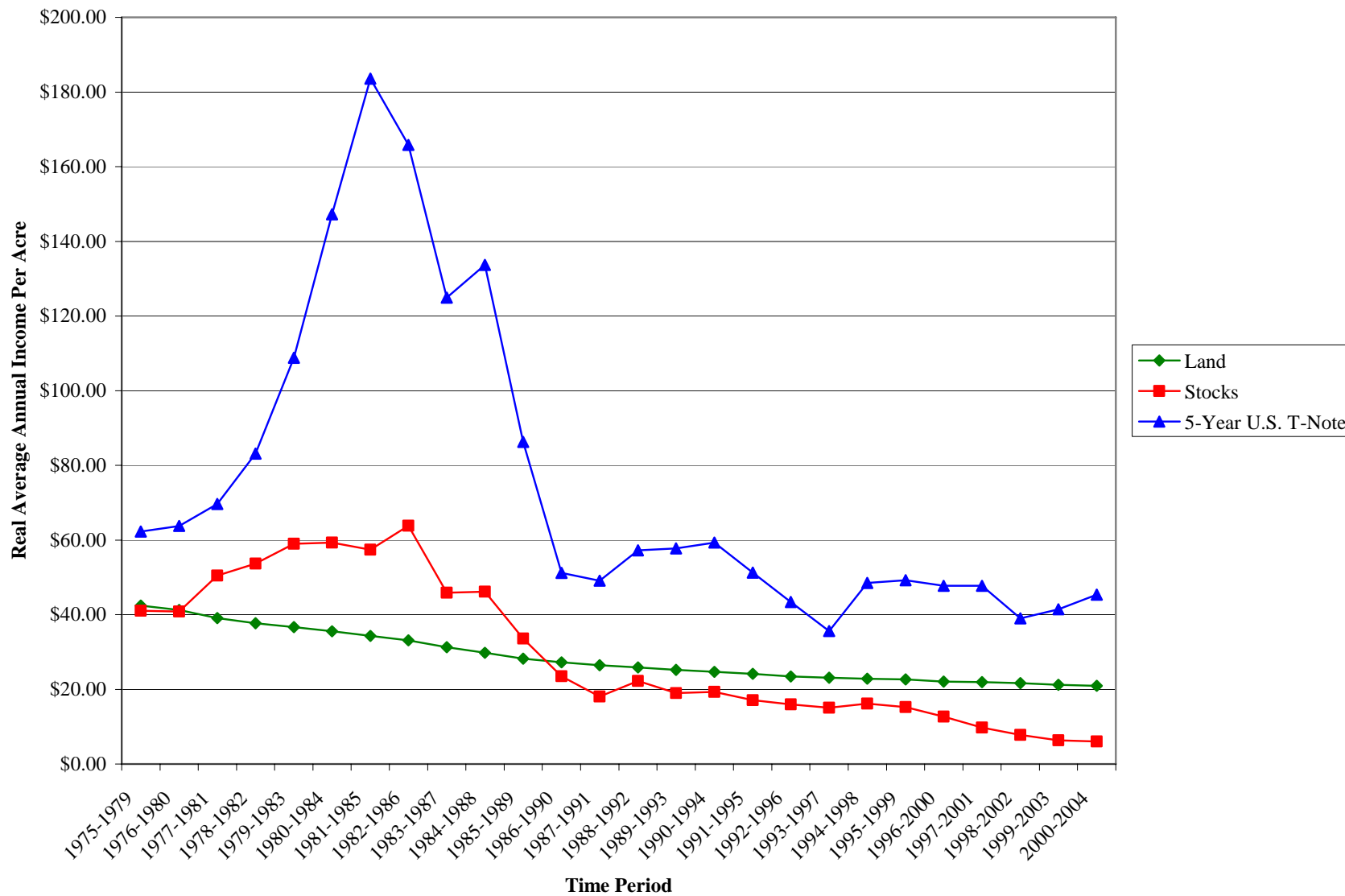


Figure 5.2 Real Average Annual Incomes per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

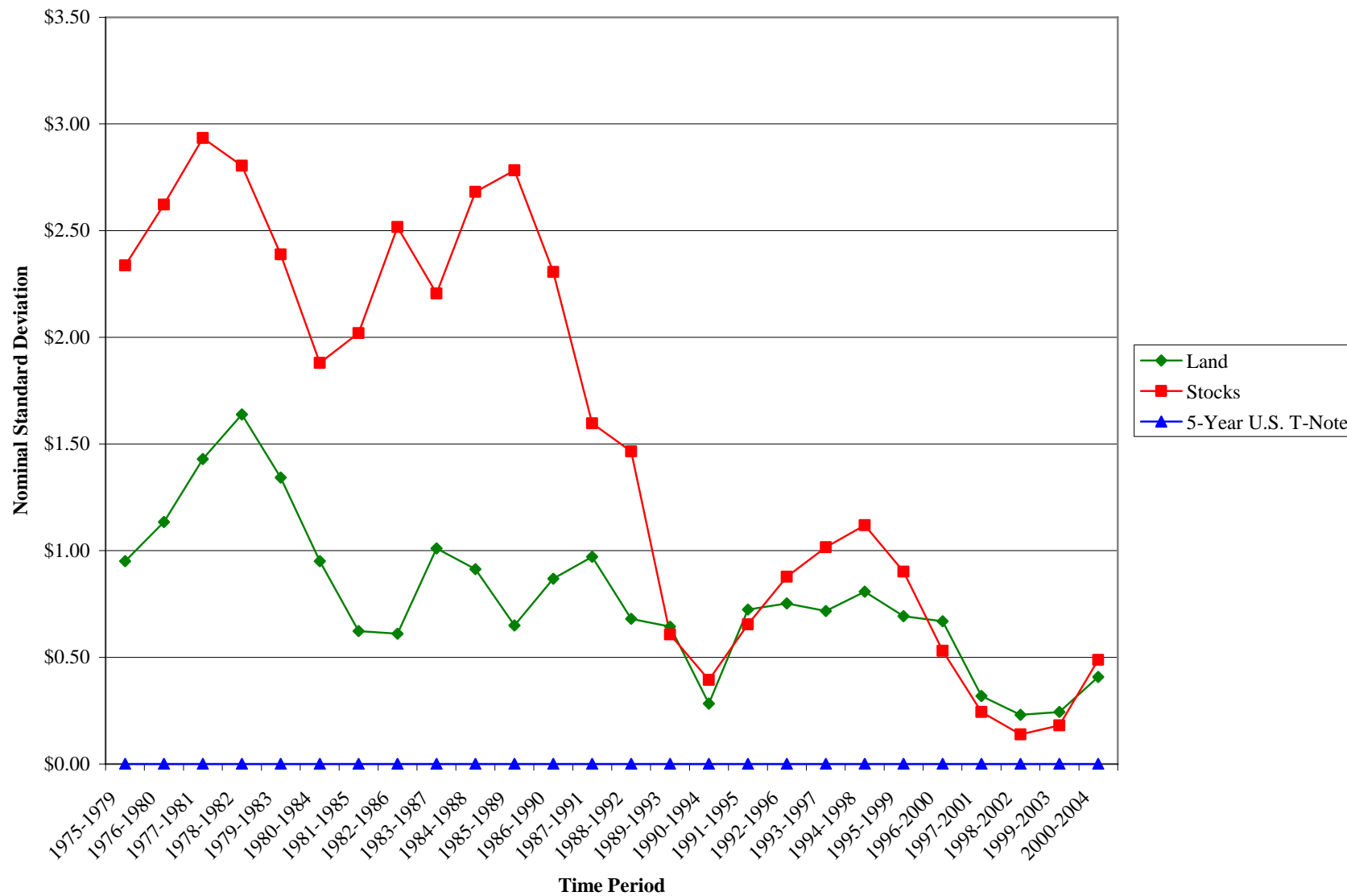


Figure 5.3 Nominal Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

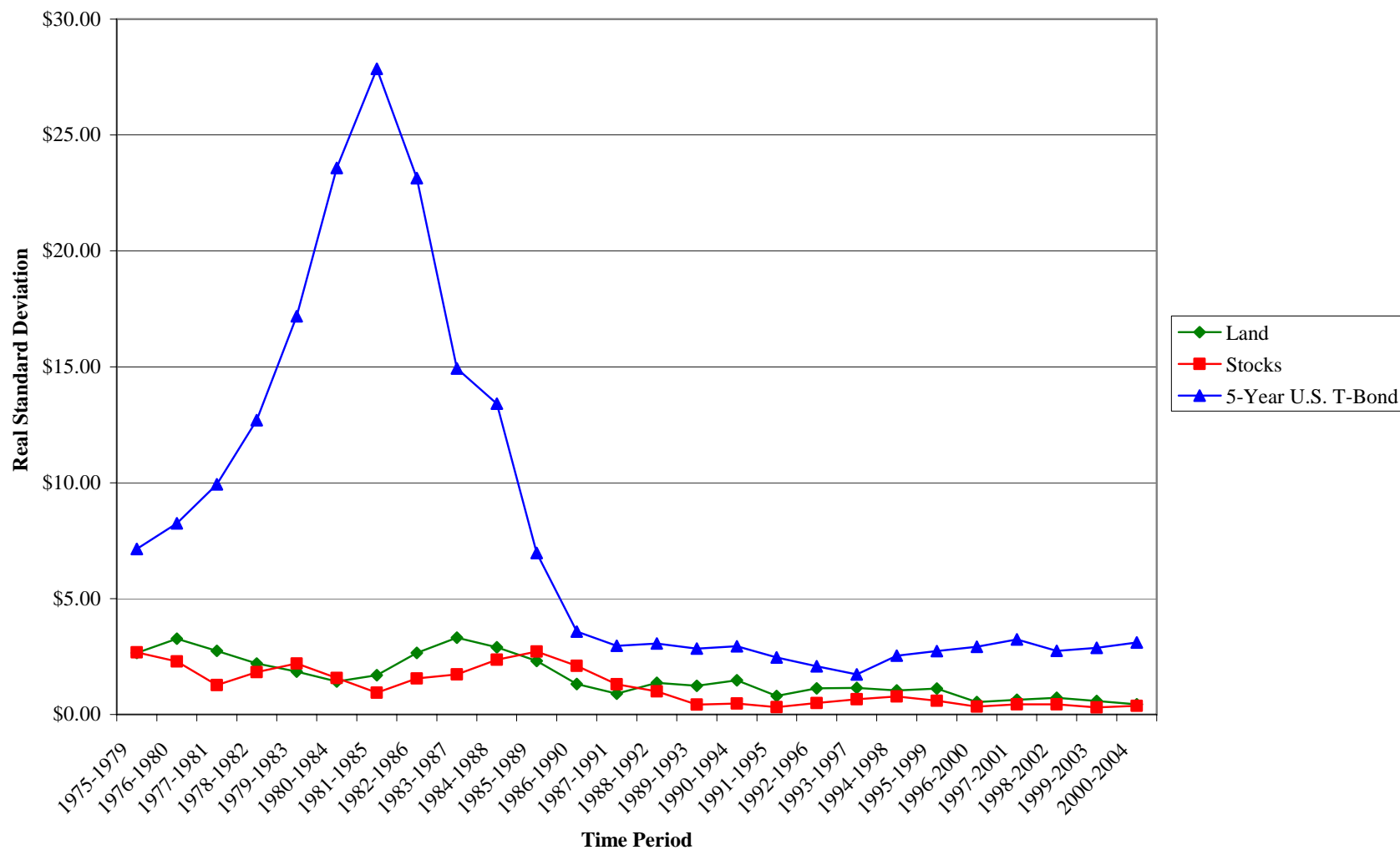


Figure 5.4 Real Standard Deviations of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

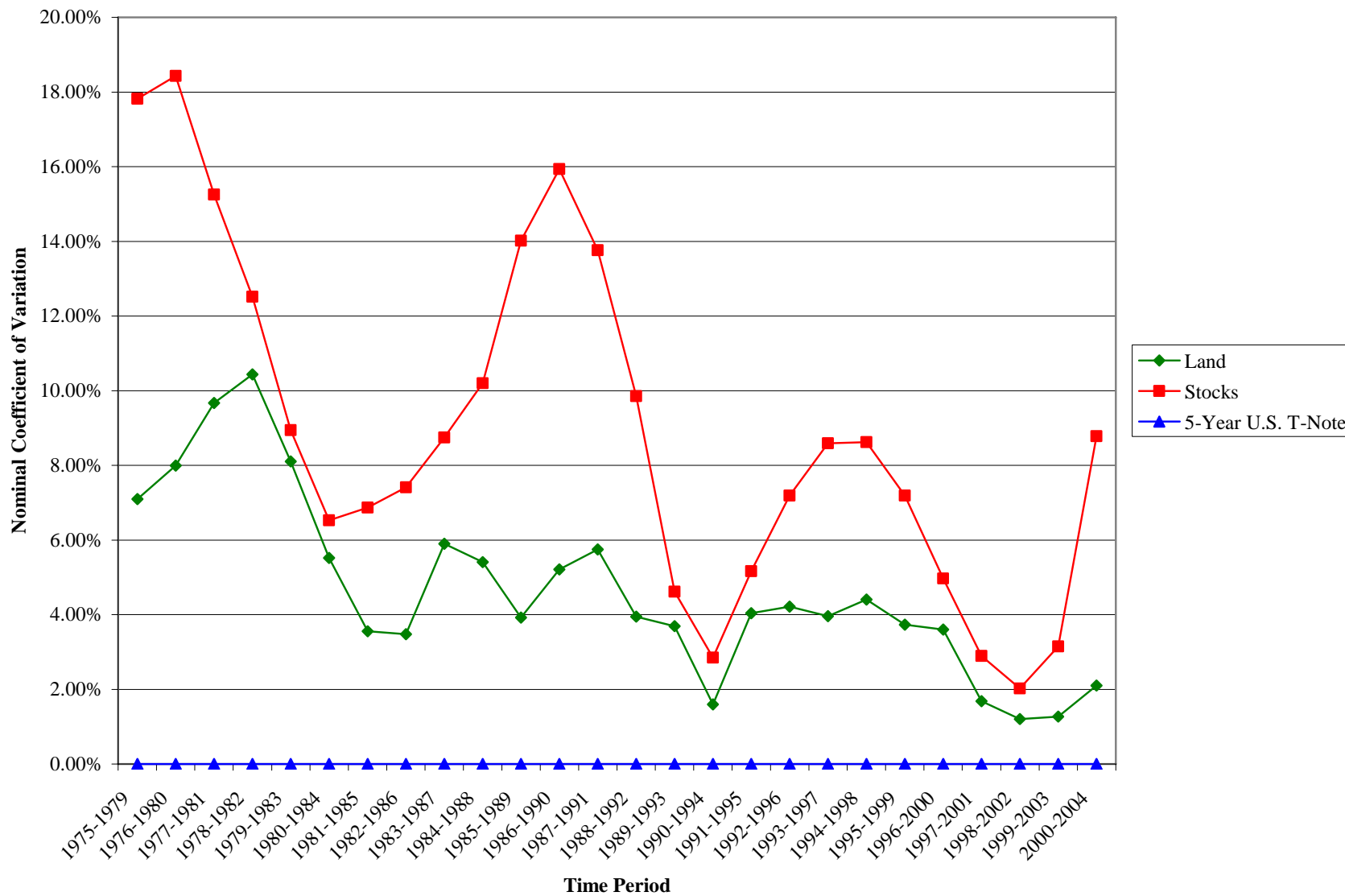


Figure 5.5 Nominal Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

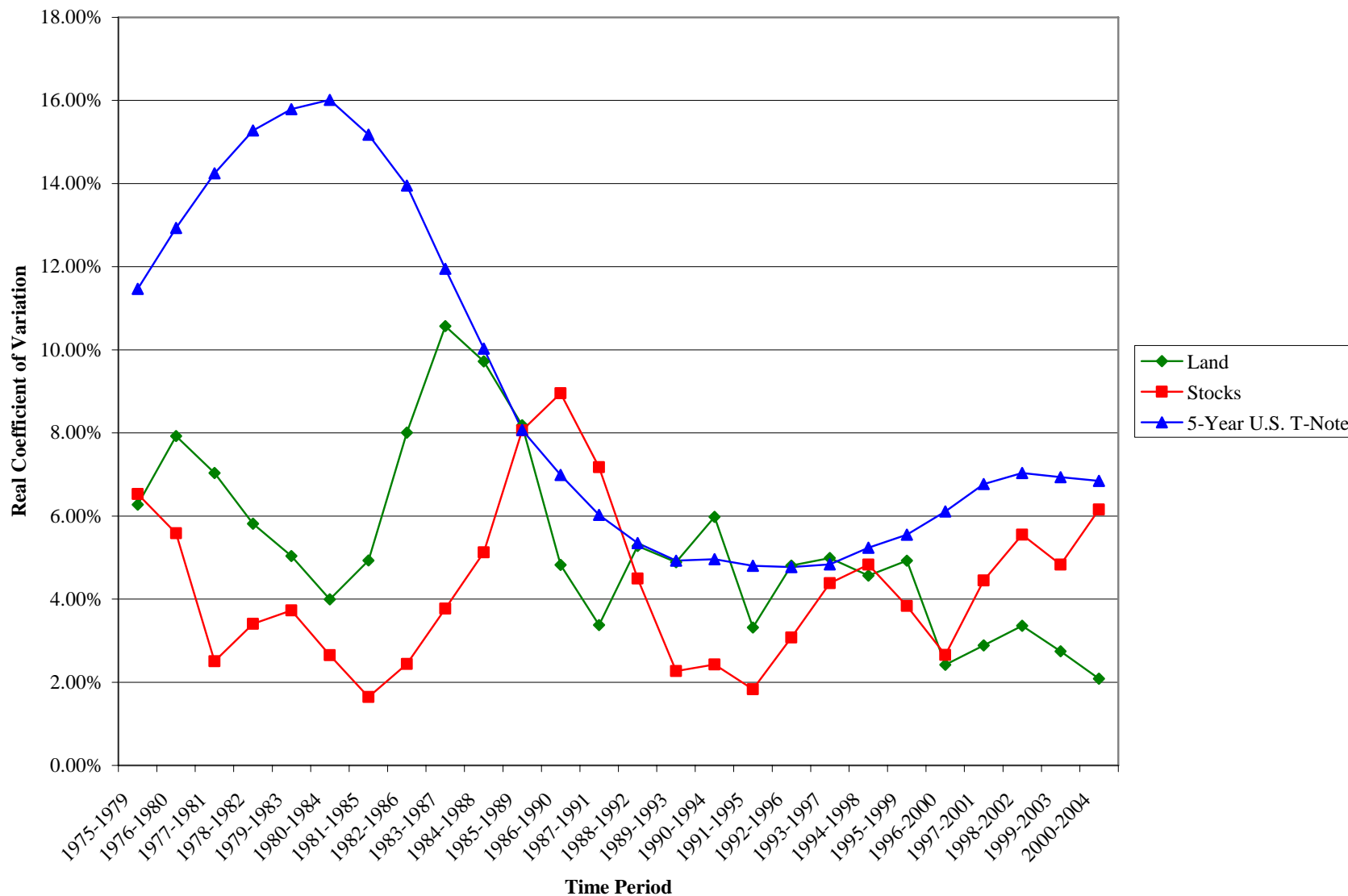


Figure 5.6 Real Coefficients of Variation of Annual Income per Acre for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

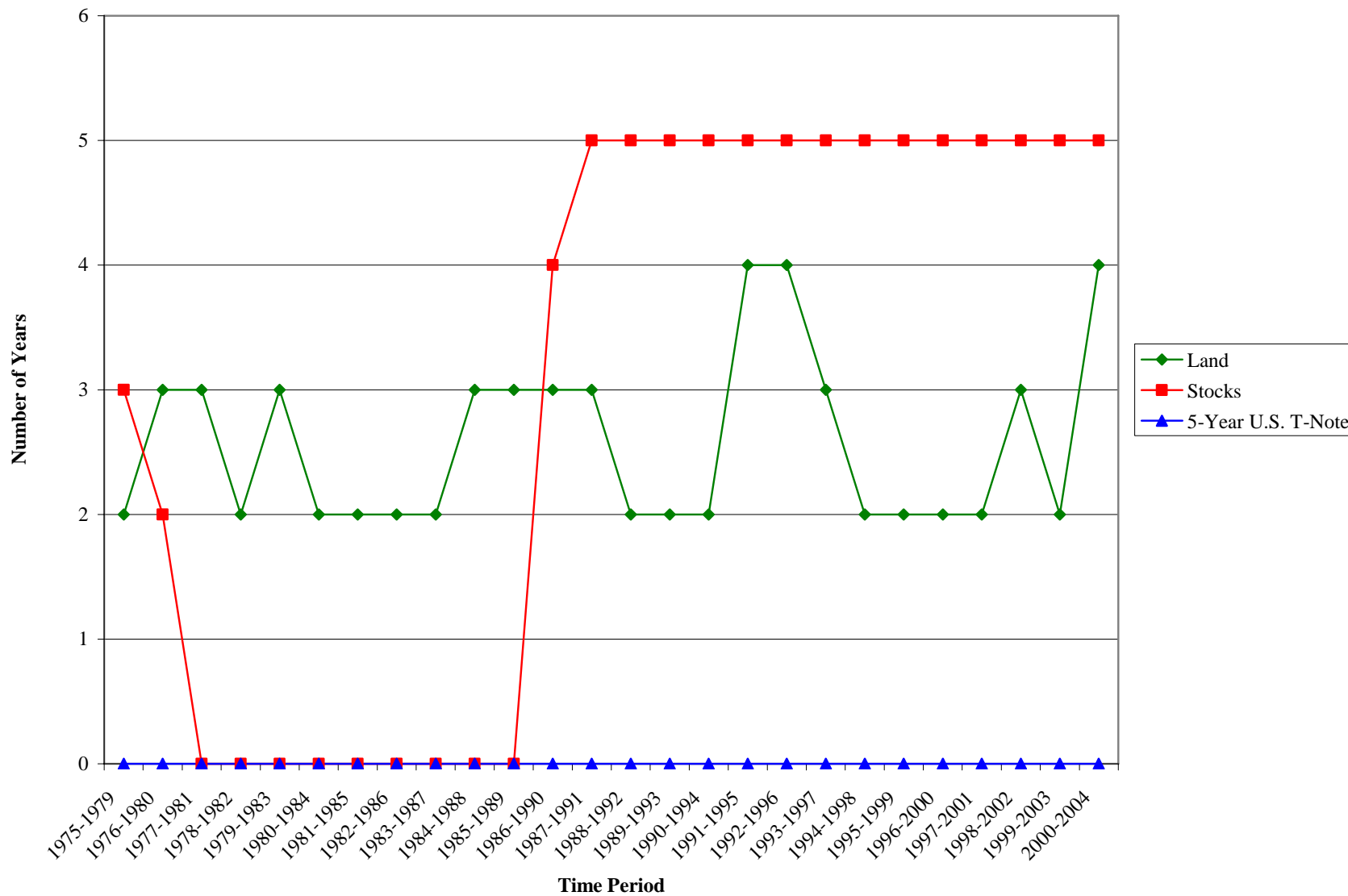


Figure 5.7 Number of Years Nominal Annual Income was Below 5-Year Kansas Nonirrigated Cropland Average Annual Income

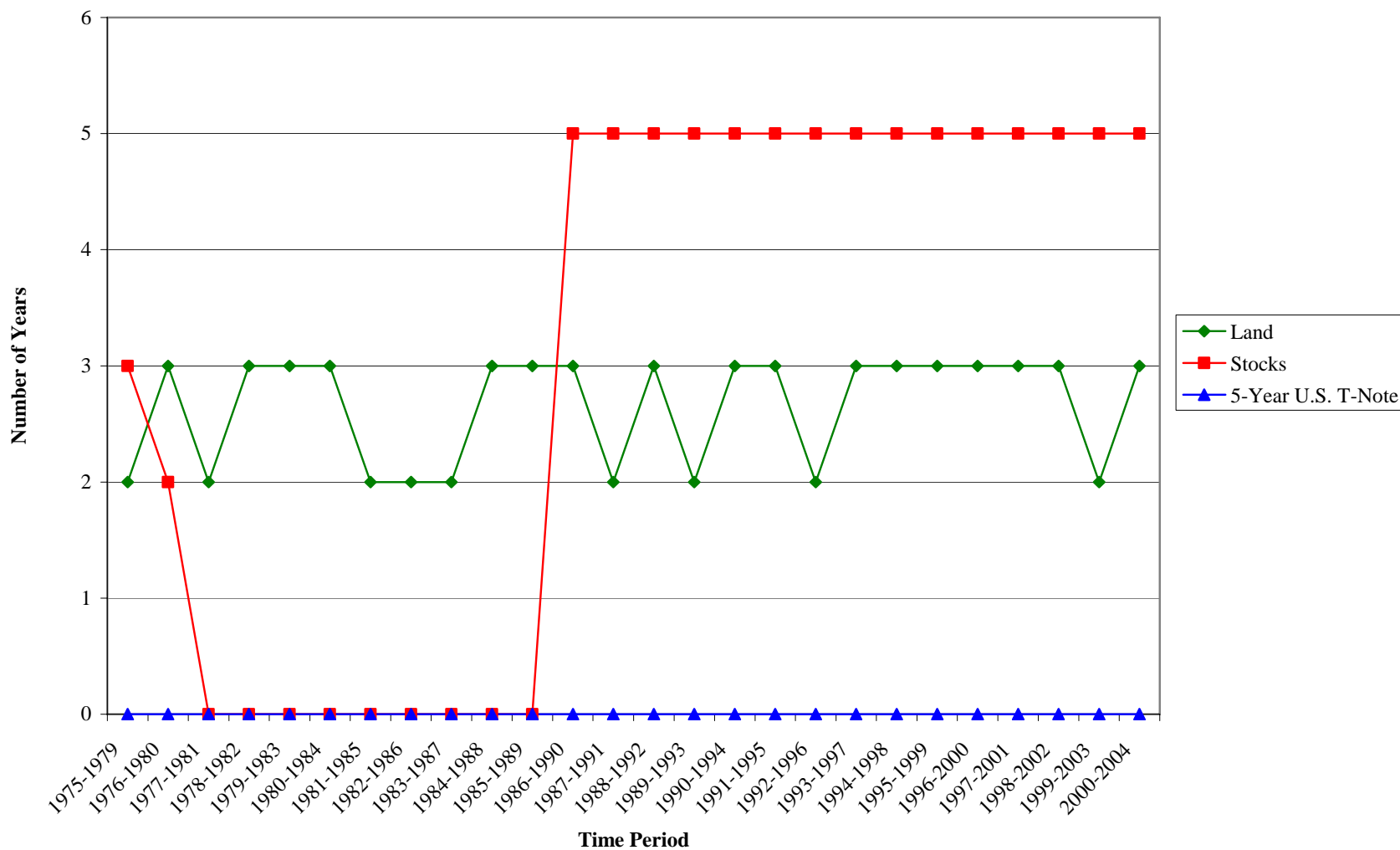


Figure 5.8 Number of Years Real Annual Income was Below 5-Year Kansas Nonirrigated Cropland Average Annual Income

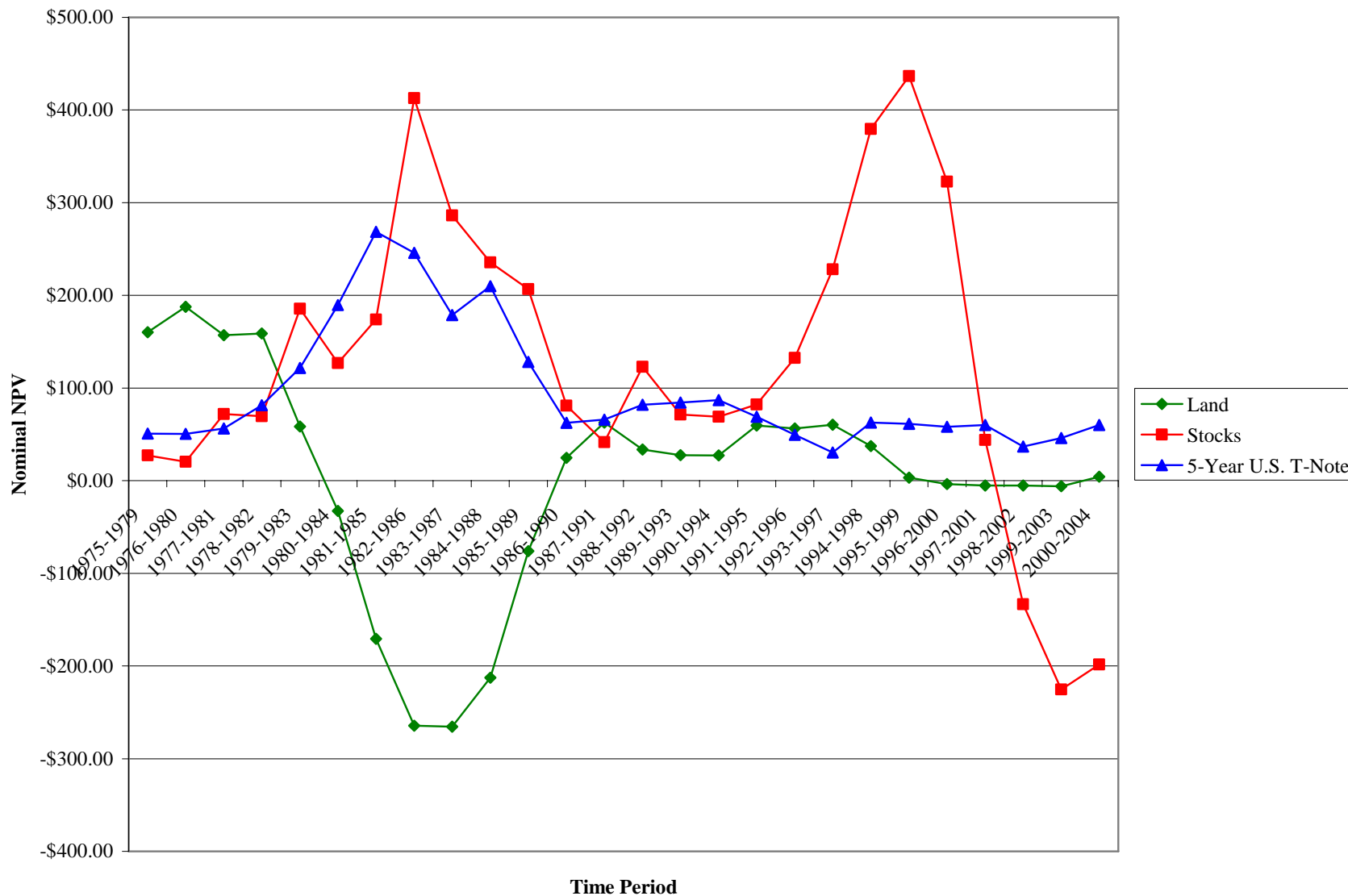


Figure 5.9 Nominal NPVs for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

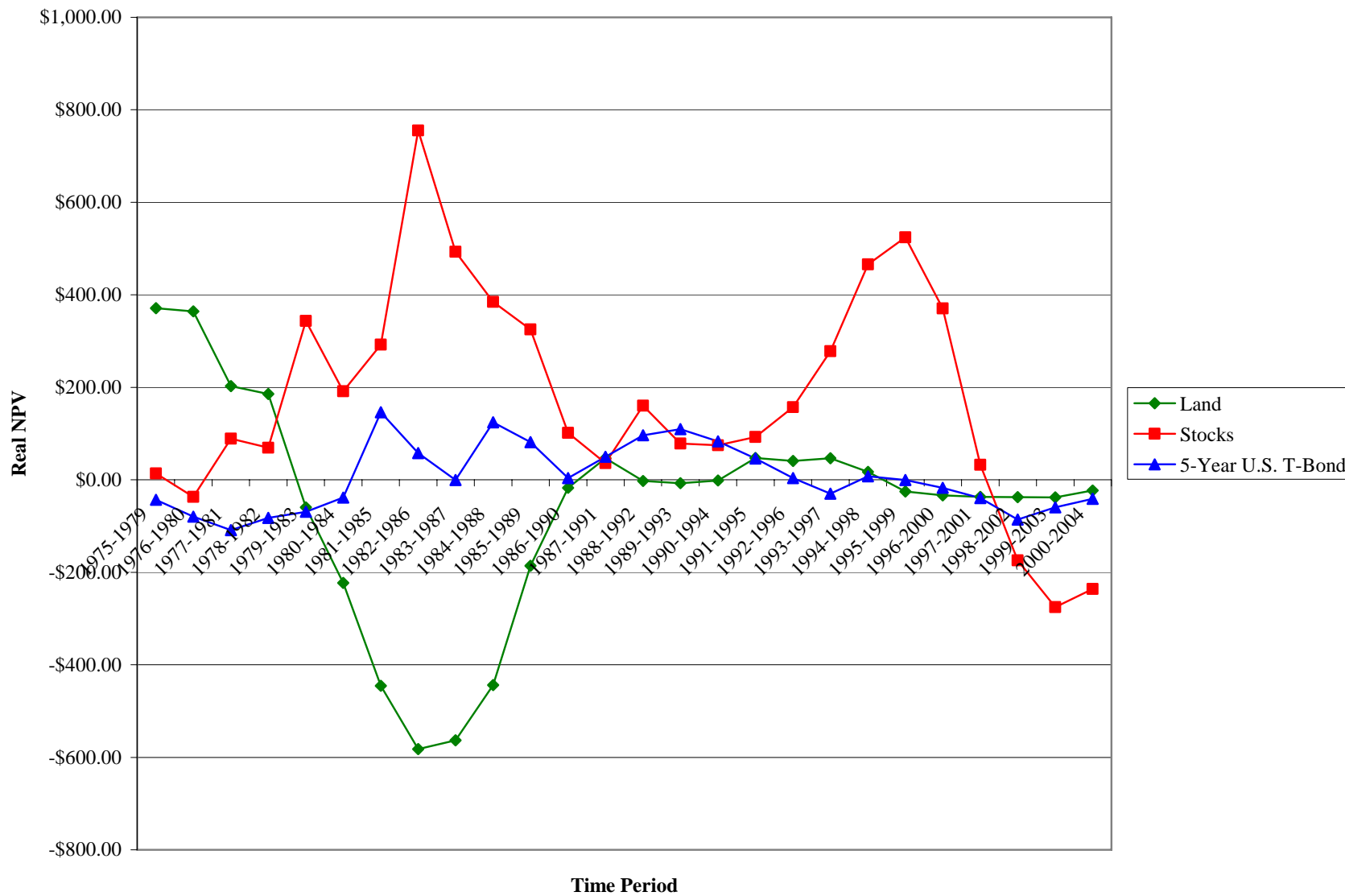


Figure 5.10 Real NPVs for Kansas Nonirrigated Cropland, Stocks, and a 5-Year U.S. T-Note over 5-Year Time Periods

Table 6. Average Annual Income and Risk per Acre for Different Portfolios of Kansas Nonirrigated Cropland, Stocks, and a 30-Year U.S. T-Bond for a 30-Year Time Period^a

Portfolio			1975-2004	
Land	Stocks	Treasury	Income	Risk
1/3	1/3	1/3	\$37.72	\$18.76
1/2	1/4	1/4	35.55	20.92
1/4	1/2	1/4	40.05	16.42
1/4	1/4	1/2	37.55	18.99
1	0	0	29.06	27.41
0	1	0	47.05	9.46
0	0	1	37.03	21.08

^a Risk is the average amount that income for the portfolio was below the annual per acre target value (\$56.47). The target value is half the income needed per acre from owned nonirrigated cropland from an averaged sized nonirrigated farm in Kansas (NASS 2002 Census of Agriculture) to cover the average expenditures of a couple (Funk).

Table 7. Average Annual Income and Risk per Acre for Different Portfolios of Kansas Nonirrigated Cropland, Stocks, and U.S. Treasuries for 15-, 10-, and 5-Year Time Periods

Portfolio			15-Year Periods ^a									
			1975-1989 BL		1980-1994 BN		1982-1996 BS		1987-2001 WS WN		1990-2004 WL	
Land	Stocks	Treasury	Income	Risk	Income	Risk	Income	Risk	Income	Risk	Income	Risk
1/3	1/3	1/3	\$44.25	\$12.23	\$61.40	\$1.41	\$61.21	\$2.54	\$24.09	\$32.39	\$25.49	\$30.99
1/2	1/4	1/4	42.03	14.44	53.42	5.10	52.82	6.98	24.05	32.42	24.80	31.67
1/4	1/2	1/4	43.71	12.76	62.46	0.11	64.09	0.12	22.81	33.67	24.15	32.32
1/4	1/4	1/2	47.00	9.48	68.33	0.86	66.71	2.81	25.40	31.07	27.51	28.96
1	0	0	35.38	21.10	29.46	27.01	27.67	28.81	23.95	32.53	22.74	33.73
0	1	0	42.12	14.36	65.62	0.00	72.74	0.00	18.97	37.50	20.14	36.33
0	0	1	55.25	4.69	89.12	0.02	83.22	3.80	29.35	27.13	33.58	22.90

Portfolio			10-Year Periods ^a									
			1975-1984 BL		1981-1990 BN		1982-1991 BS		1993-2002 WN		1995-2004 WL WS	
Land	Stocks	Treasury	Income	Risk	Income	Risk	Income	Risk	Income	Risk	Income	Risk
1/3	1/3	1/3	\$44.23	\$12.25	\$83.40	\$0.00	\$82.36	\$0.00	\$24.92	\$31.55	\$27.67	\$28.81
1/2	1/4	1/4	42.91	13.56	70.25	0.00	69.22	0.00	24.29	32.19	26.20	30.28
1/4	1/2	1/4	43.39	13.09	78.00	0.00	79.22	0.00	22.53	33.95	24.52	31.95
1/4	1/4	1/2	46.38	10.14	101.95	0.00	98.65	0.00	27.95	28.53	32.28	24.20
1	0	0	38.97	17.51	30.79	25.69	29.79	26.69	22.39	34.09	21.79	34.69
0	1	0	40.88	15.60	61.81	0.02	69.80	0.00	15.35	41.13	15.09	41.39
0	0	1	52.83	7.70	157.61	0.00	147.50	0.00	37.03	19.45	46.12	10.35

Portfolio			5-Year Periods ^a									
			1975-1979 BL		1981-1985 BN		1982-1986 BS		1993-1997 WN		2000-2004 WL WS	
Land	Stocks	Treasury	Income	Risk	Income	Risk	Income	Risk	Income	Risk	Income	Risk
1/3	1/3	1/3	\$48.58	\$7.89	\$91.76	\$0.00	\$87.61	\$0.00	\$24.61	\$31.86	\$24.11	\$32.37
1/2	1/4	1/4	47.04	9.44	77.40	0.00	73.99	0.00	24.24	32.24	23.32	33.16
1/4	1/2	1/4	46.70	9.78	83.17	0.00	81.67	0.00	22.23	34.25	19.58	36.89
1/4	1/4	1/2	52.01	4.47	114.70	0.00	107.17	0.00	27.37	29.10	29.43	27.04
1	0	0	42.40	14.07	34.32	22.16	33.12	23.35	23.12	33.36	20.94	35.53
0	1	0	41.06	15.42	57.41	0.05	63.86	0.00	15.07	41.40	6.00	50.48
0	0	1	62.28	0.90	183.54	0.00	165.85	0.00	35.65	20.83	45.39	11.08

a BL means Best Land of the time periods. The highest average real income per acre of the time periods was the criterion used. BS means Best Stocks. BN means Best Notes. WL means Worst Land. WS means Worst Stocks. WN means Worst Notes.

Table 8. Historical Coupon Rates for U.S. Treasury Notes and Bonds^a

Table 8. Historical Coupon Rates for U.S. Treasury Notes and Bonds^a

Year	5-Year T-Notes	10-Year T-Notes	30-Year T-Bonds ^b
1975	7.78%	7.99%	8.25%
1976	7.18%	7.61%	8.25%
1977	6.99%	7.42%	7.75%
1978	8.32%	8.41%	8.49%
1979	9.51%	9.43%	9.28%
1980	11.45%	11.43%	11.27%
1981	14.25%	13.92%	13.45%
1982	13.01%	13.01%	12.76%
1983	10.79%	11.10%	11.18%
1984	12.26%	12.46%	12.41%
1985	10.12%	10.62%	10.79%
1986	7.30%	7.67%	7.78%
1987	7.94%	8.39%	8.59%
1988	8.48%	8.85%	8.96%
1989	8.50%	8.49%	8.45%
1990	8.37%	8.55%	8.61%
1991	7.37%	7.86%	8.14%
1992	6.19%	7.01%	7.67%
1993	5.14%	5.87%	6.59%
1994	6.69%	7.09%	7.37%
1995	6.38%	6.57%	6.88%
1996	6.18%	6.44%	6.71%
1997	6.22%	6.35%	6.61%
1998	5.15%	5.26%	5.58%
1999	5.55%	5.65%	5.87%
2000	6.16%	6.03%	5.94%
2001	4.56%	5.02%	5.49%
2002	3.82%	4.61%	5.43%
2003	2.97%	4.01%	N/A
2004	3.43%	4.27%	N/A
Average ^c	7.12%	7.52%	8.11%

Source: The Federal Reserve Board. "H.15 - Selected Interest Rates: Historical Data." Federal Reserve Statistical Release. Washington, DC. Internet site: <http://www.federalreserve.gov/releases/h15/data.htm> (Accessed June 2005).

^a Coupon rates do not account for taxes or inflation.

^b A coupon rate is available for 2002, but 30-Year T-bonds have not been issued since October 2001. Many 30-Year T-Bonds are still unredeemed and earning interest.

^c The average is a geometric mean to account for the time value of money.

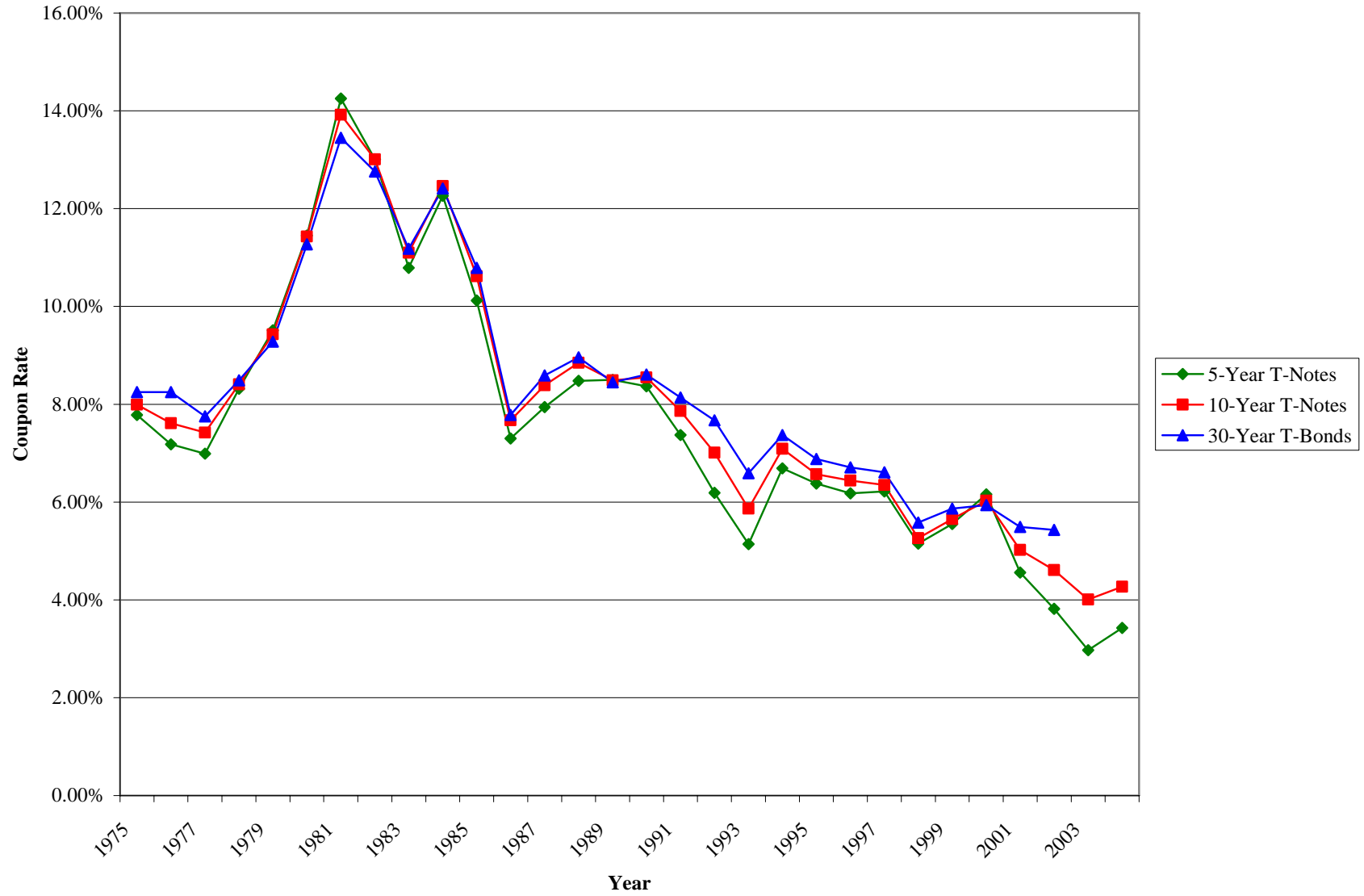


Figure 8.1 Historical Coupon Rates for U.S. Treasury Notes and Bonds