THE PENNSYLVANIA STATE UNIVERSITY SCHREYER HONORS COLLEGE

DEPARTMENT OF FINANCE

USING THE U.S. TREASURY YIELD CURVE TO PREDICT S&P 500 RETURNS AND U.S. RECESSIONS

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ABSTRACT

The goal of this study was to test whether or not the U.S. Treasury yield curve can be used as a predictor of future S&P 500 returns or U.S. recessions. The rationale behind investigating this was that if a relationship was found, it would be very valuable in making investment decisions. A Literature Review was conducted to evaluate previous research, and in general, the results indicated that there was little or no information to support using the U.S. Treasury yield curve as a predictor of future S&P 500 returns, but that there is a strong relationship between the U.S. Treasury yield curve and U.S. Recessions.

To test for both of these relationships, data was collected on various Treasury yields as well as S&P 500 price data. The primary way of evaluating whether or not there was a relationship was by using graphical analysis, with some general analysis of the raw data also contributing to the results. Ultimately, the testing revealed that although there is a positive relationship between the yield spreads and S&P 500 returns, the connection was not very strong. On the other hand, after analysis was completed, it was found that there is a very strong relationship between the yield curve and recessions. To summarize, it was found that when the yield spread between a longer-maturity Treasury and a shorter-maturity Treasury is near zero or negative, a recession is likely to occur in the upcoming months.

The findings from the study can be used to help make investment decisions. By tracking the U.S. Treasury yield curve, investors can predict when recessions are likely to occur, and can therefore minimize their financial losses from the recession by switching to safer assets during periods when recessions are likely.

TABLE OF CONTENTS

INTRODUCTION	1
LITERATURE REVIEW.	
"The Yield Curve as a Predictor of U.S. Recessions"	3
"Using the Yield Curve to Time the Stock Market"	5
"Forecasts of Economic Growth from the Bond and Stock Markets"	8
METHODOLOGY	11
Testing the Relationship between the U.S.	
Treasury Yield Curve and S&P 500 Returns	11
Testing the Abilities of the U.S. Treasury	
Yield Curve in Predicting U.S. Recessions	12
EMPIRICAL RESULTS	15
The Relationship between the U.S.	
Treasury Yield Curve and S&P 500 Returns	15
The Abilities of the U.S. Treasury	
Yield Curve in Predicting U.S. Recessions	24
CONCLUSION	30
Bibliography	32
Appendix	33

INTRODUCTION

There are many different economic indicators that are used by investors to help them make investment decisions. This study looks at the U.S. Treasury yield curve and how valuable it is as an indicator. Specifically, the ability of the U.S. Treasury yield curve in predicting future S&P 500 returns and U.S. Recessions was analyzed. In order to do that, a Literature Review was conducted, in which evidence showed little or no information that indicated that the U.S. Treasury yield curve could be used to predict future S&P 500 returns accurately. The Literature Review did, however, provide results that showed that the U.S. Treasury yield curve can be a strong predictor of U.S. recessions.

After the Literature Review was conducted, data on U.S. Treasuries of varying maturities was collected and then analyzed using graphical analysis. Varying U.S. Treasury yield spreads were graphed against forward-looking S&P 500 returns for different time periods in the future. It was ultimately found that although there is a positive relationship between the yield spreads and S&P 500 returns, the connection was not very strong. Testing was also conducted to analyze how accurately the U.S. Treasury yield curve is at predicting U.S. recessions. In order to do this, different yield spreads were graphed through time, and recessionary periods were depicted on the same chart using shading. In addition, the relationship was also evaluated by looking for patterns in the yield spread leading up to recessions. It was ultimately found that there was a strong relationship between the yield spreads of the U.S. Treasury yield curve and U.S. recessions. In general, when the yield spreads are negative or close to zero, there is a very good chance that a recession is going to occur.

The reason this study was done was because the information that was researched and analyzed can be of great assistance to people when making investment decisions. For example, investors can minimize losses if they are able to predict upcoming recessions. If an investor knows there is a good chance of a recession occurring, they can alter their portfolio so that they are not exposed to things that are likely to be hurt by a recession, such as the stock market.

LITERATURE REVIEW

To gain general knowledge of research that has already been done on the U.S. Treasury yield curve as an economic indicator for both future S&P 500 returns as well as predicting recessions, three literary sources were reviewed. The general consensus of these pieces of research is that there is a connection between the shape of the yield curve and recessionary periods. The studies showed results that when the spread between the yields of a longer-maturity Treasury and a shorter-maturity Treasury was small, or negative, that it is very likely that a recession will occur in the near future. There is also some information provided that show the shape of the yield curve can also be used to predict a growing stock market as well, although the evidence does not seem as strong as predicting recessions. Three studies were reviewed: "The Yield Curve as a Predictor of U.S. Recessions" by A Estrella and F. Mishkin (1996), "Using the Yield Curve to Time the Stock Market" by B. Resnick and G. Shoesmith (2002), and "Forecasts of Economic Growth from the Bond and Stock Markets" by C. Harvey (1989). The reviews for each of these studies can be found below.

"The Yield Curve as a Predictor of U.S. Recessions" by A. Estrella and F. Mishkin (1996).

In this article from *Current Issues in Economics and Finance*, published by the Federal Reserve Bank of New York, the authors focus on the yield curve of U.S. Treasuries to predict where the market will be in the future. Two key things to note from this study are that they focus solely on the spread between the 10-year Treasury and the three-month Treasury, and that they only apply their model to predicting U.S. bear markets and recessions, with no focus on bull markets. Estrella and Mishkin explain that they focus on predicting recessions

because they believe that knowing that a recession is coming is of significant interest of investors and policy makers. (Estrella p. 1)

The basic set-up to the model in the article is to predict the probability of a recession using a probit model. The model uses varying forward looking returns, for example, one, two, four, and six quarters ahead of the indicator. The model can then be applied by using the resulting output to make assumptions. For example, their model found that there was a 10% chance of recession four quarters in the future when the spread between the 10-year and three-month Treasury was 0.76%, while there was a 90% chance of recession four quarters in the future when the spread of recession four quarters in the future when the spread between the 10-year and three-month the three was -2.40%, meaning that the 10-year Treasury is yielding 2.40% less than the three-month Treasury. (Estrella p. 2)

Estrella and Mishkin explain their findings by saying, "Consider that in the third quarter of 1994, the spread averaged 2.74 percentage points. The corresponding predicted probability of recession in the third quarter of 1995 was only 0.2 percent, and indeed, a recession did not materialize." They go on to explain further by saying, "In contrast, the yield curve spread averaged -2.18 percentage points in the first quarter of 1982, implying a probability of recession of 86.5 percent four quarters later. As predicted, the first quarter of 1982 was in face designated a recession quarter." (Estrella p. 2) They summarized their findings in Figure 1, which is shown below. These examples that the authors provide show how their model can be used in real world situations. Knowing that there is a strong probability of a recession can be very useful to investors, as well as government officials and policy makers.

Figure 1 (Source: Estrella p. 2):

Estimated Recession Probabilities for Probit Model Using the Yield Curve Spread

Four	Quarters Ahead	

Recession Probability (Percent)	Value of Spread (Percentage Points)	_
5	1.21	-
10	0.76	
15	0.46	
20	0.22	
25	0.02	
30	-0.17	
40	-0.50	
50	-0.82	
60	-1.13	
70	-1.46	
80	-1.85	
90	-2.40	

Note: The yield curve spread is defined as the spread between the interest rates on the ten-year Treasury note and the three-month Treasury bill.

Ultimately, it is concluded in the article that the yield curve can be a strong predictor of future recessions. Specifically, they concluded that by using the 10-year and three-month Treasuries, the yield curve can not only predict periods of recession, but can also be used as a supplement to other economic indicators. The authors also noted that their model is most accurate when longer lead times are used, which is convenient because policy makers usually prefer the longer term prediction models. (Estrella, p. 5)

"Using the Yield Curve to Time the Stock Market" by B. Resnick and G. Shoesmith (2002).

In this article from *Financial Analysts Journal*, which is published by the CFA Institute, Resnick and Shoesmith did a similar study as was done in "The Yield Curve as a Predictor of U.S. Recessions" by Estrella and Mishkin. There are a few key similarities between the two articles. First, they both use the spread between the 10-year Treasury and the three-month Treasury as the point of reference to make predictions about the market. Second, they both primarily focus on bear markets and recessions. However, in the "Using the Yield Curve to Time the Stock Market" study, even though Resnick and Shoesmith focus mostly on using the yield curve to forecast bear markets, they do reference being able to apply their model to bull markets as well. (Resnick p. 82)

In creating their model, the authors defined a bear market as at least six months of a general decline in stock market prices. By using graphs to compare the bear stock markets to the associated yield curve spread, they were able to find that when the spread is small, or negative, there is usually a bear stock market during the same time period. They illustrate this graphically in Figures 2 and 3 below. In Figure 2, the bear markets are shaded, and those periods of bear markets are also illustrated in Figure 3. Figure 3 also shows that, in general, when there is a period of a bear market, there is usually a small or negative spread between the 10-year and three-month Treasury yields. (Resnick p 83-84)





Figure 3 (Source: Resnick p. 84):



In the article, the authors mention that by using the yield curve to time the stock market to indicate when an investor should switch out of stocks and into bonds, or out of bonds and back into stocks, investors can "beat a stock-only buy-and-hold investment strategy." (Resnick p. 82). So to sum up, by using Resnick and Shoesmith's model, an investor should generally plan to hold stocks when the yield spread is large, and should switch to holding bonds when the spread is small or negative.

"Forecasts of Economic Growth from the Bond and Stock Markets" by C. Harvey (1989).

In Campbell Harvey's article, "Forecasts of Economic Growth from the Bond and Stock Markets" from the *Financial Analysts Journal*, published by the CFA Institute, the author aims to show that the yield curve can be used to predict economic growth and contraction. He also compares the effectiveness of the yield curve and the stock market as leading economic indicators. The study ultimately concludes that the yield curve is a strong economic indicator, explaining roughly 30 percent of the variation in economic growth, and that the stock market is a weaker indicator, only explaining about five percent of the variation in economic growth. (Harvey p. 38)

The article explains the basic idea behind why a flat or inverted yield curve can occur before the economy begins to struggle by first establishing the idea that investors typically buy long term bonds and sell short term bonds when it appears there may be a downturn in the economy. Because of this, the price of long-term bonds will rise, while the price of shortterm bonds will fall. This causes the yield of long term bonds to be relatively lower, and the yield on short-term bonds to become higher, causing a flat or inverted yield curve. (Harvey p. 39)

One of the main findings of the study is consistent with that of the findings of the previous two articles discussed. Harvey found that, when using the spread between the 10-year and three-month Treasuries, a recession can be predicted by watching for an inverted yield curve. He explains by stating, "The yield curve (measured as the difference between a 10-year and a three-month yield) inverted in 1969, 1973, 1979 and 1981," and goes on to explain that recessions occurred after all four of those inverted yield curves. (Harvey p 39)

This study also has a key difference from the previous two articles discussed in that Harvey's study also addresses that the yield curve can predict economic growth, whereas the other articles focused mainly on bear markets and recessions. Figure 4 below shows that the yield spread moves fairly closely to the GNP growth. In the graph, to show the relationship more clearly, the yield spread is plotted using the natural logarithm of one plus the 10-year rate divided by one plus the three-month rate. By using the graph, Harvey draws the conclusion that, "The yield curve measures show close association with GNP growth, especially from 1966. (Harvey p. 40)



Figure B Annual GNP Growth and Lagged 10-Year Yield Spread

To summarize, in Harvey's article, "Forecasts of Economic Growth from the Bond and Stock Markets," he finds several important conclusions. First, that the yield curve is a stronger economic indicator of growth and contraction than the stock market, by being able to explain about 30 percent of the variation in economic growth, whereas the stock market can only explain about five percent. Also, he found that the yield curve is particularly strong in predicting recessions, although there appears to also be a connection to GNP growth. (Harvey p. 38-40)

METHODOLOGY

Testing the Relationship between the U.S. Treasury Yield Curve and S&P 500 Returns The vast majority of this study was completed using Microsoft Excel. To begin, an Excel spreadsheet was created that included monthly data on U.S. Treasury yields with varying maturities as well as S&P 500 Index prices. The data collected goes as far back as 1962, although for most of the study, only data beginning from February of 1977. The rationale behind excluding data before this date was that the first 30-year bond was not created until February of 1977, so in order to stay consistent the only data considered for most of the study was the data after this date. The U.S. Treasury maturities that were focused on for the study were the 30-year, 10-year, and three-month Treasuries. The monthly data for the U.S. Treasury yields and the S&P 500 Index prices were found by using Yahoo! Finance.

After collecting the data on the U.S. Treasury Yields and the S&P 500, Excel was used to calculate the U.S. Treasury yield spreads. The study focused on three different yield spreads, and they were all calculated by simply subtracting the yield of the shorter maturity Treasury from the longer maturity Treasury. The three yield spreads that were used included: the 30-year and the three-month, the 10-year and the three-month, and the 30-year and the 10-year. These three yield spreads were calculated for each month from which data was collected.

Once the U.S. Treasury Yield spreads were calculated, the next step was to incorporate the S&P 500 returns into the spreadsheet. This was done on a forward-looking basis, meaning that for any given month, the return at a specific amount of time in the future was calculated. For example, the three month forward-looking return of the S&P 500 in January of 2004

would have to consider the price change from January to April of 2004. This type of backtesting was ultimately used to assess if there is a relationship between the yield spread and S&P 500 returns that would be useful for investors to decide whether or not it is a good time to invest in the stock market. Five different forward-looking time periods were used, including: one month, three months, six months, 12 months, and 24 months. The original data, as well as the yield spreads and forward-looking returns can be found in the Appendix.

In order to depict the relationship between the U.S. Treasury yield curve and the S&P 500 returns, several graphs were created. Each of the three yield spreads that were used were graphed against each of the five forward-looking return time periods that were used. For example, five separate scatter plots were created for the spread between the 10-year and three-month Treasuries, which included the spread plotted against the one, three, six, 12, and 24 month forward-looking S&P 500 returns. A linear trendline was then added to each scatterplot to show if there is a positive relationship in each chart. In general, an upward sloping trendline would indicate that there is a fairly strong relationship between the yield spread and the S&P 500 return, a flat line would indicate little or no relationship, and a downward sloping line would indicate an inverse or opposite relationship.

Testing the Abilities of the U.S. Treasury Yield Curve in Predicting U.S. Recessions The study then did additional testing to see if there is a more specific relationship between the U.S. Treasury yield curve and downturns in the market, because the articles discussed previously indicate that the yield curve may be a strong indicator of recessions and bear markets. In order to analyze the effectiveness of the U.S. Treasury yield curve in predicting recessions, the recessionary periods first needed to be defined for the time period that was being studied. In order to have several recessions included in analysis, data beginning in 1962 was used when using the spread between the 10-year and three-month bonds. For the spread between the 30-year and three-month, as well as between the 30-year and the 10-year, only data beginning in February of 1977 was used because the 30-year Treasury Bond was not available prior to then.

In order to test the effectiveness of the yield curve in predicting recessions, it was first necessary to define the recessionary periods that the U.S. has experienced for the time period that data was collected. According to the National Bureau of Economic Research, there have been seven recessions since 1962, which is the furthest back from which this study used data. In a table that the National Bureau of Economic Research released titled "US Business Cycle Expansions and Contractions," they explain that recessions occurred from December 1969 to November 1970, November 1973 to March 1975, January 1980 to July 1980, July 1981 to November 1982, July 1990 to March 1991, March 2001 to November 2001, and December 2007 to June 2009. ("US Business Cycle Expansions and Contractions.")

Checking to see if the yield curve can predict recessions can be done in two different ways. One option is to simply look at the data that was collected, paying special attention to the months leading up to a recession to see if there is a recurring theme, such as a spread that is negative or close to zero, prior to recessions occurring. Another way to test if the yield curve is a predictor of recessions is to create a time series plot of a particular yield spread, and add a shaded area to the plot to indicate when the recessions have occurred so that it is easy to visualize the relationship.

In this study, three graphs were created to depict the relationship between U.S. Treasury Yield spreads and periods of recessions in the U.S. economy. The three graphs each use one of the yield spreads that were used throughout the study. There is a graph that depicts the relationship between recessions and the spread between the 10-year and three-month Treasuries, the 30-year and three-month Treasuries, and the 30-year and 10-year Treasuries. It is again important to note that for the graph with the 10-year and three-month Treasury spread, data was used that dated back to January of 1962, but for the 30-year and three-month Treasury spread and the 30-year and 10-year Treasury spread, the data used begins with February of 1977. This is because the 30-year bond was not created until this date.

By using a graph to analyze the relationship, it is possible to visualize when recessions have occurred and the yield spread before, during, and after the recessionary periods.

EMPIRICAL RESULTS

The Relationship between the U.S. Treasury Yield Curve and S&P 500 Returns

The data and analysis that was described previously produced two conclusions. First, that although there is a generally positive relationship between the U.S. Treasury yield curve and future S&P 500 returns, the relationship is not very strong. Second, that there is a strong connection between the U.S. Treasury yield curve and recessions.

In order to assess if there was a relationship between the U.S. Treasury yield curve and future S&P 500 returns, several graphs were made.

When the 10-year and three-month Treasury yield spread was plotted against forwardlooking S&P 500 returns with varying time lags, the majority of the graphs show a positive relationship, but the connection does not appear to be very strong. For the one-month, threemonth, and six-month return horizons, the linear trendline was essentially a flat line, indicating that there is little or no relationship. This is shown in Figures 5-7. However, for the 12-month and 24-month return horizons, the trendline is upward sloping. This is shown in Figures 8-9. This indicates that, in general, a higher yield spread between the 10-year and three-month Treasuries results in higher returns for the S&P 500.

Figures 5-9 show the scatterplots of the spread between the 10-year and three-month bonds plotted against S&P 500 returns with varying time lags as discussed above.





Note: Figure 5 shows a scatterplot of the spread between the yields of 10-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward one month on the vertical axis.



Figure 6:

Note: Figure 6 shows a scatterplot of the spread between the yields of 10-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward three months on the vertical axis.





Figure 8:

vertical axis.



Note: Figure 8 shows a scatterplot of the spread between the yields of 10-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward 12 months on the vertical axis.



Figure 9:

When the 30-year and three-month Treasury yield spread was plotted against forwardlooking S&P 500 returns with varying time lags, the majority of the graphs show little or relationship, although some appear to have a small connection. Similar to the results from the 10-year and three-month spread, for the one-month, three-month, and six-month return horizons, the linear trendline was essentially a flat line, indicating that there is little or no relationship. This is shown in Figures 10-12. The trendline for the 12-month return horizon was slightly upward sloping, but not as much as it was with the 10-year and three-month spread, and for the 24-month return horizon, the trendline is upward sloping. This is shown in Figures 13-14. This indicates that, in general, a higher yield spread between the 30-year and three-month Treasuries results in higher returns for the S&P 500.

Note: Figure 9 shows a scatterplot of the spread between the yields of 10-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward 24 months on the vertical axis.

Figures 10-14 show the scatterplots of the spread between the 30-year and three-month bonds plotted against S&P 500 returns with varying time lags as discussed above.





Note: Figure 10 shows a scatterplot of the spread between the yields of 30-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward one month on the vertical axis.

Figure	11	;
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Note: Figure 11 shows a scatterplot of the spread between the yields of 30-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward three months on the vertical axis.

Figure 12:



Note: Figure 12 shows a scatterplot of the spread between the yields of 30-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward six months on the vertical axis.

Figure 13:



Note: Figure 13 shows a scatterplot of the spread between the yields of 30-year and three-month bonds on the horizontal axis against the S&P 500 returns looking forward 12 months on the vertical axis.

Figure 14:



When the 30-year and 10-year Treasury yield spread was plotted against forward-looking S&P 500 returns with varying time lags, all of the graphs show little or relationship. The trendline for all of the return horizons are essentially flat, and all have slopes of close to zero. This is shown in Figures 15-19. This indicates that, in general, there is not a strong connection between the 30-year and 10-year Treasury yield spread and forward-looking S&P 500 returns.

Figures 15-19 show the scatterplots of the spread between the 30-year and 10-year bonds plotted against S&P 500 returns with varying time lags as discussed above.





Note: Figure 15 shows a scatterplot of the spread between the yields of 30-year and 10-year bonds on the horizontal axis against the S&P 500 returns looking forward one month on the vertical axis.

Figure 16:



Note: Figure 16 shows a scatterplot of the spread between the yields of 30-year and 10-year bonds on the horizontal axis against the S&P 500 returns looking forward three months on the vertical axis.

Figure 17:



Figure 18:



Note: Figure 18 shows a scatterplot of the spread between the yields of 30-year and 10-year bonds on the horizontal axis against the S&P 500 returns looking forward 12 months on the vertical axis.

Figure 19:



All in all, there were no significant findings in the study to say that there is a connection between the U.S. Treasury yield curve and future returns in the S&P 500. Although it does appear that some of the results indicate that there is a connection when a 12-month or 24month horizon is used, it is also likely that this is simply because the time horizon is longer, meaning the market has more time to have positive returns, as it generally does over longer periods of time. Based on this, the U.S. Treasury yield curve should not be used in investment decisions as the sole indicator of future S&P 500 returns.

The Abilities of the U.S. Treasury Yield Curve in Predicting U.S. Recessions

Even though the yield curve does not appear to be a strong indicator of future S&P 500 returns, the study did return strong results pointing to the U.S. Treasury yield curve's ability to predict recessions.

In order to test if the U.S. Treasury yield curve was able to predict when recessions were going to occur, the three yield spreads were graphed as a time series, and then the recessionary periods were added to show the relationship between when recessions occur based on the yield curve. Figures 20-22 show the charts of this data, using the following yield spreads: 10-year and three-month, 30-year and three-month, and 30-year and 10-year.

The 10-year and three-month spread seems to have the best results in predicting recessions. This spread is negative in months prior to most of the recessions. This can be seen in Figure 20 and also in the raw data. For example, the spread between the 10-year and three-month Treasuries was negative in four of the five months prior to the start of the 1969-1970 recession. The same spread was negative for all five months prior to the start of the 1973-1975 recession, and it was also negative for 14 consecutive months prior to the 1980 recession. Similar results can be before the 1981-1982 and 2001 recessions, where the spread was negative for eight out of nine months prior to the 1981-1982 recession, and five out of seven months leading up to the 2001 recession.

Slightly different results are evident for the 2007-2009 recession, where although there are many months of a negative yield spread, there are several months immediately prior to the recession where the spread is negative. From August 2006 until July 2007, the spread is negative in 10 out of 12 months, and then is followed by four consecutive months of positive yield spreads leading into the recession. Although this is not as compelling as the evidence from other recessions, having 10 out of 16 months of negative yield spreads is still a strong predictor of a recession. The one recession that does not consistent with any of the results is

the 1990-1991 recession, a recession that lasted only five months, which does not have a significant amount of negative yield spreads to indicate a recession, with only one negative value in the 18 months prior to the recession.



Figure 20:

The U.S. Treasury Yield spread between the 30-year and three-month Treasuries does not seem to be quite as strong as the spread between the 10-year and three-month spread in predicting recessions, but it still shows strong results as an indicator of upcoming recessions. This can be seen in Figure 21 as well as in the raw data. For example, the spread between the 30-year and three-month Treasuries was negative for 14 consecutive months prior to the 1980 recession, and for eight out of nine months prior to the 1981-1982 recession. Similar results can be seen prior to the 2001 recessionary period, when the yield spread was negative for six out of the eight months prior to the beginning of the recession.

Much like the findings from the spread between the 10-year and three-month Treasuries, the 30-year and three-month spread did not have very strong results for the 2007-2009 recession, although the data could still be used to predict a recession. The spread was negative in August of 2006, then slightly positive in September 2006, and then negative for six consecutive months from October 2006 until March 2007. Following that, the spread was positive for eight months before the recession began in December 2007. Although this data is not as strong as some of the data that was previously discussed, the spread is negative in seven of the 16 months prior to the recession, which could be used as a sign that a recession may occur soon. Just like the findings from using the 10-year and three-month spread, the data does not support the 1990-1991 recessions, and would not have predicted the downturn in the market for that period of time.



Figure 21:

Note: Figure 21 shows graph of the spread between the yields of 30-year and three-month bonds on the vertical axis and the dates through time on the horizontal axis. The shaded regions are periods that were declared to be recessions in the United States.

The results from using the spread between the 30-year and 10-year Treasuries are very similar to the results from using the spread between the 30-year and three-month Treasuries, but are not consistent with as many recessions as the results discussed previously. The results of this can be seen in Figure 22 as well as in the raw data that was collected. For example, the spread between the 30-year and 10-year Treasuries was negative for 13 out of the 15 months prior to the 1980 recession, and it is negative for 11 consecutive months leading up to the 1981-1982 recession. The same spread was negative for some of the months prior to the recession in 1990, with a negative spread for four of the eight months prior to the start of the recession. Similar results were seen before the 2001 recession, when the spread was negative for eight consecutive months from January 2000 until August 2000, followed by six months of positive values before the recession began in March 2001.

As discussed earlier, when using the spread between the 10-year and three-month and the spread between the 30-year and three-month Treasuries, there was only one recession that was not consistent with the finding that the spread will be negative for several months in the time leading up to a recession. There was also only one recession that was not consistent with the findings when using the 30-year and 10-year spread as well. In months leading up to the 2007-2009 recession, nearly all of the values are positive, with only one month of a negative spread in the 24 months leading up to the recession.

Figure 22:



Overall, the data and the findings that were made through the graphs and data discussed previously, it is evident that there is a strong relationship between the U.S. Treasury yield curve and recessions. Based on the findings, the spread between the 10-year and three-month Treasuries is the best at predicting future recessions. This spread can be very useful to investors, government officials, and financial analysts in any type of company by indicating to them that if there is a negative yield spread, there is a good chance that a recession will soon occur, which will give them enough time to properly prepare so that they are not hurt as much as those who did not prepare for a potential downturn in the market.

CONCLUSION

All in all, the research and analysis that was done is very consistent with research that has been done in the past and that was reviewed in the Literature Review section. Through data collection and analysis it was found that there is little or no connection between the U.S. Treasury yield curve and future S&P 500 returns. In the Literature Review, it was addressed that research has been done to find that there is little, if any, connection between the two variables. From the analysis that was done in this study, it is evident that while there is a positive relationship between U.S. Treasury yield spreads and forward-looking S&P 500 returns, the relationship is not very strong. This means that when the spread between a longer-maturity Treasury and a shorter-maturity Treasury is high, it is likely that S&P 500 returns will be higher going forward, and the opposite is true for when the spread is small. Although there was a positive relationship, the results were not very significant and therefore, while it can still be taken into consideration in investment decisions, the U.S. Treasury yield curve should not be used as a key indicator of future S&P 500 returns.

On the other hand, through data collection and analysis by creating and using graphs as well as analyzing raw data, it was found that upcoming U.S. recessions can typically be accurately predicted by using the U.S. Treasury yield curve. In general, when the spread between a longer-maturity Treasury and a shorter-maturity Treasury is small, and especially when negative, for an extended period of time, there is a strong possibility that a recession will occur soon. The best yield spread in predicting U.S. recessions was the spread between the 10-year and three-month Treasuries, although the spread between the 30-year and three-month, as well as the 30-year and 10-year also yielded strong results in predicting recessions.

These findings can be very useful for all investors, from the high school student who owns a few shares of a stock to learn more about investing and how to handle money, to a Fortune 500 company, or any government agency or legislative body. Being able to predict a recession is a valuable strategy when forming an investment portfolio, and by using the findings in this study, investors will be able to predict recessions more accurately so that they can switch their investments out of stocks and into assets with less risk. For example, looking at the recessions of the last decade, investors would have been able to minimize losses from the 2001 and 2007-2009 recessions if they followed these findings to use the U.S. Treasury yield curve as an indicator that they should prepare for a recession and therefore switch out of stocks and into safer investments like Treasuries.

In conclusion, the findings in this study are consistent with the findings of previous research. It was found that although there is a positive relationship between the U.S. Treasury yield curve and future S&P 500 returns, the results were not very significant and therefore, while it can still be taken into consideration in investment decisions, the U.S. Treasury yield curve should not be used as a key indicator of future S&P 500 returns. On the other hand, it was found that the U.S. Treasury yield curve is a strong indicator for U.S. recessions, and investors should therefore make investment decisions to guard against a possible recession when the yield curve is flat or has a negative slope.

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APPENDIX

Date	U.S. 1	Freasury Y	'ields	U.S. Tre	asury Yield	Spreads	S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
9/1/2011	0.00	1.81	2.87	2.87	1.81	1.06	1136.43					
8/1/2011	0.01	2.22	3.59	3.58	2.21	1.37	1218.89	-6.77%				
7/1/2011	0.09	2.81	4.13	4.04	2.72	1.32	1292.28	-5.68%				
6/1/2011	0.01	3.16	4.38	4.37	3.15	1.22	1320.64	-2.15%	-13.95%			
5/2/2011	0.04	3.05	4.22	4.18	3.01	1.17	1345.20	-1.83%	-9.39%			
4/1/2011	0.04	3.30	4.41	4.37	3.26	1.11	1363.61	-1.35%	-5.23%			
3/1/2011	0.09	3.45	4.51	4.42	3.36	1.06	1325.83	2.85%	-0.39%	-14.29%		
2/1/2011	0.14	3.41	4.49	4.35	3.27	1.08	1327.22	-0.10%	1.35%	-8.16%		
1/3/2011	0.14	3.38	4.57	4.43	3.24	1.19	1286.12	3.20%	6.03%	0.48%		
12/1/2010	0.12	3.31	4.36	4.24	3.19	1.05	1257.64	2.26%	5.42%	5.01%		
11/1/2010	0.16	2.80	4.10	3.94	2.64	1.30	1180.55	6.53%	12.42%	13.95%		
10/1/2010	0.11	2.61	4.00	3.89	2.50	1.39	1183.26	-0.23%	8.69%	15.24%		
9/1/2010	0.16	2.52	3.69	3.53	2.36	1.17	1141.20	3.69%	10.20%	16.18%	-0.42%	
8/2/2010	0.14	2.48	3.53	3.39	2.34	1.05	1049.33	8.76%	12.51%	26.48%	16.16%	
//1/2010	0.14	2.91	3.98	3.84	2.77	1.07	1020.71	-4.74%	7.41%	16.75%	17.31%	
6/1/2010	0.17	2.95	3.91	3.74	2.78	0.96	1030.71	6.88%	10.72%	22.02%	28.13%	
4/1/2010	0.15	2.50	4.21	4.00	3.13	0.91	11069.41	-5.59%	-3.00%	0.37%	23.40%	
3/1/2010	0.10	3.00	4.55	4.57	3.50	0.87	1160.09	-0.20%	-7.1770	-0.29%	12 27%	
2/1/2010	0.13	3.60	4.72	4.37	3.08	0.03	1103.43	5.88%	-1 37%	-2.4170	20 17%	
1/4/2010	0.12	3.60	4.55	4.41	3.40	0.90	1073.87	2.85%	10 51%	2 58%	19 76%	
12/1/2009	0.05	3.84	4.51	4.59	3.79	0.50	1115 10	-3 70%	4 87%	-7 57%	12 78%	
11/2/2009	0.05	3.20	4 19	4.14	3.15	0.99	1095.63	1.78%	0.81%	-0.57%	7.75%	
10/1/2009	0.05	3.39	4.24	4.19	3.34	0.85	1036.19	5.74%	3.64%	14.52%	14.19%	
9/1/2009	0.12	3.31	4.05	3.93	3.19	0.74	1057.08	-1.98%	5.49%	10.63%	7.96%	7.51%
8/3/2009	0.13	3.40	4.18	4.05	3.27	0.78	1020.62	3.57%	7.35%	8.22%	2.81%	19.43%
7/1/2009	0.17	3.50	4.31	4.14	3.33	0.81	987.48	3.36%	4.93%	8.75%	11.56%	30.87%
6/1/2009	0.18	3.52	4.31	4.13	3.34	0.79	919.32	7.41%	14.98%	21.30%	12.12%	43.65%
5/1/2009	0.13	3.46	4.34	4.21	3.33	0.88	919.14	0.02%	11.04%	19.20%	18.52%	46.35%
4/1/2009	0.12	3.12	4.04	3.92	3.00	0.92	872.81	5.31%	13.14%	18.72%	35.96%	56.23%
3/2/2009	0.20	2.68	3.56	3.36	2.48	0.88	797.87	9.39%	15.22%	32.49%	46.57%	66.17%
2/2/2009	0.25	3.04	3.72	3.47	2.79	0.68	735.09	8.54%	25.04%	38.84%	50.25%	80.55%
1/2/2009	0.22	2.84	3.60	3.38	2.62	0.76	825.88	-10.99%	5.68%	19.57%	30.03%	55.73%
12/1/2008	0.12	2.24	2.69	2.57	2.12	0.45	903.25	-8.57%	-11.67%	1.78%	23.45%	39.23%
11/3/2008	0.02	2.96	3.49	3.47	2.94	0.53	896.24	0.78%	-17.98%	2.56%	22.25%	31.72%
10/1/2008	0.44	3.97	4.37	3.93	3.53	0.40	968.75	-7.48%	-14.75%	-9.90%	6.96%	22.14%
9/2/2008	0.90	3.83	4.30	3.40	2.93	0.47	1100.30	-16.94%	-22.56%	-31.59%	-9.37%	-2.16%
8/1/2008	1.69	3.81	4.41	2.72	2.12	0.60	1282.83	-9.08%	-30.14%	-42.70%	-20.44%	-18.20%
6/2/2008	1.03	3.90	4.00	2.37	2.33	0.02	1207.30	-0.99%	-23.30%	-34.04%	-22.00%	-10.08%
5/1/2008	1.71	4.05	4.55	2.82	2.27	0.55	1400 38	-8.60%	-8.39%	-25.45%	-20.10%	-13.48%
4/1/2008	1.34	3.76	4.50	3.16	2.42	0.74	1385.59	1.07%	-8.53%	-30.08%	-37.01%	-14.35%
3/3/2008	1.27	3.43	4.31	3.04	2.16	0.88	1322.70	4.75%	-3.23%	-11.82%	-39.68%	-11.59%
2/1/2008	1.78	3.53	4.42	2.64	1.75	0.89	1330.63	-0.60%	5.24%	-3.59%	-44.76%	-16.99%
1/2/2008	1.87	3.64	4.35	2.48	1.77	0.71	1378.55	-3.48%	0.51%	-8.06%	-40.09%	-22.10%
12/3/2007	3.14	4.03	4.46	1.32	0.89	0.43	1468.36	-6.12%	-9.92%	-12.83%	-38.49%	-24.06%
11/1/2007	3.07	3.97	4.40	1.33	0.90	0.43	1481.14	-0.86%	-10.16%	-5.45%	-39.49%	-26.03%
10/1/2007	3.82	4.47	4.75	0.93	0.65	0.28	1549.38	-4.40%	-11.03%	-10.57%	-37.47%	-33.12%
9/4/2007	3.70	4.58	4.83	1.13	0.88	0.25	1526.75	1.48%	-3.82%	-13.36%	-23.61%	-30.76%
8/1/2007	3.99	4.54	4.83	0.84	0.55	0.29	1473.99	3.58%	0.49%	-9.73%	-12.97%	-30.76%
7/2/2007	4.81	4.77	4.92	0.11	-0.04	0.15	1455.27	1.29%	6.47%	-5.27%	-12.91%	-32.14%
6/1/2007	4.67	5.03	5.13	0.46	0.36	0.10	1503.35	-3.20%	1.56%	-2.33%	-14.86%	-38.85%
5/1/2007	4.59	4.89	5.01	0.42	0.30	0.12	1530.62	-1.78%	-3.70%	-3.23%	-8.51%	-39.95%
4/2/2007	4.72	4.63	4.82	0.10	-0.09	0.19	1482.37	3.25%	-1.83%	4.52%	-6.53%	-41.12%
3/1/2007	4.89	4.65	4.85	-0.04	-0.24	0.20	1420.86	4.33%	5.81%	1.45%	-6.91%	-43.85%
2/1/2007	4.99	4.55	4.67	-0.32	-0.44	0.12	1406.82	1.00%	8.80%	4.//%	-5.42%	-47.75%
12/1/2007	4.97	4.83	4.93	-0.04	-0.14	0.10	1410.24	-2.18%	3.07%	1.18%	-4.15%	-42.58%
11/1/2006	4.89	4./1	4.82	-0.07	-0.18	0.11	1418.30	1.41%	0.18%	0.00%	5.55%	-36.01%
10/2/2006	4.09	4.40	4.50	-0.33	-0.43	0.10	1377 0/	1.20%	4 38%	7 58%	12 44%	-29 70%
9/1/2006	4.34	4.01	4.72	0.01	-0.33	0.11	1335.85	3 1 5%	6 17%	6 36%	14 29%	-12 69%
8/1/2006	4.91	4.73	4.88	-0.03	-0.18	0.15	1303.82	2.46%	7.43%	7.90%	13.05%	-1.61%
7/3/2006	4.93	4.99	5.07	0.14	0.06	0.08	1276.66	2.13%	7.93%	12.66%	13.99%	-0.73%
6/1/2006	4.86	5.14	5.19	0.33	0.28	0.05	1270.20	0.51%	5.17%	11.66%	18.36%	0.77%

Date	U.S. 1	Freasury Y	'ields	U.S. Treasury Yield Spreads			S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
5/1/2006	4.72	5.11	5.21	0.49	0.39	0.10	12/0.09	0.01%	2.66%	10.28% 5 14%	20.51%	10.26% 5 72%
3/1/2006	4.05	4.85	4 89	0.32	0.42	0.10	1294.87	1 22%	-2.35%	3 16%	9 73%	2 15%
2/1/2006	4.51	4.55	4.50	-0.01	0.04	-0.05	1280.66	1.11%	-0.83%	1.81%	9.85%	3.90%
1/3/2006	4.37	4.53	4.68	0.31	0.16	0.15	1280.08	0.05%	2.39%	-0.27%	12.36%	7.69%
12/1/2005	3.98	4.39	4.55	0.57	0.41	0.16	1248.29	2.55%	3.73%	1.76%	13.62%	17.63%
11/1/2005	3.86	4.50	4.70	0.84	0.64	0.20	1249.48	-0.10%	2.50%	1.65%	12.10%	18.54%
10/3/2005	3.81	4.56	4.76	0.95	0.75	0.20	1207.01	3.52%	6.05%	8.58%	14.16%	28.37%
9/1/2005	3.47	4.33	4.57	1.10	0.86	0.24	1228.81	-1.77%	1.59%	5.38%	8.71%	24.25%
8/1/2005	3.43	4.02	4.26	0.83	0.59	0.24	1220.33	0.69%	2.39%	4.94%	6.84%	20.79%
7/1/2005	3.33	4.29	4.47	1.14	0.96	0.18	1234.18	-1.12%	-2.20%	3.72%	3.44%	17.91%
5/2/2005	3.00	3.94	4.22	1.10	0.88	0.28	1191.33	-0.01%	3.15%	4.78%	6.60%	28.19%
4/1/2005	2.88	4.01	4.55	1.47	1.15	0.34	1156.85	3.00%	6.68%	4.87%	13 29%	28.40%
3/1/2005	2.72	4.50	4.77	2.05	1.78	0.27	1180.59	-2.01%	0.91%	4.08%	9.68%	20.35%
2/1/2005	2.69	4.36	4.71	2.02	1.67	0.35	1203.60	-1.91%	-1.01%	1.39%	6.40%	16.88%
1/3/2005	2.42	4.13	4.59	2.17	1.71	0.46	1181.27	1.89%	-2.07%	4.48%	8.36%	21.75%
12/1/2004	2.18	4.22	4.82	2.64	2.04	0.60	1211.92	-2.53%	-2.59%	-1.70%	3.00%	17.03%
11/1/2004	2.18	4.36	5.01	2.83	2.18	0.65	1173.82	3.25%	2.54%	1.51%	6.45%	19.32%
10/1/2004	1.87	4.03	4.79	2.92	2.16	0.76	1130.20	3.86%	4.52%	2.36%	6.80%	21.92%
9/1/2004	1.67	4.12	4.89	3.22	2.45	0.77	1114.58	1.40%	8.73%	5.92%	10.25%	19.85%
8/2/2004	1.57	4.13	4.94	3.3/	2.56	0.81	1104.24	0.94%	6.30%	9.00%	10.51%	18.07%
6/1/2004	1.41	4.47	5.20	3.79	3.06	0.73	1101.72	-3 / 3%	2.59%	6.22%	12.02%	11 34%
5/3/2004	1.50	4.02	5 35	4.01	3.52	0.05	1120.68	1.80%	-1 47%	4 74%	6 32%	13 33%
4/1/2004	0.95	4.50	5.28	4.33	3.55	0.78	1107.30	1.21%	-0.50%	2.07%	4.47%	18.36%
3/1/2004	0.92	3.84	4.78	3.86	2.92	0.94	1126.21	-1.68%	1.30%	-1.03%	4.83%	14.98%
2/2/2004	0.93	3.98	4.86	3.93	3.05	0.88	1144.94	-1.64%	-2.12%	-3.55%	5.12%	11.85%
1/2/2004	0.90	4.14	4.97	4.07	3.24	0.83	1131.13	1.22%	-2.11%	-2.60%	4.43%	13.17%
12/1/2003	0.91	4.26	5.07	4.16	3.35	0.81	1111.92	1.73%	1.29%	2.60%	8.99%	12.26%
11/3/2003	0.91	4.32	5.13	4.22	3.41	0.81	1058.20	5.08%	8.20%	5.90%	10.93%	18.08%
10/1/2003	0.93	4.30	5.14	4.21	3.37	0.84	1050.71	0.71%	7.65%	5.39%	7.57%	14.88%
9/2/2003	0.93	3.94	4.88	3.95	3.01	0.94	1008.01	5.50%	11.64%	13.08%	0.55%	23.38%
7/1/2003	0.90	4.43	5.22	4.20	3.45	0.77	990 31	1 79%	6 10%	14 22%	11 25%	21.00%
6/2/2003	0.84	3.53	4.57	3.73	2.69	1.04	974.50	1.62%	2.20%	14.10%	17.07%	22.25%
5/1/2003	1.09	3.35	4.36	3.27	2.26	1.01	963.59	1.13%	4.61%	9.82%	16.30%	23.65%
4/1/2003	1.10	3.86	4.78	3.68	2.76	0.92	916.92	5.09%	8.00%	14.59%	20.76%	26.17%
3/3/2003	1.09	3.82	4.84	3.75	2.73	1.02	848.18	8.10%	14.89%	17.42%	32.78%	39.19%
2/3/2003	1.17	3.70	4.68	3.51	2.53	0.98	841.15	0.84%	14.56%	19.84%	36.12%	43.09%
1/2/2003	1.15	3.97	4.85	3.70	2.82	0.88	855.70	-1.70%	7.15%	15.73%	32.19%	38.05%
12/2/2002	1.18	3.82	4.78	3.60	2.64	0.96	879.82	-2.74%	-3.60%	10.76%	26.38%	37.75%
10/1/2002	1.20	4.21	5.05	3.85	3.01	0.84	930.31	-6.03%	-10.16%	2.91%	18.62%	25.37%
9/3/2002	1.53	3.61	4.66	3.13	2.45	1.10	815.28	8.64%	7.92%	4.04%	22.16%	36.71%
8/1/2002	1.64	4.14	4.94	3.30	2.50	0.80	916.07	-11.00%	2.21%	-8.18%	10.04%	20.54%
7/1/2002	1.66	4.47	5.30	3.64	2.81	0.83	911.62	0.49%	-2.84%	-6.13%	8.63%	20.85%
6/3/2002	1.66	4.82	5.52	3.86	3.16	0.70	989.82	-7.90%	-17.63%	-11.11%	-1.55%	15.26%
5/1/2002	1.71	5.04	5.61	3.90	3.33	0.57	1067.14	-7.25%	-14.16%	-12.26%	-9.70%	5.02%
4/1/2002	1.73	5.09	5.59	3.86	3.36	0.50	1076.92	-0.91%	-15.35%	-17.75%	-14.86%	2.82%
3/1/2002	1.74	5.41	5.82	4.08	3.67	0.41	1147.39	-6.14%	-13.73%	-28.94%	-26.08%	-1.85%
1/2/2002	1.72	4.80	5.41	3.09	3.14	0.55	1120.73	3.07%	-3.58%	-17.23%	-24.00%	3.45%
12/3/2001	1.72	5.03	5 48	3.81	3 36	0.40	1148.08	-1 56%	-0.06%	-13 78%	-23 37%	-3 15%
11/1/2001	1.73	4.74	5.26	3.53	3.01	0.52	1139.45	0.76%	-2.87%	-6.35%	-17.83%	-7.13%
10/1/2001	2.01	4.26	4.87	2.86	2.25	0.61	1059.78	7.52%	6.64%	1.62%	-16.42%	-0.86%
9/4/2001	2.30	4.57	5.41	3.11	2.27	0.84	1040.94	1.81%	10.29%	10.23%	-21.68%	-4.32%
8/1/2001	3.28	4.82	5.37	2.09	1.54	0.55	1133.58	-8.17%	0.52%	-2.37%	-19.19%	-11.08%
7/2/2001	3.44	5.04	5.50	2.06	1.60	0.46	1211.23	-6.41%	-12.50%	-6.69%	-24.74%	-18.24%
6/1/2001	3.56	5.39	5.74	2.18	1.83	0.35	1224.38	-1.07%	-14.98%	-6.23%	-19.16%	-20.41%
5/1/2001	3.54	5.41	5.78	2.24	1.87	0.37	1255.82	-2.50%	-9.73%	-9.27%	-15.02%	-23.27%
3/1/2001	3.83 4.19	5.54 4 01	5.77	1.94	1.51	0.43	1160 22	7 68%	-5.00%	-10.18%	-13.61%	-20.01%
2/1/2001	4.72	4.91	5.34	0.62	0.19	0.43	1239.94	-6.42%	1.28%	-8.58%	-10.74%	-32.16%
1/2/2001	4.84	5.18	5.54	0.70	0.34	0.36	1366.01	-9.23%	-8.53%	-11.33%	-17.26%	-37.36%

Date	U.S. 1	Treasury Y	'ields	U.S. Treasury Yield Spreads			S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
12/1/2000	5.73	5.11	5.46	-0.27	-0.62	0.35	1320.28	3.46%	-12.11%	-7.26%	-13.04%	-33.36%
10/2/2000	6.01	5.44	5.59	-0.42	-0.57	0.15	1314.95	-8 01%	-5.70%	-4.50%	-13.35%	-28.80%
9/1/2000	6.03	5.78	5.87	-0.16	-0.25	0.02	1436.51	-0.49%	-8.09%	-19.23%	-27.54%	-43.25%
8/1/2000	6.11	5.73	5.67	-0.44	-0.38	-0.06	1517.68	-5.35%	-13.36%	-18.30%	-25.31%	-39.64%
7/3/2000	6.02	6.03	5.78	-0.24	0.01	-0.25	1430.83	6.07%	-0.10%	-4.53%	-15.35%	-36.29%
6/1/2000	5.70	6.02	5.88	0.18	0.32	-0.14	1454.60	-1.63%	-1.24%	-9.23%	-15.83%	-31.95%
5/1/2000	5.49	6.28	6.02	0.53	0.79	-0.26	1420.60	2.39%	6.83%	-7.44%	-11.60%	-24.88%
4/3/2000	5.65	6.21	5.96	0.31	0.56	-0.25	1452.43	-2.19%	-1.49%	-1.59%	-13.97%	-25.85%
3/1/2000	5.72	6.02	5.85	0.13	0.30	-0.17	1498.58	-3.08%	-2.93%	-4.14%	-22.57%	-23.43%
2/1/2000	5.64	6.41	6.13	0.49	0.77	-0.28	1366.42	9.67%	3.97%	11.07%	-9.26%	-19.01%
12/1/1999	5.55	6.43	6.49	1 31	1.14	-0.18	1469 25	-5.09%	2.00%	-1.00%	-10 14%	-21 86%
11/1/1999	5.15	6.16	6.28	1.13	1.01	0.12	1388.91	5.78%	-1.62%	2.28%	-5.33%	-17.96%
10/1/1999	4.96	6.00	6.15	1.19	1.04	0.15	1362.93	1.91%	2.31%	6.57%	4.88%	-22.24%
9/1/1999	4.71	5.89	6.06	1.35	1.18	0.17	1282.71	6.25%	14.54%	16.83%	11.99%	-18.85%
8/2/1999	4.85	5.98	6.07	1.22	1.13	0.09	1320.41	-2.86%	5.19%	3.48%	14.94%	-14.15%
7/1/1999	4.62	5.91	6.10	1.48	1.29	0.19	1328.72	-0.63%	2.57%	4.95%	7.68%	-8.84%
6/1/1999	4.67	5.81	5.99	1.32	1.14	0.18	1372.71	-3.20%	-6.56%	7.03%	5.97%	-10.81%
5/3/1999	4.51	5.61	5.82	1.31	1.10	0.21	1301.84	5.44%	1.43%	6.69%	9.12%	-3.53%
3/1/1999	4.43	5.35	5.67	1.24	0.92	0.32	1335.18	-2.50%	-0.48%	2.08%	8.78%	-6.42%
2/1/1999	4.50	5.23	5.55	1.20	0.37	0.35	1238.37	3.88%	5 13%	6.63%	10.30%	0.13%
1/4/1999	4.36	4.65	5.09	0.73	0.29	0.44	1279.64	-3.23%	4.34%	3.84%	8.97%	6.75%
12/1/1998	4.35	4.64	5.08	0.73	0.29	0.44	1229.23	4.10%	4.65%	11.67%	19.53%	7.41%
11/2/1998	4.42	4.73	5.07	0.65	0.31	0.34	1163.63	5.64%	6.42%	11.88%	19.36%	13.00%
10/1/1998	4.21	4.60	5.14	0.93	0.39	0.54	1098.67	5.91%	16.47%	21.53%	24.05%	30.10%
9/1/1998	4.25	4.41	4.98	0.73	0.16	0.57	1017.01	8.03%	20.87%	26.49%	26.13%	41.25%
8/3/1998	4.76	5.03	5.29	0.53	0.27	0.26	957.28	6.24%	21.56%	29.36%	37.93%	58.54%
6/1/1998	4.95	5.49	5.72	0.77	0.54	0.25	1120.07	-14.58%	-10 30%	14.19% 8.41%	21 07%	27.08%
5/1/1998	4.89	5.55	5.80	0.05	0.66	0.15	1090.82	3.94%	-12.24%	6.67%	19 35%	30.23%
4/1/1998	4.85	5.67	5.95	1.10	0.82	0.28	1111.75	-1.88%	0.80%	-1.18%	20.10%	30.64%
3/2/1998	4.99	5.66	5.94	0.95	0.67	0.28	1101.75	0.91%	2.91%	-7.69%	16.76%	36.02%
2/2/1998	5.18	5.62	5.92	0.74	0.44	0.30	1049.34	4.99%	3.95%	-8.77%	18.01%	30.22%
1/2/1998	5.04	5.51	5.80	0.76	0.47	0.29	980.28	7.04%	13.41%	14.32%	30.54%	42.25%
12/1/1997	5.20	5.74	5.93	0.73	0.54	0.19	970.43	1.02%	13.53%	16.84%	26.67%	51.40%
11/3/1997	5.06	5.85	6.04	0.98	0.79	0.19	955.40	1.57%	9.83%	14.17%	21.80%	45.37%
9/2/1997	5.00 4.97	6.11	6.41	1.08	1 14	0.32	947.02	-3.45%	7.18%	16 31%	7 36%	45.02%
8/1/1997	5.09	6.33	6.60	1.51	1.24	0.27	899.47	5.32%	6.22%	16.66%	6.43%	46.80%
7/1/1997	5.10	6.00	6.29	1.19	0.90	0.29	954.31	-5.75%	-4.16%	2.72%	17.43%	39.23%
6/2/1997	5.05	6.50	6.79	1.74	1.45	0.29	885.14	7.81%	7.02%	9.64%	28.10%	55.08%
5/1/1997	4.82	6.66	6.91	2.09	1.84	0.25	848.28	4.35%	6.03%	12.63%	28.59%	53.47%
4/1/1997	5.10	6.70	6.95	1.85	1.60	0.25	801.34	5.86%	19.09%	14.14%	38.74%	66.62%
3/3/1997	5.17	6.91	7.10	1.93	1.74	0.19	757.12	5.84%	16.91%	25.12%	45.52%	69.90%
2/3/1997	5.07	6.53	6.79	1.72	1.46	0.26	790.82	-4.26%	1.27%	13.74%	32.69%	56.59%
12/2/1997	5.01	6.30	6.60	1.79	1.49	0.50	740.10	6 13%	2 21%	19 49%	31 01%	65 95%
11/1/1996	4.99	6.04	6.35	1.36	1.05	0.31	757.02	-2.15%	4.46%	12.06%	26.21%	53.71%
10/1/1996	5.01	6.35	6.65	1.64	1.34	0.30	705.27	7.34%	11.47%	13.62%	29.68%	55.78%
9/3/1996	4.91	6.70	6.92	2.01	1.79	0.22	687.33	2.61%	7.77%	10.15%	37.82%	47.97%
8/1/1996	5.14	6.94	7.11	1.97	1.80	0.17	651.99	5.42%	16.11%	21.29%	37.96%	46.82%
7/1/1996	5.18	6.79	6.97	1.79	1.61	0.18	639.95	1.88%	10.21%	22.85%	49.12%	75.12%
6/3/1996	5.03	6.71	6.90	1.87	1.68	0.19	670.63	-4.57%	2.49%	10.45%	31.99%	69.07%
5/1/1996	5.04	6.84	6.99	1.95	1.80	0.15	669.12	0.23%	-2.56%	13.14%	26.78%	63.02%
3/1/1996	5.01	6 22	0.88 6.60	1.8/	1.62	0.25	645 50	2.29%	-2.1/%	6 48%	22.50%	70 68%
2/1/1996	4.88	6.11	6.49	1.61	1.23	0.38	640.43	0.79%	4,48%	1.81%	23.48%	63.85%
1/2/1996	4.91	5.58	6.02	1.11	0.67	0.44	636.02	0.69%	2.85%	0.62%	23.61%	54.13%
12/1/1995	4.96	5.57	5.95	0.99	0.61	0.38	615.93	3.26%	4.80%	8.88%	20.26%	57.56%
11/1/1995	5.32	5.74	6.13	0.81	0.42	0.39	605.37	1.74%	5.79%	10.53%	25.05%	57.82%
10/2/1995	5.31	6.00	6.32	1.01	0.69	0.32	581.50	4.10%	9.38%	12.50%	21.28%	57.29%
9/1/1995	5.24	6.16	6.48	1.24	0.92	0.32	584.41	-0.50%	5.39%	10.45%	17.61%	62.09%
8/1/1995	5.27	6.27	6.64	1.37	1.00	0.37	561.88	4.01%	7.74%	13.98%	16.04%	60.08%

Date	U.S	U.S. Treasury Yields U.S. Treasury				Spreads	S&P 500		S&P 500	Forward	Returns	
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
7/3/1995	5.42	6.43	6.86	1.44	1.01	0.43	562.06	-0.03%	3.46%	13.16%	13.86%	69.79%
6/1/1995 5/1/1995	5.43	6.20	6.62	1.19	0.77	0.42	544.75	3.18%	7.28% 5.24%	13.07%	23.11%	50.02%
4/3/1995	5.69	7.05	7 33	1.01	1 36	0.55	514 71	2.15%	9 20%	12.49%	25.44%	55 69%
3/1/1995	5.00	7.05	7.55	1.04	1.50	0.20	500 71	2.80%	8 80%	16 72%	28.92%	51 21%
2/1/1995	5.75	7.21	7.45	1.70	1.46	0.24	487.39	2.73%	9.44%	15.28%	31.40%	62.26%
1/3/1995	5.84	7.59	7.69	1.85	1.75	0.10	470.42	3.61%	9.41%	19.48%	35.20%	67.12%
12/1/1994	5.53	7.83	7.87	2.34	2.30	0.04	459.27	2.43%	9.02%	18.61%	34.11%	61.29%
11/1/1994	5.55	7.89	7.98	2.43	2.34	0.09	453.69	1.23%	7.43%	17.57%	33.43%	66.86%
10/3/1994	5.02	7.79	7.96	2.94	2.77	0.17	472.35	-3.95%	-0.41%	8.97%	23.11%	49.31%
9/1/1994	4.67	7.60	7.82	3.15	2.93	0.22	462.71	2.08%	-0.74%	8.21%	26.30%	48.54%
8/1/1994	4.56	7.16	7.44	2.88	2.60	0.28	475.49	-2.69%	-4.58%	2.50%	18.17%	37.12%
7/1/1994	4.27	7.09	7.38	3.11	2.82	0.29	458.26	3.76%	3.07%	2.65%	22.65%	39.65%
6/1/1994	4.14	7.33	7.61	3.47	3.19	0.28	444.27	3.15%	4.15%	3.38%	22.62%	50.95%
5/2/1994	4.17	7.15	7.43	3.20	2.98	0.28	450.50	-2.08%	4.10%	-0.62%	14 15%	40.58%
3/1/1994	3.80	6.77	7.30	3.44	3.17	0.27	430.31	1.24%	-0.34%	3.80%	12 32%	43.08%
2/1/1994	3.36	6.15	6.67	3.31	2.79	0.52	467.14	-4 57%	-2.28%	1.79%	4 33%	37.10%
1/3/1994	2.97	5.64	6.22	3.25	2.67	0.58	481.61	-3.00%	-6.37%	-4.85%	-2.32%	32.06%
12/1/1993	3.00	5.78	6.34	3.34	2.78	0.56	466.45	3.25%	-4.43%	-4.76%	-1.54%	32.05%
11/1/1993	3.14	5.80	6.29	3.15	2.66	0.49	461.79	1.01%	1.16%	-1.15%	-1.75%	31.09%
10/1/1993	3.03	5.39	5.97	2.94	2.36	0.58	467.83	-1.29%	2.95%	-3.62%	0.97%	24.30%
9/1/1993	2.92	5.40	6.04	3.12	2.48	0.64	458.93	1.94%	1.64%	-2.87%	0.82%	27.34%
8/2/1993	3.01	5.45	6.09	3.08	2.44	0.64	463.56	-1.00%	-0.38%	0.77%	2.57%	21.21%
7/1/1993	3.03	5.83	6.57	3.54	2.80	0.74	448.13	3.44%	4.40%	7.47%	2.26%	25.42%
6/1/1993	3.03	5.80	6.68	3.65	2.77	0.88	450.53	-0.53%	1.86%	3.53%	-1.39%	20.91%
5/3/1993	3.06	6.16	6.98	3.92	3.10	0.82	450.19	0.08%	2.97%	2.58%	1.40%	18.48%
4/1/1993	2.91	6.05	6.95	4.04	3.14	0.90	440.19	2.27%	1.80%	0.28%	2.44%	10.93%
2/1/1993	2.05	6.03	6.90	3 95	3.14	0.50	431.07	1.87%	1 54%	4 55%	5 36%	9.93%
1/4/1993	2.90	6.39	7.21	4.31	3.49	0.82	438.78	1.05%	0.32%	2.13%	9.76%	7.21%
12/1/1992	3.08	6.70	7.40	4.32	3.62	0.70	435.71	0.70%	3.66%	3.40%	7.06%	5.41%
11/2/1992	3.27	6.95	7.59	4.32	3.68	0.64	431.35	1.01%	2.79%	4.37%	7.06%	5.18%
10/1/1992	2.96	6.80	7.63	4.67	3.84	0.83	418.68	3.03%	4.80%	5.14%	11.74%	12.82%
9/1/1992	2.69	6.37	7.38	4.69	3.68	1.01	417.80	0.21%	4.29%	8.11%	9.84%	10.75%
8/3/1992	3.16	6.62	7.42	4.26	3.46	0.80	414.03	0.91%	4.18%	7.09%	11.96%	14.84%
7/1/1992	3.18	6.72	7.46	4.28	3.54	0.74	424.21	-2.40%	-1.30%	3.43%	5.64%	8.03%
6/1/1992	3.57	7.14	7.79	4.22	3.57	0.65	408.14	3.94%	2.37%	6.76%	10.39%	8.85%
5/1/1992	3.70	7.33	7.84	4.14	3.63	0.51	415.35	-1.74%	-0.32%	3.85%	8.39%	9.91%
3/2/1992	3.70	7.01	7.96	4.50	3.91	0.43	414.55	2 70%	1 10%	3.50%	11 99%	10 42%
2/3/1992	3.93	7.27	7.80	3.87	3.34	0.53	412.70	-2.18%	0.64%	0.32%	7.43%	13.19%
1/2/1992	3.84	7.31	7.77	3.93	3.47	0.46	408.78	0.96%	1.51%	3.77%	7.34%	17.82%
12/2/1991	3.88	6.71	7.41	3.53	2.83	0.70	417.09	-1.99%	-3.21%	-2.15%	4.46%	11.83%
11/1/1991	4.35	7.38	7.94	3.59	3.03	0.56	375.22	11.16%	9.99%	10.70%	14.96%	23.07%
10/1/1991	4.82	7.47	7.91	3.09	2.65	0.44	392.45	-4.39%	4.16%	5.73%	6.68%	19.21%
9/3/1991	5.11	7.47	7.82	2.71	2.36	0.35	387.86	1.18%	7.54%	4.08%	7.72%	18.32%
8/1/1991	5.33	7.82	8.06	2.73	2.49	0.24	395.43	-1.91%	-5.11%	4.37%	4.70%	17.23%
7/1/1991	5.53	8.20	8.36	2.83	2.67	0.16	387.81	1.96%	1.20%	5.41%	9.39%	15.55%
6/3/1991	5.54	8.24	8.42	2.88	2.70	0.18	3/1.16	4.49%	4.50%	12.3/%	9.96%	21.38%
J/1/1991	5.55	8.00	0.20	2.75	2.55	0.20	275 24	-4.79%	2 2 2 2 0 /	-5.75%	10 55%	17 20%
3/1/1991	5.74	8.02	8.20	2.03	2.31	0.18	375.34	0.03%	-1 08%	3 37%	7 59%	20 37%
2/1/1991	6.04	8.02	8.19	2.15	1.98	0.17	367.07	2.22%	6.20%	7.73%	12.43%	20.79%
1/2/1991	6.19	8.03	8.21	2.02	1.84	0.18	343.93	6.73%	9.13%	12.76%	18.86%	27.58%
12/3/1990	6.44	8.08	8.26	1.82	1.64	0.18	330.22	4.15%	13.63%	12.40%	26.31%	31.95%
11/1/1990	7.02	8.26	8.40	1.38	1.24	0.14	322.22	2.48%	13.92%	20.98%	16.45%	33.87%
10/1/1990	7.11	8.65	8.78	1.67	1.54	0.13	304.00	5.99%	13.13%	23.47%	29.10%	37.72%
9/4/1990	7.14	8.82	8.96	1.82	1.68	0.14	306.05	-0.67%	7.90%	22.60%	26.73%	36.51%
8/1/1990	7.39	8.86	8.99	1.60	1.47	0.13	322.56	-5.12%	-0.11%	13.80%	22.59%	28.36%
7/2/1990	7.49	8.36	8.42	0.93	0.87	0.06	356.15	-9.43%	-14.64%	-3.43%	8.89%	19.11%
6/1/1990	7.74	8.43	8.41	0.67	0.69	-0.02	358.02	-0.52%	-14.52%	-7.76%	3.6/%	14.00%
3/1/1990	7.75	8.6U	8.58 0.00	0.83	0.85	-0.02	301.23	9 20%	-10./1%	-10.80%	13 460/	25 110/
3/1/1990	7.80	8.65	8.63	0.83	0.85	-0.04	339.94	-2.69%	5.32%	-9.97%	10.38%	18.75%
, _, _,0	1.00	5.05	5.05		0.00	0.02			2.3270	2.2770	_0.0070	

Date	U.S. Treasury Yields U.S. Treasury Yield Sp				Spreads	S&P 500 S&P 500 Forward Returns					1	
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
2/1/1990	7.77	8.51	8.54	0.77	0.74	0.03	331.89	2.43%	8.84%	-2.81%	10.60%	24.35%
1/2/1990	7.74	8.43	8.46	0.72	0.69	0.03	329.08	0.85%	0.52%	8.23%	4.51%	24.22%
11/1/1989	7.55	7.93	7.98	0.43	0.38	0.05	353.40	-0.88%	-3.81%	1.31%	-6.20%	8 45%
10/2/1989	7.55	7.04	7.50	0.51	0.25	0.00	340.36	1.65%	-3 31%	-2.81%	-10.68%	15 30%
9/1/1989	7.91	8.31	8.24	0.33	0.40	-0.07	349.15	-2.52%	1.22%	-2.64%	-12.34%	11.09%
8/1/1989	7.89	8.26	8.21	0.32	0.37	-0.05	351.45	-0.65%	-1.55%	-5.57%	-8.22%	12.51%
7/3/1989	7.80	7.82	7.92	0.12	0.02	0.10	346.08	1.55%	-1.65%	-4.91%	2.91%	12.06%
6/1/1989	7.99	8.10	8.05	0.06	0.11	-0.05	317.98	8.84%	9.80%	11.14%	12.59%	16.72%
5/1/1989	8.61	8.60	8.60	-0.01	-0.01	0.00	320.52	-0.79%	9.65%	7.95%	12.70%	21.62%
4/3/1989	8.41	9.02	8.91	0.50	0.61	-0.11	309.64	3.51%	11.77%	9.92%	6.83%	21.22%
3/1/1989	8.90	9.30	9.11	0.21	0.40	-0.19	294.87	5.01%	7.84%	18.41%	15.28%	27.25%
2/1/1989	8.71	9.32	9.14	0.43	0.61	-0.18	288.86	2.08%	10.96%	21.6/%	14.90%	27.08%
12/1/1989	8.39	9.01	8.84	0.45	0.62	-0.17	297.47	-2.89%	6 18%	14 50%	10.63%	18 00%
11/1/1988	7.83	9.06	9.00	1 24	1.04	0.14	273.70	1 47%	5 54%	17.11%	26.41%	17 73%
10/3/1988	7.36	8.65	8.74	1.38	1.29	0.09	278.97	-1.89%	6.63%	10.99%	22.01%	8.97%
9/1/1988	7.25	8.87	8.98	1.73	1.62	0.11	271.91	2.60%	2.14%	8.44%	28.41%	12.56%
8/1/1988	7.30	9.25	9.31	2.01	1.95	0.06	261.52	3.97%	4.66%	10.45%	34.39%	23.34%
7/1/1988	6.95	9.12	9.23	2.28	2.17	0.11	272.02	-3.86%	2.55%	9.36%	27.23%	30.93%
6/1/1988	6.56	8.82	8.87	2.31	2.26	0.05	273.50	-0.54%	-0.58%	1.54%	16.26%	30.90%
5/2/1988	6.43	9.20	9.30	2.87	2.77	0.10	262.16	4.33%	-0.24%	4.40%	22.26%	37.79%
4/4/1988	5.98	8.87	9.11	3.13	2.89	0.24	261.33	0.32%	4.09%	6.75%	18.49%	26.58%
3/1/1988	5.71	8.57	8.82	3.11	2.86	0.25	258.89	0.94%	5.64%	5.03%	13.90%	31.31%
2/1/1988	5.62	8.16	8.39	2.//	2.54	0.23	267.82	-3.33%	-2.11%	-2.35%	7.86%	23.92%
12/1/1988	5.68	8.20	8.4Z	2.78	2.02	0.16	257.07	4.18%	1.00%	5.82%	12.72%	28.01%
11/2/1987	5.00	8 99	9.10	3.89	3.78	0.12	247.00	7 29%	16 29%	13.83%	18 84%	50 23%
10/1/1987	5.27	8.88	9.03	3.76	3.61	0.15	251.79	-8.53%	2.10%	3.79%	10.79%	35.18%
9/1/1987	6.61	9.63	9.79	3.18	3.02	0.16	321.83	-21.76%	-23.23%	-19.56%	-15.51%	8.49%
8/3/1987	6.25	9.00	9.17	2.92	2.75	0.17	329.80	-2.42%	-30.17%	-18.79%	-20.70%	6.56%
7/1/1987	6.07	8.66	8.89	2.82	2.59	0.23	318.66	3.50%	-20.98%	-19.33%	-14.64%	8.60%
6/1/1987	5.73	8.38	8.51	2.78	2.65	0.13	304.00	4.82%	5.87%	-18.72%	-10.03%	4.60%
5/1/1987	5.68	8.49	8.65	2.97	2.81	0.16	290.10	4.79%	13.68%	-20.61%	-9.63%	10.49%
4/1/1987	5.53	8.21	8.45	2.92	2.68	0.24	288.36	0.60%	10.51%	-12.68%	-9.37%	7.38%
3/2/198/	5.01	7.51	7.81	2.20	1.90	0.30	291.70	-1.15%	2 08%	16.05%	-11.25%	1.09%
1/2/1987	5.60	7.18	7.40	1.88	1.74	0.20	274.08	3 69%	5 21%	16.05%	-6.21%	8 53%
12/1/1986	5.67	7.23	7.49	1.82	1.56	0.26	242.17	13.18%	20.45%	25.53%	2.03%	14.68%
11/3/1986	5.39	7.15	7.41	2.02	1.76	0.26	249.22	-2.83%	14.04%	16.40%	-7.59%	9.82%
10/1/1986	5.20	7.34	7.61	2.41	2.14	0.27	243.98	2.15%	12.34%	18.19%	3.20%	14.34%
9/2/1986	5.20	7.45	7.60	2.40	2.25	0.15	231.32	5.47%	4.69%	26.10%	39.13%	17.55%
8/1/1986	5.17	6.95	7.21	2.04	1.78	0.26	252.93	-8.54%	-1.47%	12.36%	30.39%	3.40%
7/1/1986	5.79	7.34	7.46	1.67	1.55	0.12	236.12	7.12%	3.33%	16.08%	34.96%	15.20%
5/1/1086	5.96	7.35	7.24	1.28	1.39	-0.11	250.84	-5.8/%	-1.18%	-3.46%	21.19%	5.00%
4/1/1986	6.30	0.05 7 38	7.74	1.44	1.75	0.01	247.35	5.02%	0.25%	3 59%	27.28%	10.96%
3/3/1986	6.34	7.39	7.44	1.10	1.05	0.05	238.90	-1.41%	5.00%	-3.17%	22.10%	8.37%
2/3/1986	7.02	8.13	8.27	1.25	1.11	0.14	226.92	5.28%	9.00%	11.46%	25.24%	18.02%
1/2/1986	6.97	9.08	9.34	2.37	2.11	0.26	211.78	7.15%	11.21%	11.49%	29.42%	21.39%
12/2/1985	7.05	9.00	9.27	2.22	1.95	0.27	211.28	0.24%	13.07%	18.72%	14.62%	16.94%
11/1/1985	7.16	9.59	9.86	2.70	2.43	0.27	202.17	4.51%	12.24%	22.35%	23.27%	13.91%
10/1/1985	7.19	10.01	10.28	3.09	2.82	0.27	189.82	6.51%	11.57%	24.08%	28.53%	32.65%
9/3/1985	7.04	10.31	10.57	3.53	3.27	0.26	182.08	4.25%	16.04%	31.21%	27.04%	76.75%
8/1/1985 7/1/1095	7.14	10.28	10.48	3.34	3.14	0.20	188.63	-3.4/%	-0.58%	20.30%	34.09%	74.84%
6/3/1985	6.83	10.57	10.70	3.42	3.29	0.13	191.92	-0.48%	-5 09%	10.33%	30 75%	58 46%
5/1/1985	7.14	10.28	10.58	3.44	3.14	0.30	189.55	1.21%	-0.49%	6.66%	30.49%	53.05%
4/1/1985	7.85	11.41	11.48	3.63	3.56	0.07	179.83	5.41%	6.17%	5.56%	30.97%	60.35%
3/1/1985	8.18	11.65	11.64	3.46	3.47	-0.01	180.66	-0.46%	6.19%	0.79%	32.24%	61.46%
2/1/1985	8.50	11.91	11.90	3.40	3.41	-0.01	181.18	-0.29%	4.62%	4.11%	25.25%	56.86%
1/2/1985	8.05	11.17	11.21	3.16	3.12	0.04	179.63	0.86%	0.11%	6.29%	17.90%	52.58%
12/3/1984	7.85	11.55	11.54	3.69	3.70	-0.01	167.24	7.41%	8.02%	14.72%	26.33%	44.80%
11/1/1984	8.44	11.58	11.58	3.14	3.14	0.00	163.58	2.24%	10.76%	15.88%	23.59%	52.35%
10/1/1984	9.01	11.79	11.64	2.63	2.78	-0.15	166.09	-1.51%	8.15%	8.27%	14.29%	46.90%

Date	U.S. 1	Freasury Y	/ields	U.S. Treasury Yield Spreads			S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
9/4/1984	10.22	12.47	12.28	2.06	2.25	-0.19	166.10	-0.01%	0.69%	8.77%	9.62%	39.27%
8/1/1984	10.63	12.79	12.51	1.88	2.16	-0.28	150.68	-0.35%	-1.86%	8.70%	13.1/%	51.75%
6/1/1984	9.92	13.84	13.64	3.72	3.92	-0.04	153.00	-1.65%	8 43%	9 18%	25.72%	63 76%
5/1/1984	9.75	13.91	13.84	4.09	4.16	-0.07	150.55	1.75%	10.71%	8.65%	25.91%	64.30%
4/2/1984	9.72	12.82	12.86	3.14	3.10	0.04	160.05	-5.94%	-5.87%	3.77%	12.36%	47.15%
3/1/1984	9.72	12.53	12.52	2.80	2.81	-0.01	159.18	0.55%	-3.77%	4.35%	13.49%	50.08%
2/1/1984	9.14	12.04	12.14	3.00	2.90	0.10	157.06	1.35%	-4.14%	6.13%	15.36%	44.48%
1/3/1984	8.89	11.67	11.78	2.89	2.78	0.11	163.41	-3.89%	-2.06%	-7.80%	9.93%	29.60%
12/1/1983	8.97	11.82	11.87	2.90	2.85	0.05	164.93	-0.92%	-3.49%	-7.12%	1.40%	28.10%
11/1/1983	8.88	11.63	11.67	2.79	2.75	0.04	166.40	-0.88%	-5.61%	-9.53%	-1.69%	21.50%
10/3/1983	8.51	11.74	11.78	3.27	3.23	0.04	163.55	1.74%	-0.09%	-2.14%	1.55%	16.06%
9/1/1983	8.71	11.44	11.44	2.73	2.73	0.00	166.07	-1.52%	-0.69%	-4.15%	0.02%	9.64%
7/1/1983	9.26	11.98	11.96	2.70	2.72	-0.02	162.56	1.02%	1.22%	-4.46%	1.39%	17.45%
6/1/1983	8.79	10.96	11.00	2.58	2.54	0.04	167.50	-3.03%	-0.94%	-1.62%	-8.63%	14 44%
5/2/1983	8.63	10.81	10.97	2.34	2.18	0.16	162.39	3.23%	1.24%	2.47%	-7.29%	16.73%
4/4/1983	8.08	10.27	10.38	2.30	2.19	0.11	164.43	-1.24%	-1.14%	-0.54%	-2.66%	9.37%
3/1/1983	8.64	10.62	10.69	2.05	1.98	0.07	152.96	7.50%	9.60%	8.57%	4.07%	18.11%
2/1/1983	7.93	10.27	10.51	2.58	2.34	0.24	148.06	3.31%	9.68%	11.04%	6.08%	22.37%
1/3/1983	8.10	10.80	10.99	2.89	2.70	0.19	145.30	1.90%	13.17%	11.88%	12.46%	23.63%
12/1/1982	7.92	10.36	10.43	2.51	2.44	0.07	140.64	3.31%	8.76%	19.20%	17.27%	18.91%
11/1/1982	8.28	10.79	10.70	2.42	2.51	-0.09	138.53	1.52%	6.88%	17.22%	20.12%	18.08%
10/1/1982	7.90	10.71	11.01	3.11	2.81	0.30	133.72	3.60%	8.66%	22.97%	22.31%	24.21%
9/1/1982	7.62	11.73	11.79	4.17	4.11	0.06	120.42	11.04%	16.79%	27.02%	37.91%	37.93%
8/2/1982	8.42	12.81	12.50	4.08	4.39	-0.31	119.51	0.76%	15.91%	23.89%	37.56%	39.47%
6/1/1982	10.17	13.08	13.42	3.25	3.51	-0.26	107.09	2 2 0%	24.87%	30.08%	51.80%	40.69%
5/3/1982	11 50	13 71	13.31	1.13	2 21	-0.33	111 88	-2.30%	6.82%	20.31/0	15 15%	34 56%
4/1/1982	12.34	13.87	13.39	1.05	1.53	-0.48	116.44	-3.92%	-8.03%	14.84%	41.21%	37.45%
3/1/1982	13.26	14.18	13.68	0.42	0.92	-0.50	111.96	4.00%	-2.10%	7.56%	36.62%	42.18%
2/1/1982	12.44	14.03	13.83	1.39	1.59	-0.20	113.11	-1.02%	-1.09%	5.66%	30.90%	38.86%
1/4/1982	12.52	14.14	13.91	1.39	1.62	-0.23	120.40	-6.05%	-3.29%	-11.05%	20.68%	35.72%
12/1/1981	11.08	13.98	13.65	2.57	2.90	-0.33	122.55	-1.75%	-8.64%	-10.56%	14.76%	34.58%
11/2/1981	10.37	13.13	12.91	2.54	2.76	-0.22	126.35	-3.01%	-10.48%	-11.45%	9.64%	31.70%
10/1/1981	12.75	14.63	14.36	1.61	1.88	-0.27	121.89	3.66%	-1.22%	-4.47%	9.71%	34.18%
9/1/1981	14.34	15.84	15.19	0.85	1.50	-0.65	116.18	4.91%	5.48%	-3.63%	3.65%	42.94%
8/3/1981	15.52	15.41	14.78	-0.74	-0.11	-0.63	122.79	-5.38%	2.90%	-7.88%	-2.67%	33.89%
6/1/1981	14.87	13.86	13.96	-0.91	-0.20	-0.71	130.92	-0.21%	-0.90%	-8.04%	-18.20%	24.17%
5/1/1981	15.10	13.50	13.06	-2.04	-0.42	-0.30	132.59	-1.04%	-7 39%	-4 71%	-15 62%	27.70%
4/1/1981	14.86	14.11	13.65	-1.21	-0.75	-0.46	132.81	-0.17%	-1.42%	-8.22%	-12.33%	23.81%
3/2/1981	12.46	13.13	12.65	0.19	0.67	-0.48	136.00	-2.35%	-3.52%	-14.57%	-17.68%	12.47%
2/2/1981	14.22	13.43	12.97	-1.25	-0.79	-0.46	131.27	3.60%	1.01%	-6.46%	-13.83%	12.79%
1/2/1981	14.59	12.68	12.28	-2.31	-1.91	-0.40	129.55	1.33%	2.52%	1.06%	-7.06%	12.16%
12/1/1980	14.30	12.43	11.98	-2.32	-1.87	-0.45	135.76	-4.57%	0.18%	-3.35%	-9.73%	3.59%
11/3/1980	14.48	12.72	12.32	-2.16	-1.76	-0.40	140.52	-3.39%	-6.58%	-5.64%	-10.08%	-1.42%
10/1/1980	12.71	12.46	12.23	-0.48	-0.25	-0.23	127.47	10.24%	1.63%	4.19%	-4.38%	4.90%
9/2/1980	11.44	11.86	11.70	0.26	0.42	-0.16	125.46	1.60%	8.21%	8.40%	-7.40%	-4.02%
8/1/1980	9.96	11.55	11.27	1.31	1.59	-0.28	122.38	2.52%	14.82%	7.26% c 10%	0.34%	-2.35%
6/2/1980	7.88	10.70	10.80	2.10	2.14	-0.10	114 24	6.50%	9.87%	18 84%	14 85%	-4.05%
5/1/1980	7.75	10.05	10.37	2.62	2.50	0.12	111.24	2.70%	10.01%	26.32%	19.19%	0.58%
4/1/1980	10.39	10.76	10.89	0.50	0.37	0.13	106.29	4.66%	14.47%	19.93%	24.95%	9.55%
3/3/1980	14.24	12.64	12.31	-1.93	-1.60	-0.33	102.09	4.11%	11.90%	22.89%	33.22%	9.67%
2/1/1980	14.01	12.72	12.25	-1.76	-1.29	-0.47	113.66	-10.18%	-2.13%	7.67%	15.49%	-0.48%
1/2/1980	12.00	11.13	11.09	-0.91	-0.87	-0.04	114.16	-0.44%	-6.89%	6.58%	13.48%	5.47%
12/3/1979	12.04	10.33	10.11	-1.93	-1.71	-0.22	107.94	5.76%	-5.42%	5.84%	25.77%	13.54%
11/1/1979	11.49	10.38	10.09	-1.40	-1.11	-0.29	106.16	1.68%	7.06%	4.79%	32.37%	19.02%
10/1/1979	12.12	10.72	10.19	-1.93	-1.40	-0.53	101.82	4.26%	12.12%	4.39%	25.19%	19.71%
9/4/1979	10.12	9.44	9.25	-0.87	-0.68	-0.19	109.32	-6.86%	-1.26%	-6.61%	14.76%	6.28%
7/2/1070	9.81	9.24	9.09 9.09	-0.72	-0.57	-0.15	109.32	5 21%	-2.89%	5.97% 9 07%	17 20%	26 12%
6/1/1979	9.10	8 81	8.99	-0.19	-0.17	0.02	103.81	0.87%	6 23%	4 89%	11 01%	27 50%
5/1/1979	9.57	9.06	9.08	-0.49	-0.51	0.02	99.08	3.87%	10.34%	7.15%	12.27%	33.82%

Date	U.S. 1	U.S. Treasury Yields U.S.			reasury Yield Spreads S8			S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
4/2/1979	9.56	9.35	9.22	-0.34	-0.21	-0.13	101.76	-2.63%	2.01%	0.06%	4.45%	30.51%
3/1/19/9	9.44	9.11	9.02	-0.42	-0.33	-0.09	101.59	0.17%	1.30%	12 5 49/	19.05%	33.8/%
1/2/1979	9.45	9.17	9.06	-0.57	-0.26	-0.09	90.20	-3 65%	1 83%	3 88%	14 24%	20.54%
12/1/1978	9.25	9.15	8.96	-0.30	-0.11	-0.10	96 11	3.05%	5 70%	7.08%	12 31%	41 25%
11/1/1978	9.01	8.86	8.80	-0.21	-0.15	-0.06	94.70	1.49%	1.67%	4.63%	12.10%	48.38%
10/2/1978	8.75	8.96	8.87	0.12	0.21	-0.09	93.15	1.66%	7.28%	9.24%	9.31%	36.84%
9/1/1978	7.98	8.56	8.61	0.63	0.58	0.05	102.54	-9.16%	-6.27%	-0.93%	6.61%	22.35%
8/1/1978	7.54	8.39	8.46	0.92	0.85	0.07	103.29	-0.73%	-8.32%	-6.79%	5.84%	18.48%
7/3/1978	6.76	8.56	8.56	1.80	1.80	0.00	100.68	2.59%	-7.48%	-0.74%	3.11%	20.85%
6/1/1978	7.01	8.62	8.62	1.61	1.61	0.00	95.53	5.39%	7.34%	0.61%	7.73%	19.59%
5/1/1978	6.65	8.42	8.50	1.85	1.77	0.08	97.24	-1.76%	6.22%	-2.61%	1.89%	14.40%
4/3/1978	6.35	8.24	8.39	2.04	1.89	0.15	96.83	0.42%	3.98%	-3.80%	5.09%	9.77%
3/1/1978	6.47	8.15	8.33	1.86	1.68	0.18	89.21	8.54%	7.08%	14.94%	13.88%	14.44%
2/1/19/8	6.42	8.04	8.25	1.83	1.62	0.21	87.04	2.49%	11.72%	13.67%	11.62%	30.58%
12/1/1978	6.42	7.94	0.10	1.70	1.52	0.24	69.25	-2.48%	6 10%	0.45%	1.97%	12 50%
11/1/1977	6.04	7.78	7.83	1.50	1.05	0.23	94.83	0.15%	-8 21%	2 54%	-0.14%	11 95%
10/3/1977	6.18	7.62	7.83	1.65	1.44	0.20	92.34	2.70%	-3.35%	4.86%	0.88%	10.27%
9/1/1977	5.89	7.41	7.68	1.79	1.52	0.27	96.53	-4.34%	-1.48%	-7.58%	6.23%	13.25%
8/1/1977	5.56	7.28	7.60	2.04	1.72	0.32	96.77	-0.25%	-2.00%	-10.05%	6.74%	12.97%
7/1/1977	5.40	7.42	7.72	2.32	2.02	0.30	98.85	-2.10%	-6.59%	-9.71%	1.85%	5.02%
6/1/1977	4.98	7.20	7.58	2.60	2.22	0.38	100.48	-1.62%	-3.93%	-5.35%	-4.93%	2.42%
5/2/1977	5.03	7.38	7.74	2.71	2.35	0.36	96.12	4.54%	0.68%	-1.34%	1.17%	3.08%
4/1/1977	4.69	7.45	7.80	3.11	2.76	0.35	98.44	-2.36%	0.42%	-6.20%	-1.64%	3.37%
3/1/1977	4.54	7.42	7.79	3.25	2.88	0.37	98.42	0.02%	2.09%	-1.92%	-9.36%	3.22%
2/1/1977	4.70	7.45	7.80	3.10	2.75	0.35	99.82	-1.40%	-3.71%	-3.06%	-12.80%	-3.55%
1/3/19//	4.72	7.40		-4.72	2.68	-7.40	102.03	-2.17%	-3.52%	-3.12%	-12.53%	-2.06%
11/1/1976	4.34	7.01		-4.34	2.47	-0.81	107.46	-5.05%	-8.41%	-0.50%	-11.50%	-10.56%
10/1/1976	4.42	7.01		-4.42	2.55	-7.01	102.10	-0.78%	-0.85%	-4 33%	-10 26%	-9.48%
9/1/1976	5.06	7.55		-5.06	2.49	-7.55	105.24	-2.22%	2.11%	-6.48%	-8.28%	-2.57%
8/2/1976	5.09	7.66		-5.09	2.57	-7.66	102.91	2.26%	-0.79%	-3.00%	-5.97%	0.37%
7/1/1976	5.17	7.86		-5.17	2.69	-7.86	103.44	-0.51%	-0.52%	-1.36%	-4.44%	-2.67%
6/1/1976	5.37	7.86		-5.37	2.49	-7.86	104.28	-0.81%	0.92%	3.05%	-3.64%	-8.39%
5/3/1976	5.49	7.96		-5.49	2.47	-7.96	100.18	4.09%	2.73%	1.92%	-4.05%	-2.93%
4/1/1976	4.91	7.67		-4.91	2.76	-7.67	101.64	-1.44%	1.77%	1.24%	-3.15%	-4.73%
3/1/1976	4.97	7.66		-4.97	2.69	-7.66	102.77	-1.10%	1.47%	2.40%	-4.23%	-13.19%
2/2/1976	5.00	7.77		-5.00	2.77	-7.77	99.71	3.07%	0.47%	3.21%	0.11%	-12.71%
1/2/19/6	4.73	7.80		-4./3	3.07	-7.80	100.86	-1.14%	12.05%	2.56%	1.16%	-11.51%
11/3/1975	5.20	2.70		-5.20	2.50	-7.70	90.19	-1 15%	0 28%	0.80%	11 90%	3 03%
10/1/1975	5.54	7 91		-5 51	2.00	-7 91	89.04	2 47%	13 27%	14 15%	15 57%	3 71%
9/2/1975	6.58	8.48		-6.58	1.90	-8.48	83.87	6.16%	7.54%	22.53%	25.48%	15.09%
8/1/1975	6.36	8.22		-6.36	1.86	-8.22	86.88	-3.46%	5.02%	14.77%	18.45%	11.38%
7/1/1975	6.25	8.20		-6.25	1.95	-8.20	88.75	-2.11%	0.33%	13.65%	16.55%	11.38%
6/2/1975	5.86	7.96		-5.86	2.10	-7.96	95.19	-6.77%	-11.89%	-5.25%	9.55%	5.56%
5/1/1975	5.20	8.04		-5.20	2.84	-8.04	91.15	4.43%	-4.68%	0.10%	9.91%	5.45%
4/1/1975	5.50	8.31		-5.50	2.81	-8.31	87.30	4.41%	1.66%	1.99%	16.43%	12.76%
3/3/1975	5.53	8.01		-5.53	2.48	-8.01	83.36	4.73%	14.19%	0.61%	23.28%	18.07%
2/3/1975	5.40	7.46		-5.40	2.06	-7.46	81.59	2.1/%	11.72%	6.48%	22.21%	22.34%
12/2/19/5	2.08	7.53		-5.08	1.65	-7.53	69.56	5.99%	13.41%	20 040/	21 55%	56 74%
11/1/1974	7.00	7.40		-7.00	0.34	-7.40	69.90	-2 02%	16 61%	30.27%	30.40%	45 92%
10/1/1974	7.80	7.79		-7.80	-0.01	-7.79	73.90	-5.32%	4.17%	18.13%	20.49%	39.24%
9/3/1974	6.12	7.94		-6.12	1.82	-7.94	63.54	16.30%	7.90%	31.19%	32.00%	65.63%
8/1/1974	8.93	8.11		-8.93	-0.82	-8.11	72.15	-11.93%	-3.02%	13.08%	20.42%	42.63%
7/1/1974	7.67	7.89		-7.67	0.22	-7.89	79.31	-9.03%	-6.82%	-2.94%	11.90%	30.42%
6/3/1974	7.34	7.64		-7.34	0.30	-7.64	86.00	-7.78%	-26.12%	-20.28%	10.69%	21.26%
5/1/1974	8.08	7.52		-8.08	-0.56	-7.52	87.28	-1.47%	-17.34%	-19.83%	4.43%	14.78%
4/1/1974	8.90	7.66		-8.90	-1.24	-7.66	90.31	-3.36%	-12.18%	-18.17%	-3.33%	12.55%
3/1/1974	8.28	7.41		-8.28	-0.87	-7.41	93.98	-3.91%	-8.49%	-32.39%	-11.30%	9.35%
2/1/1974	7.46	7.01		-7.46	-0.45	-7.01	96.22	-2.33%	-9.29%	-25.02%	-15.20%	3.63%
12/3/1972	7.48	6.90		-7.48	-0.48 -0.56	-7.00	90.57	-0.30%	-0.48%	-11.87%	-20.29%	-7 54%
1	7.40	0.50		1 7.40	0.50	0.50	51.55	1.00/0	3.0070	11.04/0		1.54/0

Date	U.S. 7	Freasury Y	rields	U.S. Treasury Yield Spreads			S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
11/1/1973	7.30	6.69)	-7.30	-0.61	-6.69	95.96	1.66%	0.27%	-9.05%	-27.08%	-4.92%
10/1/1973	7.36	6.71		-7.36	-0.65	-6.71	108.29	-11.39%	-10.82%	-16.60%	-31.76%	-17.78%
9/4/1973	6.98	6.90)	-6.98	-0.08	-6.90	108.43	-0.13%	-10.03%	-13.33%	-41.40%	-22.65%
8/1/1973	8.66	7.25	;	-8.66	-1.41	-7.25	104.25	4.01%	-7.95%	-7.70%	-30.79%	-16.66%
7/2/1973	8.32	7.43	5	-8.32	-0.89	-7.43	108.22	-3.67%	0.06%	-10.77%	-26.71%	-17.99%
6/1/1973	7.52	6.94	ŧ.	-7.52	-0.58	-6.94	104.26	3.80%	4.00%	-6.44%	-17.51%	-8.70%
5/1/1973	6.92	6.93	5	-6.92	0.01	-6.93	104.95	-0.66%	-0.67%	-8.57%	-16.84%	-13.15%
4/2/1973	6.23	6.70)	-6.23	0.47	-6.70	106.97	-1.89%	1.17%	1.23%	-15.57%	-18.39%
3/1/1973	6.40	6.73	\$	-6.40	0.33	-6.73	111.52	-4.08%	-6.51%	-2.77%	-15.73%	-25.25%
2/1/1973	5.85	6.64	ŀ	-5.85	0.79	-6.64	111.68	-0.14%	-6.03%	-6.65%	-13.84%	-26.94%
1/2/1973	5.68	6.54	ŀ	-5.68	0.86	-6.54	116.03	-3.75%	-7.81%	-6.73%	-16.77%	-33.66%
12/1/1972	5.14	6.41	20	-5.14	1.27	-6.41	118.05	-1.71%	-5.53%	-11.68%	-17.37%	-41.92%
11/1/1972	4.88	6.28	5	-4.88	1.40	-6.28	116.67	1.18%	-4.28%	-10.05%	-17.75%	-40.03%
10/2/1972	4.76	6.41		-4.76	1.65	-6.41	111.58	4.56%	3.99%	-4.13%	-2.95%	-33.77%
9/1/1972	4.55	6.54	•	-4.55	1.99	-6.54	110.55	0.93%	6.78%	0.88%	-1.92%	-42.52%
8/1/1972	4.55	6.42	l.	-4.55	1.87	-6.42	111.09	-0.49%	5.02%	0.53%	-6.16%	-35.05%
7/3/1972	3.80	6.12		-3.80	2.32	-6.12	107.39	3.45%	3.90%	8.05%	0.77%	-26.15%
6/1/1972	4.06	6.15	,	-4.06	2.09	-6.15	107.14	0.23%	3.18%	10.18%	-2.69%	-19.73%
5/1/1972	3.81	6.05	,	-3.81	2.24	-6.05	109.53	-2.18%	1.42%	6.52%	-4.18%	-20.31%
4/3/1972	3.63	6.14	r .	-3.63	2.51	-6.14	107.67	1.73%	-0.26%	3.63%	-0.65%	-16.12%
3/1/19/2	3.83	6.12		-3.83	2.29	-6.12	107.20	0.44%	-0.06%	3.12%	4.03%	-12.33%
2/1/19/2	3.46	6.04	č N	-3.46	2.58	-6.04	100.57	0.59%	2.78%	4.24%	4.79%	-9.71%
1/3/19/2	3.35	5.09) N	-3.35	2.74	-6.09	103.94	2.53%	3.59%	3.32%	11.63%	-7.09%
12/1/19/1	3.00	5.05	, ,	-3.00	2.21	-5.65	02.09	0.630/	12 200/	4.95%	24 120/	-4.45%
10/1/1971	4.34	5.93	, 7	-4.34	1.59	-5.93	93.99	0.02%	10.20%	14.35%	24.13%	2.10%
0/1/1971	4.51	5.07	1	-4.51	1.50	-5.67	94.23	-0.23%	3 81%	9.01%	12 / 2%	10.26%
8/2/1971	4.00	6.28	2	-4.00	1.40	-6.28	90.34	-9.10%	-5.09%	7.61%	12.42/0	5 27%
7/1/1971	5 31	6.85		-5.31	1.54	-6.85	95.58	3.61%	-1 41%	8 75%	12.10%	13 22%
6/1/1971	5 22	6.70	,)	-5.22	1.54	-6.70	98.70	-3 16%	-0.36%	3 43%	8 55%	5 63%
5/3/1971	4 34	6.38	2	-4 34	2.04	-6.38	99.63	-0.93%	-0.60%	-5.66%	9 94%	5 34%
4/1/1971	3 93	6.08	, ł	-3.93	2.15	-6.08	103.95	-4 16%	-8.05%	-9.35%	3.58%	2.91%
3/1/1971	3.64	5.53	ŝ	-3.64	1.89	-5.53	100.31	3.63%	-1.61%	-1.96%	6.87%	11.18%
2/1/1971	3.40	6.14	ł	-3.40	2.74	-6.14	96.75	3.68%	2.98%	2.36%	10.15%	15.43%
1/4/1971	4.15	6.09)	-4.15	1.94	-6.09	95.88	0.91%	8.42%	-0.31%	8.41%	21.02%
12/1/1970	4.85	6.50)	-4.85	1.65	-6.50	92.15	4.05%	8.86%	7.11%	10.79%	28.11%
11/2/1970	5.04	6.49)	-5.04	1.45	-6.49	87.20	5.68%	10.95%	14.25%	7.79%	33.80%
10/1/1970	5.84	7.33	3	-5.84	1.49	-7.33	83.25	4.74%	15.17%	24.86%	13.19%	34.03%
9/1/1970	5.84	7.29)	-5.84	1.45	-7.29	84.30	-1.25%	9.31%	18.99%	16.65%	31.14%
8/3/1970	6.33	7.49)	-6.33	1.16	-7.49	81.52	3.41%	6.97%	18.68%	21.48%	36.27%
7/1/1970	6.38	7.38	3	-6.38	1.00	-7.38	78.05	4.45%	6.66%	22.84%	22.46%	37.59%
6/1/1970	6.49	7.68	\$	-6.49	1.19	-7.68	72.72	7.33%	15.92%	26.72%	35.73%	47.33%
5/1/1970	6.93	7.95	,	-6.93	1.02	-7.95	76.55	-5.00%	6.49%	13.91%	30.15%	43.08%
4/1/1970	6.93	7.82	1	-6.93	0.89	-7.82	81.52	-6.10%	-4.26%	2.12%	27.51%	32.08%
3/2/1970	6.38	7.08	\$	-6.38	0.70	-7.08	89.63	-9.05%	-18.87%	-5.95%	11.92%	19.60%
2/2/1970	6.85	6.90)	-6.85	0.05	-6.90	89.50	0.15%	-14.47%	-8.92%	8.10%	19.07%
1/2/1970	7.86	7.75	,	-7.86	-0.11	-7.75	85.02	5.27%	-4.12%	-8.20%	12.77%	22.25%
12/1/1969	8.01	7.88	;	-8.01	-0.13	-7.88	92.06	-7.65%	-2.64%	-21.01%	0.10%	10.90%
11/3/1969	7.51	7.29)	-7.51	-0.22	-7.29	93.81	-1.87%	-4.59%	-18.40%	-7.05%	0.19%
10/1/1969	6.99	6.94	t	-6.99	-0.05	-6.94	97.12	-3.41%	-12.46%	-16.06%	-14.28%	-2.98%
9/2/1969	7.14	7.51		-7.14	0.37	-7.51	93.12	4.30%	-1.14%	-3.75%	-9.47%	5.61%
8/1/1969	6.95	6.83) -	-6.95	-0.12	-6.83	95.51	-2.50%	-1.78%	-6.29%	-14.65%	3.69%
7/1/1969	7.06	6.66) >	-7.06	-0.40	-6.66	91.83	4.01%	5.76%	-7.42%	-15.01%	4.08%
5/2/1969	6.29	0.73	, -	-6.29	0.44	-0.73	97.71	-6.02%	-4.70%	-5./8%	-25.58%	2.70%
A/1/1969	5.08	6.20	,)	-0.08	0.48	-0.00	103.40	-0.20%	-11 440/	-5.33%	-20.01%	-3.70%
3/2/1000	5.07	6.20	,	-5.87	0.35	-0.20	101.09	2 1 50/	-11.44%	-0.34%	-21.30%	-1 100/
2/2/1060	5.59	6.30		-5.99	0.51	-0.50	02.12	2.15%	5 /120/	-0.21%	-11.70%	-1 /10%
1/2/1969	6 19	6.10	, a	-6.19	0.07	-6.19	103.01	-4 74%	0.66%	-10.85%	-17 46%	-6 97%
12/2/1969	6.25	6 16	, ,	-6.25	-0.00	-6.16	103.86	-0.82%	-2.26%	-5 92%	-11 36%	-11 27%
11/1/1968	5.52	5 78	2	-5 52	0.05	-5.78	108.37	-4 16%	-9 45%	-4 53%	-13 44%	-19 53%
10/1/1968	5.48	5.61		-5.48	0.13	-5.61	103.41	4.80%	-0.39%	0.27%	-6.08%	-19.50%
9/3/1968	5.16	5.49)	-5.16	0.33	-5.49	102.67	0.72%	1.16%	-1.13%	-9.30%	-17.89%
8/1/1968	5.18	5.42	2	-5.18	0.24	-5.42	98.86	3.85%	9.62%	-0.74%	-3.39%	-17.54%
7/1/1968	5.17	5.39)	-5.17	0.22	-5.39	97.74	1.15%	5.80%	5.39%	-6.05%	-20.15%

Date	U.S. Treasury Yields		U.S. Treasury Yield Spreads			S&P 500	<u> </u>					
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
6/3/1968	5.30	5.64	l .	-5.30	0.34	-5.64	99.58	-1.85%	3.10%	4.30%	-1.88%	-26.97%
5/1/1968	5.68	5.86	5	-5.68	0.18	-5.86	98.68	0.91%	0.18%	9.82%	4.84%	-22.43%
4/1/1968	5.51	5.74	ļ.	-5.51	0.23	-5.74	97.46	1.25%	0.29%	6.11%	6.39%	-16.36%
3/1/1968	5.17	5.76	5	-5.17	0.59	-5.76	90.20	8.05%	10.40%	13.82%	12.54%	-0.63%
2/1/1968	5.02	5.56	5	-5.02	0.54	-5.56	89.36	0.94%	10.43%	10.63%	9.81%	0.16%
1/2/1968	4.88	5.54	ŧ.	-4.88	0.66	-5.54	92.24	-3.12%	5.66%	5.96%	11.68%	-7.83%
12/1/1967	5.04	5.70)	-5.04	0.66	-5.70	96.47	-4.38%	-6.50%	3.22%	7.66%	-4.57%
11/1/1967	4.95	5.74	ŀ	-4.95	0.79	-5.74	94.00	2.63%	-4.94%	4.98%	15.29%	-0.20%
10/2/1967	4.56	5.64	ł	-4.56	1.08	-5.64	93.30	0.75%	-1.14%	4.46%	10.84%	4.09%
9/1/1967	4.39	5.31		-4.39	0.92	-5.31	96.71	-3.53%	-0.25%	-6.73%	6.16%	-3.71%
8/1/1967	4.38	5.27	7	-4.38	0.89	-5.27	93.64	3.28%	0.38%	-4.57%	5.57%	2.00%
7/3/1967	4.12	5.16	6	-4.12	1.04	-5.16	94.75	-1.17%	-1.53%	-2.65%	3.16%	-3.08%
6/1/1967	4.00	5.22	2	-4.00	1.22	-5.22	90.64	4.53%	6.70%	6.43%	9.86%	7.80%
5/1/1967	3.46	4.81		-3.46	1.35	-4.81	89.08	1.75%	5.12%	5.52%	10.78%	16.14%
4/3/1967	3.73	4.78	3	-3.73	1.05	-4.78	94.01	-5.24%	0.79%	-0.76%	3.67%	10.30%
3/1/1967	4.01	4.50)	-4.01	0.49	-4.50	90.20	4.22%	0.49%	7.22%	0.00%	12.54%
2/1/1967	4.54	4.72	2	-4.54	0.18	-4.72	86.78	3.94%	2.65%	7.91%	2.97%	13.08%
1/3/1967	4.51	4.52	2	-4.51	0.01	-4.52	86.61	0.20%	8.54%	9.40%	6.50%	18.94%
12/1/1966	4.81	4.64	Ļ	-4.81	-0.17	-4.64	80.33	7.82%	12.29%	12.83%	20.09%	29.29%
11/1/1966	5.16	5.12	2	-5.16	-0.04	-5.12	80.45	-0.15%	7.87%	10.73%	16.84%	34.70%
10/3/1966	5.22	4.97	(-5.22	-0.25	-4.97	80.20	0.31%	7.99%	17.22%	16.33%	28.94%
9/1/1966	5.34	5.02	-	-5.34	-0.32	-5.02	76.56	4.75%	4.92%	17.82%	26.32%	34.10%
8/1/1966	5.06	5.30		-5.06	0.30	-5.30	//.10	-0.70%	4.35%	12.56%	21.45%	28.22%
C/1/1900	4.77	5.05	7	-4.77	0.28	-5.05	03.00	-7.76%	-4.07%	5.00%	15.54%	10.91%
5/1/1966 5/2/1066	4.58	4.97	,	-4.58	0.39	-4.97	84.74	-1.35%	-9.05%	-5.20%	0.90%	1/.51%
J/2/1900	4.04	4.00	,)	-4.64	0.16	-4.60	01.06	-1.01%	-10.46% 9 10%	-0.39%	2 2 1 10/	7 02%
3/1/1966	4.03	4.73		-4.03	0.14	-4.75	91.00	2.05%	-5.03%	-14 20%	1.00%	1.00%
2/1/1966	4.52	5.02		-4.52	0.19	-4.71	91 22	-2.05%	-5 58%	-15 /18%	-4.87%	-2 04%
1/3/1966	4.63	4.60	- 1	-4.63	0.06	-4.69	92.88	-1 79%	-1.96%	-9.99%	-6 75%	-0.69%
12/1/1965	4.05	4.65	;	-4 49	0.00	-4.65	92.00	0.49%	-3 46%	-8 32%	-13.09%	4 37%
11/1/1965	4.13	4.48	2	-4.13	0.35	-4.48	91.61	0.90%	-0.43%	-5.98%	-12.18%	2.61%
10/1/1965	4.06	4.41		-4.06	0.35	-4.41	92.42	-0.88%	0.50%	-1.47%	-13.22%	0.95%
9/1/1965	4.02	4.35	5	-4.02	0.33	-4.35	89.96	2.73%	2.75%	-0.81%	-14.90%	7.50%
8/2/1965	3.90	4.27	7	-3.90	0.37	-4.27	87.17	3.20%	5.09%	4.65%	-11.55%	7.42%
7/1/1965	3.81	4.22	2	-3.81	0.41	-4.22	85.25	2.25%	8.41%	8.95%	-1.94%	11.14%
6/1/1965	3.81	4.20)	-3.81	0.39	-4.20	84.12	1.34%	6.94%	9.88%	0.74%	7.75%
5/3/1965	3.87	4.23	3	-3.87	0.36	-4.23	88.42	-4.86%	-1.41%	3.61%	-2.59%	0.75%
4/1/1965	3.91	4.21		-3.91	0.30	-4.21	89.11	-0.77%	-4.33%	3.71%	2.19%	5.50%
3/1/1965	3.93	4.20)	-3.93	0.27	-4.20	86.16	3.42%	-2.37%	4.41%	3.56%	4.69%
2/1/1965	3.99	4.22	2	-3.99	0.23	-4.22	87.43	-1.45%	1.13%	-0.30%	4.33%	-0.74%
1/4/1965	3.87	4.19)	-3.87	0.32	-4.19	87.56	-0.15%	1.77%	-2.64%	6.08%	-1.08%
12/1/1964	3.82	4.21		-3.82	0.39	-4.21	84.75	3.32%	1.66%	-0.74%	9.06%	-5.22%
11/2/1964	3.84	4.20)	-3.84	0.36	-4.20	84.42	0.39%	3.57%	4.74%	8.52%	-4.70%
10/1/1964	3.55	4.16	5	-3.55	0.61	-4.16	84.86	-0.52%	3.18%	5.01%	8.91%	-5.49%
9/1/1964	3.55	4.18	3	-3.55	0.63	-4.18	84.18	0.81%	0.68%	2.35%	6.87%	-9.05%
8/3/1964	3.50	4.21		-3.50	0.71	-4.21	81.83	2.87%	3.17%	6.84%	6.53%	-5.78%
7/1/1964	3.47	4.19)	-3.47	0.72	-4.19	83.18	-1.62%	2.02%	5.27%	2.49%	0.50%
6/1/1964	3.47	4.15)	-3.47	0.68	-4.15	81.69	1.82%	3.05%	3.75%	2.97%	3.73%
5/1/1964	3.47	4.19	,	-3.47	0.72	-4.19	80.37	1.64%	1.82%	5.04%	10.02%	7.17%
4/1/1964	3.45	4.22	2	-3.45	0.77	-4.22	79.46	1.15%	4.68%	6.80%	12.14%	12.00%
3/2/1964	3.51	4.23	5 5	-3.51	0.72	-4.23	78.98	1 5 29/	3.43%	0.58% E 199/	9.09%	17.98%
1/2/1964	2.50	4.10	5 :	-5.60	0.56	-4.10	77.60	0.00%	2 14%	7.07%	12.56%	20 56%
12/2/1964	2.50	4.1.	,	-3.50	0.03	-4.13	77.04	2 6 0%	5.14% E 200/	0 000/	12.00%	20.30%
11/1/1062	3.51	4.14	r 2	-3.51	0.03	-4.14	73.02	2.05%	6 24%	9 75%	15 28%	25.21%
10/1/1963	3.10	4.00	;	-3.48	0.50	-4.15	74.01	-1.05%	4 00%	7 36%	14 66%	23.1070
9/3/1063	2 27	4.13	,	-3.40	0.07	-4.13	71 70	3 2 2 %	4.05%	10 15%	17 41%	25.00%
8/1/1963	3.37	4.07	,	-3.37	0.70	-4.07	72 50	-1 10%	1.05%	7 31%	12 87%	20.23%
7/1/1963	3.33	4.02)	-3.27	0.03	-4.00	69.13	4.87%	7.06%	11.44%	20.32%	23.32%
6/3/1963	2.99	4.00)	-2.99	1.01	-4.00	69.37	-0.35%	3 36%	8 14%	17 76%	21 26%
5/1/1963	3.00	3.96	5	-3.00	0.96	-3.96	70.80	-2.02%	2.40%	3.43%	13.52%	24.89%
4/1/1963	2.90	3.95	5	-2.90	1.05	-3.95	69.80	1.43%	-0.96%	6.03%	13.84%	27.66%
3/1/1963	2.91	3.95	5	-2.91	1.04	-3.95	66.57	4.85%	4.21%	7.71%	18.64%	29.43%
2/1/1963	2 90	3.94	L	-2.90	1 04	-3 94	64.29	3 55%	10 13%	12 77%	21.01%	35 99%

Date	U.S. Treasury Yields			U.S. Treasury Yield Spreads			S&P 500	S&P 500 Forward Returns				
	3 Month	10 Year	30 Year	30yr-3mo	10yr-3mo	30yr-10yr	Index	(1 mo)	(3 mo)	(6 mo)	(12 mo)	(24 mo)
1/2/1963	2.93	3.87	8	-2.93	0.94	-3.87	66.20	-2.89%	5.44%	4.43%	16.37%	32.27%
12/3/1962	2.92	3.85		-2.92	0.93	-3.85	63.10	4.91%	5.50%	9.94%	18.89%	34.31%
11/1/1962	2.86	3.92		-2.86	1.06	-3.92	62.26	1.35%	3.26%	13.72%	17.62%	35.59%
10/1/1962	2.72	3.92		-2.72	1.20	-3.92	56.52	10.16%	17.13%	23.50%	30.94%	50.14%
9/4/1962	2.74	3.94		-2.74	1.20	-3.94	56.27	0.44%	12.14%	18.30%	27.42%	49.60%
8/1/1962	2.81	3.96		-2.81	1.15	-3.96	59.12	-4.82%	5.31%	8.74%	22.63%	38.41%
7/2/1962	2.86	4.04		-2.86	1.18	-4.04	58.23	1.53%	-2.94%	13.69%	18.72%	42.85%
6/1/1962	2.90	4.00		-2.90	1.10	-4.00	54.75	6.36%	2.78%	15.25%	26.70%	49.21%
5/1/1962	2.70	3.90		-2.70	1.20	-3.90	59.63	-8.18%	-0.86%	4.41%	18.73%	34.78%
4/2/1962	2.74	3.86		-2.74	1.12	-3.86	65.24	-8.60%	-10.74%	-13.37%	6.99%	21.80%
3/1/1962	2.75	3.86		-2.75	1.11	-3.86	69.55	-6.20%	-21.28%	-19.09%	-4.28%	13.56%
2/1/1962	2.71	4.00		-2.71	1.29	-4.00	69.96	-0.59%	-14.77%	-15.49%	-8.10%	11.21%
1/2/1962	2.73	4.10	6	-2.73	1.37	-4.10	68.84	1.63%	-5.23%	-15.41%	-3.83%	11.91%

Note:

Source for U.S. Treasury Yields and S&P 500 Index: *Yahoo! Finance* (See Bibliography for individual references)

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