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Universal Truths About The Bond Market Grant's Interest Rate Observer Conference November 1, 2000



Long-Term Interest Rates - 1900 to 1999

Major Themes

The Best Measure Of Interest Rate Valuation

Global Fair Value

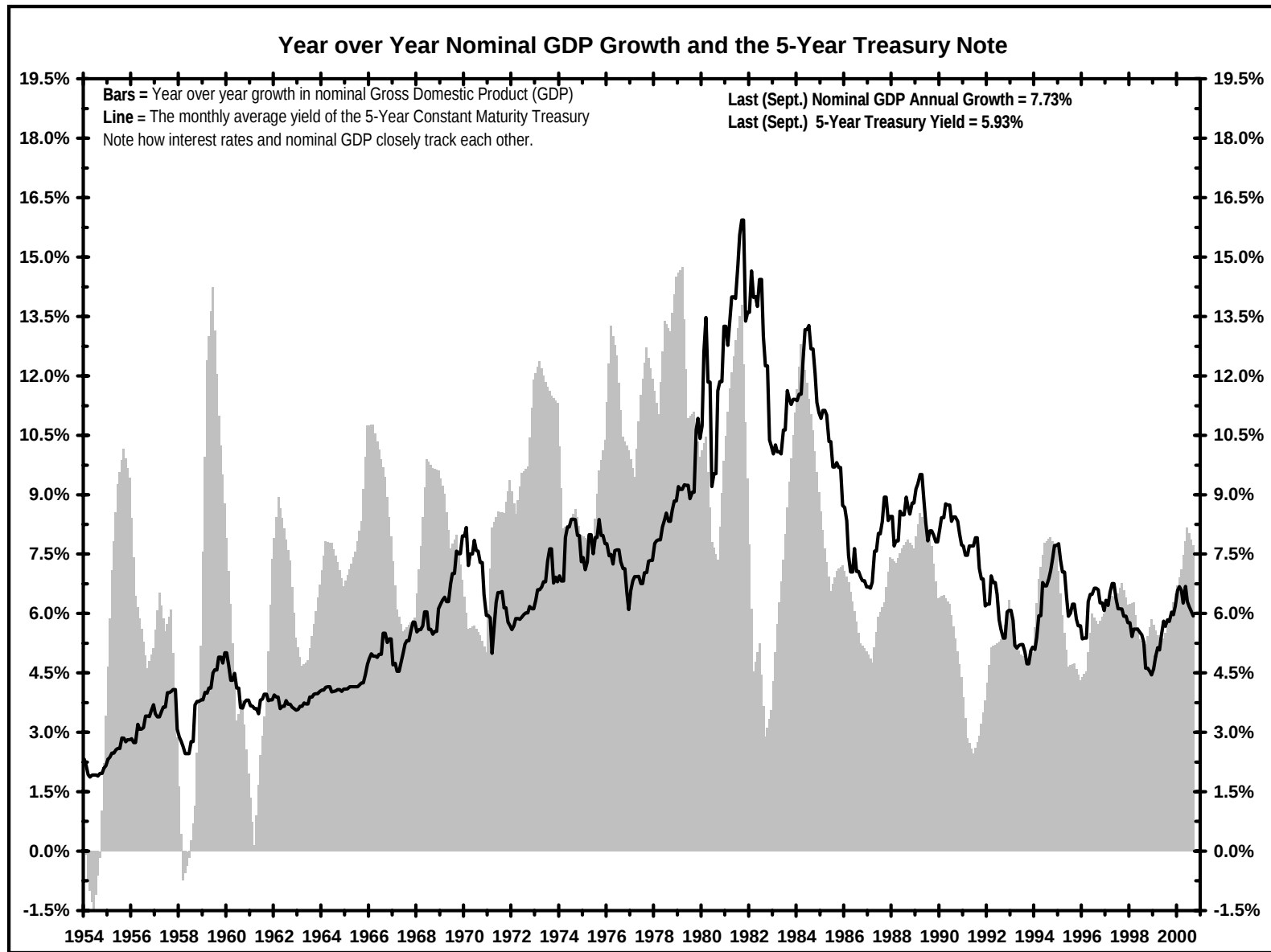
- Japan
- U.K.
- Canada
- Australia
- EU

The Expectations Index

Measuring The Wealth Effect

Thoughts About Spreads

The Best Measure Of Interest Rate Valuation - 1



The Best Measure Of Interest Rate Valuation - 2

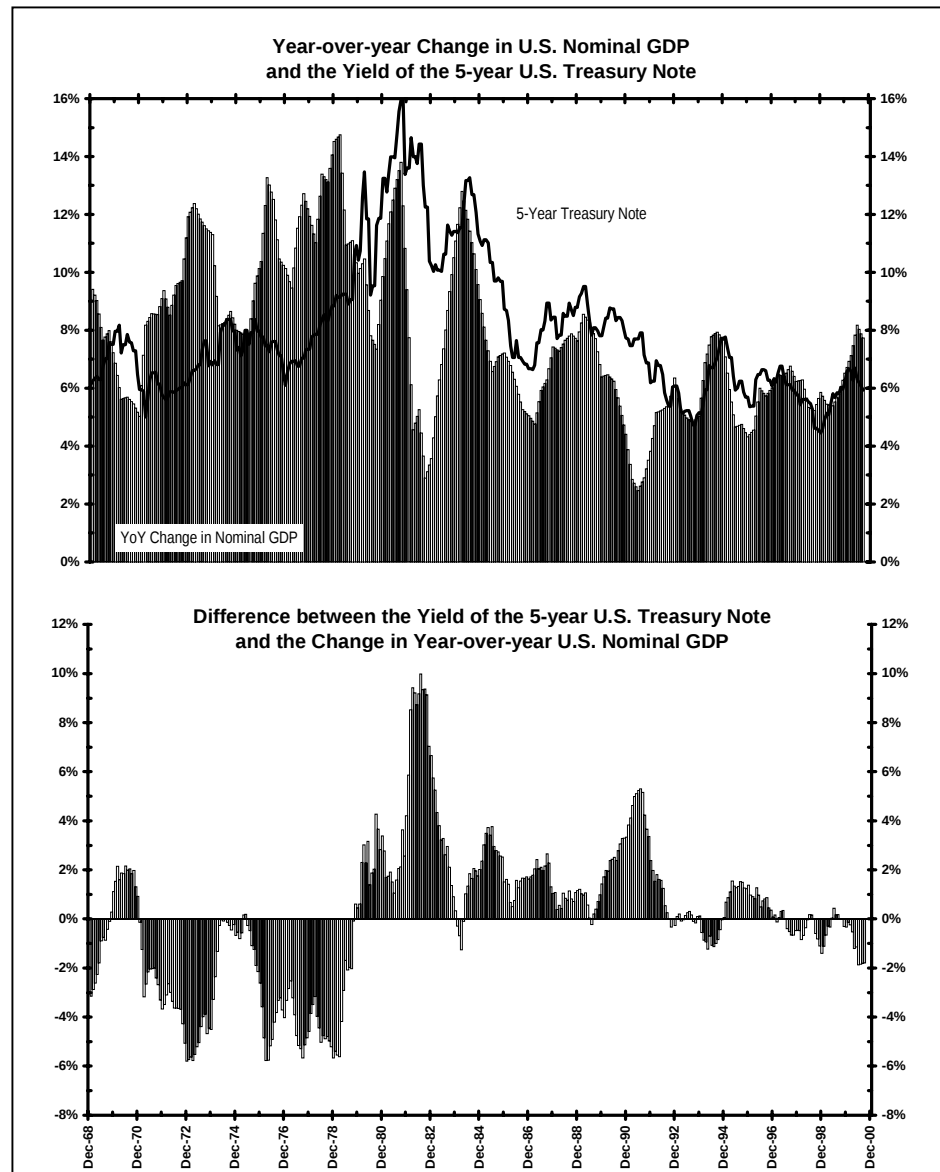
The bars in the top panel show the year-over-year change in nominal GDP (real GDP **plus** inflation). The line in the top panel shows the yield of the 5-year Treasury note. (We chose the 5-year Treasury note because it is the middle of the yield curve. Any other point on the yield curve, or even corporate bond yields, could have been used and would show similar results.) The bottom panel shows the difference between the yield of the 5-year Treasury note and the year-over-year change in nominal GDP.

Think of this measure as an asset valuation model with the asset being the entire economy. If the asset, as measured by nominal GDP, returns a rate higher than the prevailing interest rate (the 5-year Treasury note), then it makes sense for a business to borrow and expand. One can make money in such an environment because the asset has a higher return than the cost of borrowing. This will cause an increase in the demand for credit thus putting upward pressure on the price of credit -- interest rates. This will last as long as yields are below the year-over-year change in nominal GDP (or at least the perception that interest rates are below nominal GDP).

On the flip side, if interest rates (5-year Treasury note) are higher than the returns provided by the economy (nominal GDP), then borrowing to "buy" is a money-losing proposition. In this case the demand for money will fall because the profit incentive is not present. This will drive the price of credit (interest rates) down so long as yields are above the growth rate, or perceived growth rate, of nominal GDP.

This concept is only a slight variation of the "real rate" concept that many use. The "real rate" concept suggests that the "fair value" of interest rates is inflation plus a fixed number -- 3%; the nominal GDP concept suggests the fair value of interest rates is inflation plus a variable -- real GDP. Inflation plus real GDP equals nominal GDP.

By using a variable instead of a fixed number, the nominal GDP concept makes more sense than the real rate concept. Where else in finance is a market based relationship fixed over time and in all cycles? Using real GDP as a proxy for the level of real rates means that the faster the economy grows without igniting inflation, the higher real interest rates should be. This makes sense.

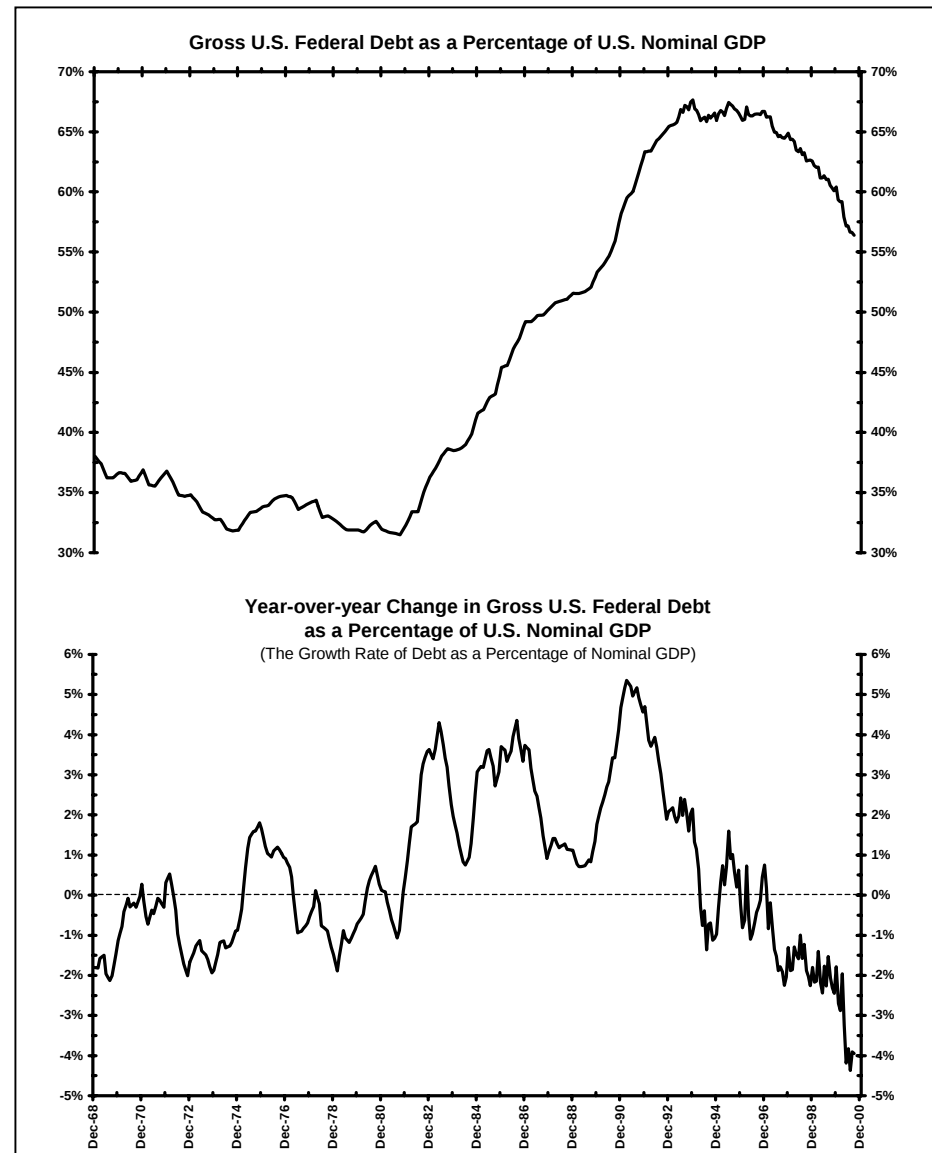


The Best Measure Of Interest Rate Valuation - 3

The top panel shows federal debt as a percentage of nominal GDP (our federal debt statistic is from the Federal Reserve's H6 report and is U.S. government debt, not including government-sponsored enterprises or federally related mortgage pools). The bottom panel shows the year-over-year change in federal debt as a percentage of nominal GDP. This measure is the growth rate of federal debt to nominal GDP.

Notice that as the budget deficit peaked in the early 1990's so did debt as a percentage of nominal GDP (top panel). Now that the Federal Government is running a surplus, the growth rate of debt is negative (bottom panel).

When assessing the deficit/surplus situation of the federal government, we believe this is the most relevant chart. Federal debt as percentage of nominal GDP and its growth rate (the year-over-year change in federal debt as a percentage of nominal GDP) are the key measures to examine.



The Best Measure Of Interest Rate Valuation - 4

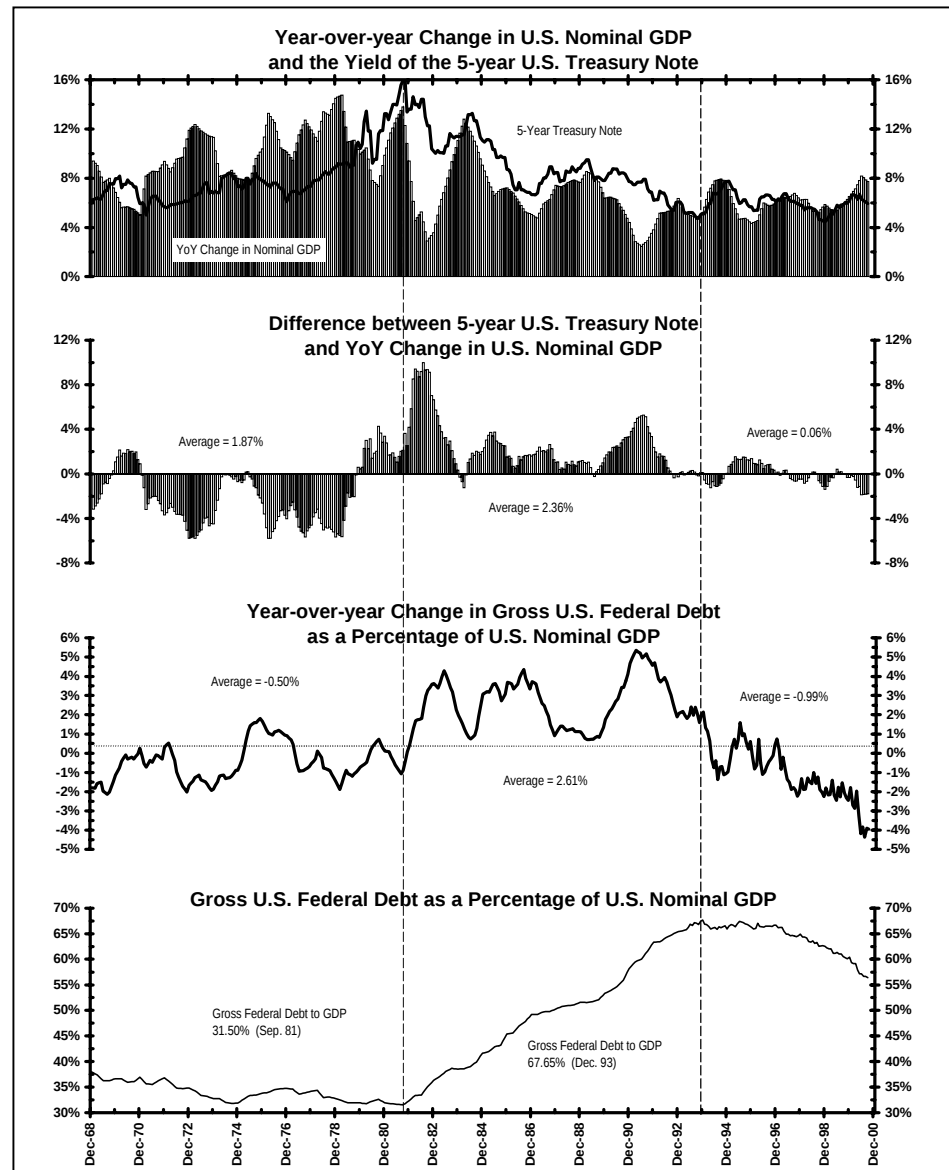
This chart shows the panels of the charts on the previous two pages. Our intention is to show how the federal deficit/surplus affects interest rates. It is our belief that the surplus affects interest rates **relative to** nominal GDP. **The surplus does not render this valuation model useless.**

This chart has two vertical dotted lines. The first one is September 1981 when debt to GDP was at a multi-year low and on the verge of exploding higher. The second is December 1993 when debt to GDP was at a multi-decade high (it was higher in the aftermath of WW2) and about to turn lower.

Between 1968 and 1980 (the left-most third of the chart), interest rates were often **below** nominal GDP -- by an average of 1.87%. In this environment of low debt to GDP ratios with negative debt growth rates (-0.50%), nominal GDP was still an effective valuation tool. However, one had to bias their view of "fair value" to a level below nominal GDP given the **positive** (very little) supply situation.

Between 1980 and 1993 (the middle third of the chart), interest rates were often **above** nominal GDP -- by an average of 2.61%. In this environment of high debt levels with high debt growth rates, nominal GDP was still an effective valuation tool. However, one had to bias their view of "fair value" to a level above nominal GDP given the **negative** (too much) supply situation.

Since 1993 (the right-most third of the chart), interest rates have moved in tandem with nominal GDP -- averaging a difference of only 0.06%. In this environment of high debt levels **and** negative growth rates, the bias for the "fair value" of interest rates has moved from well above nominal GDP to equal to nominal GDP. Should the debt growth rates continue to fall into deeper negative territory, the level of debt to nominal GDP should also fall. When this happens, we expect the bias of interest rates relative to nominal GDP to revert to that seen in the left-most third of this chart -- that being well **below** nominal GDP.



Global Fair Value - Japan

The Current Japanese Situation

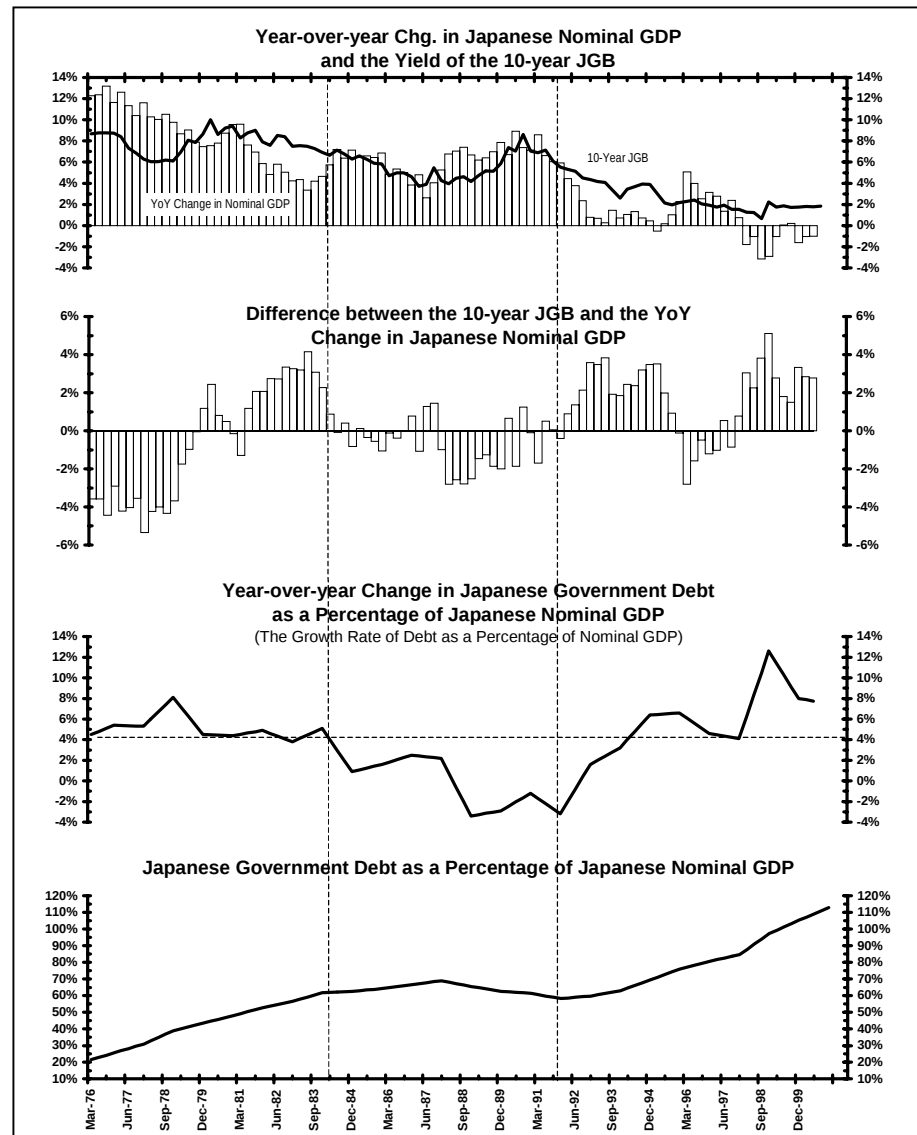
The latest bar shows the year-over-year change of nominal GDP was -1.02% as of Q2 2000. The line shows the yield of the 10-year JGB. The latest plot, Q2 2000, was 1.76%.

Japan has both the lowest interest rates and the lowest nominal GDP growth of all the countries analyzed.

Japanese interest rates are 2.78% above nominal GDP growth. However, Japan has the highest debt to GDP ratio (105% as of Q4 1999) and the highest debt growth rate (+8.00%). Japan has the worst supply situation of all the countries analyzed. This suggests that Japan's interest rates should trade at a substantial premium over current nominal GDP levels and in fact they do.

If our analysis is correct, Japan's interest rates might be too low. Interest rate premiums over nominal GDP have seen much higher levels in the past. Also, we believe that nominal GDP could be poised to move higher as well.

The supply situation does affect the level of interest rates relative to nominal GDP. The vertical lines on this chart show major changes in the supply situation in Japan. Notice that when the supply situation in Japan changes, so do interest rates relative to nominal GDP (see the second panel of the chart).



Global Fair Value - U.K.

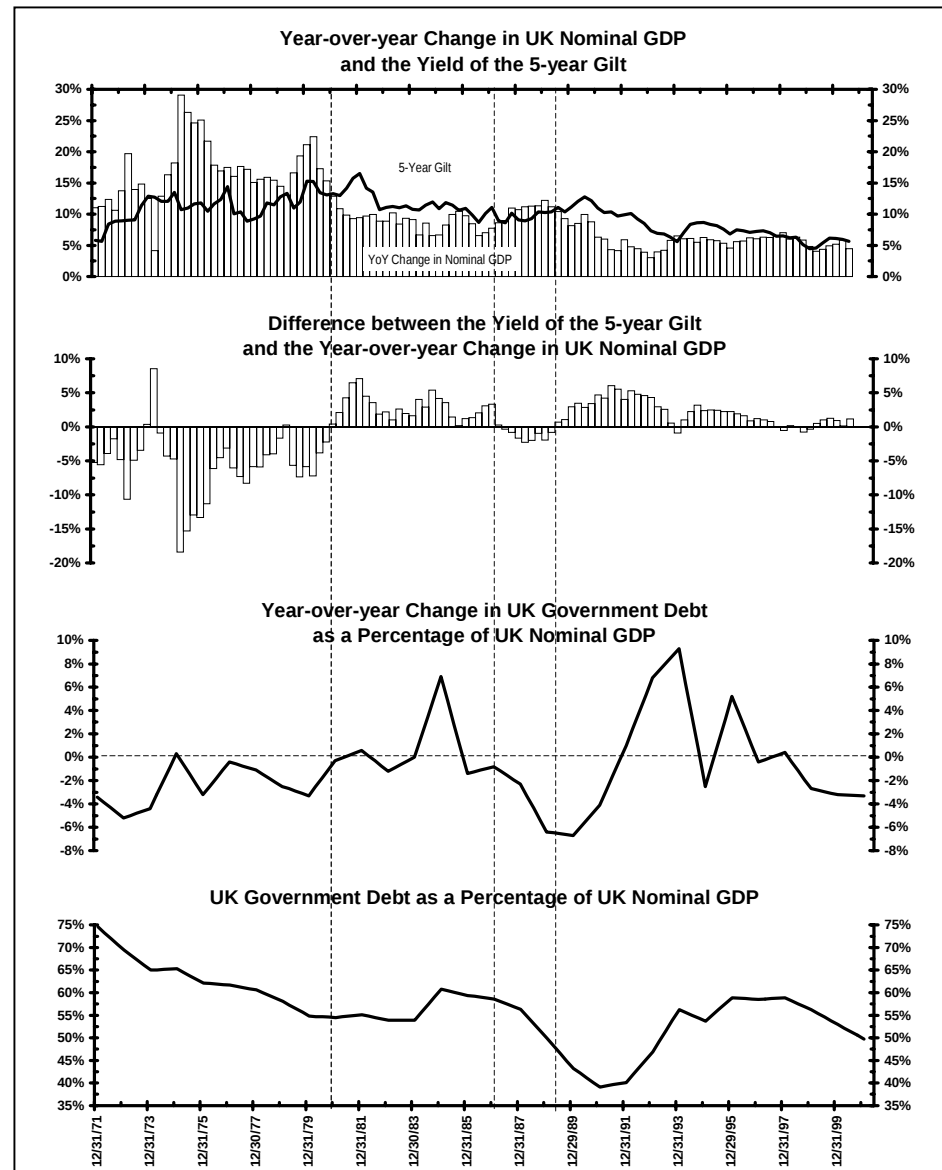
The Current U.K. Situation

The latest bar shows the year-over-year change of nominal GDP was 5.03% as of Q2 2000. The line shows the yield of the 5-year Gilt. The latest plot, Q2 2000, was 5.63%.

U.K. interest rates are in the middle of the range of all countries analyzed. Likewise, U.K. nominal GDP is also near the middle of the range of all countries analyzed.

U.K. interest rates were only 0.60% above nominal GDP growth as of Q2 2000. Given the rather neutral supply situation shown in panels 3 and 4, this suggests the U.K. should have very little difference between nominal GDP and interest rates. This is in fact what they have. It appears the U.K. interest rates were fairly valued as of Q2 2000.

Just like Japan and the U.S., the supply situation in the U.K. does affect the level of interest rates relative to nominal GDP. The vertical lines on this chart show major changes in the supply situation in the U.K. Notice that when the supply situation changes, so do interest rates relative to nominal GDP (see the second panel of the chart).



Global Fair Value - Canada

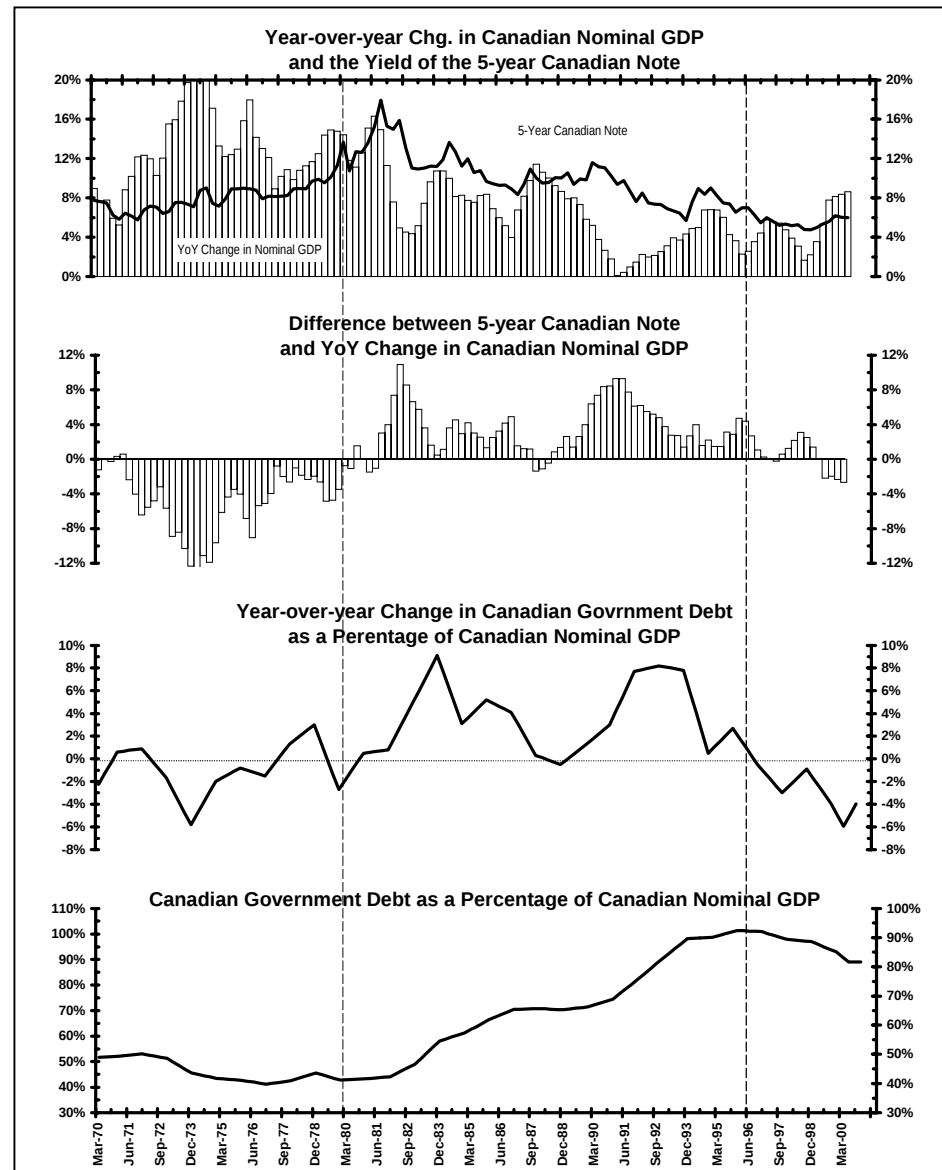
The Current Canadian Situation

The latest bar shows the year-over-year change of nominal GDP was 8.38% as of Q1 2000. The line shows the yield of the 5-year Canadian Note. The latest plot, Q1 2000, was 6.03%.

Canada has the highest nominal GDP growth rate of all the countries analyzed, and their interest rates were just a few basis points from the highest levels of all the countries analyzed.

As of Q1 2000, Canadian interest rates were 2.34% below nominal GDP. The last time Canada saw interest rates this far below nominal GDP was 1979 – just like the U.S.. Even though Canada has a positive supply situation, it still has very high levels of debt relative to GDP. Therefore, we believe the discount of interest rates to nominal GDP is too low. To correct this, either nominal GDP will have to immediately decline or interest rates will have to rise.

The vertical lines on this Chart 6 denote the major changes in the supply situation. Notice that these changes in supply are reflected in changes in the way interest rates and nominal GDP relate to each other (see the second panel).



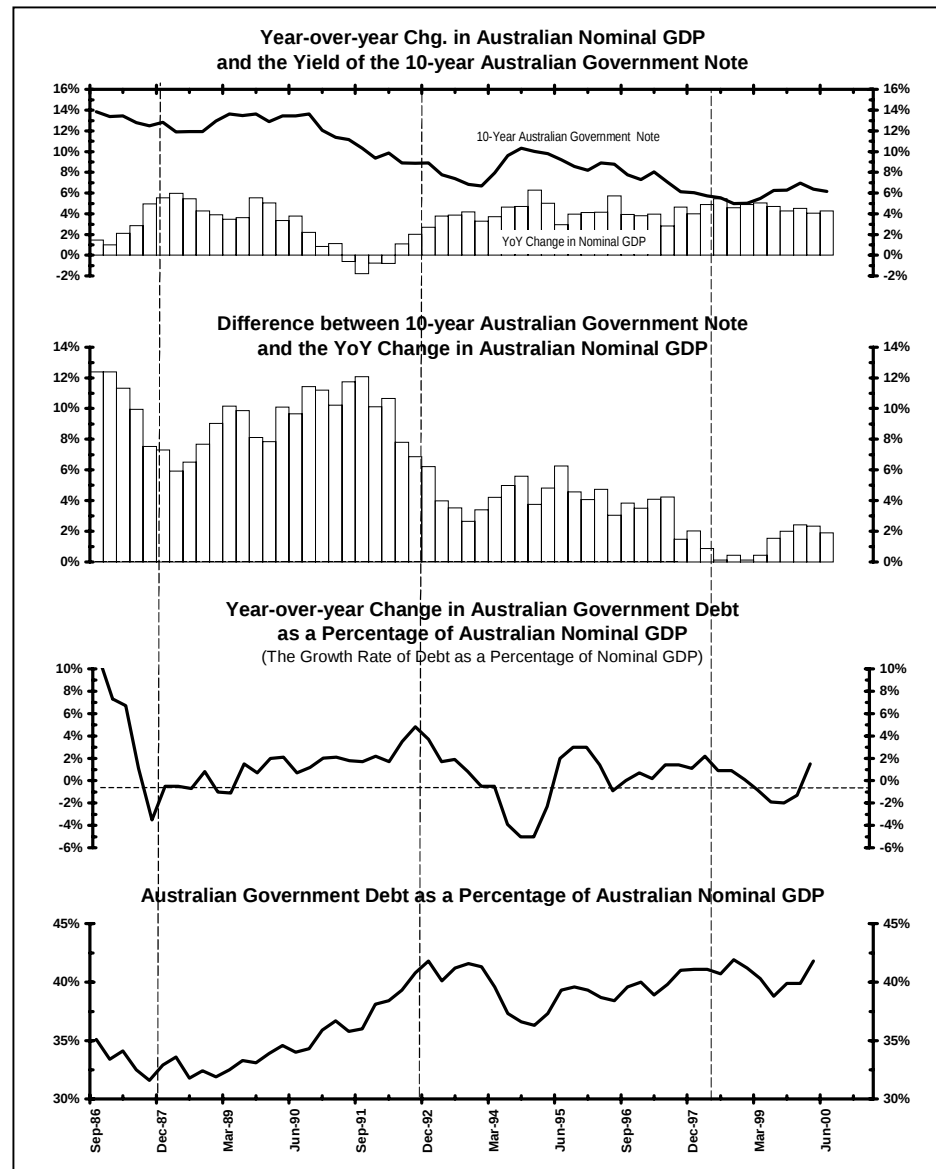
Global Fair Value - Australia

The Current Australian Situation

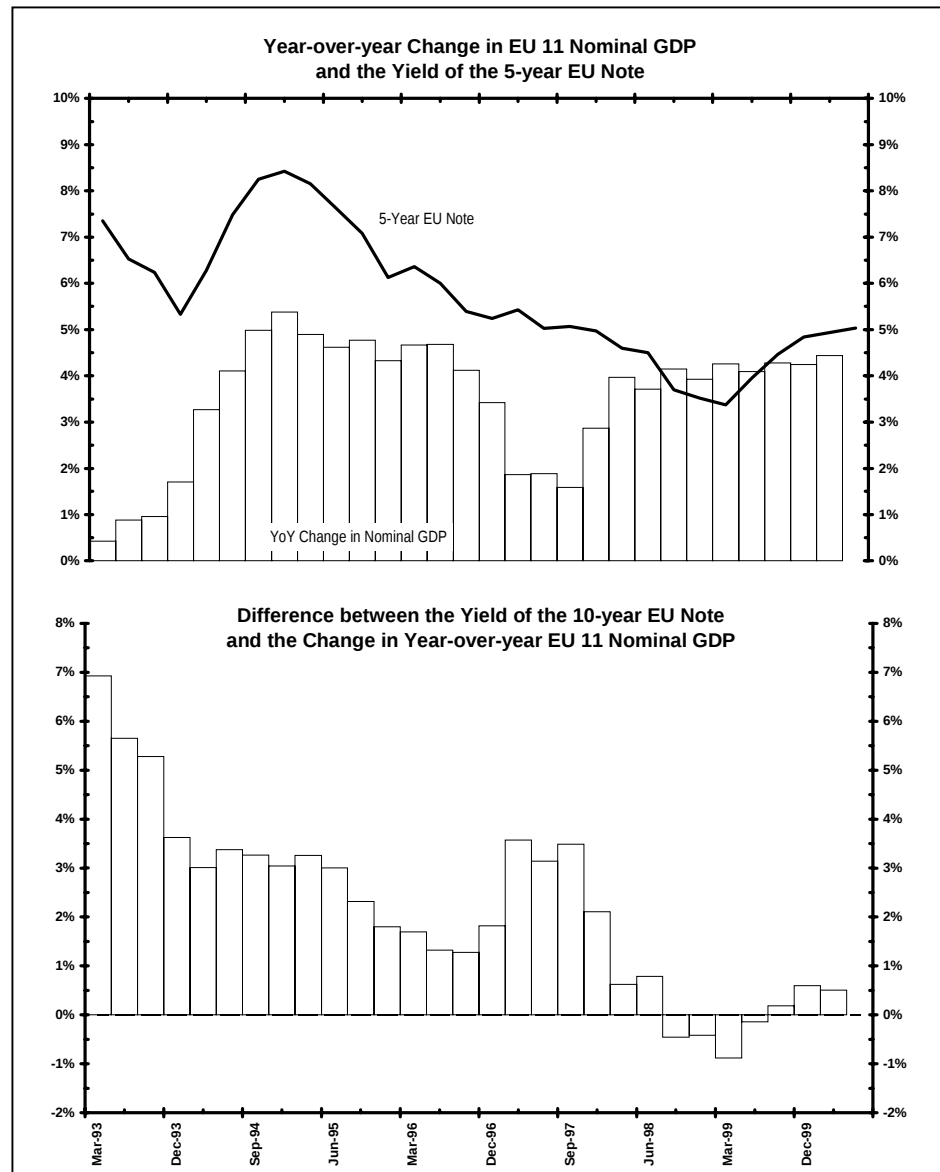
The latest bar shows that year-over-year change of nominal GDP was 4.29% as of Q2 2000. The line shows the yield of the 10-year Australian Government Note. The latest plot, Q2 2000, was 6.17%.

Australian interest rates were 1.88% above the current level of nominal GDP. A review of this chart shows that Australian interest rates typically trade at substantial premiums above nominal GDP. The current premium looks small. Since the supply situation appears to be negative for interest rates (high debt levels relative to the last 15 years and positive growth rates), the current level of interest rates looks too low.

As has been the case with all the other countries analyzed, the supply situation seems to affect the level of interest rates relative to nominal GDP. The vertical lines on this chart denote the major changes in the supply situation. Notice that these changes in supply are reflected in changes in the way interest rates and nominal GDP relate to each other (see the second panel).



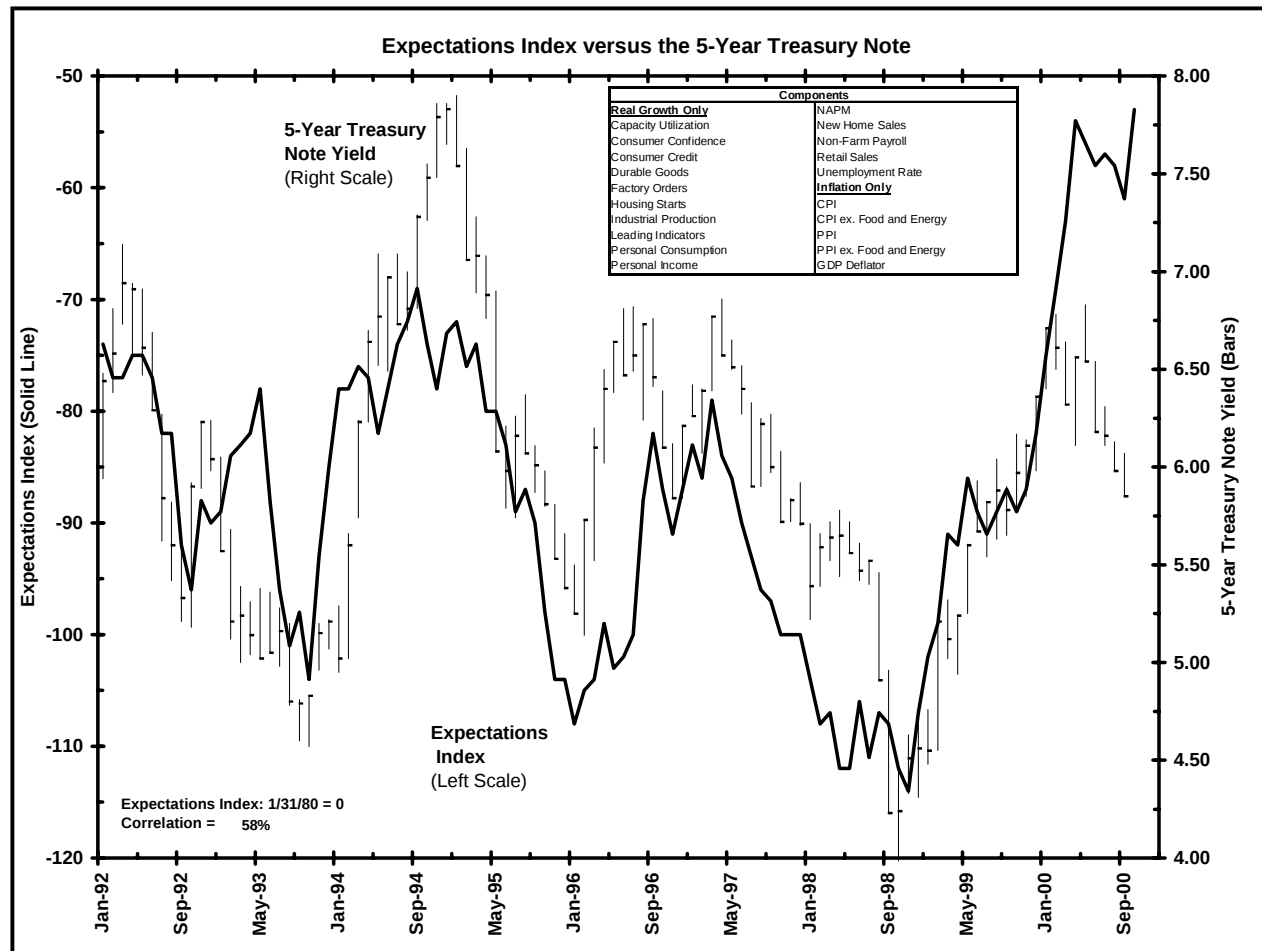
Global Fair Value - EU



The Expectations Index - 1

To create the Expectations Index, we selected 20 economic series and compared the median estimate from a survey of economists taken the **week before** the release to the actual results. If the actual result of an economic release is above consensus, we add 1 to this index. If it is below consensus, we subtract 1 from this index. If it is exactly equal to consensus, we add 0 to this index. This index starts at 0 on January 31, 1980.

The Expectations Index is the cumulative sum of 20 economic series each month. Fifteen series measure real economic growth and five series measure inflation.



The Expectations Index - 2

These tables show how individual economic releases have affected the Expectations Index and its components. Table 1 shows the September releases and Table 2 shows the October releases to date.

An interesting pattern is emerging from these tables. In the top table, the first 9 releases (through September 14) show that 8 of these reports were below expectations. We can see this by all the “-1’s” in the column titled “contributions to Expectations Index.” This suggests that the economy was weaker than expected. The next 5 releases (through September 25) show two above expectations (“1”), two below (“-1”) and one equal to expectations (“0”). The next 25 releases (the bottom of table 1 and all of table 2 through October 30) show 18 above expectations (“1”), 6 below expectations (“-1”) and 1 equal to expectations (“0”).

Tracking The Expectation Index

September 2000							
Release	Date of Release This Month	Median Estimate (from MMS)	Actual (First Release)	Contribution to Expectations Index	Contribution to Real Growth Only Index	Contribution to Inflation Only Index	
Previous Month's Index Level	August			-58	59	-117	
Leading Economic Indicators	July	8/30/00	0.00	-0.10	-1	-1	n.a.
Factory Orders	July	8/31/00	-7.00	-7.50	-1	-1	n.a.
NAPM Composite Index	August	9/1/00	52.20	49.50	-1	-1	n.a.
NonFarm Payrolls (000s)	August	9/1/00	-35	-105	-1	-1	n.a.
Unemployment Rate	August	9/1/00	4.00	4.10	1	1	n.a.
Consumer Credit	July	9/8/00	9.50	9.40	-1	-1	n.a.
Retail Sales	August	9/14/00	0.30	0.20	-1	-1	n.a.
PPI ex. Food & Energy	August	9/14/00	0.20	0.10	-1	n.a.	-1
Producer Prices	August	9/14/00	0.20	-0.20	-1	n.a.	-1
Industrial Production	August	9/15/00	-0.10	0.30	1	1	n.a.
Capacity Utilization	August	9/15/00	82.00	82.30	1	1	n.a.
Consumer Prices	Sept.	9/15/00	0.20	-0.10	-1	n.a.	-1
CPI ex. Food & Energy	October	9/15/00	0.20	0.20	0	n.a.	0
Housing Starts (000s)	August	9/19/00	1,540	1,530	-1	-1	n.a.
New Home Sales (000s)	August	9/25/00	840	944	1	1	n.a.
Consumer Confidence	Sept.	9/26/00	141.00	141.90	1	1	n.a.
Durable Goods	August	9/27/00	2.40	2.90	1	1	n.a.
GDP Deflator Q2 F	August	9/28/00	2.60	2.40	-1	n.a.	-1
Personal Spending	August	9/29/00	0.50	0.60	1	1	n.a.
Personal Income	August	9/29/00	0.30	0.40	1	1	n.a.
Sum of Current Month's Contributions				-3	1	-4	
Current Month's Index Level	September			-61	60	-121	

Tracking The Expectation Index

October 2000							
Release	Date of Release This Month	Median Estimate (from MMS)	Actual (First Release)	Contribution to Expectations Index	Contribution to Real Growth Only Index	Contribution to Inflation Only Index	
Previous Month's Index Level	September			-61	60	-121	
NAPM Composite Index	Sept.	10/2/00	50.10	49.90	-1	-1	n.a.
Leading Economic Indicators	August	10/3/00	-0.10	-0.10	0	0	n.a.
New Home Sales (000s)	August	10/3/00	898	893	-1	-1	n.a.
Factory Orders	August	10/4/00	1.80	2.00	1	1	n.a.
NonFarm Payrolls (000s)	Sept.	10/6/00	228	252	1	1	n.a.
Unemployment Rate	Sept.	10/6/00	4.10	3.90	-1	-1	n.a.
Consumer Credit	August	10/6/00	9.20	10.90	1	1	n.a.
Retail Sales	Sept.	10/13/00	0.60	0.90	1	1	n.a.
PPI ex. Food & Energy	Sept.	10/13/00	0.10	0.30	1	n.a.	1
Producer Prices	Sept.	10/13/00	0.50	0.90	1	n.a.	1
Industrial Production	Sept.	10/17/00	0.10	0.20	1	1	n.a.
Capacity Utilization	Sept.	10/17/00	82.10	82.20	1	1	n.a.
Consumer Prices	Sept.	10/18/00	0.40	0.50	1	n.a.	1
CPI ex. Food & Energy	Sept.	10/18/00	0.20	0.30	1	n.a.	1
Housing Starts (000s)	Sept.	10/18/00	1,540	1,530	-1	-1	n.a.
Durable Goods	Sept.	10/27/00	0.80	1.80	1	1	n.a.
GDP Deflator Q3 A	Sept.	10/27/00	2.30	2.00	-1	n.a.	-1
Personal Spending	Sept.	10/30/00	0.60	0.80	1	1	n.a.
Personal Income	Sept.	10/30/00	0.40	0.80	1	1	n.a.
Consumer Confidence	October	10/31/00	140.00				n.a.
Sum of Current Month's Contributions				8	5	3	
Current Month's Index Level	October			-53	65	-118	

Measuring The Wealth Effect - 1

There is a wide range of estimates of how much added growth the rise in equity prices has engendered, but they center around 1 percentage point of the somewhat more than 4 percentage point annual growth rate of GDP since late 1996. --Remarks by Chairman Alan Greenspan Before the Economic Club of New York, January 13, 2000

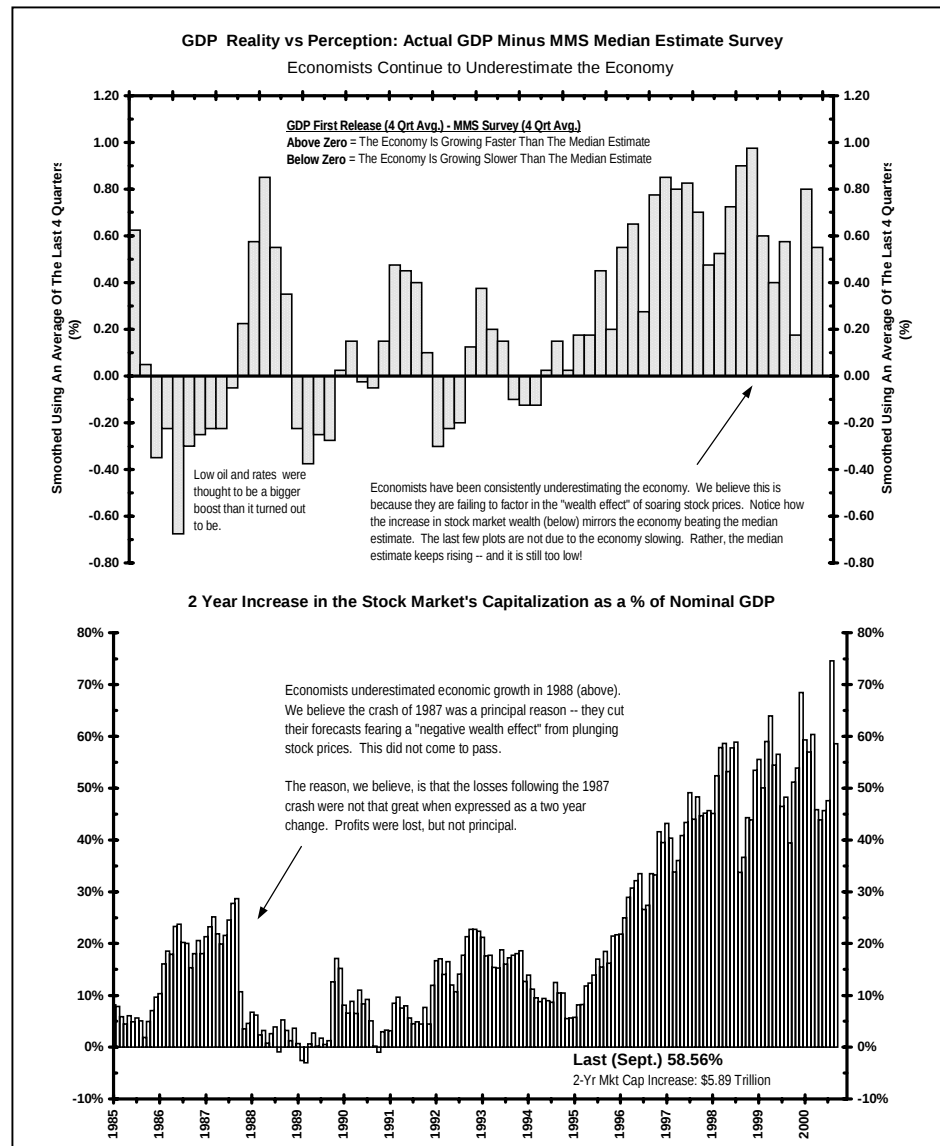


Measuring The Wealth Effect - 2

As of September 30, 2000, the two-year change in the stock market's capitalization surged by \$5.892 trillion or 58.56% of the size of nominal GDP. This is down from the all-time high of 74.61% in August, 2000. (Remember, that the stock market took a big dive in August 1998, as the Asian financial crisis took hold, accounting for this record.)

Historical evidence suggests that perhaps three to four cents out of every additional dollar of stock market wealth eventually is reflected in increased consumer purchases. The sharp rise in the amount of consumer outlays relative to disposable incomes in recent years, and the corresponding fall in the saving rate, has been consistent with this so-called wealth effect on household purchases. Moreover, higher stock prices, by lowering the cost of equity capital, have helped to support the boom in capital spending.

Outlays prompted by capital gains in excess of increases in income, as best we can judge, have added about 1 percentage point to annual growth of gross domestic purchases, on average, over the past five years. The additional growth in spending of recent years that has accompanied these wealth gains as well as other supporting influences on the economy appears to have been met in about equal measure from increased net imports and from goods and services produced by the net increase in newly hired workers over and above the normal growth of the work force, including a substantial net inflow of workers from abroad. -- Testimony of Chairman Alan Greenspan Before the Committee on Banking and Financial Services, U.S. House of Representatives 2/17/2000



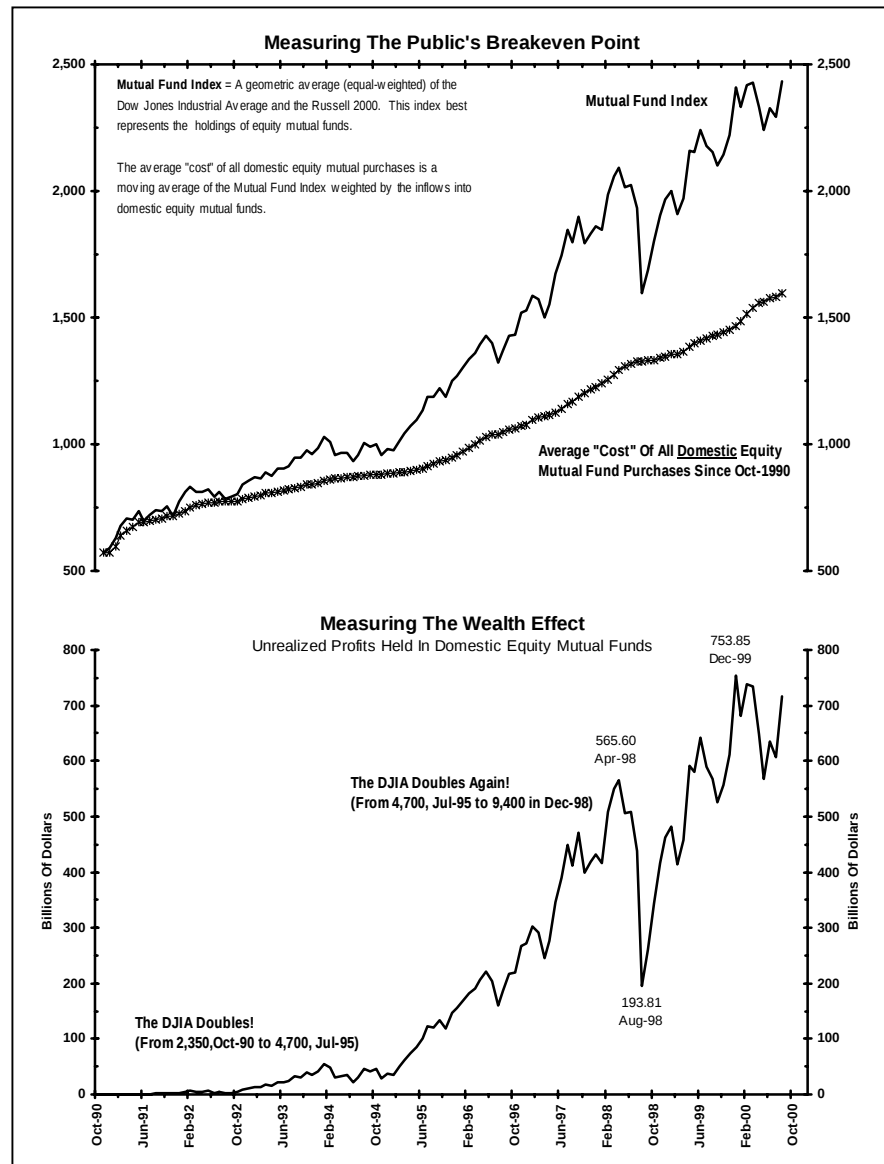
Measuring The Wealth Effect - 3

This chart measures the size of unrealized profits the public has in their mutual fund holdings. The top panel illustrates the concept of an average purchase price for all domestic equity mutual funds. In this panel we use an index we call the "Mutual Fund Index." This index is a geometric average (equally weighted) of the Dow Jones Industrial Index and the Russell 2000. We believe this index best mimics the holdings of mutual funds. The bottom panel expresses the same concept in dollar terms, or as we call it, "unrealized profits."

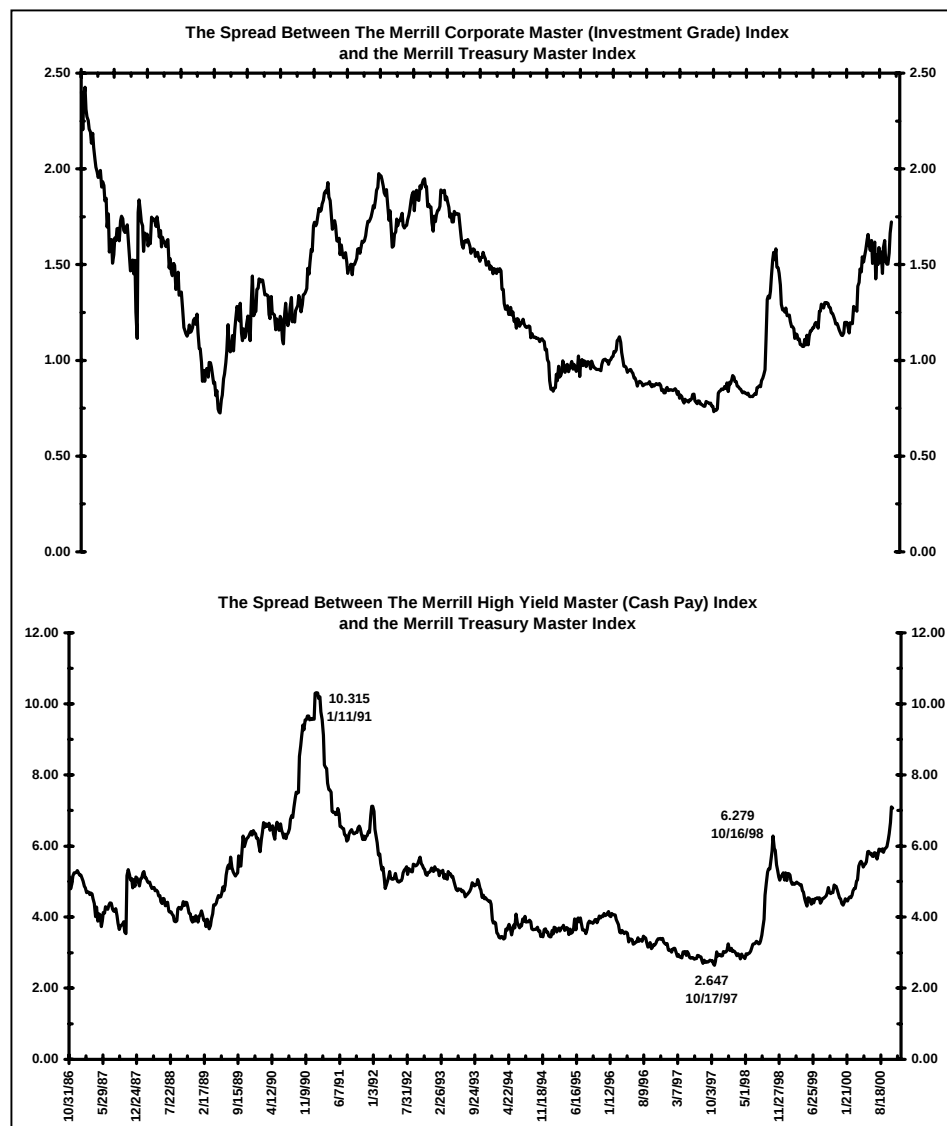
It is important to note that our starting date is October 1990. We chose this date since it is generally accepted as the start date of the latest bull market (the late 1998 decline is viewed as a correction within this context).

As of August 2000, the public had about \$717.66 billion in unrealized mutual funds profits – down from the record of \$753.69 billion in December 1999. So, most of the losses from the spring sell-off have been recovered by these investors.

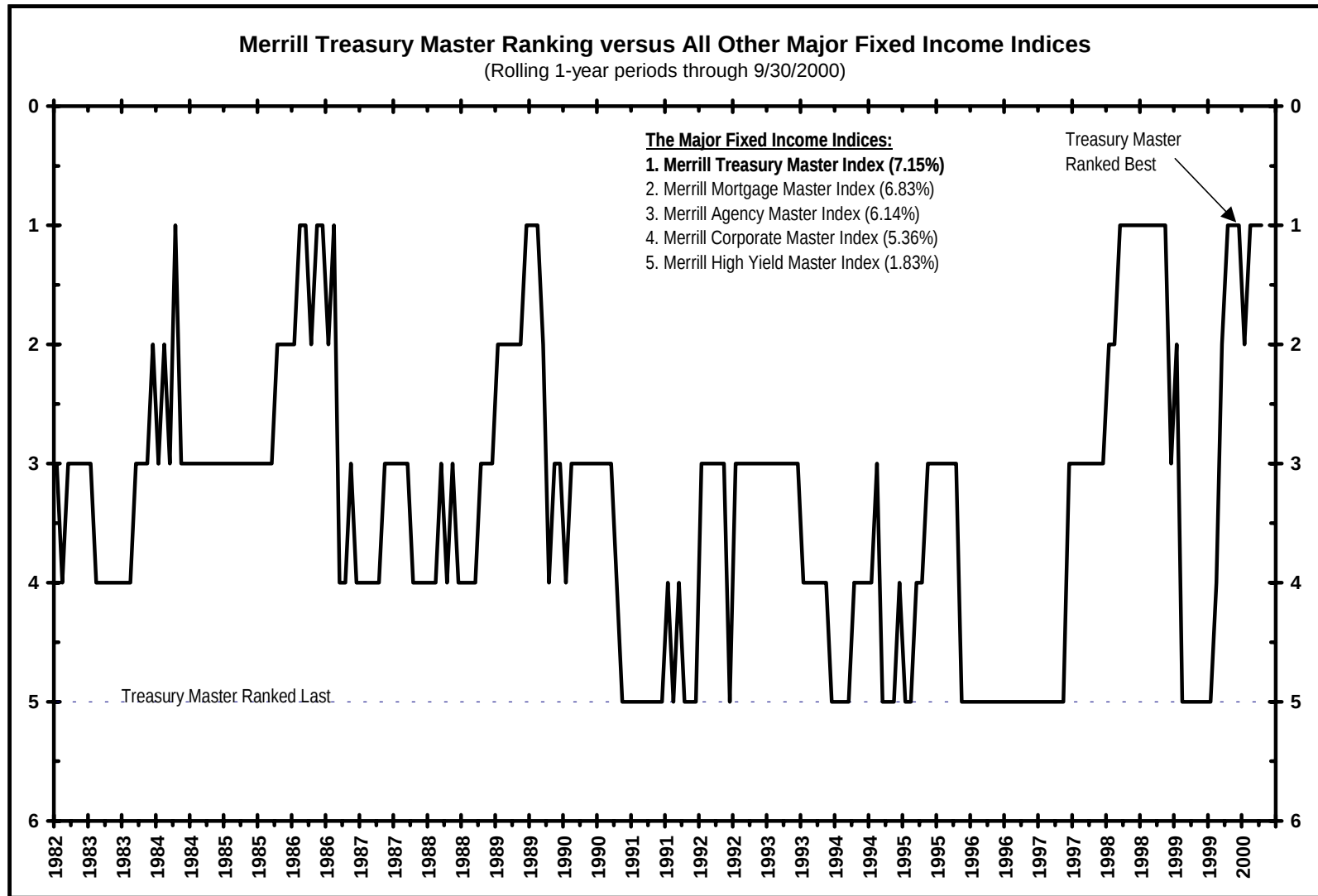
These tables show that the economy has moved from consistently under-performing expectations (through September 14) to performing in-line with expectations (through September 25) to consistently out-performing expectations (through October 30).



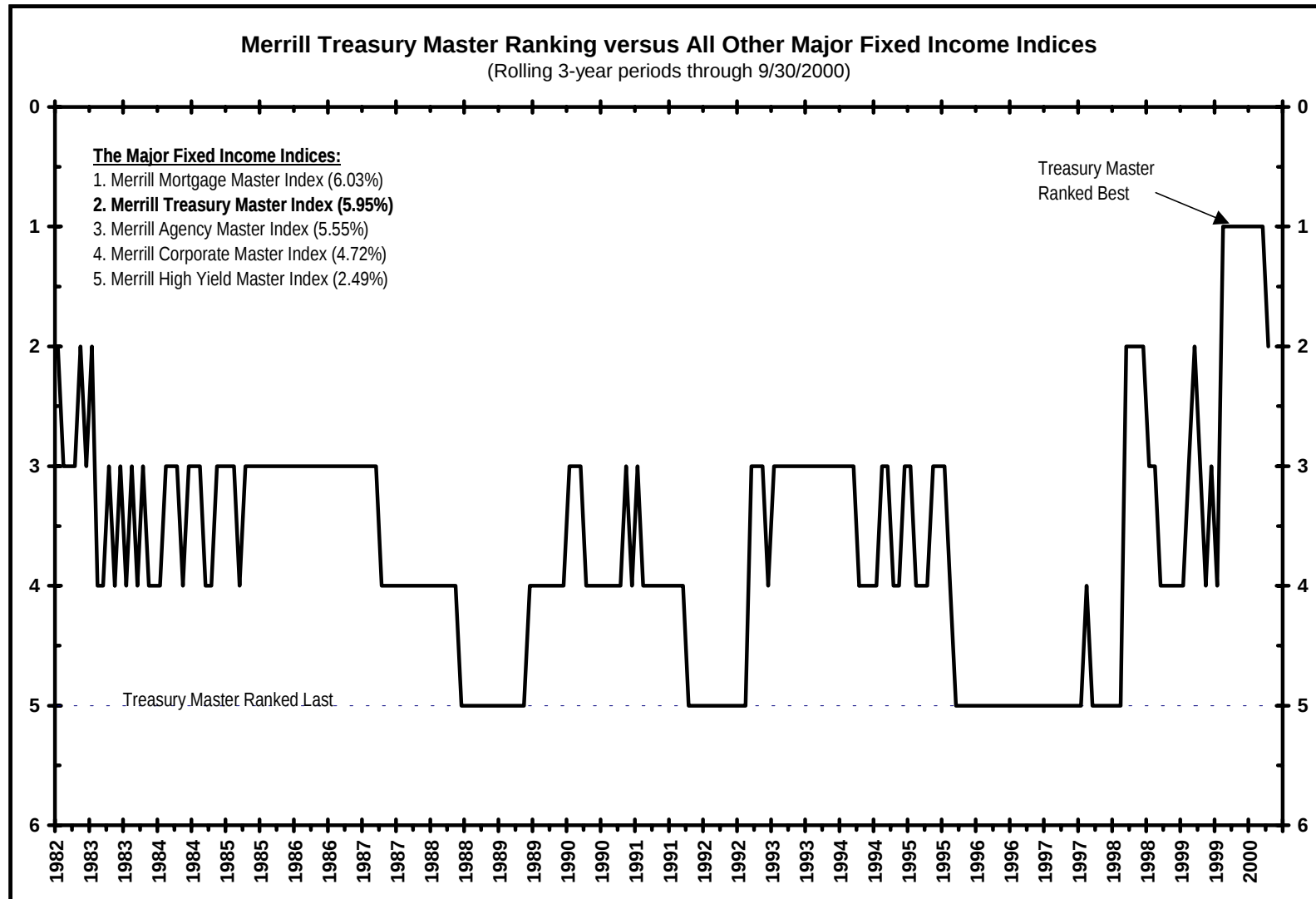
Thoughts About Spreads - 1



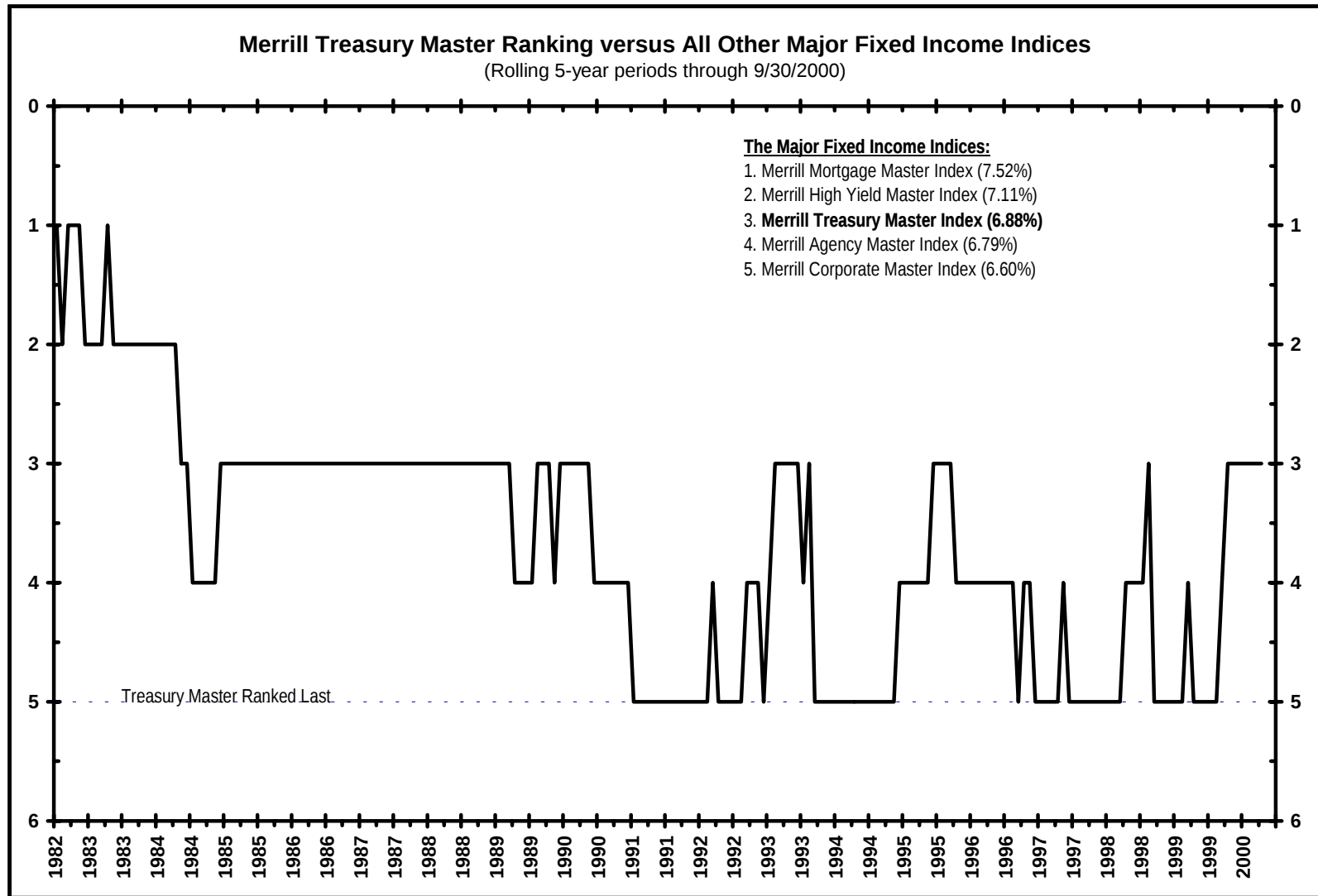
Thoughts About Spreads - 2



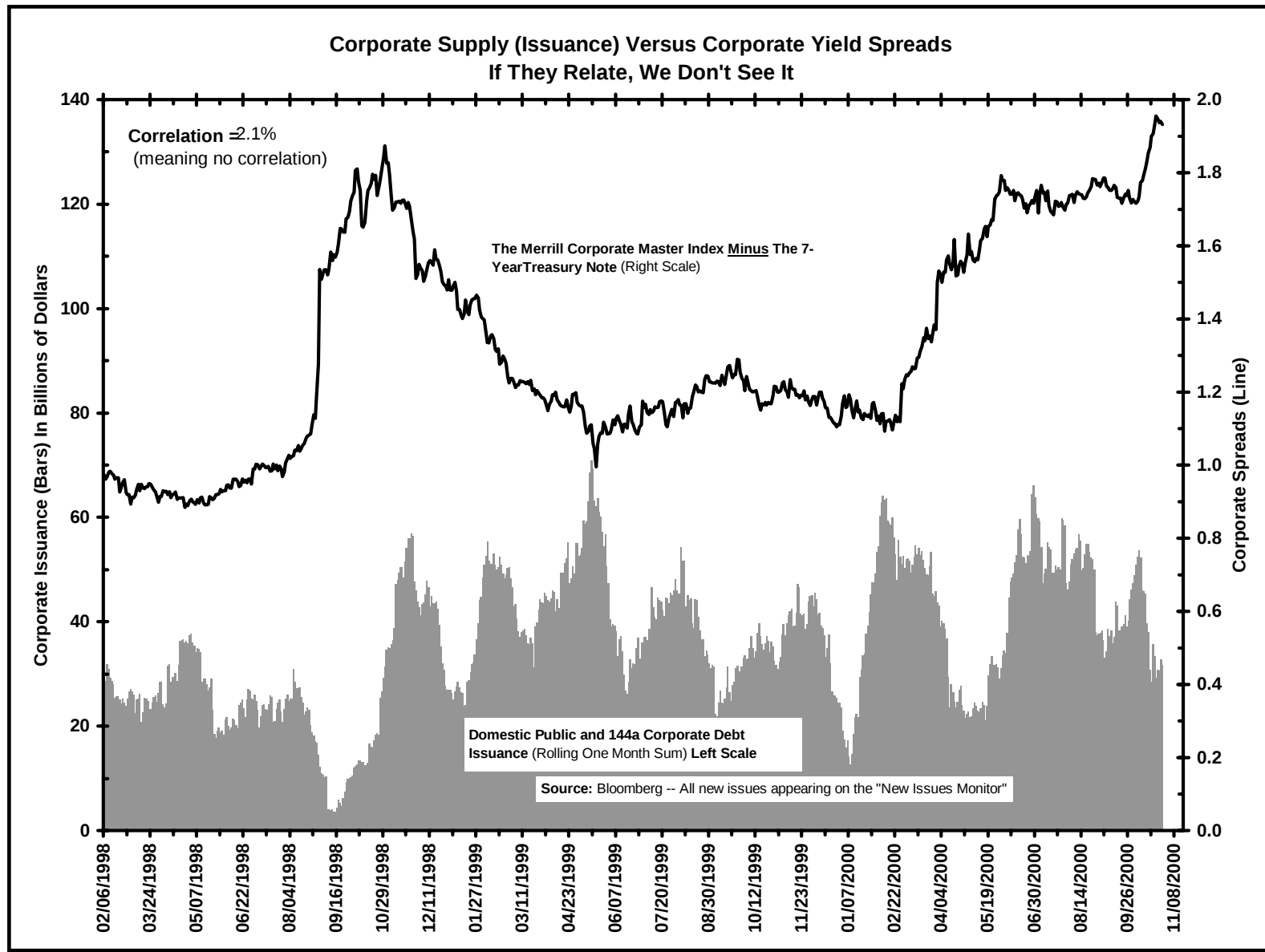
Thoughts About Spreads - 3



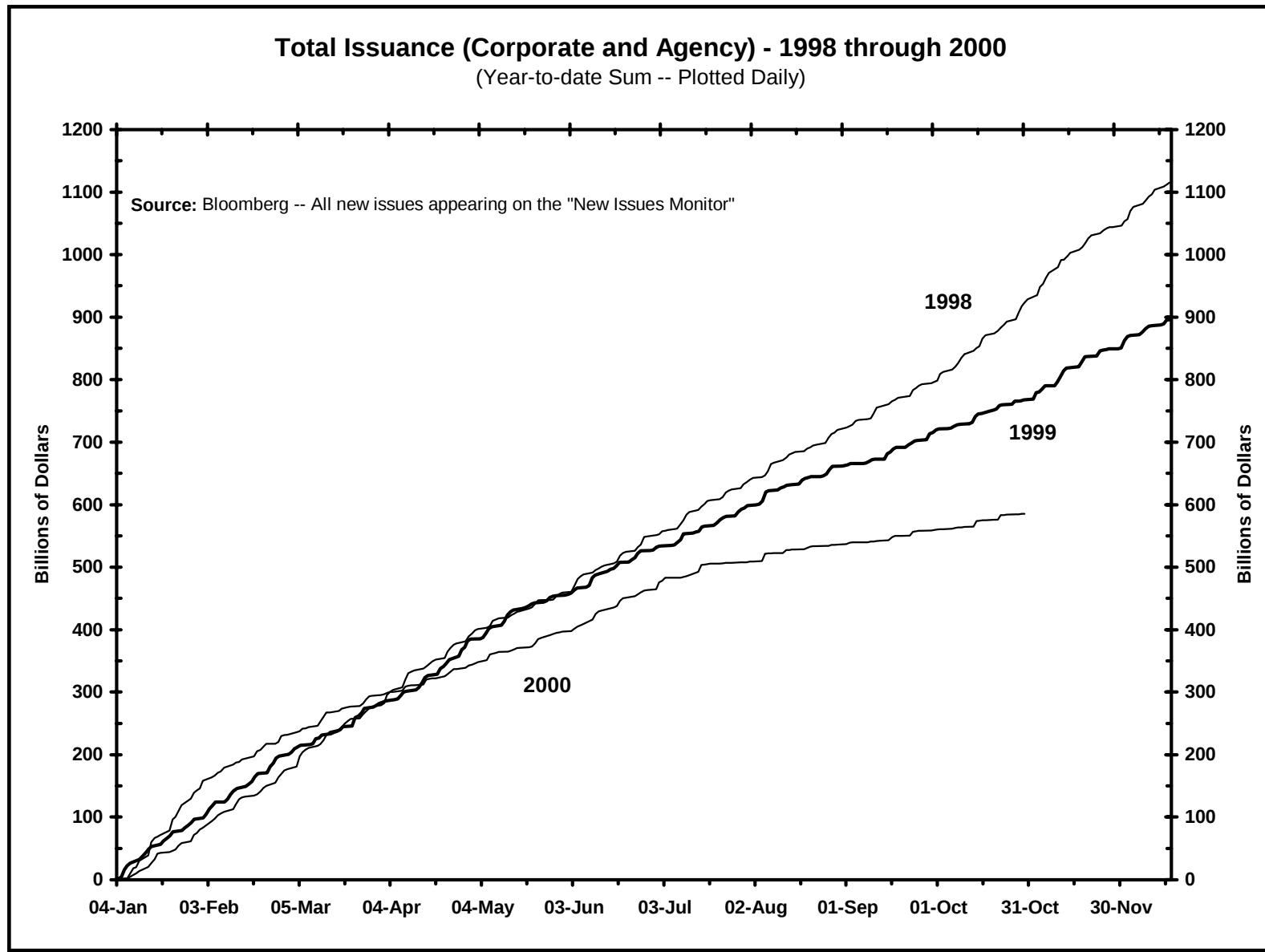
Thoughts About Spreads - 4



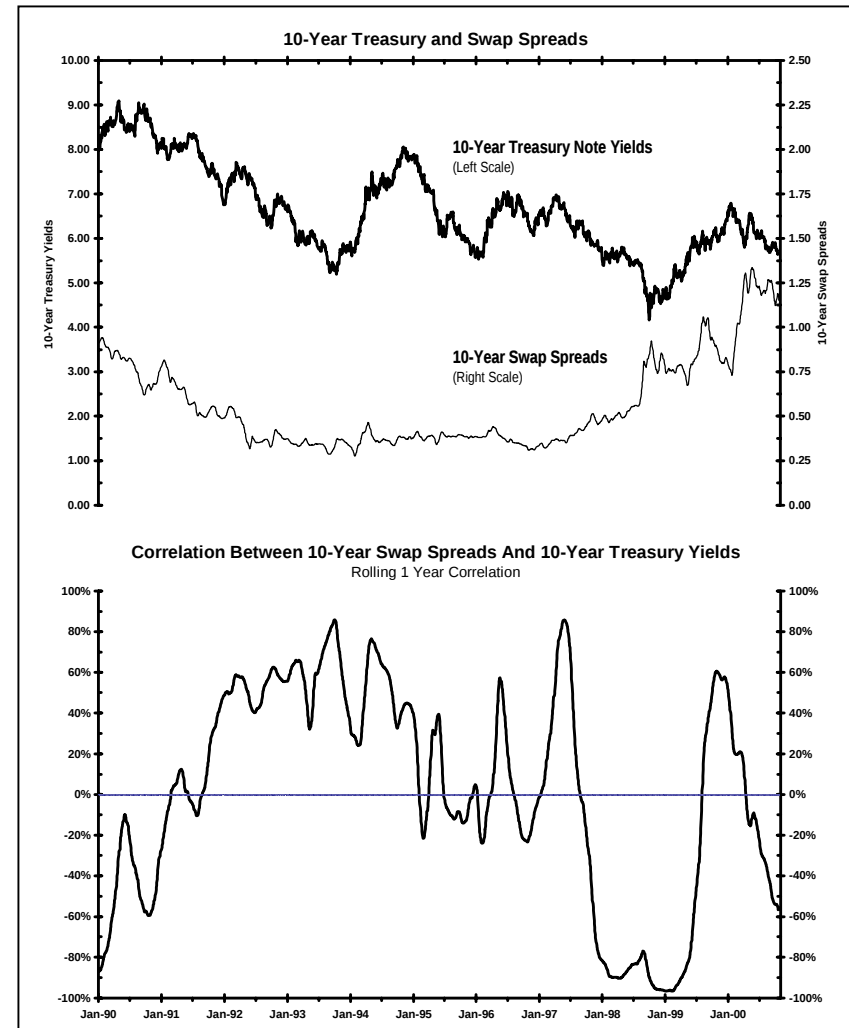
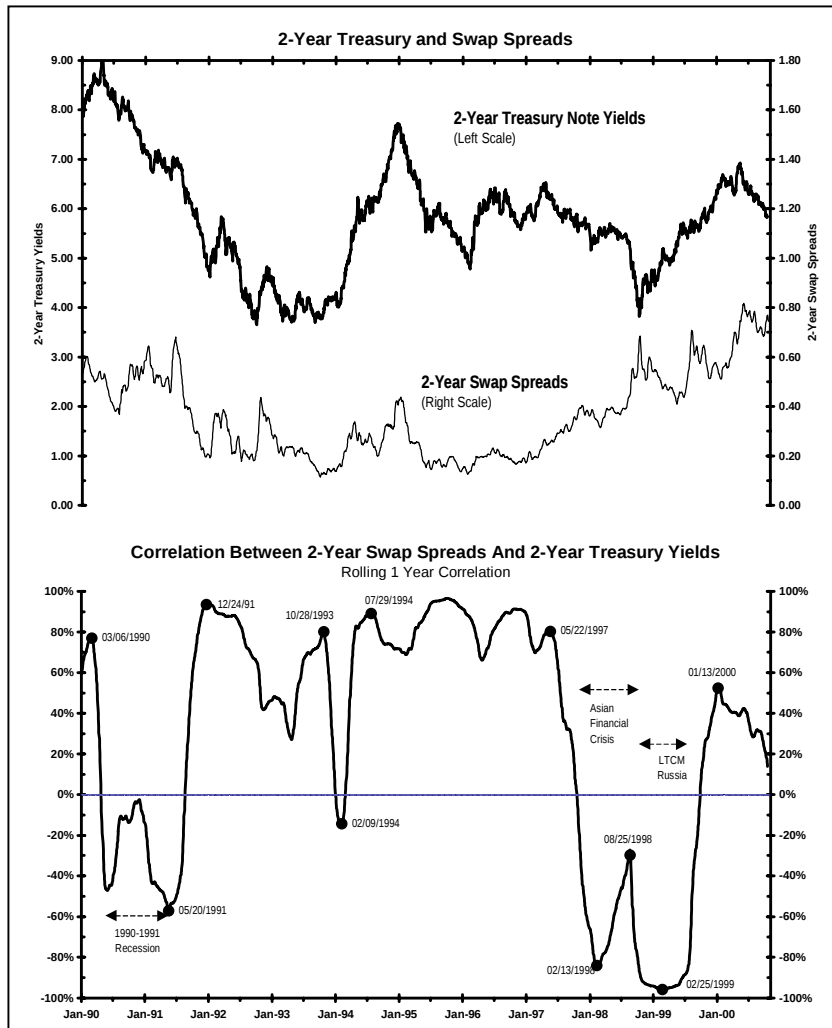
Thoughts About Spreads - 5



Thoughts About Spreads - 6



Thoughts About Spreads - 7



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