

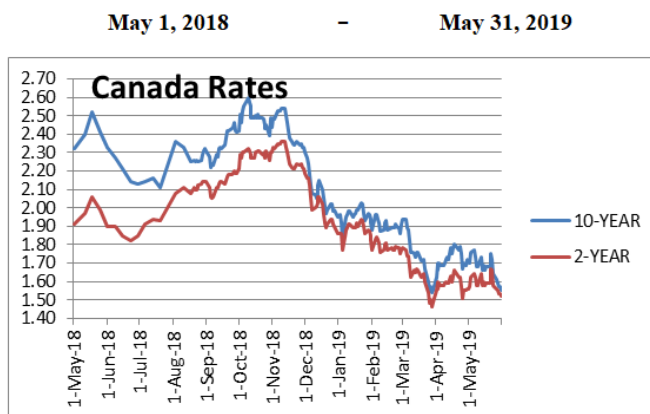
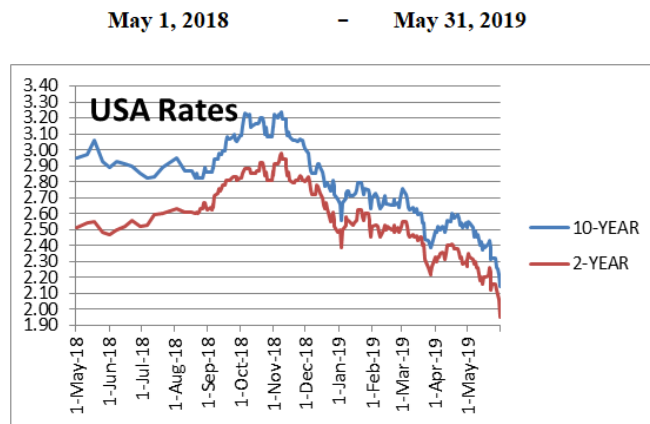
RECESSION BAROMETER

May 31, 2019

Spotlight on : Interest Rates & Yield Spreads

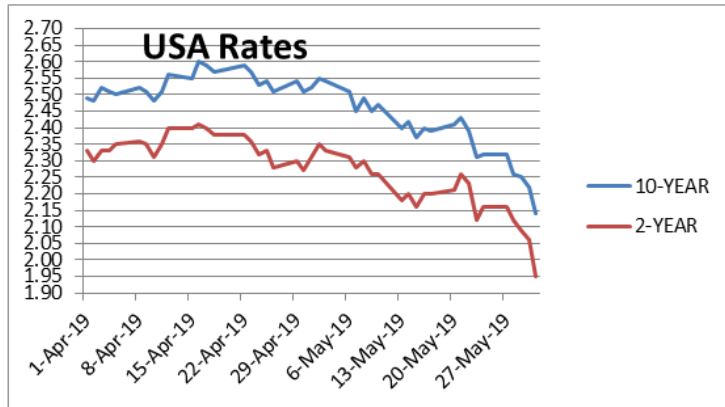
INTEREST RATES

The two charts below show the trend in interest rates in the United States and Canada over the last thirteen months, since May 1, 2018, for 10-year and 2-year maturities.

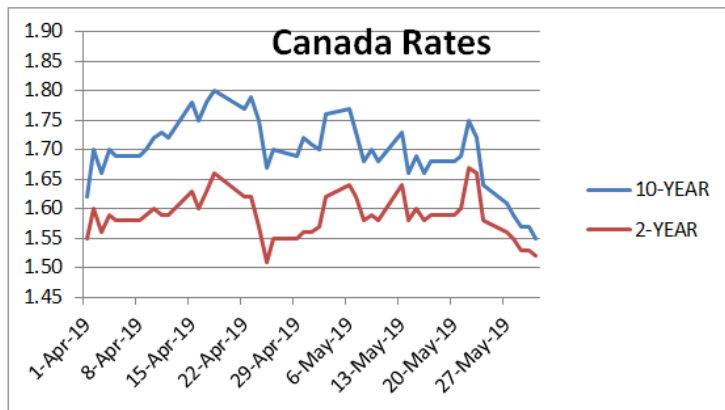


Observation: The overall trend in rates is downward, but the direction of the trends in the USA and Canada has differed recently. Since the beginning of April 2019, U.S. interest rates have dropped markedly, whereas in Canada, they have been relatively stable. So, let us look at the charts since April 1, 2019.

April 1, 2019 - May 31, 2019



April 1, 2019 - May 31, 2019



Observation: Interest rates in both countries are clearly headed downward at the moment. As bond rates head down, the corollary is that bond prices move up. The drop in 10-year U.S. Treasuries has been dramatic. As the chart above shows, on April 16, the 10-year rate was 2.60%. Just 6 weeks later, it is down to 2.14%, a drop of 46 basis points and equivalent to almost 18%. Canadian rates have not suffered as badly. On April 18, the Canadian 10-year rate was 1.80% and now it is 1.55%, a drop of 25 basis points, or almost 14%. The lower bond interest rates and the correspondingly higher bond prices reflect the trend that investors currently are seeking safety in bonds amidst the increasingly global turmoil associated with tariffs and trade that could portend a decline in equity prices.

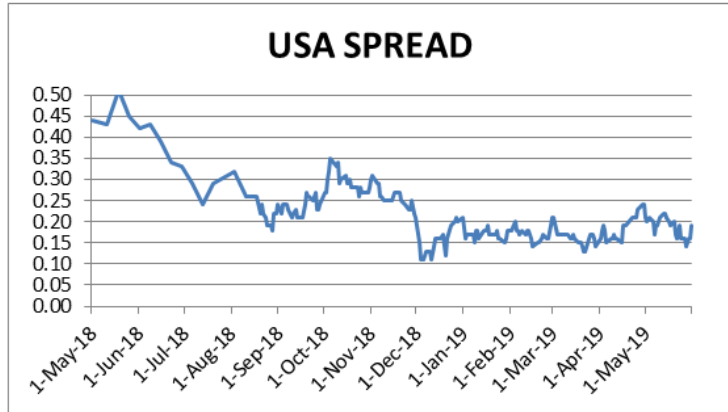
Interest rates are only one part of the equation. The other important consideration is interest rate spreads, i.e., the difference in interest rates between different maturities.

On the next page, we provide charts for the Spreads between 10-year and 2-year U.S. Treasuries and Government of Canada Bonds since May 1, 2018.

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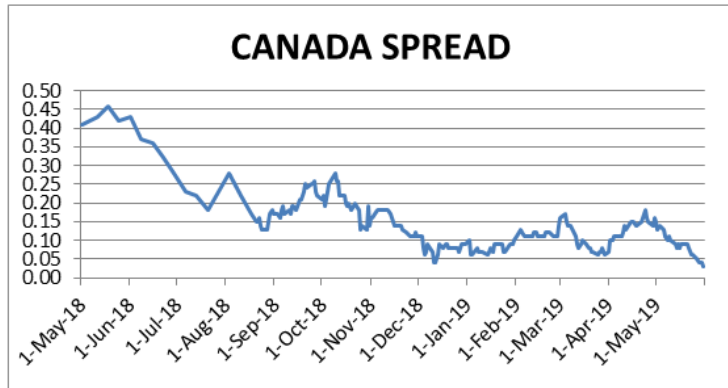
May 1, 2018 - May 31, 2019

10-Year/2-Year



May 1, 2018 - May 31, 2019

10-Year/2-Year



Observation: The Spreads tell a different story. Since the beginning of 2019, U.S. Spreads have remained quite stable, generally between 0.10x and 0.20x, with only a brief spike up to 0.25x. The current spread is 0.19x. Canadian Spreads, on the other hand, although also fairly stable, have generally ranged between 0.05x and 0.17x, and currently stand at 0.03x, i.e., approaching Inversion.

COMMENT: Our “recession barometer” kicks in when the “spread” between the 10-year rate and the 2-year rate for Treasuries in the USA and Government of Canada Bonds in Canada reaches 0.00x, which means that the yield on the 10s equals the yield on the 2s. If the 10s yield less than the 2s, an “inversion” occurs and then it is likely that a recession will soon follow.

Historically, inversions of the yield curve (the spread) have preceded most U.S. recessions. Thus, the yield curve is considered an important barometer for predicting business cycle turning points. However, it is important to note that, sometimes, a negative yield curve gives a false positive.

In the last week of March, there was much consternation when the 10-year interest rate fell below the 3-month interest rate, which represented an Inversion. The Spread quickly corrected itself, but it has inverted once again and dramatically so.

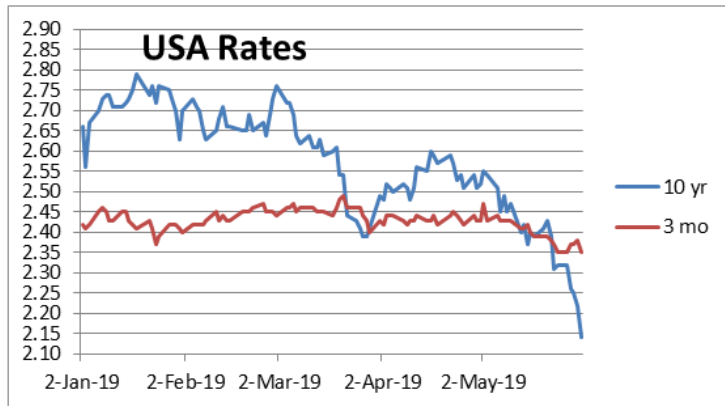
Typically, short-term interest rates are lower than long-term interest rates. That is because an investor wants to be compensated for the greater risk of holding longer-dated bonds than shorter-term bonds that have considerably less risk as maturity approaches.

So, when the interest rate on a long-term bond falls appreciably below the interest rate on a short-term bond, market pundits become necessarily alarmed. History has shown that when an Inversion occurs, a recession soon follows, typically between 15 and 20 months later.

Here is the chart that has market pundits currently upset. As shown, the 10-year Treasury rate had a dramatic drop this past week and is now significantly below that of its 3-month counterpart. The second chart shows the Spread between the two rates, which is currently **-0.21x**, and also portrays a dramatic fall this past week.

January 2, 2019 - May 31, 2019

USA Rates: 10-Year/3-Month



January 2, 2019 - May 31, 2019

USA SPREAD: 10-Year/3-Month



<continued>

COMMENT: *Just because an Inversion occurs, it is not automatic that a Recession follows. And, when one does occur, the average lag time is 15 to 20 months. Further, if an Inversion occurs for just one day, is it automatic that the Recession count-down begins at that point? Or, should there be a certain number of days of a continuous Inversion to give confirmation? Also, which yield spreads do you choose?*

ANALYZING VARIOUS YIELD SPREADS

There are a myriad of different yield spreads that can be calculated. With so many iterations possible, which one(s) is(are) the most relevant? It is too easy to choose one iteration, eg., 10-year/6-month or 10-year/3-month (both currently “inverted”) and declare “Inversion!”, while both the 10-year/5-year and the 10-year/2-year yield spreads do not currently show inversion.

Our yield-spread watch includes a total of **24** yield spread ratios, ranging all the way from 30-year/20-year to 1-year/1-month.

Interestingly, more than half, 15 in total, are in an inverted state and all are at the short-end of the curve.

Q: What is the market saying? What does this tell us?

A: It could suggest that the market is expecting that there will be a rate cut by the Fed, which would send short-end rates lower. It might also suggest that the short-end is waiting for the longer-end to “catch up” and “join it” in inversion.

COMMENT: *If we were to choose only one yield spread to measure “Inversion”, it would be the 10-year/2-year ratio. However, we monitor two different series of Spreads. The First Spread Series is a weighted average of 3 Spreads: 10-year/2-year (70%), 10-year/3-month (20%), and 5-year/2-year (10%). The Second Spread Series is an equal-weight average of 12 Spreads: 30-year/20-year, 30-year/10-year, 20-year/10-year, 20-year/5-year, 10-year/2-year, 10-year/3-month, 5-year/2-year, 5-year/3-month, 2-year/1-year, 2-year/3-month, 1-year/6-month, and 1-year/3-month.*

First Spread Series: Weighted Average Of Three Spreads

Our First Spread Series highlights three yield Spreads to measure “Inversion” and the possibility of a subsequent Economic Recession.

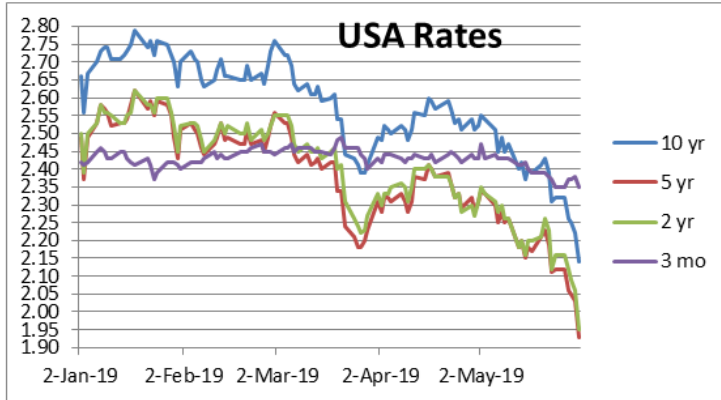
These three yield spreads feature U.S. Treasuries for: (1) 10-year/2-year; (2) 10-year/3 month; and (3) 5-year/2-year.

Let us have a look at the spreads for each of these three yield ratios.

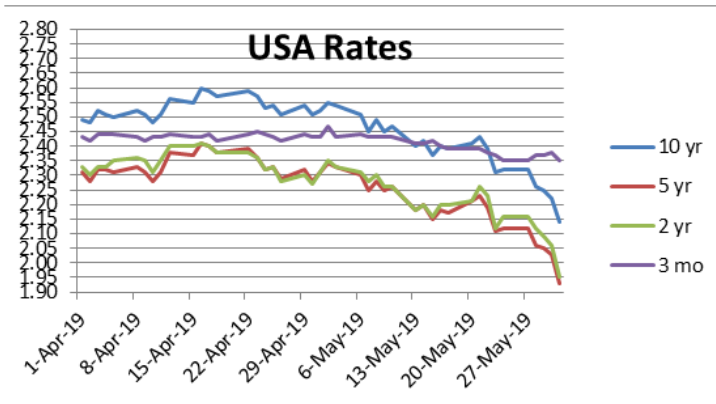
The first chart shows the rates since January 2, 2019.

The second chart shows the rates since April 1, 2019.

January 2, 2019 - May 31, 2019



April 1, 2019 - May 31, 2019



Observation: In a normal market, the 10-year would be the highest rate, then the 5-year, and followed by the 2-year, and the 3-month. There are currently two Inversions: (1) the 10-year rate is below the 3-month rate; and (2) the 5-year rate is below the 2-year rate. These Inversions have been consistently so for some time, particularly the 5-year/2-year.

Here are the current Spreads:

10-Year/2-Year

CURRENT SPREAD
 USA = 0.19 x
 Canada = 0.03 x

10-Year/3-Month

CURRENT SPREAD
 USA = -0.21 x

5-Year/2-Year

CURRENT SPREAD
 USA = -0.02 x

Second Spread Series: Equal-Weight Average Of Twelve Spreads

As declared in a previous COMMENT above, we have chosen an equal-weight average of 12 spreads to monitor Inversion. Here are the ratios for all 12 of these spreads over the past five weeks:

	<u>30Y</u>	<u>30Y</u>	<u>20Y</u>	<u>20Y</u>	<u>10Y</u>	<u>10Y</u>	<u>5Y</u>	<u>5Y</u>	<u>2Y</u>	<u>2Y</u>	<u>1Y</u>	<u>1Y</u>
	<u>20Y</u>	<u>10Y</u>	<u>10Y</u>	<u>5Y</u>	<u>2Y</u>	<u>3M</u>	<u>2Y</u>	<u>3M</u>	<u>1Y</u>	<u>3M</u>	<u>6M</u>	<u>3M</u>
May 3, 2019	0.18	0.39	0.21	0.42	0.21	0.11	0.00	-0.10	-0.08	-0.10	-0.05	-0.02
May 10, 2019	0.19	0.42	0.23	0.44	0.21	0.04	0.00	-0.17	-0.10	-0.17	-0.09	-0.07
May 17, 2019	0.19	0.43	0.24	0.46	0.19	0.00	-0.03	-0.22	-0.13	-0.19	-0.09	-0.06
May 24, 2019	0.18	0.43	0.25	0.45	0.16	-0.03	-0.04	-0.23	-0.17	-0.19	-0.06	-0.02
May 31, 2019	0.19	0.44	0.25	0.46	0.19	-0.21	-0.02	-0.42	-0.26	-0.40	-0.14	-0.14

The table above shows that Inversions are increasing.

We still put a lot of emphasis on the 10-year/2-year Spread and it is nowhere near an Inversion. The 10-year/2-year Spread is the major part of our First Spread Series above.

The increasing Inversions across the spectrum seem bad enough, but the following table should cause even more angst.

Date	<u>OBFR</u>	<u>1 mo</u>	<u>2 mo</u>	<u>3 mo</u>	<u>6 mo</u>	<u>1 yr</u>	<u>2 yr</u>	<u>3 yr</u>	<u>5 yr</u>	<u>7 yr</u>	<u>10 yr</u>	<u>20 yr</u>	<u>30 yr</u>
1-Mar-19	2.40	2.44	2.46	2.44	2.52	2.55	2.55	2.54	2.56	2.67	2.76	2.97	3.13
15-Mar-19	2.41	2.46	2.46	2.45	2.52	2.52	2.43	2.39	2.40	2.49	2.59	2.83	3.02
1-Apr-19	2.41	2.42	2.43	2.43	2.46	2.41	2.33	2.29	2.31	2.40	2.49	2.71	2.89
15-Apr-19	2.41	2.42	2.43	2.43	2.46	2.43	2.40	2.36	2.37	2.46	2.55	2.77	2.96
1-May-19	2.44	2.42	2.41	2.43	2.44	2.39	2.31	2.28	2.31	2.41	2.52	2.74	2.92
15-May-19	2.39	2.40	2.41	2.42	2.43	2.30	2.16	2.12	2.15	2.25	2.37	2.63	2.82
31-May-19	2.37	2.35	2.38	2.35	2.35	2.21	1.95	1.90	1.93	2.03	2.14	2.39	2.58

Note: The green numbers are the Overnight Banking Fund Rates (OBFR).

Note: The red numbers are those rates that are lower than the OBFR.

COMMENT: The table above, in the first column, shows in green numbers, the federal overnight banking funds rate. (The overnight bank funding rate (OBFR) is calculated as a volume-weighted median of overnight federal funds transactions, Eurodollar transactions, and domestic deposits.) The red numbers are those rates that are below the overnight rate. This table illustrates the anomaly that exists in the current market. How could federal overnight fund rates be higher than 5-year or 10-year rates? Or any longer-dated rates? These Inversions suggest that a Recession is on its way.

We have devised a Recession Barometer table in order to reflect the readings to measure “inversion” and the prognosis for going into recession.

The table is presented on the next page.

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RECESSION BAROMETER READING

We have devised a barometer to depict the status of where we believe the economy is in forecasting an economic recession. The barometer runs from 0 to 10 in 0.5 intervals, with 0 being the least worrisome level for recession expectations, and 10 reflecting that an inversion has occurred. Each barometer numeric is associated with a range of yield spreads.

RECESSION BAROMETER

<u>Interest Rate Yield Spread</u>	<u>Barometer Reading</u>
>1.00x	0
0.94x - 1.00x	0.5
0.87x - 0.93x	1
0.79x - 0.86x	1.5
0.71x - 0.78x	2
0.64x - 0.70x	2.5
0.57x - 0.63x	3
0.51x - 0.56x	3.5
0.46x - 0.50x	4
0.41x - 0.45x	4.5
0.36x - 0.40x	5
0.31x - 0.35x	5.5
0.26x - 0.30x	6
0.21x - 0.25x	6.5
0.17x - 0.20x	7
0.13x - 0.16x	7.5
0.09x - 0.12x	8
0.06x - 0.08x	8.5
0.03x - 0.05x	9
0.00x - 0.02x	9.5
<0.00x	10 Inversion!

The above matrix is applied to our yield spread ratios to derive our Barometer Readings.

Here are the readings from the two spread series. As shown, there was no change this past week in the First Spread Series, it remains at 8.0x. But the Second Spread Series is now “inverted” at **-0.01x**, for a reading of 10.0x.

<u>Date</u>	<u>Weighted 3 U.S. Spreads</u>		<u>Unweighted 12 U.S. Spreads</u>	
	<u>Spread</u>	<u>Reading</u>	<u>Spread</u>	<u>Reading</u>
May 3, 2019	0.17	7.0x	0.10	8.0x
May 10, 2019	0.15	7.5x	0.08	8.5x
May 17, 2019	0.12	8.0x	0.07	8.5x
May 24, 2019	0.09	8.0x	0.06	8.5x
May 31, 2019	0.09	8.0x	-0.01	10.0x

<continued>

Recession Forecast

The following chart shows when a recession could occur for various post-inversion dates. For inversion, we are monitoring two yield spread ratios, a weighted and an unweighted measurement. These barometer readings are currently 8.0x and 10.0x, the latter representing Inversion.

Our current “guess” is that a recession could occur 15 months post-inversion (shown in Red). This is a “moving target” and will change with each ensuing month. It will also change with changes in global economic conditions.

However, we are mindful that an increasing number of Spreads are inverting. Already one of our monitors, the Second Spread Series has a negative Spread. If this continues and/or the First Spread Series edges closer to or reaches Inversion, we will be shortening our expectation of when a Recession could occur in the United States. (Next week, we will take a closer look at the situation in Canada.)

Forecasting the Commencement of a Recession

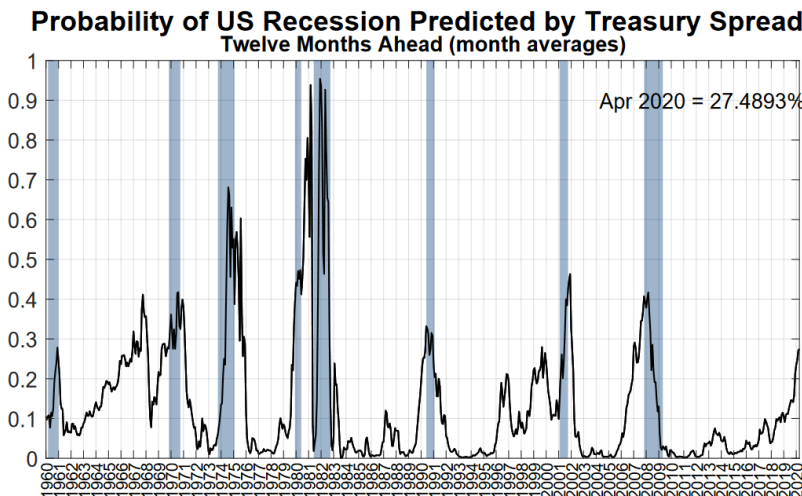
If an inversion occurs during the current month ... then a recession will begin at stated date projections.

Current Month	Inversion +12 Months	Inversion +15 Months	Inversion +18 Months	Inversion +24 Months	Inversion +30 Months	Inversion +36 Months
June/2019	June/2020	Sept/2020	Dec/2020	June/2021	Dec/2021	May/2022

Source: eResearch

New York Federal Reserve Yield Curve Recession Indicator

The following New York Fed chart, which uses the difference between 10-year and 3-month Treasury rates to calculate the probability of a recession in the United States twelve months ahead, is as of the end of April 2019. It shows the probability of a recession occurring in the next 12 months, that is, by the end of April 2020. The chart shows that probability is rising and has reached about 27.5%.



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