1/27/2016	1.40		1.40%
1/28/2016	1.42		1.42%
1/29/2016	1.41		1.41%
2/1/2016	1.40		1.40%
2/2/2016	1.36		1.36%
2/3/2016	1.38		1.38%
2/4/2016	1.36		1.36%
2/5/2016	1.33		1.33%
2/8/2016	1.23		1.23%
2/9/2016	1.21		1.21%
2/10/2016	1.21		1.21%
2/11/2016	1.18		1.18%
2/12/2016	1.25		1.25%
2/15/2016	#N/A	#N/A	
2/16/2016	1.25		1.25%
2/17/2016	1.28		1.28%
2/18/2016	1.24		1.24%
2/19/2016	1.26		1.26%
2/22/2016	1.31		1.31%
2/23/2016	1.32		1.32%
2/24/2016	1.36		1.36%
2/25/2016	1.39		1.39%
2/26/2016	1.41		1.41%
2/29/2016	1.42		1.42%
3/1/2016	1.48		1.48%
3/2/2016	1.51		1.51%
3/3/2016	1.53		1.53%
3/4/2016	1.51		1.51%
3/7/2016	1.48		1.48%
3/8/2016	1.46		1.46%
3/9/2016	1.51		1.51%
3/10/2016	1.48		1.48%
3/11/2016	1.54		1.54%
3/14/2016	1.52		1.52%
3/15/2016	1.50		1.50%
3/16/2016	1.58		1.58%
3/17/2016	1.57		1.57%
3/18/2016	1.61		1.61%
3/21/2016	1.64		1.64%
3/22/2016	1.63		1.63%
3/23/2016	1.58		1.58%
3/24/2016	1.57		1.57%
3/25/2016	#N/A	#N/A	
3/28/2016	1.56		1.56%
3/29/2016	1.61		1.61%
3/30/2016	1.65		1.65%
3/31/2016	1.62		1.62%
4/1/2016	1.62		1.62%
4/4/2016	1.64		1.64%
4/5/2016	1.59		1.59%
4/6/2016	1.59		1.59%
4/7/2016	1.58		1.58%
4/8/2016	1.58		1.58%
4/11/2016	1.56		1.56%
4/12/2016	1.57		1.57%
4/13/2016	1.56		1.56%
4/14/2016	1.56		1.56%
4/15/2016	1.56		1.56%
4/18/2016	1.57		1.57%
4/19/2016	1.60		1.60%
4/20/2016	1.62		1.62%
4/21/2016	1.64		1.64%
4/22/2016	1.64		1.64%
4/25/2016	1.65		1.65%
4/26/2016	1.67		1.67%
4/27/2016	1.68		1.68%
4/28/2016	1.72		1.72%
4/29/2016	1.71		1.71%
5/2/2016	1.68		1.68%
5/3/2016	1.64		1.64%
5/4/2016	1.63		1.63%
5/5/2016	1.63		1.63%
5/6/2016	1.61		1.61%
5/9/2016	1.59		1.59%
5/10/2016	1.62		1.62%
5/11/2016	1.59		1.59%
5/12/2016	1.60		1.60%
5/13/2016	1.58		1.58%
5/16/2016	1.60		1.60%
5/17/2016	1.61		1.61%
5/18/2016	1.61		1.61%
5/19/2016	1.56		1.56%
5/20/2016	1.56		1.56%
5/23/2016	1.54		1.54%
5/24/2016	1.55		1.55%
5/25/2016	1.58		1.58%
5/26/2016	1.58		1.58%
5/27/2016	1.58		1.58%
5/30/2016	#N/A	#N/A	
5/31/2016	1.54		1.54%
6/1/2016	1.54		1.54%
6/2/2016	1.54		1.54%
6/3/2016	1.52		1.52%
6/6/2016	1.54		1.54%
6/7/2016	1.57		1.57%
6/8/2016	1.59		1.59%
6/9/2016	1.56		1.56%
6/10/2016	1.52		1.52%
6/13/2016	1.47		1.47%
6/14/2016	1.45		1.45%
6/15/2016	1.47		1.47%
6/16/2016	1.42		1.42%
6/17/2016	1.42		1.42%
6/20/2016	1.43		1.43%
6/21/2016	1.43		1.43%
6/22/2016	1.44		1.44%
6/23/2016	1.50		1.50%
6/24/2016	1.42		1.42%
6/27/2016	1.34		1.34%
6/28/2016	1.37		1.37%
6/29/2016	1.40		1.40%
6/30/2016	1.40		1.40%
7/1/2016	1.43		1.43%
7/4/2016	#N/A	#N/A	

7/5/2016	1.40	1.40%
7/6/2016	1.43	1.43%
7/7/2016	1.43	1.43%
7/8/2016	1.43	1.43%
7/11/2016	1.42	1.42%
7/12/2016	1.46	1.46%
7/13/2016	1.45	1.45%
7/14/2016	1.45	1.45%
7/15/2016	1.49	1.49%
7/18/2016	1.49	1.49%
7/19/2016	1.44	1.44%
7/20/2016	1.46	1.46%
7/21/2016	1.52	1.52%
7/22/2016	1.51	1.51%
7/25/2016	1.50	1.50%
7/26/2016	1.50	1.50%
7/27/2016	1.49	1.49%
7/28/2016	1.52	1.52%
7/29/2016	1.49	1.49%
8/1/2016	1.46	1.46%
8/2/2016	1.44	1.44%
8/3/2016	1.46	1.46%
8/4/2016	1.47	1.47%
8/5/2016	1.50	1.50%
8/8/2016	1.51	1.51%
8/9/2016	1.49	1.49%
8/10/2016	1.44	1.44%
8/11/2016	1.47	1.47%
8/12/2016	1.44	1.44%
8/15/2016	1.45	1.45%
8/16/2016	1.44	1.44%
8/17/2016	1.47	1.47%
8/18/2016	1.47	1.47%
8/19/2016	1.48	1.48%
8/22/2016	1.47	1.47%
8/23/2016	1.48	1.48%
8/24/2016	1.48	1.48%
8/25/2016	1.49	1.49%
8/26/2016	1.47	1.47%
8/29/2016	1.46	1.46%
8/30/2016	1.46	1.46%
8/31/2016	1.47	1.47%
9/1/2016	1.45	1.45%
9/2/2016	1.47	1.47%
9/5/2016	#N/A	#N/A
9/6/2016	1.49	1.49%
9/7/2016	1.51	1.51%
9/8/2016	1.52	1.52%
9/9/2016	1.50	1.50%
9/12/2016	1.51	1.51%
9/13/2016	1.49	1.49%
9/14/2016	1.49	1.49%
9/15/2016	1.49	1.49%
9/16/2016	1.51	1.51%
9/19/2016	1.50	1.50%
9/20/2016	1.49	1.49%
9/21/2016	1.51	1.51%
9/22/2016	1.55	1.55%
9/23/2016	1.57	1.57%
9/26/2016	1.54	1.54%
9/27/2016	1.52	1.52%
9/28/2016	1.56	1.56%
9/29/2016	1.54	1.54%
9/30/2016	1.60	1.60%
10/3/2016	1.63	1.63%
10/4/2016	1.62	1.62%
10/5/2016	1.62	1.62%
10/6/2016	1.64	1.64%
10/7/2016	1.63	1.63%
10/10/2016	#N/A	#N/A
10/11/2016	1.64	1.64%
10/12/2016	1.64	1.64%
10/13/2016	1.63	1.63%
10/14/2016	1.67	1.67%
10/17/2016	1.68	1.68%
10/18/2016	1.66	1.66%
10/19/2016	1.68	1.68%
10/20/2016	1.68	1.68%
10/21/2016	1.67	1.67%
10/24/2016	1.66	1.66%
10/25/2016	1.70	1.70%
10/26/2016	1.71	1.71%
10/27/2016	1.72	1.72%
10/28/2016	1.73	1.73%
10/31/2016	1.73	1.73%
11/1/2016	1.72	1.72%
11/2/2016	1.70	1.70%
11/3/2016	1.68	1.68%
11/4/2016	1.68	1.68%
11/7/2016	1.71	1.71%
11/8/2016	1.73	1.73%
11/9/2016	1.82	1.82%
11/10/2016	1.88	1.88%
11/11/2016	#N/A	#N/A
11/14/2016	1.83	1.83%
11/15/2016	1.82	1.82%
11/16/2016	1.83	1.83%
11/17/2016	1.87	1.87%
11/18/2016	1.90	1.90%
11/21/2016	1.91	1.91%
11/22/2016	1.90	1.90%
11/23/2016	1.92	1.92%
11/24/2016	#N/A	#N/A
11/25/2016	1.89	1.89%
11/28/2016	1.85	1.85%
11/29/2016	1.86	1.86%
11/30/2016	1.94	1.94%
12/1/2016	1.97	1.97%
12/2/2016	1.91	1.91%
12/5/2016	1.94	1.94%
12/6/2016	1.95	1.95%
12/7/2016	1.92	1.92%
12/8/2016	1.95	1.95%
12/9/2016	1.96	1.96%

12/12/2016	1.98		1.98%
12/13/2016	1.95		1.95%
12/14/2016	1.94		1.94%
12/15/2016	1.90		1.90%
12/16/2016	1.86		1.86%
12/19/2016	1.86		1.86%
12/20/2016	1.90		1.90%
12/21/2016	1.91		1.91%
12/22/2016	1.95		1.95%
12/23/2016	1.97		1.97%
12/26/2016	#N/A	#N/A	
12/27/2016	1.99		1.99%
12/28/2016	1.95		1.95%
12/29/2016	1.94		1.94%
12/30/2016	1.95		1.95%
1/2/2017	#N/A	#N/A	
1/3/2017	1.98		1.98%
1/4/2017	1.99		1.99%
1/5/2017	1.95		1.95%
1/6/2017	1.96		1.96%
1/9/2017	1.95		1.95%
1/10/2017	1.95		1.95%
1/11/2017	1.99		1.99%
1/12/2017	1.98		1.98%
1/13/2017	1.99		1.99%
1/16/2017	#N/A	#N/A	
1/17/2017	1.97		1.97%
1/18/2017	2.00		2.00%
1/19/2017	2.04		2.04%
1/20/2017	2.04		2.04%
1/23/2017	2.02		2.02%
1/24/2017	2.06		2.06%
1/25/2017	2.08		2.08%
1/26/2017	2.08		2.08%
1/27/2017	2.08		2.08%
1/30/2017	2.07		2.07%
1/31/2017	2.05		2.05%
2/1/2017	2.05		2.05%
2/2/2017	2.05		2.05%
2/3/2017	2.05		2.05%
2/6/2017	2.02		2.02%
2/7/2017	2.00		2.00%
2/8/2017	1.96		1.96%
2/9/2017	1.99		1.99%
2/10/2017	2.01		2.01%
2/13/2017	2.00		2.00%
2/14/2017	2.01		2.01%
2/15/2017	2.06		2.06%
2/16/2017	2.02		2.02%
2/17/2017	2.01		2.01%
2/20/2017	#N/A	#N/A	
2/21/2017	2.03		2.03%
2/22/2017	2.04		2.04%
2/23/2017	2.03		2.03%
2/24/2017	2.00		2.00%
2/27/2017	2.01		2.01%
2/28/2017	2.02		2.02%
3/1/2017	2.03		2.03%
3/2/2017	2.01		2.01%
3/3/2017	2.04		2.04%
3/6/2017	2.01		2.01%
3/7/2017	2.03		2.03%
3/8/2017	2.01		2.01%
3/9/2017	2.00		2.00%
3/10/2017	2.01		2.01%
3/13/2017	2.01		2.01%
3/14/2017	1.99		1.99%
3/15/2017	2.01		2.01%
3/16/2017	2.02		2.02%
3/17/2017	2.01		2.01%
3/20/2017	2.00		2.00%
3/21/2017	1.98		1.98%
3/22/2017	1.97		1.97%
3/23/2017	1.95		1.95%
3/24/2017	1.98		1.98%
3/27/2017	1.97		1.97%
3/28/2017	1.97		1.97%
3/29/2017	1.98		1.98%
3/30/2017	1.96		1.96%
3/31/2017	1.97		1.97%
4/3/2017	1.96		1.96%
4/4/2017	1.96		1.96%
4/5/2017	1.97		1.97%
4/6/2017	1.95		1.95%
4/7/2017	1.94		1.94%
4/10/2017	1.93		1.93%
4/11/2017	1.91		1.91%
4/12/2017	1.90		1.90%
4/13/2017	1.92		1.92%
4/14/2017	#N/A	#N/A	
4/17/2017	1.88		1.88%
4/18/2017	1.85		1.85%
4/19/2017	1.85		1.85%
4/20/2017	1.85		1.85%
4/21/2017	1.84		1.84%
4/24/2017	1.87		1.87%
4/25/2017	1.91		1.91%
4/26/2017	1.90		1.90%
4/27/2017	1.91		1.91%
4/28/2017	1.92		1.92%
5/1/2017	1.92		1.92%
5/2/2017	1.88		1.88%
5/3/2017	1.87		1.87%
5/4/2017	1.86		1.86%
5/5/2017	1.86		1.86%
5/8/2017	1.86		1.86%
5/9/2017	1.86		1.86%
5/10/2017	1.85		1.85%
5/11/2017	1.88		1.88%
5/12/2017	1.84		1.84%
5/15/2017	1.82		1.82%
5/16/2017	1.82		1.82%
5/17/2017	1.78		1.78%
5/18/2017	1.80		1.80%

5/19/2017	1.82		1.82%
5/22/2017	1.82		1.82%
5/23/2017	1.83		1.83%
5/24/2017	1.81		1.81%
5/25/2017	1.80		1.80%
5/26/2017	1.81		1.81%
5/29/2017	#N/A	#N/A	
5/30/2017	1.81		1.81%
5/31/2017	1.81		1.81%
6/1/2017	1.81		1.81%
6/2/2017	1.79		1.79%
6/5/2017	1.79		1.79%
6/6/2017	1.77		1.77%
6/7/2017	1.78		1.78%
6/8/2017	1.78		1.78%
6/9/2017	1.78		1.78%
6/12/2017	1.75		1.75%
6/13/2017	1.75		1.75%
6/14/2017	1.71		1.71%
6/15/2017	1.67		1.67%
6/16/2017	1.67		1.67%
6/19/2017	1.67		1.67%
6/20/2017	1.66		1.66%
6/21/2017	1.66		1.66%
6/22/2017	1.69		1.69%
6/23/2017	1.70		1.70%
6/26/2017	1.71		1.71%
6/27/2017	1.71		1.71%
6/28/2017	1.73		1.73%
6/29/2017	1.72		1.72%
6/30/2017	1.73		1.73%
7/3/2017	1.75		1.75%
7/4/2017	#N/A	#N/A	
7/5/2017	1.75		1.75%
7/6/2017	1.76		1.76%
7/7/2017	1.73		1.73%
7/10/2017	1.72		1.72%
7/11/2017	1.75		1.75%
7/12/2017	1.76		1.76%
7/13/2017	1.77		1.77%
7/14/2017	1.76		1.76%
7/17/2017	1.77		1.77%
7/18/2017	1.76		1.76%
7/19/2017	1.76		1.76%
7/20/2017	1.77		1.77%
7/21/2017	1.76		1.76%
7/24/2017	1.78		1.78%
7/25/2017	1.81		1.81%
7/26/2017	1.80		1.80%
7/27/2017	1.83		1.83%
7/28/2017	1.83		1.83%
7/31/2017	1.82		1.82%
8/1/2017	1.79		1.79%
8/2/2017	1.79		1.79%
8/3/2017	1.78		1.78%
8/4/2017	1.80		1.80%
8/7/2017	1.80		1.80%
8/8/2017	1.83		1.83%
8/9/2017	1.82		1.82%
8/10/2017	1.80		1.80%
8/11/2017	1.79		1.79%
8/14/2017	1.77		1.77%
8/15/2017	1.78		1.78%
8/16/2017	1.78		1.78%
8/17/2017	1.77		1.77%
8/18/2017	1.76		1.76%
8/21/2017	1.75		1.75%
8/22/2017	1.77		1.77%
8/23/2017	1.75		1.75%
8/24/2017	1.75		1.75%
8/25/2017	1.75		1.75%
8/28/2017	1.75		1.75%
8/29/2017	1.74		1.74%
8/30/2017	1.76		1.76%
8/31/2017	1.76		1.76%
9/1/2017	1.79		1.79%
9/4/2017	#N/A	#N/A	
9/5/2017	1.77		1.77%
9/6/2017	1.78		1.78%
9/7/2017	1.79		1.79%
9/8/2017	1.81		1.81%
9/11/2017	1.83		1.83%
9/12/2017	1.84		1.84%
9/13/2017	1.85		1.85%
9/14/2017	1.85		1.85%
9/15/2017	1.85		1.85%
9/18/2017	1.87		1.87%
9/19/2017	1.87		1.87%
9/20/2017	1.85		1.85%
9/21/2017	1.83		1.83%
9/22/2017	1.84		1.84%
9/25/2017	1.84		1.84%
9/26/2017	1.84		1.84%
9/27/2017	1.87		1.87%
9/28/2017	1.87		1.87%
9/29/2017	1.84		1.84%
10/2/2017	1.83		1.83%
10/3/2017	1.84		1.84%
10/4/2017	1.85		1.85%
10/5/2017	1.86		1.86%
10/6/2017	1.87		1.87%
10/9/2017	#N/A	#N/A	
10/10/2017	1.88		1.88%
10/11/2017	1.89		1.89%
10/12/2017	1.89		1.89%
10/13/2017	1.85		1.85%
10/16/2017	1.84		1.84%
10/17/2017	1.82		1.82%
10/18/2017	1.84		1.84%
10/19/2017	1.84		1.84%
10/20/2017	1.87		1.87%
10/23/2017	1.86		1.86%
10/24/2017	1.87		1.87%
10/25/2017	1.88		1.88%

10/26/2017	1.89		1.89%
10/27/2017	1.88		1.88%
10/30/2017	1.87		1.87%
10/31/2017	1.88		1.88%
11/1/2017	1.88		1.88%
11/2/2017	1.87		1.87%
11/3/2017	1.86		1.86%
11/6/2017	1.86		1.86%
11/7/2017	1.88		1.88%
11/8/2017	1.87		1.87%
11/9/2017	1.87		1.87%
11/10/2017	1.88		1.88%
11/13/2017	1.88		1.88%
11/14/2017	1.87		1.87%
11/15/2017	1.85		1.85%
11/16/2017	1.84		1.84%
11/17/2017	1.86		1.86%
11/20/2017	1.85		1.85%
11/21/2017	1.84		1.84%
11/22/2017	1.84		1.84%
11/23/2017	#N/A	#N/A	
11/24/2017	1.84		1.84%
11/27/2017	1.83		1.83%
11/28/2017	1.84		1.84%
11/29/2017	1.84		1.84%
11/30/2017	1.86		1.86%
12/1/2017	1.86		1.86%
12/4/2017	1.87		1.87%
12/5/2017	1.86		1.86%
12/6/2017	1.86		1.86%
12/7/2017	1.87		1.87%
12/8/2017	1.88		1.88%
12/11/2017	1.88		1.88%
12/12/2017	1.89		1.89%
12/13/2017	1.88		1.88%
12/14/2017	1.87		1.87%
12/15/2017	1.88		1.88%
12/18/2017	1.89		1.89%
12/19/2017	1.91		1.91%
12/20/2017	1.92		1.92%
12/21/2017	1.93		1.93%
12/22/2017	1.94		1.94%
12/25/2017	#N/A	#N/A	
12/26/2017	1.94		1.94%
12/27/2017	1.94		1.94%
12/28/2017	1.96		1.96%
12/29/2017	1.96		1.96%
1/1/2018	#N/A	#N/A	
1/2/2018	2.00		2.00%
1/3/2018	1.98		1.98%
1/4/2018	2.01		2.01%
1/5/2018	2.01		2.01%
1/8/2018	2.02		2.02%
1/9/2018	2.03		2.03%
1/10/2018	2.03		2.03%
1/11/2018	2.00		2.00%
1/12/2018	2.01		2.01%
1/15/2018	#N/A	#N/A	
1/16/2018	2.03		2.03%
1/17/2018	2.04		2.04%
1/18/2018	2.05		2.05%
1/19/2018	2.06		2.06%
1/22/2018	2.06		2.06%
1/23/2018	2.06		2.06%
1/24/2018	2.07		2.07%
1/25/2018	2.07		2.07%
1/26/2018	2.09		2.09%
1/29/2018	2.09		2.09%
1/30/2018	2.10		2.10%
1/31/2018	2.11		2.11%
2/1/2018	2.11		2.11%
2/2/2018	2.14		2.14%
2/5/2018	2.10		2.10%
2/6/2018	2.10		2.10%
2/7/2018	2.10		2.10%
2/8/2018	2.09		2.09%
2/9/2018	2.05		2.05%
2/12/2018	2.07		2.07%
2/13/2018	2.05		2.05%
2/14/2018	2.09		2.09%
2/15/2018	2.11		2.11%
2/16/2018	2.09		2.09%
2/19/2018	#N/A	#N/A	
2/20/2018	2.10		2.10%
2/21/2018	2.12		2.12%
2/22/2018	2.11		2.11%
2/23/2018	2.12		2.12%
2/26/2018	2.13		2.13%
2/27/2018	2.13		2.13%
2/28/2018	2.12		2.12%
3/1/2018	2.10		2.10%
3/2/2018	2.12		2.12%
3/5/2018	2.13		2.13%
3/6/2018	2.12		2.12%
3/7/2018	2.13		2.13%
3/8/2018	2.11		2.11%
3/9/2018	2.12		2.12%
3/12/2018	2.10		2.10%
3/13/2018	2.09		2.09%
3/14/2018	2.07		2.07%
3/15/2018	2.08		2.08%
3/16/2018	2.08		2.08%
3/19/2018	2.08		2.08%
3/20/2018	2.08		2.08%
3/21/2018	2.09		2.09%
3/22/2018	2.08		2.08%
3/23/2018	2.07		2.07%
3/26/2018	2.08		2.08%
3/27/2018	2.07		2.07%
3/28/2018	2.05		2.05%
3/29/2018	2.05		2.05%
3/30/2018	#N/A	#N/A	
4/2/2018	2.05		2.05%
4/3/2018	2.08		2.08%

4/4/2018	2.08	2.08%
4/5/2018	2.08	2.08%
4/6/2018	2.07	2.07%
4/9/2018	2.07	2.07%
4/10/2018	2.08	2.08%
4/11/2018	2.11	2.11%
4/12/2018	2.13	2.13%
4/13/2018	2.13	2.13%
4/16/2018	2.12	2.12%
4/17/2018	2.14	2.14%
4/18/2018	2.16	2.16%
4/19/2018	2.17	2.17%
4/20/2018	2.17	2.17%
4/23/2018	2.18	2.18%
4/24/2018	2.17	2.17%
4/25/2018	2.17	2.17%
4/26/2018	2.18	2.18%
4/27/2018	2.17	2.17%
4/30/2018	2.17	2.17%
5/1/2018	2.16	2.16%
5/2/2018	2.17	2.17%
5/3/2018	2.16	2.16%
5/4/2018	2.16	2.16%
5/7/2018	2.17	2.17%
5/8/2018	2.16	2.16%
5/9/2018	2.18	2.18%
5/10/2018	2.17	2.17%
5/11/2018	2.15	2.15%
5/14/2018	2.15	2.15%
5/15/2018	2.18	2.18%
5/16/2018	2.17	2.17%
5/17/2018	2.16	2.16%
5/18/2018	2.15	2.15%
5/21/2018	2.16	2.16%
5/22/2018	2.15	2.15%
5/23/2018	2.14	2.14%
5/24/2018	2.12	2.12%
5/25/2018	2.09	2.09%
5/28/2018	#N/A	#N/A
5/29/2018	2.04	2.04%
5/30/2018	2.06	2.06%
5/31/2018	2.07	2.07%
6/1/2018	2.09	2.09%
6/4/2018	2.12	2.12%
6/5/2018	2.13	2.13%
6/6/2018	2.14	2.14%
6/7/2018	2.13	2.13%
6/8/2018	2.11	2.11%
6/11/2018	2.13	2.13%
6/12/2018	2.13	2.13%
6/13/2018	2.12	2.12%
6/14/2018	2.12	2.12%
6/15/2018	2.12	2.12%
6/18/2018	2.12	2.12%
6/19/2018	2.12	2.12%
6/20/2018	2.12	2.12%
6/21/2018	2.11	2.11%
6/22/2018	2.12	2.12%
6/25/2018	2.10	2.10%
6/26/2018	2.12	2.12%
6/27/2018	2.11	2.11%
6/28/2018	2.10	2.10%
6/29/2018	2.11	2.11%
7/2/2018	2.14	2.14%
7/3/2018	2.12	2.12%
7/4/2018	#N/A	#N/A
7/5/2018	2.13	2.13%
7/6/2018	2.12	2.12%
7/9/2018	2.13	2.13%
7/10/2018	2.13	2.13%
7/11/2018	2.11	2.11%
7/12/2018	2.10	2.10%
7/13/2018	2.11	2.11%
7/16/2018	2.10	2.10%
7/17/2018	2.09	2.09%
7/18/2018	2.09	2.09%
7/19/2018	2.09	2.09%
7/20/2018	2.11	2.11%
7/23/2018	2.11	2.11%
7/24/2018	2.11	2.11%
7/25/2018	2.13	2.13%
7/26/2018	2.11	2.11%
7/27/2018	2.12	2.12%
7/30/2018	2.13	2.13%
7/31/2018	2.12	2.12%
8/1/2018	2.13	2.13%
8/2/2018	2.12	2.12%
8/3/2018	2.12	2.12%
8/6/2018	2.11	2.11%
8/7/2018	2.13	2.13%
8/8/2018	2.11	2.11%
8/9/2018	2.11	2.11%
8/10/2018	2.09	2.09%
8/13/2018	2.10	2.10%
8/14/2018	2.09	2.09%
8/15/2018	2.08	2.08%
8/16/2018	2.08	2.08%
8/17/2018	2.08	2.08%
8/20/2018	2.07	2.07%
8/21/2018	2.08	2.08%
8/22/2018	2.08	2.08%
8/23/2018	2.09	2.09%
8/24/2018	2.09	2.09%
8/27/2018	2.11	2.11%
8/28/2018	2.11	2.11%
8/29/2018	2.12	2.12%
8/30/2018	2.10	2.10%
8/31/2018	2.08	2.08%
9/3/2018	#N/A	#N/A
9/4/2018	2.10	2.10%
9/5/2018	2.09	2.09%
9/6/2018	2.08	2.08%
9/7/2018	2.10	2.10%
9/10/2018	2.10	2.10%

9/11/2018	2.12		2.12%
9/12/2018	2.12		2.12%
9/13/2018	2.10		2.10%
9/14/2018	2.10		2.10%
9/17/2018	2.10		2.10%
9/18/2018	2.13		2.13%
9/19/2018	2.15		2.15%
9/20/2018	2.15		2.15%
9/21/2018	2.15		2.15%
9/24/2018	2.16		2.16%
9/25/2018	2.16		2.16%
9/26/2018	2.14		2.14%
9/27/2018	2.15		2.15%
9/28/2018	2.14		2.14%
10/1/2018	2.14		2.14%
10/2/2018	2.12		2.12%
10/3/2018	2.16		2.16%
10/4/2018	2.16		2.16%
10/5/2018	2.16		2.16%
10/8/2018	#N/A	#N/A	
10/9/2018	2.17		2.17%
10/10/2018	2.16		2.16%
10/11/2018	2.12		2.12%
10/12/2018	2.12		2.12%
10/15/2018	2.13		2.13%
10/16/2018	2.13		2.13%
10/17/2018	2.13		2.13%
10/18/2018	2.10		2.10%
10/19/2018	2.11		2.11%
10/22/2018	2.11		2.11%
10/23/2018	2.09		2.09%
10/24/2018	2.07		2.07%
10/25/2018	2.05		2.05%
10/26/2018	2.06		2.06%
10/29/2018	2.06		2.06%
10/30/2018	2.05		2.05%
10/31/2018	2.05		2.05%
11/1/2018	2.02		2.02%
11/2/2018	2.06		2.06%
11/5/2018	2.06		2.06%
11/6/2018	2.07		2.07%
11/7/2018	2.07		2.07%
11/8/2018	2.07		2.07%
11/9/2018	2.04		2.04%
11/12/2018	#N/A	#N/A	
11/13/2018	2.02		2.02%
11/14/2018	2.00		2.00%
11/15/2018	2.00		2.00%
11/16/2018	2.02		2.02%
11/19/2018	1.99		1.99%
11/20/2018	1.97		1.97%
11/21/2018	1.97		1.97%
11/22/2018	#N/A	#N/A	
11/23/2018	1.96		1.96%
11/26/2018	1.96		1.96%
11/27/2018	1.91		1.91%
11/28/2018	1.94		1.94%
11/29/2018	1.98		1.98%
11/30/2018	1.97		1.97%
12/3/2018	1.96		1.96%
12/4/2018	1.94		1.94%
12/5/2018	#N/A	#N/A	
12/6/2018	1.90		1.90%
12/7/2018	1.89		1.89%
12/10/2018	1.86		1.86%
12/11/2018	1.83		1.83%
12/12/2018	1.83		1.83%
12/13/2018	1.83		1.83%
12/14/2018	1.82		1.82%
12/17/2018	1.81		1.81%
12/18/2018	1.81		1.81%
12/19/2018	1.80		1.80%
12/20/2018	1.76		1.76%
12/21/2018	1.77		1.77%
12/24/2018	1.75		1.75%
12/25/2018	#N/A	#N/A	
12/26/2018	1.77		1.77%
12/27/2018	1.74		1.74%
12/28/2018	1.73		1.73%
12/31/2018	1.71		1.71%
1/1/2019	#N/A	#N/A	
1/2/2019	1.70		1.70%
1/3/2019	1.68		1.68%
1/4/2019	1.76		1.76%
1/7/2019	1.78		1.78%
1/8/2019	1.82		1.82%
1/9/2019	1.83		1.83%
1/10/2019	1.81		1.81%
1/11/2019	1.83		1.83%
1/14/2019	1.81		1.81%
1/15/2019	1.81		1.81%
1/16/2019	1.82		1.82%
1/17/2019	1.79		1.79%
1/18/2019	1.83		1.83%
1/21/2019	#N/A	#N/A	
1/22/2019	1.79		1.79%
1/23/2019	1.80		1.80%
1/24/2019	1.77		1.77%
1/25/2019	1.79		1.79%
1/28/2019	1.78		1.78%
1/29/2019	1.78		1.78%
1/30/2019	1.84		1.84%
1/31/2019	1.85		1.85%
2/1/2019	1.88		1.88%
2/4/2019	1.87		1.87%
2/5/2019	1.87		1.87%
2/6/2019	1.86		1.86%
2/7/2019	1.84		1.84%
2/8/2019	1.82		1.82%
2/11/2019	1.82		1.82%
2/12/2019	1.83		1.83%
2/13/2019	1.86		1.86%
2/14/2019	1.85		1.85%
2/15/2019	1.86		1.86%

2/18/2019	#N/A	#N/A	
2/19/2019	1.87		1.87%
2/20/2019	1.89		1.89%
2/21/2019	1.91		1.91%
2/22/2019	1.91		1.91%
2/25/2019	1.92		1.92%
2/26/2019	1.92		1.92%
2/27/2019	1.93		1.93%
2/28/2019	1.95		1.95%
3/1/2019	1.96		1.96%
3/4/2019	1.94		1.94%
3/5/2019	1.93		1.93%
3/6/2019	1.91		1.91%
3/7/2019	1.90		1.90%
3/8/2019	1.90		1.90%
3/11/2019	1.91		1.91%
3/12/2019	1.90		1.90%
3/13/2019	1.92		1.92%
3/14/2019	1.94		1.94%
3/15/2019	1.94		1.94%
3/18/2019	1.96		1.96%
3/19/2019	1.95		1.95%
3/20/2019	1.96		1.96%
3/21/2019	1.96		1.96%
3/22/2019	1.90		1.90%
3/25/2019	1.88		1.88%
3/26/2019	1.86		1.86%
3/27/2019	1.84		1.84%
3/28/2019	1.83		1.83%
3/29/2019	1.88		1.88%
4/1/2019	1.90		1.90%
4/2/2019	1.90		1.90%
4/3/2019	1.91		1.91%
4/4/2019	1.90		1.90%
4/5/2019	1.90		1.90%
4/8/2019	1.91		1.91%
4/9/2019	1.91		1.91%
4/10/2019	1.94		1.94%
4/11/2019	1.94		1.94%
4/12/2019	1.95		1.95%
4/15/2019	1.94		1.94%
4/16/2019	1.96		1.96%
4/17/2019	1.94		1.94%
4/18/2019	1.95		1.95%
4/19/2019	#N/A	#N/A	
4/22/2019	1.95		1.95%
4/23/2019	1.95		1.95%
4/24/2019	1.96		1.96%
4/25/2019	1.98		1.98%
4/26/2019	1.97		1.97%
4/29/2019	1.96		1.96%
4/30/2019	1.95		1.95%
5/1/2019	1.93		1.93%
5/2/2019	1.89		1.89%
5/3/2019	1.91		1.91%
5/6/2019	1.91		1.91%
5/7/2019	1.87		1.87%
5/8/2019	1.87		1.87%
5/9/2019	1.85		1.85%
5/10/2019	1.88		1.88%
5/13/2019	1.85		1.85%
5/14/2019	1.86		1.86%
5/15/2019	1.83		1.83%
5/16/2019	1.84		1.84%
5/17/2019	1.81		1.81%
5/20/2019	1.81		1.81%
5/21/2019	1.83		1.83%
5/22/2019	1.79		1.79%
5/23/2019	1.73		1.73%
5/24/2019	1.76		1.76%
5/27/2019	#N/A	#N/A	
5/28/2019	1.73		1.73%
5/29/2019	1.75		1.75%
5/30/2019	1.74		1.74%
5/31/2019	1.74		1.74%
6/3/2019	1.73		1.73%
6/4/2019	1.74		1.74%
6/5/2019	1.75		1.75%
6/6/2019	1.73		1.73%
6/7/2019	1.74		1.74%
6/10/2019	1.73		1.73%
6/11/2019	1.72		1.72%
6/12/2019	1.71		1.71%
6/13/2019	1.68		1.68%
6/14/2019	1.63		1.63%
6/17/2019	1.61		1.61%
6/18/2019	1.64		1.64%
6/19/2019	1.67		1.67%
6/20/2019	1.74		1.74%
6/21/2019	1.73		1.73%
6/24/2019	1.71		1.71%
6/25/2019	1.67		1.67%
6/26/2019	1.70		1.70%
6/27/2019	1.68		1.68%
6/28/2019	1.69		1.69%
7/1/2019	1.69		1.69%
7/2/2019	1.65		1.65%
7/3/2019	1.65		1.65%
7/4/2019	#N/A	#N/A	
7/5/2019	1.69		1.69%
7/8/2019	1.70		1.70%
7/9/2019	1.71		1.71%
7/10/2019	1.74		1.74%
7/11/2019	1.77		1.77%
7/12/2019	1.77		1.77%
7/15/2019	1.77		1.77%
7/16/2019	1.80		1.80%
7/17/2019	1.75		1.75%
7/18/2019	1.79		1.79%
7/19/2019	1.80		1.80%
7/22/2019	1.79		1.79%
7/23/2019	1.81		1.81%
7/24/2019	1.79		1.79%
7/25/2019	1.80		1.80%

7/26/2019	1.78		1.78%
7/29/2019	1.77		1.77%
7/30/2019	1.78		1.78%
7/31/2019	1.76		1.76%
8/1/2019	1.70		1.70%
8/2/2019	1.66		1.66%
8/5/2019	1.60		1.60%
8/6/2019	1.62		1.62%
8/7/2019	1.62		1.62%
8/8/2019	1.65		1.65%
8/9/2019	1.66		1.66%
8/12/2019	1.61		1.61%
8/13/2019	1.63		1.63%
8/14/2019	1.57		1.57%
8/15/2019	1.54		1.54%
8/16/2019	1.54		1.54%
8/19/2019	1.56		1.56%
8/20/2019	1.53		1.53%
8/21/2019	1.54		1.54%
8/22/2019	1.55		1.55%
8/23/2019	1.54		1.54%
8/26/2019	1.54		1.54%
8/27/2019	1.55		1.55%
8/28/2019	1.55		1.55%
8/29/2019	1.59		1.59%
8/30/2019	1.55		1.55%
9/2/2019	#N/A	#N/A	
9/3/2019	1.50		1.50%
9/4/2019	1.51		1.51%
9/5/2019	1.56		1.56%
9/6/2019	1.54		1.54%
9/9/2019	1.57		1.57%
9/10/2019	1.60		1.60%
9/11/2019	1.60		1.60%
9/12/2019	1.63		1.63%
9/13/2019	1.67		1.67%
9/16/2019	1.67		1.67%
9/17/2019	1.66		1.66%
9/18/2019	1.59		1.59%
9/19/2019	1.61		1.61%
9/20/2019	1.61		1.61%
9/23/2019	1.61		1.61%
9/24/2019	1.58		1.58%
9/25/2019	1.60		1.60%
9/26/2019	1.57		1.57%
9/27/2019	1.53		1.53%
9/30/2019	1.53		1.53%
10/1/2019	1.52		1.52%
10/2/2019	1.50		1.50%
10/3/2019	1.48		1.48%
10/4/2019	1.50		1.50%
10/7/2019	1.51		1.51%
10/8/2019	1.48		1.48%
10/9/2019	1.49		1.49%
10/10/2019	1.52		1.52%
10/11/2019	1.56		1.56%
10/14/2019	#N/A	#N/A	
10/15/2019	1.56		1.56%
10/16/2019	1.57		1.57%
10/17/2019	1.59		1.59%
10/18/2019	1.60		1.60%
10/21/2019	1.61		1.61%
10/22/2019	1.61		1.61%
10/23/2019	1.61		1.61%
10/24/2019	1.62		1.62%
10/25/2019	1.65		1.65%
10/28/2019	1.64		1.64%
10/29/2019	1.61		1.61%
10/30/2019	1.57		1.57%
10/31/2019	1.54		1.54%
11/1/2019	1.59		1.59%
11/4/2019	1.64		1.64%
11/5/2019	1.68		1.68%
11/6/2019	1.66		1.66%
11/7/2019	1.69		1.69%
11/8/2019	1.71		1.71%
11/11/2019	#N/A	#N/A	
11/12/2019	1.70		1.70%
11/13/2019	1.66		1.66%
11/14/2019	1.62		1.62%
11/15/2019	1.63		1.63%
11/18/2019	1.63		1.63%
11/19/2019	1.63		1.63%
11/20/2019	1.60		1.60%
11/21/2019	1.63		1.63%
11/22/2019	1.62		1.62%
11/25/2019	1.62		1.62%
11/26/2019	1.62		1.62%
11/27/2019	1.63		1.63%
11/28/2019	#N/A	#N/A	
11/29/2019	1.61		1.61%
12/2/2019	1.65		1.65%
12/3/2019	1.63		1.63%
12/4/2019	1.66		1.66%
12/5/2019	1.67		1.67%
12/6/2019	1.69		1.69%
12/9/2019	1.69		1.69%
12/10/2019	1.71		1.71%
12/11/2019	1.69		1.69%
12/12/2019	1.72		1.72%
12/13/2019	1.70		1.70%
12/16/2019	1.73		1.73%
12/17/2019	1.75		1.75%
12/18/2019	1.76		1.76%
12/19/2019	1.77		1.77%
12/20/2019	1.77		1.77%
12/23/2019	1.75		1.75%
12/24/2019	1.75		1.75%
12/25/2019	#N/A	#N/A	
12/26/2019	1.74		1.74%
12/27/2019	1.73		1.73%
12/30/2019	1.75		1.75%
12/31/2019	1.77		1.77%
1/1/2020	#N/A	#N/A	

1/2/2020	1.80		1.80%
1/3/2020	1.77		1.77%
1/6/2020	1.75		1.75%
1/7/2020	1.74		1.74%
1/8/2020	1.75		1.75%
1/9/2020	1.74		1.74%
1/10/2020	1.76		1.76%
1/13/2020	1.77		1.77%
1/14/2020	1.77		1.77%
1/15/2020	1.75		1.75%
1/16/2020	1.74		1.74%
1/17/2020	1.75		1.75%
1/20/2020	#N/A	#N/A	
1/21/2020	1.74		1.74%
1/22/2020	1.72		1.72%
1/23/2020	1.70		1.70%
1/24/2020	1.68		1.68%
1/27/2020	1.63		1.63%
1/28/2020	1.65		1.65%
1/29/2020	1.64		1.64%
1/30/2020	1.64		1.64%
1/31/2020	1.65		1.65%
2/3/2020	1.63		1.63%
2/4/2020	1.64		1.64%
2/5/2020	1.66		1.66%
2/6/2020	1.67		1.67%
2/7/2020	1.66		1.66%
2/10/2020	1.66		1.66%
2/11/2020	1.65		1.65%
2/12/2020	1.66		1.66%
2/13/2020	1.67		1.67%
2/14/2020	1.66		1.66%
2/17/2020	#N/A	#N/A	
2/18/2020	1.65		1.65%
2/19/2020	1.65		1.65%
2/20/2020	1.63		1.63%
2/21/2020	1.61		1.61%
2/24/2020	1.59		1.59%
2/25/2020	1.53		1.53%
2/26/2020	1.54		1.54%
2/27/2020	1.53		1.53%
2/28/2020	1.41		1.41%
3/2/2020	1.41		1.41%
3/3/2020	1.45		1.45%
3/4/2020	1.46		1.46%
3/5/2020	1.40		1.40%
3/6/2020	1.31		1.31%
3/9/2020	0.99		0.99%
3/10/2020	1.00		1.00%
3/11/2020	0.96		0.96%
3/12/2020	0.92		0.92%
3/13/2020	0.90		0.90%
3/16/2020	0.73		0.73%
3/17/2020	0.63		0.63%
3/18/2020	0.63		0.63%
3/19/2020	0.50		0.50%
3/20/2020	0.75		0.75%
3/23/2020	0.80		0.80%
3/24/2020	0.97		0.97%
3/25/2020	1.07		1.07%
3/26/2020	1.07		1.07%
3/27/2020	0.94		0.94%
3/30/2020	0.95		0.95%
3/31/2020	0.87		0.87%
4/1/2020	0.91		0.91%
4/2/2020	1.03		1.03%
4/3/2020	1.08		1.08%
4/6/2020	1.14		1.14%
4/7/2020	1.17		1.17%
4/8/2020	1.19		1.19%
4/9/2020	1.23		1.23%
4/10/2020	#N/A	#N/A	
4/13/2020	1.26		1.26%
4/14/2020	1.29		1.29%
4/15/2020	1.19		1.19%
4/16/2020	1.03		1.03%
4/17/2020	1.01		1.01%
4/20/2020	0.94		0.94%
4/21/2020	0.96		0.96%
4/22/2020	1.06		1.06%
4/23/2020	1.05		1.05%
4/24/2020	1.11		1.11%
4/27/2020	1.17		1.17%
4/28/2020	1.14		1.14%
4/29/2020	1.14		1.14%
4/30/2020	1.07		1.07%
5/1/2020	1.06		1.06%
5/4/2020	1.07		1.07%
5/5/2020	1.10		1.10%
5/6/2020	1.10		1.10%
5/7/2020	1.08		1.08%
5/8/2020	1.12		1.12%
5/11/2020	1.13		1.13%
5/12/2020	1.09		1.09%
5/13/2020	1.07		1.07%
5/14/2020	1.06		1.06%
5/15/2020	1.09		1.09%
5/18/2020	1.17		1.17%
5/19/2020	1.15		1.15%
5/20/2020	1.16		1.16%
5/21/2020	1.14		1.14%
5/22/2020	1.12		1.12%
5/25/2020	#N/A	#N/A	
5/26/2020	1.13		1.13%
5/27/2020	1.14		1.14%
5/28/2020	1.18		1.18%
5/29/2020	1.15		1.15%
6/1/2020	1.18		1.18%
6/2/2020	1.18		1.18%
6/3/2020	1.21		1.21%
6/4/2020	1.22		1.22%
6/5/2020	1.27		1.27%
6/8/2020	1.28		1.28%
6/9/2020	1.26		1.26%

6/10/2020	1.27		1.27%
6/11/2020	1.21		1.21%
6/12/2020	1.21		1.21%
6/15/2020	1.23		1.23%
6/16/2020	1.27		1.27%
6/17/2020	1.26		1.26%
6/18/2020	1.28		1.28%
6/19/2020	1.30		1.30%
6/22/2020	1.34		1.34%
6/23/2020	1.38		1.38%
6/24/2020	1.33		1.33%
6/25/2020	1.33		1.33%
6/26/2020	1.32		1.32%
6/29/2020	1.34		1.34%
6/30/2020	1.34		1.34%
7/1/2020	1.37		1.37%
7/2/2020	1.41		1.41%
7/3/2020	#N/A	#N/A	
7/6/2020	1.45		1.45%
7/7/2020	1.43		1.43%
7/8/2020	1.42		1.42%
7/9/2020	1.39		1.39%
7/10/2020	1.41		1.41%
7/13/2020	1.42		1.42%
7/14/2020	1.41		1.41%
7/15/2020	1.41		1.41%
7/16/2020	1.41		1.41%
7/17/2020	1.46		1.46%
7/20/2020	1.46		1.46%
7/21/2020	1.48		1.48%
7/22/2020	1.48		1.48%
7/23/2020	1.49		1.49%
7/24/2020	1.51		1.51%
7/27/2020	1.52		1.52%
7/28/2020	1.51		1.51%
7/29/2020	1.53		1.53%
7/30/2020	1.52		1.52%
7/31/2020	1.55		1.55%
8/3/2020	1.58		1.58%
8/4/2020	1.57		1.57%
8/5/2020	1.61		1.61%
8/6/2020	1.63		1.63%
8/7/2020	1.61		1.61%
8/10/2020	1.61		1.61%
8/11/2020	1.63		1.63%
8/12/2020	1.67		1.67%
8/13/2020	1.67		1.67%
8/14/2020	1.65		1.65%
8/17/2020	1.66		1.66%
8/18/2020	1.68		1.68%
8/19/2020	1.67		1.67%
8/20/2020	1.62		1.62%
8/21/2020	1.64		1.64%
8/24/2020	1.67		1.67%
8/25/2020	1.70		1.70%
8/26/2020	1.72		1.72%
8/27/2020	1.73		1.73%
8/28/2020	1.77		1.77%
8/31/2020	1.80		1.80%
9/1/2020	1.76		1.76%
9/2/2020	1.73		1.73%
9/3/2020	1.65		1.65%
9/4/2020	1.70		1.70%
9/7/2020	#N/A	#N/A	
9/8/2020	1.68		1.68%
9/9/2020	1.71		1.71%
9/10/2020	1.69		1.69%
9/11/2020	1.65		1.65%
9/14/2020	1.65		1.65%
9/15/2020	1.67		1.67%
9/16/2020	1.68		1.68%
9/17/2020	1.66		1.66%
9/18/2020	1.67		1.67%
9/21/2020	1.62		1.62%
9/22/2020	1.62		1.62%
9/23/2020	1.60		1.60%
9/24/2020	1.58		1.58%
9/25/2020	1.58		1.58%
9/28/2020	1.61		1.61%
9/29/2020	1.64		1.64%
9/30/2020	1.63		1.63%
10/1/2020	1.63		1.63%
10/2/2020	1.64		1.64%
10/5/2020	1.68		1.68%
10/6/2020	1.66		1.66%
10/7/2020	1.71		1.71%
10/8/2020	1.72		1.72%
10/9/2020	1.73		1.73%
10/12/2020	#N/A	#N/A	
10/13/2020	1.70		1.70%
10/14/2020	1.69		1.69%
10/15/2020	1.69		1.69%
10/16/2020	1.71		1.71%
10/19/2020	1.71		1.71%
10/20/2020	1.72		1.72%
10/21/2020	1.74		1.74%
10/22/2020	1.76		1.76%
10/23/2020	1.75		1.75%
10/26/2020	1.72		1.72%
10/27/2020	1.71		1.71%
10/28/2020	1.70		1.70%
10/29/2020	1.71		1.71%
10/30/2020	1.70		1.70%
11/2/2020	1.71		1.71%
11/3/2020	1.72		1.72%
11/4/2020	1.64		1.64%
11/5/2020	1.66		1.66%
11/6/2020	1.65		1.65%
11/9/2020	1.73		1.73%
11/10/2020	1.76		1.76%
11/11/2020	#N/A	#N/A	
11/12/2020	1.71		1.71%
11/13/2020	1.72		1.72%
11/16/2020	1.72		1.72%

11/17/2020	1.70		1.70%
11/18/2020	1.70		1.70%
11/19/2020	1.70		1.70%
11/20/2020	1.69		1.69%
11/23/2020	1.71		1.71%
11/24/2020	1.74		1.74%
11/25/2020	1.75		1.75%
11/26/2020	#N/A	#N/A	
11/27/2020	1.75		1.75%
11/30/2020	1.77		1.77%
12/1/2020	1.81		1.81%
12/2/2020	1.85		1.85%
12/3/2020	1.86		1.86%
12/4/2020	1.89		1.89%
12/7/2020	1.88		1.88%
12/8/2020	1.89		1.89%
12/9/2020	1.91		1.91%
12/10/2020	1.88		1.88%
12/11/2020	1.87		1.87%
12/14/2020	1.88		1.88%
12/15/2020	1.91		1.91%
12/16/2020	1.92		1.92%
12/17/2020	1.94		1.94%
12/18/2020	1.95		1.95%
12/21/2020	1.95		1.95%
12/22/2020	1.94		1.94%
12/23/2020	1.97		1.97%
12/24/2020	1.97		1.97%
12/25/2020	#N/A	#N/A	
12/28/2020	1.97		1.97%
12/29/2020	1.96		1.96%
12/30/2020	1.96		1.96%
12/31/2020	1.99		1.99%
1/1/2021	#N/A	#N/A	
1/4/2021	2.01		2.01%
1/5/2021	2.03		2.03%
1/6/2021	2.06		2.06%
1/7/2021	2.09		2.09%
1/8/2021	2.06		2.06%
1/11/2021	2.06		2.06%
1/12/2021	2.08		2.08%
1/13/2021	2.06		2.06%
1/14/2021	2.09		2.09%
1/15/2021	2.10		2.10%
1/18/2021	#N/A	#N/A	
1/19/2021	2.10		2.10%
1/20/2021	2.12		2.12%
1/21/2021	2.10		2.10%
1/22/2021	2.09		2.09%
1/25/2021	2.08		2.08%
1/26/2021	2.08		2.08%
1/27/2021	2.08		2.08%
1/28/2021	2.13		2.13%
1/29/2021	2.13		2.13%
2/1/2021	2.11		2.11%
2/2/2021	2.15		2.15%
2/3/2021	2.19		2.19%
2/4/2021	2.17		2.17%
2/5/2021	2.21		2.21%
2/8/2021	2.22		2.22%
2/9/2021	2.22		2.22%
2/10/2021	2.21		2.21%
2/11/2021	2.20		2.20%
2/12/2021	2.21		2.21%
2/15/2021	#N/A	#N/A	
2/16/2021	2.24		2.24%
2/17/2021	2.21		2.21%
2/18/2021	2.16		2.16%
2/19/2021	2.14		2.14%
2/22/2021	2.16		2.16%
2/23/2021	2.16		2.16%
2/24/2021	2.17		2.17%
2/25/2021	2.14		2.14%
2/26/2021	2.15		2.15%
3/1/2021	2.16		2.16%
3/2/2021	2.20		2.20%
3/3/2021	2.21		2.21%
3/4/2021	2.20		2.20%
3/5/2021	2.22		2.22%
3/8/2021	2.21		2.21%
3/9/2021	2.21		2.21%
3/10/2021	2.26		2.26%
3/11/2021	2.28		2.28%
3/12/2021	2.26		2.26%
3/15/2021	2.27		2.27%
3/16/2021	2.30		2.30%
3/17/2021	2.30		2.30%
3/18/2021	2.27		2.27%
3/19/2021	2.31		2.31%
3/22/2021	2.33		2.33%
3/23/2021	2.29		2.29%
3/24/2021	2.31		2.31%
3/25/2021	2.32		2.32%
3/26/2021	2.34		2.34%
3/29/2021	2.36		2.36%
3/30/2021	2.35		2.35%
3/31/2021	2.37		2.37%
4/1/2021	2.35		2.35%
4/2/2021	2.36		2.36%
4/5/2021	2.35		2.35%
4/6/2021	2.32		2.32%
4/7/2021	2.34		2.34%
4/8/2021	2.33		2.33%
4/9/2021	2.31		2.31%
4/12/2021	2.33		2.33%
4/13/2021	2.33		2.33%
4/14/2021	2.33		2.33%
4/15/2021	2.33		2.33%
4/16/2021	2.36		2.36%
4/19/2021	2.34		2.34%
4/20/2021	2.32		2.32%
4/21/2021	2.33		2.33%
4/22/2021	2.33		2.33%
4/23/2021	2.34		2.34%

4/26/2021	2.36		2.36%
4/27/2021	2.39		2.39%
4/28/2021	2.41		2.41%
4/29/2021	2.42		2.42%
4/30/2021	2.41		2.41%
5/3/2021	2.42		2.42%
5/4/2021	2.42		2.42%
5/5/2021	2.47		2.47%
5/6/2021	2.45		2.45%
5/7/2021	2.49		2.49%
5/10/2021	2.54		2.54%
5/11/2021	2.53		2.53%
5/12/2021	2.54		2.54%
5/13/2021	2.51		2.51%
5/14/2021	2.51		2.51%
5/17/2021	2.54		2.54%
5/18/2021	2.52		2.52%
5/19/2021	2.48		2.48%
5/20/2021	2.41		2.41%
5/21/2021	2.43		2.43%
5/24/2021	2.44		2.44%
5/25/2021	2.42		2.42%
5/26/2021	2.40		2.40%
5/27/2021	2.42		2.42%
5/28/2021	2.42		2.42%
5/31/2021	#N/A	#N/A	
6/1/2021	2.46		2.46%
6/2/2021	2.44		2.44%
6/3/2021	2.42		2.42%
6/4/2021	2.40		2.40%
6/7/2021	2.39		2.39%
6/8/2021	2.36		2.36%
6/9/2021	2.32		2.32%
6/10/2021	2.35		2.35%
6/11/2021	2.32		2.32%
6/14/2021	2.36		2.36%
6/15/2021	2.38		2.38%
6/16/2021	2.32		2.32%
6/17/2021	2.27		2.27%
6/18/2021	2.24		2.24%
6/21/2021	2.25		2.25%
6/22/2021	2.31		2.31%
6/23/2021	2.34		2.34%
6/24/2021	2.30		2.30%
6/25/2021	2.34		2.34%
6/28/2021	2.33		2.33%
6/29/2021	2.32		2.32%
6/30/2021	2.32		2.32%
7/1/2021	2.35		2.35%
7/2/2021	2.33		2.33%
7/5/2021	#N/A	#N/A	
7/6/2021	2.31		2.31%
7/7/2021	2.28		2.28%
7/8/2021	2.22		2.22%
7/9/2021	2.28		2.28%
7/12/2021	2.33		2.33%
7/13/2021	2.36		2.36%
7/14/2021	2.34		2.34%
7/15/2021	2.32		2.32%
7/16/2021	2.33		2.33%
7/19/2021	2.24		2.24%
7/20/2021	2.26		2.26%
7/21/2021	2.28		2.28%
7/22/2021	2.28		2.28%
7/23/2021	2.35		2.35%
7/26/2021	2.40		2.40%
7/27/2021	2.38		2.38%
7/28/2021	2.41		2.41%
7/29/2021	2.43		2.43%
7/30/2021	2.40		2.40%
8/2/2021	2.37		2.37%
8/3/2021	2.38		2.38%
8/4/2021	2.35		2.35%
8/5/2021	2.33		2.33%
8/6/2021	2.37		2.37%
8/9/2021	2.37		2.37%
8/10/2021	2.40		2.40%
8/11/2021	2.42		2.42%
8/12/2021	2.41		2.41%
8/13/2021	2.37		2.37%
8/16/2021	2.36		2.36%
8/17/2021	2.33		2.33%
8/18/2021	2.32		2.32%
8/19/2021	2.28		2.28%
8/20/2021	2.27		2.27%
8/23/2021	2.27		2.27%
8/24/2021	2.30		2.30%
8/25/2021	2.35		2.35%
8/26/2021	2.33		2.33%
8/27/2021	2.39		2.39%
8/30/2021	2.37		2.37%
8/31/2021	2.33		2.33%
9/1/2021	2.34		2.34%
9/2/2021	2.32		2.32%
9/3/2021	2.34		2.34%
9/6/2021	#N/A	#N/A	
9/7/2021	2.36		2.36%
9/8/2021	2.38		2.38%
9/9/2021	2.38		2.38%
9/10/2021	2.40		2.40%
9/13/2021	2.37		2.37%
9/14/2021	2.33		2.33%
9/15/2021	2.35		2.35%
9/16/2021	2.35		2.35%
9/17/2021	2.33		2.33%
9/20/2021	2.29		2.29%
9/21/2021	2.29		2.29%
9/22/2021	2.28		2.28%
9/23/2021	2.31		2.31%
9/24/2021	2.34		2.34%
9/27/2021	2.35		2.35%
9/28/2021	2.38		2.38%
9/29/2021	2.37		2.37%
9/30/2021	2.37		2.37%

10/1/2021	2.38		2.38%
10/4/2021	2.38		2.38%
10/5/2021	2.45		2.45%
10/6/2021	2.43		2.43%
10/7/2021	2.46		2.46%
10/8/2021	2.50		2.50%
10/11/2021	#N/A	#N/A	
10/12/2021	2.49		2.49%
10/13/2021	2.52		2.52%
10/14/2021	2.52		2.52%
10/15/2021	2.56		2.56%
10/18/2021	2.54		2.54%
10/19/2021	2.54		2.54%
10/20/2021	2.57		2.57%
10/21/2021	2.64		2.64%
10/22/2021	2.64		2.64%
10/25/2021	2.66		2.66%
10/26/2021	2.69		2.69%
10/27/2021	2.65		2.65%
10/28/2021	2.57		2.57%
10/29/2021	2.51		2.51%
11/1/2021	2.50		2.50%
11/2/2021	2.51		2.51%
11/3/2021	2.53		2.53%
11/4/2021	2.56		2.56%
11/5/2021	2.54		2.54%
11/8/2021	2.62		2.62%
11/9/2021	2.63		2.63%
11/10/2021	2.70		2.70%
11/11/2021	#N/A	#N/A	
11/12/2021	2.73		2.73%
11/15/2021	2.76		2.76%
11/16/2021	2.73		2.73%
11/17/2021	2.70		2.70%
11/18/2021	2.73		2.73%
11/19/2021	2.65		2.65%
11/22/2021	2.61		2.61%
11/23/2021	2.62		2.62%
11/24/2021	2.61		2.61%
11/25/2021	#N/A	#N/A	
11/26/2021	2.55		2.55%
11/29/2021	2.54		2.54%
11/30/2021	2.50		2.50%
12/1/2021	2.44		2.44%
12/2/2021	2.47		2.47%
12/3/2021	2.43		2.43%
12/6/2021	2.44		2.44%
12/7/2021	2.47		2.47%
12/8/2021	2.52		2.52%
12/9/2021	2.47		2.47%
12/10/2021	2.44		2.44%
12/13/2021	2.40		2.40%
12/14/2021	2.37		2.37%
12/15/2021	2.39		2.39%
12/16/2021	2.42		2.42%
12/17/2021	2.38		2.38%
12/20/2021	2.39		2.39%
12/21/2021	2.44		2.44%
12/22/2021	2.47		2.47%
12/23/2021	2.47		2.47%
12/24/2021	#N/A	#N/A	
12/27/2021	2.50		2.50%
12/28/2021	2.50		2.50%
12/29/2021	2.53		2.53%
12/30/2021	2.58		2.58%
12/31/2021	2.56		2.56%
1/3/2022	2.60		2.60%
1/4/2022	2.57		2.57%
1/5/2022	2.53		2.53%
1/6/2022	2.46		2.46%
1/7/2022	2.48		2.48%
1/10/2022	2.48		2.48%
1/11/2022	2.54		2.54%
1/12/2022	2.48		2.48%
1/13/2022	2.43		2.43%
1/14/2022	2.44		2.44%
1/17/2022	#N/A	#N/A	
1/18/2022	2.46		2.46%
1/19/2022	2.40		2.40%
1/20/2022	2.33		2.33%
1/21/2022	2.34		2.34%
1/24/2022	2.38		2.38%
1/25/2022	2.41		2.41%
1/26/2022	2.38		2.38%
1/27/2022	2.40		2.40%
1/28/2022	2.44		2.44%
1/31/2022	2.44		2.44%
2/1/2022	2.43		2.43%
2/2/2022	2.41		2.41%
2/3/2022	2.38		2.38%
2/4/2022	2.41		2.41%
2/7/2022	2.40		2.40%
2/8/2022	2.42		2.42%
2/9/2022	2.42		2.42%
2/10/2022	2.45		2.45%
2/11/2022	2.43		2.43%
2/14/2022	2.48		2.48%
2/15/2022	2.48		2.48%
2/16/2022	2.46		2.46%
2/17/2022	2.43		2.43%
2/18/2022	2.41		2.41%
2/21/2022	#N/A	#N/A	
2/22/2022	2.45		2.45%
2/23/2022	2.53		2.53%
2/24/2022	2.55		2.55%
2/25/2022	2.54		2.54%
2/28/2022	2.62		2.62%
3/1/2022	2.62		2.62%
3/2/2022	2.71		2.71%
3/3/2022	2.69		2.69%
3/4/2022	2.67		2.67%
3/7/2022	2.77		2.77%
3/8/2022	2.90		2.90%
3/9/2022	2.84		2.84%

3/10/2022	2.86		2.86%
3/11/2022	2.94		2.94%
3/14/2022	2.93		2.93%
3/15/2022	2.84		2.84%
3/16/2022	2.80		2.80%
3/17/2022	2.91		2.91%
3/18/2022	2.86		2.86%
3/21/2022	2.90		2.90%
3/22/2022	2.91		2.91%
3/23/2022	2.94		2.94%
3/24/2022	2.92		2.92%
3/25/2022	2.95		2.95%
3/28/2022	2.95		2.95%
3/29/2022	2.86		2.86%
3/30/2022	2.86		2.86%
3/31/2022	2.84		2.84%
4/1/2022	2.80		2.80%
4/4/2022	2.80		2.80%
4/5/2022	2.84		2.84%
4/6/2022	2.83		2.83%
4/7/2022	2.82		2.82%
4/8/2022	2.87		2.87%
4/11/2022	2.91		2.91%
4/12/2022	2.86		2.86%
4/13/2022	2.80		2.80%
4/14/2022	2.89		2.89%
4/15/2022 .		#N/A	
4/18/2022	2.92		2.92%
4/19/2022	2.93		2.93%
4/20/2022	2.92		2.92%
4/21/2022	3.02		3.02%
4/22/2022	2.98		2.98%
4/25/2022	2.91		2.91%
4/26/2022	2.85		2.85%
4/27/2022	2.88		2.88%
4/28/2022	2.97		2.97%
4/29/2022	2.88		2.88%
5/2/2022	2.81		2.81%
5/3/2022	2.83		2.83%
5/4/2022	2.86		2.86%

The Tell

This bond expert who called the spike in U.S. yields forecasts the 10-year to reach 4%

Last Updated: May 7, 2022 at 8:11 a.m. ET
First Published: May 6, 2022 at 9:20 a.m. ET

By Steve Goldstein Follow

Powell's comment about tools not working on supply-side issues points to need for aggressive Fed action, fund manager says

US Federal Reserve Chairman Jerome Powell speaks during a news conference in Washington, DC, on May 4, 2022.
JIM WATSON/AGENCE FRANCE-PRESSE/GETTY IMAGES

TMUBMUSD10Y 2.788% NDX +2.85% JNK +1.50%

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3 minutes

Scott Peng, the founder and chief investment officer of New York investment manager Advocate Capital Management, has been out in front of the collapse of the bond market.

In Jan. 2021, Citi's former chief interest-rate strategist forecast the 10-year U.S. Treasury yield **TMUBMUSD10Y, 2.788%** to reach 2.5% in 12 months — it took about 15 months to get there. More recently, he said in December that interest rate sensitive asset classes would struggle, identifying technology stocks **NDX, +2.85%**, high yield bonds **JNK, +1.50%**, emerging markets and real estate, all of which have dropped sharply.

So the big question from here is whether the bond market pain will continue or not. Peng says it will, forecasting the 10-year yield will reach 4% by the end of this year, and 5% by the end of 2023. The yield on the 10-year was 3.11%, about a half-hour after the latest U.S. jobs report that came in close to market expectations.

Peng points out that Federal Reserve Chair Jerome Powell made an interesting comment during the press conference on Wednesday, that the Fed's tools don't work on supply shocks but rather demand. "It may require considerably more hikes than the market has experienced in recent years before the Fed can get ahead of this bout of supply-shock-driven inflation," Peng says.

The demand shock from pent-up consumption after the pandemic, he adds, has already dissipated. At the same time, China is no longer a source of supply-side relief, both as the country shifts to higher value-added services as well as its decision for a zero-COVID policy that has exacerbated supply-chain issues. China's aging demographics mean the world's second-largest economy faces a rising tide of labor shortages and wage inflation, he adds.

Peng says the Fed funds rate will have to be at least 1.5% above the core personal consumption expenditure index (PCE) measure of U.S. inflation, which was 5.2% year-over-year in March. He said the current market consensus is just for what he calls a "dream on" scenario, that implies core PCE running at 2% by the end of 2023.

More likely scenarios would have inflation between 3% and 4%, or possibly 5%, which would therefore mean the terminal rate reaching between 4.5% and 8%. In a "time for new Fed chair" scenario, the terminal rate could even need to go as high as 9%.

SIGN UP FOR THE PREMARKET NEED TO KNOW NEWSLETTER

The red flag that preceded a halving of global equities in 2000 and 2007 is back, warns Citi

Steve Goldstein

Steven Goldstein is based in London and responsible for MarketWatch's coverage of financial markets in Europe, with a particular focus on global macro and commodities. Previously, he was Washington bureau chief, directing MarketWatch's economic, political and regulatory coverage. Follow Steve on Twitter: @MKTWgoldstein.

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Top Analysts' Forecasts Of U.S. And Foreign Interest Rates, Currency Values And The Factors That Influence Them

Vol. 41, No. 4, April 1, 2022

Wolters Kluwer

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Blue Chip Financial Forecasts® (ISSN: 0741-8345) is published monthly by CCH Incorporated, 28 Liberty St., 44th Floor New York, NY 10005-1400. Printed in the U.S.A.

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Russia/Ukraine War Weighs on Financial Markets; Fed Raises Key Rate

Russia/Ukraine War and the Economic Outlook. The Russian army invaded Ukraine on February 24. Extraordinary turmoil has ensued as at least 4 million Ukrainians have left home and about 1,200 civilians have been killed as of March 27. As people outside of Russia and Ukraine have become more aware of the breadth and depth of the war, its economic implications have become more evident. For the U.S., a simple comparison of this month's Blue Chip forecasts with last month's forecasts can help us see some expected ramifications.

Inflation Higher. The Blue Chip Financial Forecasts panel now projects inflation at 4.2% across the four quarters of 2022, as measured by the personal consumption expenditure price index, up from 3.5% just a month ago. The biggest difference is in Q2, which now has a 5.4% estimate, up from 3.5% last month. All these forecasts are at seasonally adjusted annual rates. Clearly, the Ukraine war, especially its impact on commodity and energy prices, is hardly the only cause for the increase in the inflation forecast, but it is a major issue.

Less GDP Growth. The other key economic indicator with a reaction is GDP growth, which is now projected to be somewhat slower than before. This month's forecast shows it at 2.5% Q4/Q4, down from 2.9% in the March forecast. As we will describe, this is likely due, at least in part, to the reaction of economic activity to higher inflation and less accommodative fiscal and monetary policy. But the Ukraine situation is causing major uncertainty, which is likely weighing on overall economic activity.

Monetary Policy Tries to Counter Inflation. As had been widely anticipated and even basically announced by Federal Reserve officials beforehand, the Federal Open Market Committee (FOMC) did raise the federal funds rate at its March 15-16 meeting, making the funds rate target 0.375%, up from 0.125%. That was the first "tightening" move since December 19, 2018, when they lifted the rate from 2.125% to 2.375%. In the March Blue Chip forecast, the panel looked for the rate to average 1.3% in Q4 of this year, but now, they project 1.8% in Q4, and one of the Special Questions (see page 14) shows that they believe one of the FOMC's hikes could be 50 basis points, not just 25 basis points. Next year, more tightening is still foreseen, with the funds rate reaching 2.6% by Q3 2023 and Q1 2023 and Q2 2023 running about 60 basis points above the March forecast.

In another Special Question, the panel indicates that it expects the FOMC to actually reduce its holdings of Treasuries and mortgage-backed bonds this year. In fact, such reductions could come fairly soon, during Q2. The panel is heavily weighted toward that notion, with 73% of respondents naming Q2 as a beginning for balance sheet reduction.

Fiscal Policy. Fiscal policy is less supportive of the economy as the budget deficit is projected to be much smaller than in last fiscal year 2021 (ended September 30, 2021). Then, the budget deficit was $2.775 trillion. This year, in this month's Special Questions, the Blue Chip panel estimates the deficit will be $1.24 trillion, with $1.01 trillion in FY 2023. In the official document from the Office of Management and Budget (OMB), which was published on March 28, the Administration's estimate is $1.415 trillion for this fiscal year, to be followed by $1.154 trillion next year. Thus, while both sets of estimates for this fiscal year show a major reduction in the deficit from the recession-related FY 2021 amount, the OMB deficit in FY 2022 is somewhat larger than the Blue Chip number. We suspect this is due to more spending, as the new official document includes some parts of the Build Back Better program that were not enacted during 2021.

Higher Interest Rates, Flatter Yield Curve. With inflation and the fed funds rate rising, other interest rates are rising as well. And the slope of the yield curve is decreasing. The 10-year Treasury note averaged 2.37% in the week ended March 25; it is forecast to rise to 2.50% at mid-year and 2.85% late in the year. Three-month Treasury bills average 52 basis points in the March 25 week, is expected by the panel to rise to about 1.25% by mid-year and 1.95% by year-end. Thus, the Treasury yield curve would decrease from 185 basis points last week to 125 basis points at mid-year and 100 basis points at year-end.

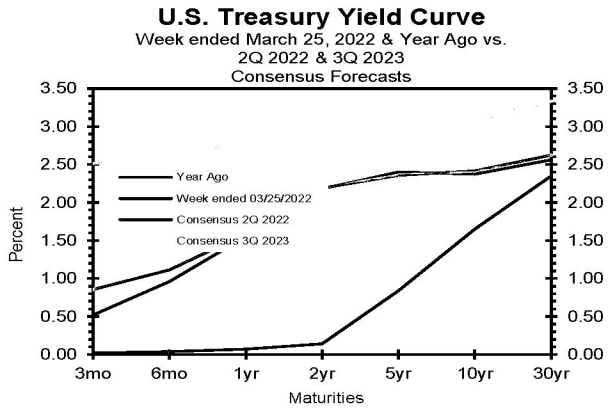
Regarding private sector borrowing rates, SOFR, the secured overnight financing rate, the recently adopted benchmark for short-term business borrowing, was just 0.05% until the time of the mid-March FOMC meeting. It rose to 0.28% for the week ended March 25. The Blue Chip panel looks for it to move to about 1.00% by mid-year and 2.00% by year-end. Corporate Aaa bond yields, measured by the ICE BofA Merrill Lynch series, were 3.72% in the March 25 week; they are forecast to rise to roundly 3.85% by mid-year and 4.3% by year-end. Thus the spread over SOFR was about 3.45% last week and is seen by the Blue Chip panel decreasing to about 2.85% at mid-year then to 2.30% at year-end.

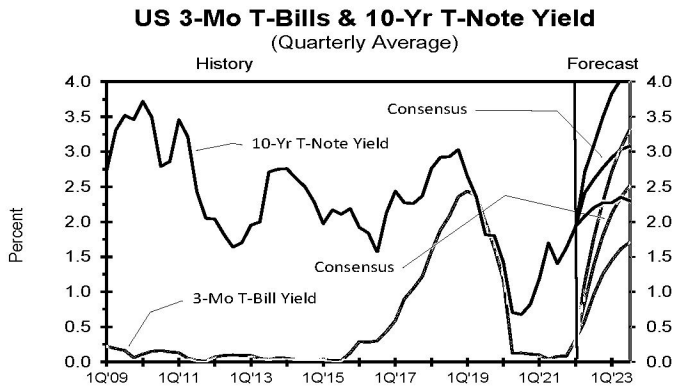
Carol Stone, CBE (Haver Analytics, New York, NY)

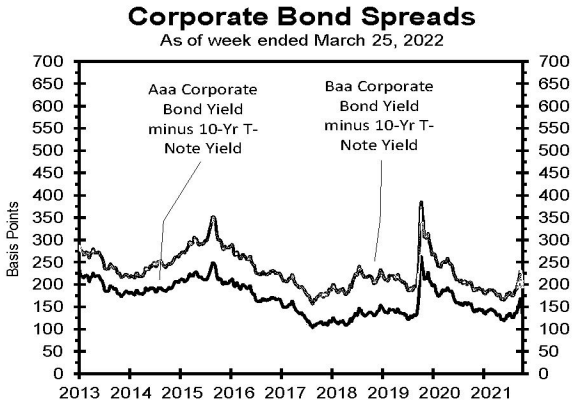
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

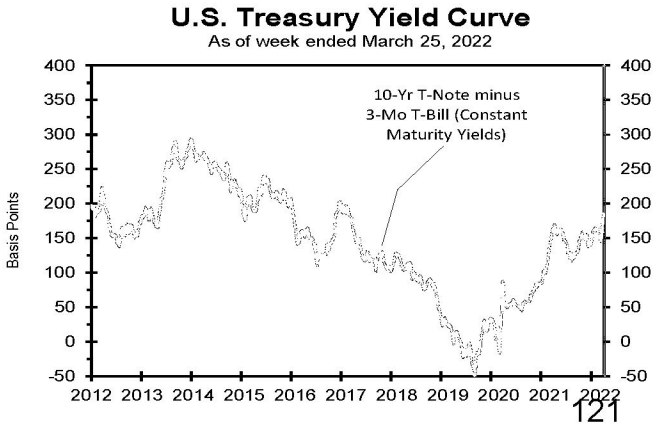
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Qtr*	2Q	3Q	4Q	1Q	2Q	3Q
Interest Rates	Mar 25	Mar 18	Mar 11	Mar 4	Feb	Jan	Dec	1Q 2022*	2022	2022	2022	2023	2023	2023
Federal Funds Rate	0.33	0.08	0.08	0.08	0.08	0.08	0.08	0.11	**0.8**	**1.4**	**1.8**	**2.2**	**2.4**	**2.6**
Prime Rate	3.50	3.25	3.25	3.25	3.25	3.25	3.25	3.28	**3.9**	**4.4**	**4.9**	**5.2**	**5.5**	**5.7**
SOFR	0.28	0.15	0.05	0.05	0.05	0.05	0.05	0.08	**0.7**	**1.3**	**1.8**	**2.1**	**2.3**	**2.5**
Commercial Paper, 1-mo.	0.33	0.36	0.30	0.25	0.16	0.07	0.07	0.17	**0.7**	**1.3**	**1.7**	**2.1**	**2.3**	**2.5**
Treasury bill, 3-mo.	0.52	0.43	0.38	0.35	0.31	0.15	0.06	0.30	**0.9**	**1.4**	**1.8**	**2.1**	**2.3**	**2.5**
Treasury bill, 6-mo.	0.96	0.84	0.75	0.67	0.64	0.33	0.15	0.60	**1.1**	**1.6**	**2.0**	**2.3**	**2.5**	**2.6**
Treasury bill, 1 yr.	1.55	1.30	1.15	1.02	1.00	0.55	0.30	0.95	**1.6**	**1.9**	**2.2**	**2.5**	**2.7**	**2.8**
Treasury note, 2 yr.	2.18	1.92	1.67	1.46	1.44	0.98	0.68	1.42	**2.2**	**2.4**	**2.6**	**2.8**	**2.9**	**2.9**
Treasury note, 5 yr.	2.40	2.14	1.85	1.68	1.81	1.54	1.23	1.80	**2.4**	**2.6**	**2.7**	**2.9**	**3.0**	**3.1**
Treasury note, 10 yr.	2.37	2.16	1.91	1.80	1.93	1.76	1.47	1.93	**2.4**	**2.6**	**2.8**	**2.9**	**3.0**	**3.1**
Treasury note, 30 yr.	2.56	2.47	2.29	2.18	2.25	2.10	1.85	2.25	**2.6**	**2.8**	**3.0**	**3.2**	**3.3**	**3.3**
Corporate Aaa bond	3.72	3.72	3.59	3.40	3.36	3.06	2.79	3.34	**3.7**	**4.0**	**4.2**	**4.4**	**4.5**	**4.6**
Corporate Baa bond	4.31	4.33	4.21	3.99	3.92	3.54	3.26	3.89	**4.6**	**4.9**	**5.1**	**5.3**	**5.4**	**5.5**
State & Local bonds	3.41	3.32	3.18	3.08	3.01	2.74	2.57	3.00	**3.1**	**3.4**	**3.6**	**3.8**	**3.9**	**3.9**
Home mortgage rate	4.42	4.16	3.85	3.76	3.76	3.45	3.10	3.75	**4.3**	**4.5**	**4.7**	**4.9**	**5.0**	**5.0**
	History								Consensus Forecasts-Quarterly					
	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q
Key Assumptions	2020	2020	2020	2021	2021	2021	2021	2022**	2022	2022	2022	2023	2023	2023
Fed's AFE $ Index	112.4	107.2	105.1	103.4	102.9	105.0	107.0	108.4	**109.4**	**109.4**	**109.3**	**109.1**	**108.9**	**109.0**
Real GDP	-31.2	33.8	4.5	6.3	6.7	2.3	6.9	1.9	**2.9**	**2.8**	**2.4**	**2.2**	**2.1**	**2.0**
GDP Price Index	-1.5	3.6	2.2	4.3	6.1	6.0	7.1	4.8	**5.1**	**3.7**	**3.0**	**2.8**	**2.6**	**2.6**
Consumer Price Index	-3.4	4.8	2.2	4.1	8.2	6.7	7.9	5.8	**6.6**	**3.8**	**3.0**	**2.9**	**2.6**	**2.6**
PCE Price Index	-1.6	3.7	1.5	3.8	6.5	5.3	6.4	5.1	**5.4**	**3.5**	**2.8**	**2.6**	**2.5**	**2.4**

Forecasts for interest rates and the Federal Reserve's Advanced Foreign Economies Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index, CPI and PCE Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; SOFR from the New York Fed. *Interest rate data for 1Q 2022 are based on historical data through the week ended March 25. **Data for 1Q 2022 for the Fed's AFE $ Index are based on data through the week ended March 25. Figures for 1Q 2022 Real GDP, GDP Chained Price Index, Consumer Price Index, and PCE Price Index are consensus forecasts from the March 2022 survey.









----------Policy Rates[1]----------

	History: Latest:	Month Ago:	Year Ago:	Consensus Forecasts Months From Now: 3	6	12
U.S.	0.38	0.13	0.13	**0.94**	**1.45**	**2.22**
Japan	-0.10	-0.10	-0.10	**-0.10**	**-0.07**	**-0.03**
U.K.	0.75	0.50	0.10	**0.94**	**1.10**	**1.39**
Switzerland	-0.75	-0.75	-0.75	**-0.75**	**-0.75**	**-0.51**
Canada	0.50	0.25	0.25	**1.03**	**1.42**	**2.01**
Australia	0.10	0.10	0.10	**0.12**	**0.22**	**0.62**
Euro area	0.00	0.00	0.00	**-0.05**	**0.02**	**0.18**

----------10-Yr. Government Bond Yields[2]------

	History: Latest:	Month Ago:	Year Ago:	Consensus Forecasts Months From Now: 3	6	12
U.S.	2.48	1.97	1.67	**2.28**	**2.42**	**2.70**
Germany	0.59	0.22	-0.34	**0.50**	**0.57**	**0.78**
Japan	0.25	0.21	0.09	**0.21**	**0.23**	**0.22**
U.K.	1.73	1.48	0.82	**1.65**	**1.87**	**2.09**
France	1.01	0.71	-0.10	**0.90**	**0.97**	**1.22**
Italy	2.08	1.84	0.63	**2.00**	**2.07**	**2.35**
Switzerland	0.48	0.26	-0.33	**0.43**	**0.47**	**0.65**
Canada	2.55	1.90	1.50	**2.39**	**2.59**	**2.80**
Australia	2.78	2.22	1.61	**2.56**	**2.64**	**2.87**
Spain	1.35	1.17	0.26	**1.39**	**1.48**	**1.75**

----------Foreign Exchange Rates[3]----------

	History: Latest:	Month Ago:	Year Ago:	Consensus Forecasts Months From Now: 3	6	12
U.S.	109.78	108.41	104.87	**109.5**	**108.7**	**107.3**
Japan	121.98	115.62	109.55	**119.4**	**118.9**	**117.8**
U.K.	1.32	1.34	1.38	**1.32**	**1.33**	**1.35**
Switzerland	0.93	0.93	0.94	**0.94**	**0.94**	**0.93**
Canada	1.25	1.27	1.26	**1.25**	**1.25**	**1.25**
Australia	0.75	0.72	0.76	**0.72**	**0.72**	**0.73**
Euro	1.10	1.13	1.18	**1.10**	**1.10**	**1.12**

	Consensus Policy Rates vs. US Rate: Now	In 12 Mo.		Consensus 10-Year Gov't Yields vs. U.S. Yield: Now	In 12 Mo.
Japan	-0.48	**-2.25**	Germany	-1.89	**-1.92**
U.K.	0.38	**-0.83**	Japan	-2.23	**-2.49**
Switzerland	-1.13	**-2.74**	U.K.	-0.75	**-0.62**
Canada	0.13	**-0.22**	France	-1.47	**-1.49**
Australia	-0.28	**-1.61**	Italy	-0.40	**-0.36**
Euro area	-0.38	**-2.04**	Switzerland	-2.00	**-2.06**
			Canada	0.06	**0.10**
			Australia	0.30	**0.16**
			Spain	-1.13	**-0.96**

Forecasts of panel members are on pages 10 and 11. Definitions of variables are as follows: [1]Monetary policy rates. [2]Government bonds are yields to maturity. [3]Foreign exchange rate forecasts for U.K., Australia and the Euro are U.S. dollars per currency unit. For the U.S dollar, forecasts are of the U.S. Federal Reserve Board's AFE Dollar Index.

International. Just as the global economy was beginning to shake off the drag from the Omicron COVID wave, the Russian conflict with Ukraine has presented a new economic challenge as it has pushed already elevated oil and agricultural prices even higher. Even with some recent retracement, the price of Brent crude oil is up 15% since the day before the invasion while an index of wheat prices has risen more than 16% over that same period. Russia and Ukraine together produce about 14% of the world's wheat and account for about 28% of global wheat exports. Domestic inflation has reached multi-decade highs across the industrialized world and is set to move even higher with the invasion-prompted surge in energy and food prices. And the pace of economic growth is set to slow even further. The supply-side hit from the invasion has ignited fears of a revival of "stagflation," the economic environment that characterized the 1970s in which both inflation and unemployment were unacceptably high while economic growth stagnated. It is too soon to tell whether the events of the past month will set off another period of stagflation, but they have clearly raised the risk of both subpar growth and elevated inflation in the near term. Encouragingly, the flash PMI reports for March showed activity holding up well (outside of Japan) since the Russian invasion.

Financial market indicators have yet to flash red though they are clearly amber. Yields on 10-year government debt, the benchmark longer-term interest rate in most industrial economies, have been on the rise, pointing to increased concerns over inflation and a tightening of financial market conditions. However, BCFF forecasters apparently envisage a slight return to the relative safety of government debt in the near term as they look for 10-year yields to retreat a bit over the next 3-6 months but to be higher than current levels within 12 months. Another key financial market indicator is the yield curve (the shorthand version is the difference between a longer-term interest rate and a shorter-term one). A positive yield curve (that is, longer-term yield greater than shorter-term yield) points to economic expansion while a negative yield curve has typically presaged recession. Yield curves in the industrial world are uniformly positive at present but with monetary authorities beginning to move to a less accommodative policy stance, they have flattened recently, pointing to an increasing risk of an economic downturn. BCFF forecasters do not envisage a negative yield curve over the one year forecast horizon but, with the exception of the Euro Area, they do expect yield curves to continue to flatten.

A key question that has arisen is will the Ukraine crisis and associated threat of stagflation reduce the willingness of industrial country monetary authorities to direct their policy actions at containing inflation? So far, the answer appears to be generally, no. While recognizing that the invasion would likely boost US inflation and weigh on economic growth, the US Fed nonetheless began to remove some of its monetary accommodation at its March meeting, executing its first policy interest rate increase since 2018. The Bank of Canada raised its rate in March and expects that the policy rate will need to rise further. The Reserve Bank of New Zealand raised its rate in late February, the third consecutive rate hike, and also stated that additional rate hikes will be needed. And the Norges Bank raised its policy rate again in late March, the third 25bp increase since September, and indicated another in June.

More surprising was the change in attitude by the ECB at its March meeting. While the Bank did not raise its policy rate, it did turn considerably more hawkish. It announced that it would end its asset purchase program in the third quarter, earlier than expected, with policy interest rate increases likely "some time" after it ends asset purchases. Financial markets generally interpreted this to mean a policy rate hike before year-end. By contrast, while the Bank of England raised its policy rate 25 bps at its March meeting, the third increase in as many meetings, it softened its rhetoric in an apparent response to the increased economic uncertainty posed by the Russian invasion of Ukraine.

Second Quarter 2022

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	Percent Per Annum -- Average For Quarter: Short-Term 1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	Intermediate-Term 8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	Long-Term 11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	Avg. For Qtr. A. Fed's Adv Fgn Econ $ Index	(Q-Q % Change) (SAAR) B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
BNP Paribas Americas	1.4 H	na	na	na	na	na	na	2.6	na	2.5	2.7	na	na	na	na	na	4.2	na	8.6	na
Goldman Sachs & Co.	1.4 H	na	0.5	na	1.5 H	na	na	2.6	2.6	2.5	2.7	na	na	na	na	na	2.3	6.9	9.2	7.0
ING	1.4 H	na	1.6	na	na	na	na	2.7 H	2.9	2.8	2.8	na	na	na	na	na	2.6	na	na	na
Nomura Securities, Inc.	1.4 H	4.5 H	na	na	na	na	na	2.4	2.6	2.5	na	na	na	na	na	na	4.0	4.4	8.3	6.5
TS Lombard	1.3	4.4	1.2	1.2 H	0.6	0.6 L	1.7	2.5	2.6	2.5	2.6	3.4	4.2	2.5	4.3	110.0	1.5	5.0	5.0	5.0
Bank of America	1.1	na	1.7 H	na	na	na	na	2.5	2.5	2.4	2.5	na	na	na	na	na	3.5	7.6	9.9	7.4
Naroff Economic Advisors	1.0	4.0	0.7	0.7	1.0	1.1	1.8	2.5	2.6	2.6	2.7	na	na	2.7	4.7	109.2	1.5	3.9	5.2	4.9
Scotiabank Group	1.0	4.0	0.8	na	1.2	na	na	1.9	2.3	2.4	2.5	na	na	na	na	na	5.4 H	6.2	8.7	7.0
Barclays	0.9	4.0	na	na	na	na	na	2.1	2.2	2.2	2.4	na	na	na	na	na	3.5	4.0	4.9	4.1
BMO Capital Markets	0.9	4.0	0.7	na	1.0	1.4	1.8	2.3	1.8	2.4	2.6	na	na	na	4.3	110.5 H	1.0	8.0 H	9.4	9.2 H
Mizuho Research Institute	0.9	na	na	na	na	na	na	na	na	2.0	na	na	na	na	na	na	na	na	na	na
NatWest Markets	0.9	4.0	na	0.9	1.3	1.4	1.5	2.6	2.5	2.5	2.6	4.3	5.3 H	3.6	4.4	na	4.0	4.8	7.6	6.1
ACIMA Private Wealth	0.8	3.8	0.8	0.9	0.8	1.3	1.8	2.4	2.4	2.4	2.5	3.5	4.4	1.9 L	4.9	109.0	2.0	4.1	4.0	3.0 L
Bank of the West	0.8	3.9	0.6	0.8	0.6	1.0	1.7	2.3	2.6	2.5	2.7	3.9	4.7	3.6	4.4	109.6	2.3	4.5	5.8	4.5
Chmura Economics & Analytics	0.8	3.9	0.8	0.8	0.9	1.3	1.7	2.2	2.3	2.6	2.9	3.8	na	na	4.2	na	3.5	5.4	6.3	4.8
Daiwa Capital Markets America	0.8	3.9	0.8	0.9	1.0	1.4	1.9	2.4	2.6	2.6	2.7	4.0	4.8	na	4.5	110.0	2.7	4.8	5.0	4.8
J.P. Morgan Chase	0.8	na	na	na	na	na	na	1.7	2.1	2.1	2.4	na	na	na	na	na	3.3	4.3	6.3	6.0
MacroFin Analytics & Rutgers Bus School	0.8	3.8	0.6	0.8	1.1	1.4	1.9	2.7 H	3.1 H	3.2 H	3.3 H	4.4 H	4.9	4.0 H	5.0 H	110.1	3.0	4.1	4.7	4.5
PNC Financial Services Corp.	0.8	4.0	0.6	na	0.7	1.0	1.4	2.0	2.2	2.3	2.6	na	4.6	2.7	4.3	109.5	3.8	4.4	5.6	4.6
S&P Global Ratings	0.8	3.9	0.8	na	0.9	0.9	1.2	1.5	2.0	2.2	2.6	na	na	na	4.3	na	2.1	3.2	4.0	3.0 L
Wells Fargo	0.8	3.8	0.6	0.9	0.8	0.9	1.2	1.8	2.0	2.1	2.3	3.4	4.0	2.8	3.9	na	1.5	7.1	9.1	7.1
Chan Economics	0.7	3.7	0.7	0.7	0.9	1.4	2.0	2.6	2.9	2.8	2.9	3.6	4.3	3.6	4.8	110.0	2.9	4.8	5.9	5.6
DePrince & Assoc.	0.7	3.8	0.7	0.8	0.8	1.0	1.3	1.8	2.0	2.2	2.4	3.5	4.3	2.9	3.9	106.5 L	3.6	3.8	4.1	3.7
Grant Thornton/Diane Swonk	0.7	3.9	0.7	0.5	0.5	1.1	1.8	2.4	2.7	2.7	2.9	3.9	4.9	na	4.6	na	2.9	4.5	4.6	4.4
Regions Financial Corporation	0.7	3.9	0.6	0.6	0.6	1.1	1.7	2.4	2.6	2.5	2.6	3.9	4.7	3.4	4.5	110.0	3.3	5.9	7.1	6.2
Societe Generale	0.7	3.9	0.7	0.9	1.0	1.4	1.9	2.3	2.4	2.3	2.5	na	na	na	na	na	3.5	2.1 L	5.0	4.2
Swiss Re	0.7	3.9	1.3	0.8	1.0	1.2	1.6	2.1	2.2	2.4	2.5	3.9	4.6	na	4.3	110.4	2.4	7.8	6.8	4.4
The Northern Trust Company	0.7	3.9	0.7	0.8	0.9	1.3	1.9	2.4	2.5	2.6	3.0	4.0	4.7	3.8	4.5	108.0	1.3	5.0	7.0	6.5
Action Economics	0.6	3.8	0.4	0.6	0.7	0.9	1.1	1.6	1.9	2.0	2.3	3.2	4.0	2.7	4.1	108.2	0.3 L	7.4	9.1	7.8
Amherst Pierpont Securities	0.6	3.8	0.6	0.8	0.8	1.3	1.8	2.5	2.6	2.6	2.8	3.9	4.8	3.0	4.7	110.0	5.2	4.9	6.4	5.3
Economist Intelligence Unit	0.6	3.8	na	0.7	0.8	1.1	1.5	1.9	2.3	2.4	2.8	na	na	na	4.4	na	2.0	na	6.0	na
Fannie Mae	0.6	3.7	na	na	1.3	1.6 H	2.1 H	2.6	2.6	2.5	2.6	na	na	na	4.6	na	3.1	5.1	5.9	5.2
Georgia State University	0.6	3.7	na	na	0.8	1.1	1.5	2.3	2.3	2.6	2.6	3.6	4.5	na	3.9	na	2.1	4.8	9.0	4.6
Oxford Economics	0.6	3.7	0.5	na	0.6	0.6 L	1.1	1.6	1.9	2.1	2.5	2.7 L	na	na	4.2	109.6	2.2	6.5	10.5 H	7.9
Thru the Cycle	0.6	3.7	0.5	0.6	0.7	1.2	1.9	2.5	2.6	2.6	2.7	3.7	5.2	3.3	4.5	110.0	2.8	4.6	7.5	6.6
Via Nova Investment Mgt.	0.6	3.8	0.6	0.5	0.9	1.2	1.6	2.0	2.4	2.5	2.8	3.9	4.5	3.6	4.4	107.0	4.5	3.5	3.6 L	3.2
Loomis, Sayles & Company	0.5	3.6	0.4	0.6	0.7	0.9	1.2	1.7	1.9	2.1	2.3	3.3	3.9 L	3.2	3.6 L	110.4	2.2	5.8	8.0	6.5
S&P Global Market Intelligence	0.5	3.7	0.5	na	0.4 L	0.7	1.1	1.5	1.7 L	1.9 L	2.2 L	na	na	na	3.7	na	3.3	5.0	4.8	4.6
Moody's Analytics	0.3 L	3.5 L	0.3 L	0.3 L	0.5	0.6 L	0.9 L	1.3 L	1.8	2.1	2.6	3.7	4.6	2.9	3.7	na	4.8	3.5	4.3	3.9
April Consensus	**0.8**	**3.9**	**0.7**	**0.7**	**0.9**	**1.1**	**1.6**	**2.2**	**2.4**	**2.4**	**2.6**	**3.7**	**4.6**	**3.1**	**4.3**	**109.4**	**2.9**	**5.1**	**6.6**	**5.4**
Top 10 Avg.	1.2	4.1	1.0	0.9	1.1	1.4	1.9	2.6	2.7	2.7	2.9	4.0	4.9	3.5	4.7	110.1	4.3	6.9	9.2	7.3
Bottom 10 Avg.	0.6	3.7	0.5	0.6	0.6	0.8	1.2	1.6	1.9	2.1	2.4	3.4	4.3	2.7	4.0	108.7	1.5	3.7	4.4	3.8
March Consensus	0.6	3.7	0.5	0.6	0.7	0.8	1.1	1.6	2.0	2.1	2.5	3.4	4.2	2.9	3.9	108.0	3.9	3.8	3.9	3.5
Number of Forecasts Changed From A Month Ago:																				
Down	2	2	3	3	5	1	1	0	4	2	4	1	2	1	0	3	30	2	1	1
Same	14	12	7	5	7	6	4	4	6	9	9	6	3	4	7	1	5	7	4	4
Up	23	19	17	14	19	22	25	34	27	27	23	15	16	13	22	15	3	26	32	30
Diffusion Index	77%	76%	76%	75%	73%	86%	90%	95%	81%	83%	76%	82%	83%	83%	88%	82%	14%	84%	92%	91%

Third Quarter 2022

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	Avg. For --Qtr.-- A. Fed's Adv Fgn Econ $ Index	B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
	Percent Per Annum -- Average For Quarter																(Q-Q % Change) (SAAR)			
	Short-Term							Intermediate-Term			Long-Term									
ING	2.1 H	na	2.4 H	na	na	na	na	3.0	3.0	2.8	2.8	na	na	na	na	na	2.8	na	na	na
Nomura Securities, Inc.	2.1 H	5.3 H	na	na	na	na	na	2.7	2.6	2.6	na	na	na	na	na	na	3.5	3.0	4.9	3.9
Bank of America	1.9	na	2.3	na	na	na	na	2.8	2.6	2.5	2.5	na	na	na	na	na	2.5	4.4	3.4	2.6
BNP Paribas Americas	1.9	na	na	na	na	na	na	2.7	na	2.6	2.7	na	na	na	na	na	4.2	na	3.3	na
Goldman Sachs & Co.	1.9	na	1.4	na	2.1 H	na	na	2.8	2.7	2.6	2.7	na	na	na	na	na	2.8	4.1	4.5	3.7
Scotiabank Group	1.8	4.8	1.6	na	1.9	na	na	2.3	2.4	2.5	2.8	na	na	na	na	na	3.2	5.3	5.5	4.2
BMO Capital Markets	1.7	4.8	1.5	na	1.7	1.9	2.2	2.4	2.5	2.6	2.8	na	na	na	4.4	111.0 H	3.0	3.7	4.2	3.9
Naroff Economic Advisors	1.7	4.8	1.3	1.5	1.7	1.9	2.4	3.0	3.2	3.3	3.4	na	na	3.4	4.9	109.0	3.5	3.3	3.7	3.6
Bank of the West	1.5	4.6	1.3	1.4	1.3	1.6	2.0	2.4	2.7	2.6	2.8	4.0	4.8	3.7	4.5	110.1	2.0	3.9	4.2	4.0
Chmura Economics & Analytics	1.5	4.6	1.5	1.5	1.5	1.9	2.2	2.7	2.7	3.0	3.3	4.2	na	na	4.4	na	2.8	5.2	5.7	4.6
Regions Financial Corporation	1.5	4.7	1.4	1.4	1.4	1.6	2.0	2.6	2.7	2.6	2.7	4.1	4.9	3.5	4.6	110.2	3.6	3.5	3.0	2.9
Swiss Re	1.5	4.7	2.1	1.6 H	1.7	1.8	2.0	2.3	2.3	2.4	2.5	4.1	4.9	na	4.3	110.1	-0.3 L	5.5	4.1	3.6
TS Lombard	1.5	4.6	1.4	1.5	1.8	1.8	1.9	2.1	2.8	2.8	2.9	3.7	4.5	2.8	4.6	108.0	3.5	3.0	3.0	3.0
Barclays	1.4	4.5	na	na	na	na	na	2.2	2.2	2.1	2.3 L	na	na	na	na	na	3.0	2.6	2.7	2.4
Chan Economics	1.4	4.4	1.4	1.4	1.6	2.1 H	2.7 H	3.3 H	3.6 H	3.5	3.6	4.3	5.0	4.3	5.5 H	110.3	3.0	4.5	5.5	5.2
Daiwa Capital Markets America	1.4	4.5	1.4	1.5	1.6	2.0	2.4	2.8	3.0	2.9	3.0	4.4	5.2	na	4.9	111.0 H	2.6	4.2	4.5	4.2
DePrince & Assoc.	1.4	4.5	1.4	1.4	1.4	1.6	1.8	2.2	2.3	2.4	2.6	3.8	4.5	3.1	4.2	106.8	2.9	3.4	3.6	3.3
Mizuho Research Institute	1.4	na	na	na	na	na	na	na	na	2.2	na	na	na	na	na	na	na	na	na	na
NatWest Markets	1.4	4.5	na	1.2	1.3	1.4	1.5	2.7	2.6	2.5	2.5	4.3	5.3	3.5	4.3	na	3.5	4.6	2.6	3.0
PNC Financial Services Corp.	1.4	4.7	0.9	na	1.0	1.2	1.5	2.0	2.2	2.4	2.8	na	4.6	2.9	4.4	109.7	3.5	4.0	3.4	3.2
S&P Global Ratings	1.4	4.5	1.4	na	1.4	1.4	1.6	1.9	2.2	2.4	2.6	na	na	na	4.3	na	2.8	1.1 L	2.0	1.5 L
ACIMA Private Wealth	1.3	4.3	1.3	1.4	1.3	1.5	1.5	2.4	2.4	2.3	2.4	3.5	4.6	1.9 L	4.6	109.0	2.5	3.3	2.1	3.2
Amherst Pierpont Securities	1.3	4.5	1.3	1.5	1.5	1.9	2.4	2.8	2.9	2.9	3.2	4.3	5.3	3.3	5.0	111.0 H	4.0	4.1	4.0	3.7
Grant Thornton/Diane Swonk	1.3	4.5	1.3	0.7	0.6 L	1.8	2.2	2.7	2.9	2.9	3.1	4.1	5.1	na	4.7	na	0.2	3.2	1.2 L	2.2
J.P. Morgan Chase	1.3	na	na	na	na	na	na	2.0	2.3	2.3	2.5	na	na	na	na	na	3.5	2.9	3.2	2.9
MacroFin Analytics & Rutgers Bus School	1.3	4.3	1.1	1.3	1.7	2.0	2.5	3.1	3.5	3.7 H	3.9 H	5.0 H	5.6 H	4.5 H	5.5 H	110.4	2.5	3.0	2.5	2.9
Societe Generale	1.3	4.5	1.3	1.4	1.5	1.8	2.1	2.3	2.3	2.3	2.5	na	na	na	na	na	1.9	2.6	4.2	3.8
The Northern Trust Company	1.3	4.5	1.3	1.4	1.5	1.8	2.2	2.6	2.7	2.8	3.3	4.3	5.2	4.2	4.7	106.0 L	4.7 H	3.4	3.5	3.3
Wells Fargo	1.3	4.3	1.1	1.3	1.2	1.3	1.5	1.9	2.1	2.2	2.4	3.5	4.1 L	2.9	4.0	na	2.9	3.3	4.0	3.3
Economist Intelligence Unit	1.2	4.3	na	1.2	1.4	1.7	2.1	2.5	2.8	3.0	3.3	na	na	na	4.7	na	1.1	na	2.4	na
Oxford Economics	1.1	4.2	1.1	na	1.1	1.2	1.4	1.7	2.1	2.3	2.6	2.8 L	na	na	4.3	109.2	2.7	2.9	3.2	3.0
Thru the Cycle	1.1	4.2	1.0	1.2	1.2	1.6	2.1	2.5	2.7	2.7	2.8	3.8	5.4	3.4	4.6	110.3	2.1	3.8	5.8	5.4
Via Nova Investment Mgt.	1.1	4.3	1.1	1.1	1.4	1.7	2.1	2.5	2.7	2.9	3.1	4.3	4.9	4.0	4.8	106.5	3.5	2.8	2.7	2.6
Action Economics	0.9	4.1	0.8	0.9	1.0	1.2	1.3	1.6	2.0	2.2	2.5	3.3	4.2	2.8	4.1	109.4	3.0	6.1 H	8.1	6.8 H
Fannie Mae	0.9	4.0	na	na	1.9	2.1 H	2.5	2.8	2.7	2.5	2.6	na	na	na	4.6	na	2.6	4.0	3.4	3.6
Georgia State University	0.9	4.1	na	na	1.0	1.2	1.6	2.4	2.6	2.8	2.9	3.9	4.9	na	4.2	na	1.8	3.4	8.7 H	4.5
S&P Global Market Intelligence	0.9	4.0	0.8	na	0.7	1.0	1.4	1.7	1.9 L	2.0 L	2.4	na	na	na	3.8	na	2.6	3.4	2.6	3.0
Loomis, Sayles & Company	0.8	3.9	0.7	0.9	1.0	1.2	1.4	1.8	2.0	2.2	2.4	3.4	4.1 L	3.3	3.7 L	110.6	2.7	4.0	4.5	4.0
Moody's Analytics	0.6 L	3.8 L	0.6 L	0.6 L	0.8	0.9 L	1.1 L	1.4 L	1.9 L	2.2	2.8	3.8	4.8	3.1	3.8	na	2.5	3.4	2.5	2.6
April Consensus	**1.4**	**4.4**	**1.3**	**1.3**	**1.4**	**1.6**	**1.9**	**2.4**	**2.6**	**2.6**	**2.8**	**4.0**	**4.9**	**3.4**	**4.5**	**109.4**	**2.8**	**3.7**	**3.8**	**3.5**
Top 10 Avg.	1.8	4.8	1.7	1.5	1.8	1.9	2.4	2.9	3.0	3.1	3.3	4.3	5.2	3.8	4.9	110.5	3.8	4.8	5.8	4.7
Bottom 10 Avg.	1.0	4.1	0.9	1.0	1.0	1.2	1.4	1.8	2.1	2.2	2.4	3.6	4.5	3.0	4.1	108.4	1.6	2.7	2.3	2.6
March Consensus	1.0	4.1	0.9	0.9	1.0	1.1	1.4	1.8	2.1	2.3	2.6	3.7	4.4	3.0	4.1	108.1	3.1	3.1	3.1	2.8
Number of Forecasts Changed From A Month Ago:																				
Down	2	2	1	3	2	1	1	0	1	2	4	0	0	0	0	3	24	1	6	4
Same	8	6	4	3	5	5	4	4	7	7	9	6	6	5	6	3	6	7	4	5
Up	29	25	22	16	24	23	25	34	29	29	23	16	15	13	23	13	8	27	27	26
Diffusion Index	85%	85%	89%	80%	85%	88%	90%	95%	88%	86%	76%	86%	86%	86%	90%	76%	29%	87%	78%	81%

Fourth Quarter 2022

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	Percent Per Annum -- Average For Quarter: Short-Term: 1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	Intermediate-Term: 8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	Long-Term: 11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	Avg. For --Qtr.-- A. Fed's Adv Fgn Econ $ Index	(Q-Q % Change) (SAAR): B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
ING	2.6 H	na	2.9 H	na	na	na	na	3.0	3.0	2.8	2.6	na	na	na	na	na	2.4	na	na	na
Nomura Securities, Inc.	2.6 H	5.8 H	na	na	na	na	na	2.9	2.7	2.7	na	na	na	na	na	na	1.3	2.7	4.0	3.3
Bank of America	2.4	na	2.8	na	na	na	na	3.0	2.7	2.5	2.5	na	na	na	na	na	1.8	4.3	3.4	2.5
BNP Paribas Americas	2.4	na	na	na	na	na	na	2.8	na	2.7	2.8	na	na	na	na	na	2.9	na	3.7	na
Chan Economics	2.4	5.4	2.4	2.4 H	2.6 H	3.1 H	3.7 H	4.3 H	4.6 H	4.5 H	4.6 H	5.3	6.0	5.3 H	6.5 H	110.5	3.0	4.0	5.0	4.7
Goldman Sachs & Co.	2.4	na	1.9	na	2.5	na	na	2.9	2.8	2.7	2.8	na	na	na	na	na	2.3	3.1	2.1	2.4
Scotiabank Group	2.3	5.3	2.1	na	2.2	na	na	2.5	2.6	2.7	2.9	na	na	na	na	na	4.0 H	3.8	4.1	2.9
Naroff Economic Advisors	2.2	5.3	1.7	2.1	2.3	2.4	2.8	3.3	3.6	3.7	3.8	na	na	3.8	5.1	108.6	2.3	2.6	3.2	3.1
BMO Capital Markets	2.1	5.3	2.0	na	2.1	2.3	2.4	2.6	2.6	2.7	2.9	na	na	na	4.5	111.5	2.4	2.3	2.5	2.3
Regions Financial Corporation	2.1	5.2	2.0	1.9	2.0	2.2	2.3	2.7	2.8	2.7	2.8	4.2	5.1	3.6	4.7	110.5	3.3	3.0	2.1	2.5
Amherst Pierpont Securities	2.0	5.2	2.0	2.2	2.3	2.6	3.0	3.0	3.1	3.2	3.5	4.5	5.5	3.5	5.2	111.5	3.4	3.6	3.8	3.4
Swiss Re	2.0	5.1	2.5	2.1	1.9	2.0	2.1	2.2	2.3	2.3	2.5	4.3	5.3	na	4.3	109.6	0.1 L	4.0	3.2	2.9
TS Lombard	2.0	5.1	1.9	2.0	2.3	2.3	2.4	2.6	3.3	3.0	3.1	3.9	4.7	3.0	4.8	106.0	2.5	2.5	2.5	2.5
Bank of the West	1.9	5.0	1.7	1.9	1.7	2.0	2.4	2.8	3.0	2.9	3.1	4.3	5.1	4.0	4.8	109.9	1.9	3.5	3.7	3.5
Barclays	1.9	5.0	na	na	na	na	na	2.3	2.2	2.1 L	2.3 L	na	na	na	na	na	2.5	2.1	1.8	1.9
Chmura Economics & Analytics	1.9	5.0	1.9	1.9	1.9	2.2	2.5	2.9	2.9	3.1	3.6	4.4	na	na	4.6	na	3.3	4.8 H	5.2 H	4.4
Daiwa Capital Markets America	1.9	5.0	1.9	2.0	2.1	2.4	2.8	3.0	3.2	3.1	3.2	4.6	5.4	na	5.1	112.0 H	2.1	3.9	4.0	3.8
NatWest Markets	1.9	5.0	na	1.4	1.6	1.7	1.8	2.8	2.6	2.5	2.5	4.3	5.2	3.5	4.3	na	3.0	4.1	2.5	2.9
DePrince & Assoc.	1.8	4.9	1.9	1.9	1.9	2.0	2.1	2.4	2.5	2.6	2.8	4.0	4.7	3.3	4.4	107.3	2.3	3.0	3.2	3.0
Grant Thornton/Diane Swonk	1.8	5.0	1.8	0.9 L	0.9 L	2.2	2.5	2.9	3.0	3.1	3.3	4.3	5.2	na	4.8	na	0.8	2.8	1.4	1.9
J.P. Morgan Chase	1.8	na	na	na	na	na	na	2.3	2.4	2.5	2.5	na	na	na	na	na	2.5	2.1	2.4	2.1
PNC Financial Services Corp.	1.8	5.0	1.2	na	1.2	1.4	1.6	2.1	2.3	2.5	2.8	na	4.6	3.0	4.4	110.1	2.8	3.3	2.3	2.4
Societe Generale	1.8	5.0	1.8	1.9	2.1	2.2	2.3	2.3	2.2	2.3	2.6	na	na	na	na	na	1.9	2.7	3.7	3.4
The Northern Trust Company	1.8	5.0	1.8	1.9	2.0	2.2	2.5	2.8	2.9	2.9	3.4	4.4	5.3	4.4	4.8	105.0 L	3.2	3.3	3.3	3.1
Via Nova Investment Mgt.	1.8	5.0	1.8	1.7	2.1	2.4	2.8	3.2	3.4	3.6	3.8	5.0	5.6	4.7	5.5	106.0	3.0	2.5	2.5	2.5
Wells Fargo	1.7	4.7	1.4	1.8	1.5	1.6	1.7	2.1	2.2	2.3	2.5	3.5	4.1 L	3.0	4.1	na	2.7	2.9	3.2	2.9
Economist Intelligence Unit	1.6	4.8	na	1.7	1.8	2.1	2.5	2.9	3.3	3.4	3.8	na	na	na	5.2	na	1.0	na	2.4	na
Oxford Economics	1.6	4.7	1.6	na	1.6	1.6	1.7	2.0	2.3	2.4	2.6	2.9 L	na	na	4.4	108.7	2.1	1.1	0.0 L	0.5 L
Thru the Cycle	1.6	4.7	1.6	1.7	1.7	1.9	2.2	2.4	2.6	2.6	2.6	3.7	5.4	3.3	4.5	110.5	1.8	3.1	4.7	4.8 H
ACIMA Private Wealth	1.5	4.5	1.5	1.6	1.6	1.5	1.5	2.4	2.3	2.2	2.3 L	3.5	4.8	1.8 L	4.5	109.0	1.5	3.2	2.2	3.1
MacroFin Analytics & Rutgers Bus School	1.5	4.5	1.5	1.6	2.1	2.4	2.9	3.5	3.9	4.0	4.3	5.4 H	6.2 H	4.9	5.8	110.8	2.1	2.4	2.4	2.3
S&P Global Ratings	1.5	4.6	1.5	na	1.5	1.5	1.6	1.9	2.3	2.5	2.7	na	na	na	4.4	na	2.3	0.7 L	1.1	1.2
Mizuho Research Institute	1.4	na	na	na	na	na	na	na	na	2.2	na	na	na	na	na	na	na	na	na	na
Action Economics	1.2	4.3	1.1	1.2	1.3	1.4	1.5	1.7	2.1	2.3	2.6	3.3	4.2	2.8	4.1	109.4	3.6	3.2	3.2	2.7
Fannie Mae	1.2	4.3	na	na	2.3	2.5	2.8	2.9	2.7	2.5	2.6	na	na	na	4.6	na	2.9	3.3	1.8	2.5
Georgia State University	1.2	4.3	na	na	1.2	1.3	1.7	2.4	2.9	3.2	3.3	4.2	5.3	na	4.6	na	1.9	3.1	4.8	3.3
Loomis, Sayles & Company	1.1	4.3	1.1	1.3	1.3	1.5	1.7	2.1	2.3	2.5	2.6	3.7	4.3	3.6	4.0	110.6	2.5	3.3	3.6	3.2
S&P Global Market Intelligence	1.1	4.3	1.1	na	1.0	1.3	1.6	1.9	2.0 L	2.2	2.5	na	na	na	4.0	na	2.8	3.0	2.2	2.4
Moody's Analytics	0.9 L	4.0 L	0.8 L	0.9 L	1.0	1.1 L	1.4 L	1.6 L	2.1	2.4	2.9	3.9	5.0	3.2	3.9 L	na	2.8	3.0	2.1	2.3
April Consensus	**1.8**	**4.9**	**1.8**	**1.7**	**1.8**	**2.0**	**2.2**	**2.6**	**2.7**	**2.8**	**3.0**	**4.2**	**5.1**	**3.6**	**4.7**	**109.3**	**2.4**	**3.0**	**3.0**	**2.8**
Top 10 Avg.	2.4	5.3	2.2	2.0	2.3	2.5	2.8	3.2	3.4	3.5	3.7	4.7	5.5	4.1	5.3	110.8	3.3	3.9	4.3	3.8
Bottom 10 Avg.	1.3	4.4	1.3	1.4	1.3	1.4	1.6	2.0	2.2	2.3	2.5	3.7	4.7	3.0	4.2	108.0	1.4	2.1	1.7	1.9
March Consensus	1.3	4.3	1.2	1.2	1.3	1.4	1.6	2.0	2.3	2.4	2.7	3.9	4.6	3.2	4.2	107.8	2.6	2.8	2.7	2.4
Number of Forecasts Changed From A Month Ago:																				
Down	0	0	0	1	2	1	1	0	0	1	2	3	1	1	0	3	19	4	13	8
Same	9	8	4	4	5	5	4	3	6	5	10	2	3	3	4	1	8	9	5	6
Up	30	25	23	17	24	23	25	35	31	32	24	17	17	14	25	15	11	22	19	21
Diffusion Index	88%	88%	93%	86%	85%	88%	90%	96%	92%	91%	81%	82%	88%	86%	93%	82%	39%	76%	58%	69%

First Quarter 2023

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	Percent Per Annum -- Average For Quarter: Short-Term: 1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	Intermediate-Term: 8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	Long-Term: 11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	Avg. For --Qtr.-- A. Fed's Adv Fgn Econ $ Index	(Q-Q % Change) (SAAR): B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
Nomura Securities, Inc.	3.1 H	6.3 H	na	na	na	na	na	3.3	2.9	2.7	na	na	na	na	na	na	0.8	2.5	3.8	2.8
Bank of America	2.9	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.8	4.3	3.2	2.6
BNP Paribas Americas	2.9	na	na	na	na	na	na	2.8	na	2.7	2.8	na	na	na	na	na	2.2	na	2.8	na
Chan Economics	2.9	5.9	2.9 H	2.9 H	3.1 H	3.6 H	4.2 H	4.8 H	5.1 H	5.0 H	5.1 H	5.8	6.5	5.8 H	7.0 H	110.8	2.5	3.7	4.7	4.4 H
ING	2.9	na	2.9 H	na	na	na	na	3.0	2.9	2.8	2.6	na	na	na	na	na	1.2	na	na	na
Amherst Pierpont Securities	2.6	5.8	2.5	2.8	2.8	3.0	3.3	3.2	3.3	3.4	3.8	4.8	5.9	3.6	5.4	112.0 H	3.1	3.3	3.4	3.1
Goldman Sachs & Co.	2.6	na	2.4	na	2.8	na	na	3.0	2.9	2.8	2.8	na	na	na	na	na	2.0	3.4	2.9	2.8
BMO Capital Markets	2.5	5.6	2.4	na	2.4	2.6	2.6	2.7	2.7	2.8	3.0	na	na	na	4.7	111.5	2.4	2.4	2.7	2.5
Naroff Economic Advisors	2.5	5.5	1.9	2.6	2.7	2.9	3.1	3.6	3.8	3.8	4.0	na	na	4.0	5.3	108.2	2.0	2.5	2.7	2.4
Regions Financial Corporation	2.5	5.7	2.4	2.4	2.4	2.6	2.6	2.7	2.9	2.8	2.9	4.4	5.3	3.7	4.9	110.9	3.1	2.5	2.2	2.3
Scotiabank Group	2.5	5.5	2.3	na	2.3	na	na	2.6	2.7	2.8	3.0	na	na	na	na	na	3.6 H	4.4 H	4.1	3.6
TS Lombard	2.5	5.6	2.4	2.5	2.8	2.8	3.0	3.3	3.8	3.5	3.6	4.4	5.2	3.5	5.3	104.0 L	2.8	2.8	2.8	2.8
Grant Thornton/Diane Swonk	2.4	5.5	2.3	1.1 L	1.0 L	2.6	2.7	3.0	3.1	3.2	3.4	4.3	5.3	na	4.9	na	0.4 L	2.4	2.5	1.9
The Northern Trust Company	2.4	5.5	2.3	2.5	2.5	2.6	2.8	3.0	3.0	3.0	3.6	4.5	5.4	4.6	4.9	104.0 L	2.2	3.1	3.0	2.8
Bank of the West	2.3	5.4	2.2	2.3	2.1	2.4	2.7	3.1	3.2	3.1	3.3	4.6	5.4	4.3	5.0	109.4	1.8	2.7	3.4	3.2
Chmura Economics & Analytics	2.3	5.4	2.3	2.3	2.3	2.5	2.7	3.1	3.1	3.4	3.9	4.6	na	na	4.9	na	2.2	4.2	4.8 H	4.0
Daiwa Capital Markets America	2.3	5.4	2.2	2.3	2.5	2.7	3.1	3.2	3.3	3.3	3.3	4.8	5.6	na	5.3	111.0	1.7	3.5	3.5	3.3
J.P. Morgan Chase	2.3	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.5	2.2	2.9	2.6
Societe Generale	2.3	5.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.6	na	na	na	na	na	2.7	2.7	3.2	2.9
Via Nova Investment Mgt.	2.3	5.6	2.3	2.3	2.6	2.9	3.3	3.8	4.0	4.1	4.4	5.5	6.1	5.2	6.0	106.0	3.0	2.4	2.4	2.3
PNC Financial Services Corp.	2.2	5.5	1.4	na	1.5	1.6	1.8	2.2	2.3	2.6	2.9	na	4.6	3.1	4.4	110.3	1.8	2.8	2.0	2.1
Barclays	2.1	5.3	na	na	na	na	na	2.3	2.2	2.0 L	2.3	na	na	na	na	na	2.0	2.4	2.4	2.1
DePrince & Assoc.	2.1	5.3	2.3	2.2	2.3	2.3	2.4	2.6	2.6	2.8	3.0	4.2	4.9	3.4	4.6	108.0	2.3	3.0	3.2	3.0
NatWest Markets	2.1	5.3	na	1.7	1.8	1.9	2.0	2.8	2.6	2.5	2.4	4.3	5.3	3.4	4.2	na	2.0	4.0	2.5	2.9
S&P Global Ratings	2.1	5.2	2.1	na	2.1	2.1	2.2	2.3	2.6	2.7	2.9	na	na	na	4.7	na	2.1	1.5	1.8	1.6
Swiss Re	2.1	5.3	2.5	2.3	1.9	2.0	2.0	2.1	2.2	2.3	2.6	4.3	5.4	na	4.2	109.0	0.7	2.8	3.0	2.4
Economist Intelligence Unit	2.0	5.1	na	2.0	2.1	2.5	2.8	3.3	3.6	3.8	4.1	na	na	na	5.3	na	2.3	na	2.8	na
MacroFin Analytics & Rutgers Bus School	2.0	5.0	1.9	2.2	2.7	3.0	3.5	4.1	4.5	4.7	5.1 H	6.2 H	6.9 H	5.5	6.5	111.0	2.0	2.2	2.2	2.0
Oxford Economics	2.0	5.2	2.0	na	2.1	2.1	2.1	2.2	2.4	2.5	2.7	3.1 L	na	na	4.5	107.8	1.9	1.4 L	1.2 L	0.7 L
Mizuho Research Institute	1.9	na	na	na	na	na	na	na	na	2.2	na	na	na	na	na	na	na	na	na	na
Thru the Cycle	1.9	5.0	1.9	2.0	1.9	2.0	2.1	2.2	2.3	2.4	2.5	3.6	5.4	3.1	4.3	109.5	2.6	2.8	3.2	3.2
Wells Fargo	1.9	4.9	1.7	2.0	1.7	1.8	2.0	2.2	2.3	2.3	2.5	3.5	4.2 L	3.0	4.1	na	2.3	2.1	1.5	2.1
ACIMA Private Wealth	1.5	4.5	1.5	1.6	1.6	1.5	1.5 L	2.3	2.3	2.0 L	2.1 L	3.5	5.0	1.7 L	4.3	110.0	3.0	1.7	2.3	3.5
Loomis, Sayles & Company	1.5	4.7	1.5	1.7	1.7	1.9	2.1	2.6	2.6	2.7	2.7	3.9	4.5	3.8	4.2	110.6	2.4	3.0	3.1	2.9
Action Economics	1.4	4.6	1.4	1.4	1.5	1.6	1.6	1.8 L	2.0 L	2.3	2.6	3.4	4.3	2.8	4.2	109.5	3.6 H	2.3	2.4	2.2
Fannie Mae	1.4	4.5	na	na	2.7	2.8	3.0	3.0	2.7	2.5	2.6	na	na	na	4.7	na	2.5	3.0	2.4	2.4
Georgia State University	1.4	4.5	na	na	1.3	1.4	1.9	2.5	3.0	3.3	3.5	4.1	5.4	na	4.8	na	2.0	2.8	4.0	2.9
S&P Global Market Intelligence	1.4	4.5	1.4	na	1.2	1.5	1.8	2.1	2.2	2.4	2.7	na	na	na	4.1	na	2.6	2.6	2.6	2.2
Moody's Analytics	1.1 L	4.3 L	1.1 L	1.1 L	1.2	1.3 L	1.5 L	1.8 L	2.3	2.5	3.0	4.0	5.2	3.5	4.0 L	na	3.2	2.4	2.1	2.2
April Consensus	**2.2**	**5.2**	**2.1**	**2.1**	**2.1**	**2.3**	**2.5**	**2.8**	**2.9**	**2.9**	**3.2**	**4.4**	**5.3**	**3.8**	**4.9**	**109.1**	**2.2**	**2.8**	**2.9**	**2.6**
Top 10 Avg.	2.7	5.7	2.5	2.5	2.7	2.9	3.2	3.6	3.8	3.8	4.1	5.0	5.8	4.4	5.6	110.8	3.1	3.7	3.8	3.4
Bottom 10 Avg.	1.5	4.7	1.6	1.7	1.5	1.7	1.8	2.1	2.2	2.3	2.5	3.8	4.9	3.1	4.2	107.5	1.4	2.1	2.0	1.9
March Consensus	1.6	4.6	1.4	1.5	1.5	1.7	1.8	2.1	2.4	2.6	2.9	4.0	4.8	3.3	4.4	107.5	2.4	2.6	2.5	2.3
Number of Forecasts Changed From A Month Ago:																				
Down	0	0	0	1	1	1	0	0	0	0	2	2	0	2	0	3	14	4	8	6
Same	9	7	4	4	6	5	6	3	5	6	7	4	4	6	7	1	13	12	7	8
Up	30	26	23	17	24	23	24	32	29	29	24	16	17	10	22	15	11	19	22	21
Diffusion Index	88%	89%	93%	86%	87%	88%	90%	96%	93%	91%	83%	82%	90%	72%	88%	82%	46%	71%	69%	71%

Second Quarter 2023

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	A. Fed's Adv Fgn Econ $ Index	B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
	Percent Per Annum -- Average For Quarter															Avg. For --Qtr.--	(Q-Q % Change) (SAAR)			
	Short-Term							Intermediate-Term			Long-Term									
Nomura Securities, Inc.	3.6 H	6.8 H	na	na	na	na	na	3.5	3.3	2.9	na	na	na	na	na	na	0.6 L	2.2	2.9	2.2
Chan Economics	3.4	6.4	3.4 H	3.4 H	3.6 H	4.1 H	4.7 H	5.3 H	5.6 H	5.5 H	5.6	6.3	7.0	6.3 H	7.5 H	111.0	2.0	3.5	4.5 H	4.2 H
Bank of America	3.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.5	4.4 H	3.2	2.6
BNP Paribas Americas	3.1	na	na	na	na	na	na	2.7	na	2.7	2.8	na	na	na	na	na	1.7	na	2.2	na
TS Lombard	3.0	6.1	2.9	3.0	3.3	3.3	3.3	3.3	3.7	3.5	3.6	4.4	5.2	3.5	5.3	104.0	2.4	2.8	2.8	2.8
Amherst Pierpont Securities	2.9	6.1	2.9	3.1	3.1	3.3	3.5	3.4	3.5	3.6	3.9	4.8	5.9	3.9	5.5	112.0 H	3.0	3.2	3.3	2.9
Goldman Sachs & Co.	2.9	na	2.7	na	3.0	na	na	3.1	3.0	2.8	2.8	na	na	na	na	na	2.0	2.9	3.0	2.7
ING	2.9	na	2.9	na	na	na	na	2.7	2.6	2.5	2.6	na	na	na	na	na	1.4	na	na	na
BMO Capital Markets	2.7	5.8	2.7	na	2.6	2.7	2.8	2.9	2.8	3.0	3.2	na	na	na	4.8	111.1	2.3	2.4	2.7	2.5
Chmura Economics & Analytics	2.7	5.8	2.8	2.8	2.7	2.8	2.9	3.3	3.3	3.6	4.1	4.8	na	na	5.2	na	3.4 H	3.9	4.1	3.5
Daiwa Capital Markets America	2.7	5.8	2.6	2.7	2.8	3.0	3.3	3.4	3.5	3.4	3.5	5.0	5.8	na	5.4	110.0	1.7	3.2	3.3	3.0
Grant Thornton/Diane Swonk	2.7	5.8	2.6	1.1 L	1.1 L	2.8	2.9	3.1	3.1	3.2	3.5	4.4	5.4	na	5.0	na	1.2	2.5	2.0	1.8
Naroff Economic Advisors	2.7	5.8	2.0	2.8	2.9	3.0	3.2	3.4	3.6	3.6	3.9	na	na	3.7	5.2	107.5	1.8	2.2	2.5	1.9
J.P. Morgan Chase	2.6	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.8	2.2	2.7	2.4
PNC Financial Services Corp.	2.6	5.9	1.8	na	1.8	1.9	2.0	2.2	2.4	2.6	2.9	na	4.6	3.1	4.4	110.5	1.1	2.3	2.2	2.1
Regions Financial Corporation	2.6	5.8	2.5	2.5	2.5	2.6	2.8	2.8	3.0	2.9	3.0	4.5	5.4	3.8	5.0	110.7	2.9	2.1	2.2	2.2
The Northern Trust Company	2.6	5.8	2.6	2.7	2.7	2.7	2.9	3.0	3.0	3.0	3.6	4.5	5.4	4.6	4.9	103.0 L	2.2	2.8	2.6	2.5
Bank of the West	2.5	5.6	2.3	2.4	2.3	2.5	2.8	3.2	3.4	3.3	3.5	4.7	5.6	4.5	5.2	109.5	1.7	2.6	3.2	3.0
MacroFin Analytics & Rutgers Bus School	2.5	5.5	2.4	2.7	3.4	3.6	4.1	4.7	5.1	5.3	5.7 H	6.9 H	7.6 H	6.2	7.1	111.3	1.9	2.1	2.1	1.9
Scotiabank Group	2.5	5.5	2.3	na	2.3	na	na	2.6	2.7	2.8	3.0	na	na	na	na	na	2.9	2.2	4.0	3.1
Via Nova Investment Mgt.	2.5	5.8	2.5	2.5	2.8	3.1	3.5	4.0	4.2	4.3	4.6	5.7	6.3	5.4	6.2	105.0	2.5	2.4	2.3	2.2
Barclays	2.4	5.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.0	1.9	1.4	1.6
DePrince & Assoc.	2.4	5.5	2.5	2.5	2.5	2.5	2.5	2.7	2.7	2.9	3.2	4.3	5.0	3.6	4.7	108.7	2.3	2.9	3.1	2.8
NatWest Markets	2.4	5.5	na	1.9	2.1	2.2	2.3	2.8	2.6	2.5	2.4	4.3	5.3	3.4	4.2 L	na	2.0	4.0	2.2	3.0
S&P Global Ratings	2.4	5.6	2.4	na	2.5	2.5	2.5	2.6	2.7	2.8	3.0	na	na	na	4.9	na	1.7	2.3	1.8	1.9
Oxford Economics	2.3	5.4	2.3	na	2.3	2.4	2.4	2.4	2.5	2.6	2.7	3.2 L	na	na	4.6	106.6	1.7	2.1	1.8	1.8
Societe Generale	2.3	5.5	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.6	na	na	na	na	na	2.4	2.7	2.8	2.5
Economist Intelligence Unit	2.2	5.3	na	2.2	2.4	2.7	3.1	3.5	3.7	4.1	4.4	na	na	na	5.6	na	2.4	na	2.3	na
Wells Fargo	2.2	5.2	2.0	2.2	2.0	2.1	2.1	2.3	2.3	2.4	2.6	3.6	4.3 L	3.1	4.2 L	na	2.4	1.4	0.6 L	1.4 L
Mizuho Research Institute	2.1	na	na	na	na	na	na	na	na	2.4	na	na	na	na	na	na	na	na	na	na
Swiss Re	2.1	5.3	2.5	2.3	1.8	1.9	1.9	2.0	2.1 L	2.3	2.6	4.2	5.4	na	4.2 L	108.4	1.1	2.4	3.0	2.1
Thru the Cycle	1.9	5.0	1.9	2.0	1.9	2.0	2.0	2.0	2.1 L	2.2	2.4	3.6	5.4	3.2	4.2 L	107.8	1.5	2.5	2.9	3.0
Loomis, Sayles & Company	1.8	4.9	1.7	1.9	2.0	2.2	2.3	2.7	2.7	2.7	2.8	3.9	4.6	3.8	4.2 L	110.6	2.5	3.0	2.8	2.7
Fannie Mae	1.7	4.8	na	na	2.9	3.0	3.1	3.0	2.7	2.5	2.6	na	na	na	4.6	na	2.3	3.1	2.2	2.3
Action Economics	1.6	4.8	1.6	1.6	1.6	1.6	1.7	1.8 L	2.1 L	2.4	2.7	3.4	4.3 L	2.9	4.2 L	109.5	3.2	1.5	2.4	2.2
S&P Global Market Intelligence	1.6	4.8	1.6	na	1.4	1.6	2.0	2.2	2.3	2.5	2.8	na	na	na	4.3	na	2.8	2.6	2.4	2.2
ACIMA Private Wealth	1.5	4.5 L	1.5	1.6	1.6	1.5 L	1.5 L	2.3	2.3	2.0 L	2.1 L	3.4	5.0	1.5 L	4.3	111.0	2.2	1.3 L	2.2	2.3
Georgia State University	1.4 L	4.6	na	na	1.5	1.6	2.0	2.6	3.1	3.4	3.6	4.2	5.5	na	5.0	na	2.1	2.5	3.2	2.7
Moody's Analytics	1.4 L	4.5 L	1.3 L	1.4	1.4	1.5 L	1.8	2.0	2.4	2.7	3.1	4.2	5.3	3.5	4.2 L	na	3.2	2.3	2.1	2.1
April Consensus	**2.4**	**5.5**	**2.3**	**2.3**	**2.3**	**2.5**	**2.7**	**2.9**	**3.0**	**3.0**	**3.3**	**4.5**	**5.4**	**3.9**	**5.0**	**108.9**	**2.1**	**2.6**	**2.6**	**2.5**
Top 10 Avg.	3.0	6.0	2.8	2.8	3.1	3.2	3.5	3.8	4.0	4.0	4.3	5.2	6.0	4.6	5.8	110.8	2.9	3.4	3.5	3.1
Bottom 10 Avg.	1.7	4.8	1.8	1.8	1.6	1.8	1.9	2.2	2.3	2.4	2.5	3.8	4.9	3.2	4.2	107.0	1.4	1.9	1.8	1.9
March Consensus	1.8	4.8	1.7	1.7	1.8	1.9	2.0	2.2	2.5	2.7	3.0	4.1	4.9	3.4	4.5	107.2	2.3	2.5	2.4	2.3
Number of Forecasts Changed From A Month Ago:																				
Down	0	0	0	2	1	1	0	0	0	0	3	1	1	3	1	3	11	7	8	8
Same	8	7	4	3	7	6	6	4	6	7	8	6	3	2	4	2	14	12	9	9
Up	31	26	23	17	23	22	24	31	28	28	22	15	17	13	24	14	12	15	19	17
Diffusion Index	90%	89%	93%	84%	85%	86%	90%	94%	91%	90%	79%	82%	88%	78%	90%	79%	51%	62%	65%	63%

Third Quarter 2023

Interest Rate Forecasts

Key Assumptions

Blue Chip Financial Forecasts Panel Members	Percent Per Annum -- Average For Quarter: Short-Term: 1 Federal Funds Rate	2 Prime Bank Rate	3 SOFR Rate	4 Com. Paper 1-Mo.	5 Treas. Bills 3-Mo.	6 Treas. Bills 6-Mo.	7 Treas. Bills 1-Yr.	Intermediate-Term: 8 Treas. Notes 2-Yr.	9 Treas. Notes 5-Yr.	10 Treas. Notes 10-Yr.	Long-Term: 11 Treas. Bond 30-Yr.	12 Aaa Corp. Bond	13 Baa Corp. Bond	14 State & Local Bonds	15 Home Mtg. Rate	Avg. For --Qtr.-- A. Fed's Adv Fgn Econ $ Index	(Q-Q % Change) (SAAR): B. Real GDP	C. GDP Price Index	D. Cons. Price Index	E. PCE Price Index
Nomura Securities, Inc.	3.9 H	7.0 H	na	na	na	na	na	3.5	3.3	3.0	na	na	na	na	na	na	0.5 L	2.1	3.0	2.1
TS Lombard	3.5	6.6	3.4 H	3.5 H	3.8 H	3.8	3.8	3.8	4.2	3.5	3.6	4.4	5.2	3.5	5.3	104.0	2.6	2.8	2.8	2.8
Chan Economics	3.4	6.4	3.4	3.4	3.6	4.1 H	4.7 H	5.3 H	5.6 H	5.5	5.6	6.3	7.0	6.3	7.5 H	110.7	1.8	3.4	4.4 H	4.1 H
Amherst Pierpont Securities	3.2	6.4	3.2	3.3	3.3	3.4	3.5	3.6	3.7	3.7	4.0	4.9	6.0	4.0	5.6	112.0	2.9	3.3	3.3	2.9
Bank of America	3.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.2	4.4 H	3.2	2.7
BNP Paribas Americas	3.1	na	na	na	na	na	na	2.7	na	2.6	2.8	na	na	na	na	na	1.7	na	3.3	na
Goldman Sachs & Co.	3.1	na	2.9	na	3.2	na	na	2.2	2.4	2.8	2.6	na	na	na	na	na	2.0	2.6	2.8	2.4
Chmura Economics & Analytics	3.0	6.2	3.1	3.1	3.0	3.1	3.2	3.4	3.5	3.7	4.2	4.9	na	na	5.3	na	3.3	3.3	3.6	2.9
Daiwa Capital Markets America	3.0	6.1	3.0	3.1	3.2	3.3	3.6	3.6	3.7	3.6	3.7	5.2	6.0	na	5.6	109.0	1.4	3.0	3.1	2.9
BMO Capital Markets	2.9	6.0	2.9	na	2.8	2.9	2.9	2.9	2.9	3.0	3.2	na	na	na	4.8	110.7	2.0	2.3	2.5	2.4
Grant Thornton/Diane Swonk	2.9	6.0	2.8	1.3 L	1.3 L	2.9	2.9	3.1	3.1	3.3	3.5	4.4	5.5	na	5.0	na	1.3	2.3	2.0	1.7 L
ING	2.9	na	2.7	na	na	na	na	2.4	2.3	2.3	2.5	na	na	na	na	na	1.6	na	na	na
Naroff Economic Advisors	2.9	6.0	2.2	3.0	3.1	3.1	3.1	3.2	3.3	3.4	3.7	na	na	3.5	5.0	106.6	1.5	2.3	2.1	2.1
PNC Financial Services Corp.	2.9	6.1	2.1	na	2.0	2.0	2.1	2.2	2.4	2.6	2.9	na	4.6	3.2	4.4	110.5	0.8	2.1	2.2	2.1
Via Nova Investment Mgt.	2.9	6.2	2.9	2.9	3.2	3.5	3.9	4.4	4.6	4.7	5.0	6.1	6.7	5.8	6.6	105.0	2.5	2.4	2.3	2.2
J.P. Morgan Chase	2.8	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	1.5	2.3	2.7	2.4
MacroFin Analytics & Rutgers Bus School	2.8	5.8	2.7	3.0	3.7	4.0	4.5	5.1	5.5	5.7 H	6.1 H	7.4 H	8.1 H	6.5 H	7.5 H	119.5 H	1.7	2.1	2.0	1.9
Bank of the West	2.7	5.8	2.6	2.7	2.6	2.8	3.0	3.3	3.4	3.3	3.5	4.8	5.6	4.5	5.2	109.7	1.6	2.5	2.9	2.7
NatWest Markets	2.6	5.8	na	2.2	2.3	2.4	2.5	2.8	2.7	2.5	2.4	4.3	5.3	3.4	4.2	na	2.0	3.8	1.9 L	3.0
Regions Financial Corporation	2.6	5.8	2.5	2.5	2.6	2.7	2.8	2.8	3.0	3.0	3.1	4.6	5.5	3.9	5.0	110.5	2.4	1.9	2.1	2.0
S&P Global Ratings	2.6	5.7	2.6	na	2.7	2.7	2.6	2.7	2.8	2.9	3.0	na	na	na	5.0	na	1.7	2.5	2.1	2.0
The Northern Trust Company	2.6	5.8	2.6	2.7	2.7	2.7	2.9	3.0	3.0	3.0	3.8	4.5	5.4	4.6	4.9	102.0 L	2.0	2.6	2.5	2.4
DePrince & Assoc.	2.5	5.6	2.6	2.6	2.6	2.5	2.5	2.7	2.7	3.0	3.4	4.4	5.1	3.7	4.8	109.4	2.3	2.8	2.9	2.7
Economist Intelligence Unit	2.5	5.6	na	2.5	2.6	3.0	3.3	3.7	3.9	4.3	4.7	na	na	na	5.7	na	2.5	na	2.3	na
Scotiabank Group	2.5	5.5	2.3	na	2.3	na	na	2.6	2.7	2.8	3.1	na	na	na	na	na	2.3	1.6	2.7	2.2
Barclays	2.4	5.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2.0	2.2	2.1	1.9
Oxford Economics	2.4	5.5	2.4	na	2.4	2.3	2.3	2.4	2.5	2.6	2.8	3.3 L	na	na	4.6	105.5	1.8	2.3	2.1	2.0
Wells Fargo	2.4	5.4	2.3	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.6	3.6	4.3 L	3.1	4.2	na	2.1	2.6	2.4	2.6
Societe Generale	2.3	5.5	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.5	na	na	na	na	na	2.9	2.7	2.5	2.2
Mizuho Research Institute	2.1	na	na	na	na	na	na	na	na	2.4	na	na	na	na	na	na	na	na	na	na
Swiss Re	2.1	5.3	2.4	2.3	1.8	1.9	1.9	1.9 L	2.1	2.3	2.6	4.2	5.3	na	4.1 L	108.0	1.5	2.2	3.0	2.0
Loomis, Sayles & Company	2.0	5.2	2.0	2.1	2.1	2.3	2.5	2.8	2.8	2.8	2.9	4.0	4.7	3.9	4.3	110.6	2.5	2.9	2.7	2.6
Fannie Mae	1.9	5.0	na	na	3.1	3.1	3.1	3.0	2.7	2.5	2.6	na	na	na	4.6	na	2.1	3.1	2.7	2.5
Thru the Cycle	1.9	5.0	1.9	2.0	1.9	2.0	1.9	1.9 L	1.9 L	2.0 L	2.2	3.4	5.5	3.0	4.1 L	107.3	1.8	2.4	2.0	2.5
Action Economics	1.6	4.8	1.7	1.6	1.6	1.7	1.8	1.9 L	2.2	2.4	2.7	3.5	4.4	2.9	4.3	109.5	na	na	na	na
Georgia State University	1.6	4.8	na	na	1.7	1.7	2.2	2.8	3.3	3.6	3.8	4.5	5.8	na	5.2	na	2.6	2.5	2.7	2.2
Moody's Analytics	1.6	4.8	1.6	1.6	1.6	1.7	2.0	2.2	2.7	2.9	3.3	4.4	5.5	3.7	4.4	na	3.4 H	2.0	1.9 L	1.8
S&P Global Market Intelligence	1.6	4.8	1.6	na	1.5	1.7	2.1	2.3	2.4	2.6	2.9	na	na	na	4.3	na	2.8	2.6	2.5	2.1
ACIMA Private Wealth	1.5 L	4.5 L	1.5 L	1.6	1.6	1.5 L	1.5 L	2.3	2.3	2.0 L	2.1 L	3.4	5.0	1.5 L	4.3	110.0	1.7	1.3 L	1.9 L	2.2
April Consensus	**2.6**	**5.7**	**2.5**	**2.5**	**2.5**	**2.6**	**2.8**	**2.9**	**3.1**	**3.1**	**3.3**	**4.6**	**5.5**	**3.9**	**5.0**	**109.0**	**2.0**	**2.6**	**2.6**	**2.4**
Top 10 Avg.	3.2	6.3	3.0	3.1	3.3	3.4	3.7	4.0	4.1	4.2	4.5	5.3	6.2	4.7	6.0	111.4	2.8	3.3	3.3	2.9
Bottom 10 Avg.	1.8	5.0	1.9	1.9	1.7	1.9	2.0	2.2	2.3	2.3	2.5	3.9	4.9	3.2	4.3	106.6	1.3	2.0	2.0	2.0
March Consensus	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Number of Forecasts Changed From A Month Ago:																				
Down	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Same	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Up	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diffusion Index	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

International Interest Rate And Foreign Exchange Rate Forecasts

United States

Blue Chip Forecasters	Fed Fund Target Rate			10 Yr. Gov't Bond Yield %			Fed's AFE $ Index		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	0.88	1.38	--	2.15	2.10	--	--	--	--
BMO Capital Markets	1.38	1.88	2.63	2.45	2.60	2.85	110.7	111.2	111.3
ING Financial Markets	1.38	2.13	2.88	2.75	2.75	2.75	111.0	110.9	109.4
Mizuho Research Institute	0.88	1.38	2.13	1.95	2.15	2.40	--	--	--
Moody's Analytics	0.13	0.32	0.87	1.81	2.10	2.42	--	--	--
Northern Trust	1.13	1.63	2.63	2.55	2.75	3.00	108.0	106.0	104.0
Oxford Economics	0.58	1.09	2.04	2.23	2.37	2.53	109.6	109.2	107.8
S&P Global Market Intelligence	--	--	--	1.96	2.16	2.50	--	--	--
S&P Global Ratings	0.82	1.38	2.06	2.23	2.36	2.70	--	--	--
Scotiabank	1.00	1.75	2.50	2.35	2.50	2.75	--	--	--
TS Lombard	1.15	1.50	2.50	2.80	3.00	3.50	108.0	106.0	104.0
Wells Fargo	1.00	1.50	2.00	2.10	2.20	2.35	--	--	--
April Consensus	**0.94**	**1.45**	**2.22**	**2.28**	**2.42**	**2.70**	**109.5**	**108.7**	**107.3**
High	1.38	2.13	2.88	2.80	3.00	3.50	111.0	111.2	111.3
Low	0.13	0.32	0.87	1.81	2.10	2.35	108.0	106.0	104.0
Last Months Avg.	0.61	0.99	1.63	1.98	2.12	2.37	108.0	108.0	107.0

Japan

Blue Chip Forecasters	Policy-Rate Balance Rate			10 Yr. Gov't Bond Yield %			Yen per US$		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	-0.10	-0.10	--	0.20	0.25	--	120.0	118.0	--
BMO Capital Markets	-0.10	-0.10	-0.10	0.20	0.25	0.25	120.0	123.0	124.0
ING Financial Markets	-0.10	-0.10	-0.10	0.20	0.20	0.20	123.0	124.0	126.0
Mizuho Research Institute	-0.10	-0.10	-0.10	0.17	0.19	0.20	116.0	117.0	119.0
Moody's Analytics	-0.10	-0.10	-0.10	0.18	0.18	0.13	114.9	114.6	113.9
Nomura Securities	--	--	--	--	--	--	120.0	118.0	118.0
Northern Trust	-0.10	-0.10	-0.10	0.25	0.20	0.15	121.0	120.0	119.0
Oxford Economics	-0.05	-0.05	-0.05	0.22	0.20	0.10	118.5	116.9	112.3
S&P Global Market Intelligence	--	--	--	--	--	--	119.5	120.0	118.4
S&P Global Ratings	-0.10	-0.10	0.00	0.27	0.26	0.22	120.0	119.0	117.7
Scotiabank	-0.10	-0.10	-0.10	--	--	--	115.0	116.0	118.0
TS Lombard	-0.10	0.20	0.50	0.25	0.35	0.45	125.0	120.0	110.0
Wells Fargo	-0.10	-0.10	-0.10	0.15	0.20	0.25	--	--	--
April Consensus	**-0.10**	**-0.07**	**-0.03**	**0.21**	**0.23**	**0.22**	**119.4**	**118.9**	**117.8**
High	-0.05	0.20	0.50	0.27	0.35	0.45	125.0	124.0	126.0
Low	-0.10	-0.10	-0.10	0.15	0.18	0.10	114.9	114.6	110.0
Last Months Avg.	-0.10	-0.07	-0.03	0.18	0.21	0.26	115.4	115.9	116.8

United Kingdom

Blue Chip Forecasters	Official Bank Rate			10 Yr. Gilt Yields %			US$ per Pound Sterling		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	1.00	1.00	--	1.70	1.75	--	1.31	1.35	--
BMO Capital Markets	1.00	1.00	1.50	1.75	2.00	2.25	1.31	1.31	1.30
ING Financial Markets	1.00	1.00	1.00	1.80	1.80	1.80	1.32	1.30	1.32
Moody's Analytics	0.46	0.91	1.41	1.65	1.95	2.30	1.35	1.37	1.45
Nomura Securities	--	--	--	--	--	--	1.29	1.31	1.45
Northern Trust	1.00	1.25	1.25	1.60	1.70	1.80	1.33	1.36	1.38
Oxford Economics	1.00	1.00	1.00	1.60	1.64	1.81	1.33	1.34	1.37
S&P Global Market Intelligence	--	--	--	--	--	--	1.29	1.29	1.29
S&P Global Ratings	0.91	1.00	1.00	1.52	1.56	1.73	1.30	1.30	1.33
Scotiabank	1.00	1.25	1.50	--	--	--	1.36	1.38	1.38
TS Lombard	1.00	1.35	2.35	1.50	2.60	3.10	1.29	1.27	1.25
Wells Fargo	1.00	1.25	1.50	1.70	1.80	1.90	--	--	--
April Consensus	**0.94**	**1.10**	**1.39**	**1.65**	**1.87**	**2.09**	**1.32**	**1.33**	**1.35**
High	1.00	1.35	2.35	1.80	2.60	3.10	1.36	1.38	1.45
Low	0.46	0.91	1.00	1.50	1.56	1.73	1.29	1.27	1.25
Last Months Avg.	0.77	0.88	1.15	1.44	1.56	1.85	1.35	1.36	1.36

Switzerland

Blue Chip Forecasters	SNB Policy Rate			10 Yr. Gov't Bond Yield %			CHF per US$		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	-0.75	-0.75	--	--	--	--	0.95	0.94	--
ING Financial Markets	-0.75	-0.75	-0.25	0.70	0.80	0.80	0.95	0.97	0.99
Moody's Analytics	-0.75	-0.75	-0.75	0.06	-0.03	0.17	0.92	0.89	0.81
Nomura Securities	--	--	--	--	--	--	0.94	0.94	0.92
Northern Trust	-0.75	-0.75	-0.50	0.50	0.55	0.65	0.93	0.91	0.90
Oxford Economics	-0.75	-0.75	-0.63	0.28	0.33	0.47	0.93	0.93	0.91
S&P Global Market Intelligence	--	--	--	--	--	--	0.95	0.95	0.95
S&P Global Ratings	-0.75	-0.75	-0.69	0.36	0.49	0.60	0.94	0.96	0.97
Scotiabank	--	--	--	--	--	--	0.94	0.96	0.96
TS Lombard	-0.75	-0.75	-0.25	0.67	0.69	1.19	0.92	0.92	0.92
April Consensus	**-0.75**	**-0.75**	**-0.51**	**0.43**	**0.47**	**0.65**	**0.94**	**0.94**	**0.93**
High	-0.75	-0.75	-0.25	0.70	0.80	1.19	0.95	0.97	0.99
Low	-0.75	-0.75	-0.75	0.06	-0.03	0.17	0.92	0.89	0.81
Last Months Avg.	-0.75	-0.75	-0.60	0.05	0.13	0.29	0.92	0.93	0.92

Canada

Blue Chip Forecasters	O/N MMkt Financing Rate			10 Yr. Gov't Bond Yield %			C$ per US$		
	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.	In 3 Mo.	In 6 Mo.	In 12 Mo.
Barclays	1.50	1.50	--	--	--	--	1.25	1.24	--
BMO Capital Markets	1.50	1.75	2.25	2.45	2.55	2.80	1.26	1.25	1.24
ING Financial Markets	1.50	2.00	2.75	2.60	2.80	2.70	1.25	1.23	1.21
Moody's Analytics	0.31	0.58	1.08	1.81	1.97	2.28	1.27	1.25	1.23
Nomura Securities	--	--	--	--	--	--	1.27	1.26	1.25
Northern Trust	0.50	1.25	1.50	2.40	2.50	2.75	1.26	1.25	1.24
Oxford Economics	0.75	1.00	1.25	2.36	2.49	2.64	1.27	1.29	1.30
S&P Global Market Intelligence	--	--	--	--	--	--	1.23	1.22	1.22
S&P Global Ratings	0.63	0.88	1.25	2.11	2.37	2.55	1.27	1.28	1.31
Scotiabank	1.25	2.00	3.00	2.30	2.95	3.20	1.21	1.20	1.22
TS Lombard	1.40	1.75	2.75	2.90	3.10	3.60	1.26	1.26	1.26
Wells Fargo	1.00	1.50	2.25	2.55	2.60	2.70	--	--	--
April Consensus	**1.03**	**1.42**	**2.01**	**2.39**	**2.59**	**2.80**	**1.25**	**1.25**	**1.25**
High	1.50	2.00	3.00	2.90	3.10	3.60	1.27	1.29	1.31
Low	0.31	0.58	1.08	1.81	1.97	2.28	1.21	1.20	1.21
Last Months Avg.	0.65	1.01	1.54	2.05	2.20	2.44	1.26	1.25	1.25

International Interest Rate And Foreign Exchange Rate Forecasts

Australia

Blue Chip Forecasters	Official Cash Rate In 3 Mo.	Official Cash Rate In 6 Mo.	Official Cash Rate In 12 Mo.	10 Yr. Gov't Bond Yield % In 3 Mo.	10 Yr. Gov't Bond Yield % In 6 Mo.	10 Yr. Gov't Bond Yield % In 12 Mo.	US$ per A$ In 3 Mo.	US$ per A$ In 6 Mo.	US$ per A$ In 12 Mo.
Barclays	0.10	0.25	--	--	--	--	0.73	0.74	--
ING Financial Markets	0.25	0.50	1.00	3.00	3.00	2.90	0.73	0.74	0.75
Moody's Analytics	0.08	0.10	0.41	1.93	1.75	1.98	0.70	0.69	0.70
Nomura Securities	--	--	--	--	--	--	0.76	0.77	0.78
Northern Trust	0.10	0.10	0.50	2.80	2.85	2.95	0.73	0.74	0.75
Oxford Economics	0.10	0.10	0.50	2.41	2.47	2.59	0.73	0.73	0.75
S&P Global Market Intelligence	--	--	--	--	--	--	0.64	0.65	0.68
S&P Global Ratings	0.10	0.25	0.75	2.40	2.44	2.92	0.75	0.75	0.75
Scotiabank	0.10	0.10	0.50	--	--	--	0.72	0.72	0.74
TS Lombard	0.10	0.35	0.65	2.84	3.35	3.85	0.75	0.70	0.65
April Consensus	**0.12**	**0.22**	**0.62**	**2.56**	**2.64**	**2.87**	**0.72**	**0.72**	**0.73**
High	0.25	0.50	1.00	3.00	3.35	3.85	0.76	0.77	0.78
Low	0.08	0.10	0.41	1.93	1.75	1.98	0.64	0.65	0.65
Last Months Avg.	0.12	0.21	0.46	2.14	2.27	2.46	0.72	0.72	0.73

Euro area

Blue Chip Forecasters	Main Refinancing Rate In 3 Mo.	Main Refinancing Rate In 6 Mo.	Main Refinancing Rate In 12 Mo.	US$ per Euro In 3 Mo.	US$ per Euro In 6 Mo.	US$ per Euro In 12 Mo.
Barclays	0.00	0.00	--	1.09	1.12	--
BMO Capital Markets	0.00	0.50	0.50	1.08	1.07	1.07
ING Financial Markets	0.00	0.00	0.50	1.08	1.08	1.11
Mizuho Research Institute	0.00	0.00	0.00	1.13	1.12	1.11
Moody's Analytics	0.00	0.00	0.00	1.11	1.13	1.22
Nomura Securities	--	--	--	1.08	1.10	1.20
Northern Trust	0.00	0.00	0.00	1.12	1.14	1.15
Oxford Economics	0.00	0.00	0.00	1.11	1.12	1.15
S&P Global Market Intelligence	--	--	--	1.08	1.08	1.09
S&P Global Ratings	0.00	0.00	0.08	1.09	1.09	1.12
Scotiabank	0.00	0.00	0.25	1.12	1.10	1.10
TS Lombard	0.00	0.25	0.50	1.10	1.08	1.06
Wells Fargo	-0.50	-0.50	0.00	1.11	1.10	1.06
April Consensus	**-0.05**	**0.02**	**0.18**	**1.10**	**1.10**	**1.12**
High	0.00	0.50	0.50	1.13	1.14	1.22
Low	-0.50	-0.50	0.00	1.08	1.07	1.06
Last Months Avg.	-0.05	-0.05	0.04	1.13	1.13	1.13

Blue Chip Forecasters	10 Yr. Gov't Bond Yields % Germany In 3 Mo.	Germany In 6 Mo.	Germany In 12 Mo.	France In 3 Mo.	France In 6 Mo.	France In 12 Mo.	Italy In 3 Mo.	Italy In 6 Mo.	Italy In 12 Mo.	Spain In 3 Mo.	Spain In 6 Mo.	Spain In 12 Mo.
Barclays	0.50	0.55	--	--	--	--	--	--	--	--	--	--
BMO Capital Markets	0.70	0.80	1.00	--	--	--	--	--	--	--	--	--
ING Financial Markets	0.50	0.60	1.00	1.00	1.10	1.40	2.20	2.30	2.70	1.50	1.65	2.00
Mizuho Research Institute	0.20	0.25	0.15	--	--	--	--	--	--	--	--	--
Moody's Analytics	-0.04	-0.01	0.23	0.37	0.34	0.53	1.54	1.41	1.56	0.83	0.80	0.99
Northern Trust	0.80	0.85	0.95	1.20	1.25	1.35	2.25	2.30	2.40	1.65	1.70	1.80
Oxford Economics	0.25	0.32	0.50	0.65	0.71	0.88	1.75	1.87	2.14	1.20	1.31	1.56
S&P Global Ratings	0.35	0.43	0.60	0.71	0.79	0.99	1.88	1.96	2.17	1.28	1.37	1.59
TS Lombard	1.10	1.30	1.80	1.45	1.65	2.15	2.40	2.60	3.10	1.85	2.05	2.55
Wells Fargo	0.60	0.65	0.80	--	--	--	--	--	--	--	--	--
April Consensus	**0.50**	**0.57**	**0.78**	**0.90**	**0.97**	**1.22**	**2.00**	**2.07**	**2.35**	**1.39**	**1.48**	**1.75**
High	1.10	1.30	1.80	1.45	1.65	2.15	2.40	2.60	3.10	1.85	2.05	2.55
Low	-0.04	-0.01	0.15	0.37	0.34	0.53	1.54	1.41	1.56	0.83	0.80	0.99
Last Months Avg.	0.17	0.25	0.42	0.58	0.67	0.85	1.66	1.73	1.87	1.05	1.14	1.33

	Consensus Forecasts 10-year Bond Yields vs U.S. Yield: Current	In 3 Mo.	In 6 Mo.	In 12 Mo.
Japan	-2.23	-2.07	-2.19	-2.49
United Kingdom	-0.75	-0.63	-0.55	-0.62
Switzerland	-2.00	-1.85	-1.95	-2.06
Canada	0.06	0.11	0.17	0.10
Australia	0.30	0.29	0.22	0.16
Germany	-1.89	-1.78	-1.85	-1.92
France	-1.47	-1.38	-1.45	-1.49
Italy	-0.40	-0.27	-0.35	-0.36
Spain	-1.13	-0.89	-0.94	-0.96

	Consensus Forecasts Policy Rates vs U.S. Target Rate: Current	In 3 Mo.	In 6 Mo.	In 12 Mo.
Japan	-0.48	-1.03	-1.38	-2.25
United Kingdom	0.38	0.00	-0.35	-0.83
Switzerland	-1.13	-1.69	-2.20	-2.74
Canada	0.13	0.09	-0.03	-0.22
Australia	-0.28	-0.82	-1.23	-1.61
Euro area	-0.38	-0.98	-1.43	-2.04

Viewpoints:

A Sampling of Views on the Economy, Financial Markets and Government Policy Excerpted from Recent Reports Issued by our Blue Chip Panel Members and Others

Fed Policy: To Neutral, Nimbly and Expeditiously

Michael Gregory (BMO Capital Markets)

For the past several months, Chair Powell has been using the occasions of congressional testimonies, post-meeting pressers and major speeches to emphasize the FOMC's increasingly hawkish policy turns. The speech to NABE's Annual Economic Policy Conference on March 21 continued the practice. Only this time, the subtle nuances were absent, and the hawkish rhetoric was blatant.

The blatancy began with the title, "Restoring Price Stability", and ended with the last sentence: "We have the necessary tools, and we will use them to restore price stability." The use of the word 'restore' suggests the Fed no longer judges the U.S. economy is currently on track for price stability, as it had been previously and may have still been if the FOMC had started tightening sooner. Indeed, the use of this word is infused with both 'remorse' and 'remedy'… we made a mistake, and we're going to fix it.

From the median projection for the fed funds target range midpoint in the latest Summary of Economic Projections, we know that 'fixing it' could involve another 150 bps of tightening by year-end, raising the policy rate to 1.875%. This would be equivalent to 25 bp rate hikes in each of the remaining six meetings of 2022. But, almost half of participants, 7 of 16, pencilled in more tightening. The most hawkish 'dot' calling for a further 275 bps to 3.125% was owned by St. Louis President Bullard. He dissented on March 16 in favour of a 50 bp inaugural action and argues that raising the target range to 3%-3.25% by year-end would be "mildly restrictive" and "would help turn inflation around".

Although Bullard doesn't proffer a projection for the longer-run or neutral funds rate (he's been the 'missing dot' since mid-2016), the other 15 do. And, they ranged from 2.00% to 3.00% with a 2.375% median. Meanwhile, there's another 75-to-100 bps of tightening, according to the median forecast, lifting the funds rate to a 2.75% terminus (a bit above neutral's median but tucked under the top of its range). In the speech, Powell was blunt. To restore price stability, "there is an obvious need to move expeditiously to return the stance of monetary policy to a more neutral level". Along the way, "if we conclude that it is appropriate to move more aggressively by raising the federal funds rate by more than 25 basis points at a meeting or meetings, we will do so". And, "if we determine that we need to tighten beyond common measures of neutral and into a more restrictive stance, we will do that as well".

The candidness surprised us. And, we had already reckoned that Powell's notion about policy being "nimble" meant that it was equally likely to have six consecutive quarterpoint rate hikes as it was to have a mixture of skips, 25s and 50s over the next nine months of meetings. The arbiter would be how the war in Ukraine and inflation on the ground unfolded.

The candour also shocked the bond market. On Monday, Treasury note yields jumped some 17 bps to 19 bps, with long bond yields up 13 bps. By mid-Friday, yields were trading even higher along the curve, ranging from above 15 bps at the long end to almost 40 bps for 5s. For all tenors, yields are back to levels last seen around mid-2019, with 2s above 2.30% and 10s almost 2.50% and the curve (2s10s) getting closer to inverting.

So why the blatant messaging? It served as a strong signal that the Fed is serious about potentially raising rates 50 bps on May 4, if warranted by the data and events. Between now and then, we get several key reports (employment, CPI, two PCEs) amid a possible further 5½ weeks of the war in Ukraine with its global and U.S. economic consequences. In any event, the signal was effective; the OIS market is currently pricing in about 80% odds of a 50-pointer at the next FOMC meeting.

The blatancy also served to bolster Fed policy credibility, which had suffered a bit because the FOMC was late in discarding its 'transitory' inflation narrative and thus in starting tightening. Powell said, "it would have been appropriate to move earlier" (March 16). Furthermore, the Fed's new policy framework cast some doubt about how forcefully the FOMC would fight inflation if the maximum employment objective was not yet achieved. In the speech, Powell characterized the labour market as "very strong and extremely tight", which now required the FOMC to tighten in order to "moderate demand growth, thereby facilitating continued, sustainable increases in employment and wages."

The messaging also served notice that the coming tightening cycle was going to be different from the last one, despite starting with the same policy rate at the effective lower bound. From December 2015 to December 2018, the Fed tightened a cumulative 225 bps, employing only 25 bp rate hikes that occurred no quicker than a quarterly cadence. And, with a 12-month pause between the first two actions and a six-month wait after the target range moved above 1%. At 2.375%, the cycle stopped short of the 2.5%-to-3.5% neutral range and 2.75% median at the time.

However, if there's a similarity with the last cycle the Fed is hoping for, it's that the 225 bps of tightening and subsequent 75 bps of easing during August-October 2019 seemed to be achieving a soft landing. That is, until the pandemic caused a recession. In the speech, Powell referenced the rate-hiking episodes that occurred around the years of 1965, 1984 and 1994 that also engineered soft landings. Given where inflation is starting from and the risks surrounding its outlook, it may be difficult to restore price stability without precipitating a recession (see Sal's Thought for more on this). Even Powell lamented, "no one expects that bringing about a soft landing will be straightforward in the current context—very little is straightforward in the current context".

Soft Landings: A History Lesson

Sal Guatieri (BMO Capital Markets)

What are the chances the Fed will pull off a soft landing? History can be instructive. There have been nine U.S. recessions since 1960, all after a tightening cycle. But not all tightenings led to a downturn. The four exceptions were the cycles starting in 1965,

1983, 1994, and 2015 (the expansion was widely forecast to continue until the pandemic struck). These four "successes" suggest several things about the Fed's chances of not tanking the economy this time.

First, inflation was generally low at the start of a successful tightening cycle. In each case, rate hikes were geared toward preventing inflation from rising, as opposed to pulling it down. Second, in two cases (1983 and 1994), the unemployment rate was relatively high, suggesting the Fed had some inflation-dampening slack to help its cause. Third, with one exception (2015), the real fed funds rate (the policy rate less personal expenditures inflation) was positive, suggesting policy was not overly loose at the start of the tightening period.

The Fed kicked off the current tightening phase with a quarter-point increase in the policy rate on March 16. This cycle is starting with the unemployment rate skirting half-century lows, inflation at multi-decade highs, and the real fed funds rate deeply negative (more so than in 2015). Until a week before the rate move, the Fed was still pressing on the gas by purchasing assets. Given the lagged effect of policy changes on demand, it might now need to jam on the brakes to restore price stability, risking a downturn.

Compared with past tightening cycles, how much is the economy at risk of a downturn? By subtracting the unemployment rate and real fed funds rate from the inflation rate, we can derive an index that assesses the Fed's chances of achieving a soft landing. The lower the index at the start of a tightening phase, the greater the odds of averting trouble. Brace yourself— the index is now the highest in at least six decades. Worse, it's more than three standard deviations above the average level going into the four "successful" tightening cycles, and at least two standard deviations above the cycles that led to a downturn; so, the difference is pretty significant. Simply put, current conditions for inflation, unemployment and policy have never (since 1960) been more stacked against the Fed achieving a soft landing.

Does this mean a hard landing is inevitable? Not necessarily. Policy was fairly loose at the start of the 2015 cycle. But the Fed had a big assist from calm inflation (averaging less than 2%). Of course, inflation is anything but tame today, while real policy rates are lower and worker shortages appear worse. However, the odds of success this time will depend critically on how much inertia is built into current inflation pressure. We know that at least some of the recent run-up is temporary. The fact that long-term expectations (derived from TIPS pricing) are still near 2% is encouraging. With some better news on the commodities and supply-chain fronts, a soft landing is still possible and remains our base-case view. But it will take an especially "nimble" touch of the policy levers to pull it off. By waiting too long, the Fed has left itself with precious little room for error.

Can China Meet Its 5.5% GDP Target?

Art Woo (BMO Capital Markets)

It should come as little surprise that international investor concerns over China's economy have risen as Russia's war in Ukraine has continued to rage on. The shock to commodity prices and the accompanying slowdown in global growth is not good news for the Middle Kingdom given it's a large importer of energy, base metals and agricultural products and has been heavily reliant on merchandise exports throughout the pandemic. Nonetheless, we think it is more likely to dent rather than derail the economic recovery. The critical factor supporting China's economy is that the authorities have been swiftly changing tracks on policymaking in order to meet the recently announced 2022 real GDP target of "around 5.5%". First, they are easing up on the regulatory crackdown on the internet and housing sectors. The government's top policymaker, Vice-Premier Liu He, indicated on March 17 that the country's regulators will adopt a "standardized, transparent and predictable" approach to the internet/technology industry, which has breathed life back into big tech stocks. Meanwhile, some earlier measures to curb financial leverage in the housing sector for both buyers and property developers have been softened. Of prominence, property developers will be allowed to access funds from escrowed prepayments, while minimum down payments and mortgage rates have been reduced. Testing of a new nationwide property tax has also been shelved for the year.

Second, Beijing has reverted to its old policy playbook, which had been abandoned in recent years, and begun to loosen both its fiscal and monetary stances. Infrastructure projects are being ramped up as, after two decades of breakneck development, the country still has many vital infrastructure needs (water, power, hospitals, transportation etc.). An array of tax cuts and fee reductions (worth 2.2% of 2021 GDP) have also been recently introduced to help small- and medium-sized enterprises. Monetary policy, including lower policy rates and bank reserve requirements, is likely to be eased further, especially with the CPI rising just 0.9% y/y in February. A few key factors that have kept a lid on inflation are: (1) a highly competitive middle and downstream industrial sector that has not passed on much higher input costs (PPI for industrial products was up 8.7% y/y in February); (2) a job market and overall consumer confidence that remain weaker than their pre-pandemic states; and, (3) a favourable pork supply cycle that has led to a 42.5% y/y price decline in this critical staple. Thus, concerns over inflation becoming unhinged are non-existent.

Before President Putin's attack on Ukraine, China's economy appeared to be regaining momentum. Key activity data for the first two months of the year, namely fixed asset investment (+12.2% y/y), retail sales (+6.7% y/y), industrial output (+7.5% y/y) and merchandise exports (+16.3% y/y), outpaced market expectations by a wide margin. However, it's not all clear skies ahead as the housing market remains in a weakened state (housing unit sales fell 13.8% y/y) and exports may waver in response to the war and more forceful tightening of monetary policy by the world's other major central banks. Complicating matters, a recent spate of COVID outbreaks in major city centres (e.g., Shenzhen, Shanghai and Shenyang) shows that the pandemic remains a disruptive force, particularly given China's steadfast zero-COVID strategy.

Key Takeaway: China's economy may not be firing on all cylinders but the risk of a hard landing remains low. Reflecting the new challenges, we have nudged down our forecast for 2022 real GDP growth by 0.2 ppts to 5.3%, which is still close to the government's target. Or put another way, we expect China to remain an engine of global growth this year.

Special Questions:

1. a. How much do you expect the FFR to be increased in: 2022? 180.9 bps 2023? 79.4 bps

   b. Do you anticipate any 50bp FFR increases in:

	Yes	No		Yes	No
2022	71%	29%	2023	9%	91%

   c. When do you expect the Fed to begin to reduce its asset holdings?

In Q2 2022	In Q3 2022	In Q4 2022	Later
73%	21%	3%	3%

   d. Do you think that by removing monetary accommodation the US Fed will be successful in slowing inflation without precipitating a recession? Yes 63% No 37%

2. a. What do you think is the neutral (long run) Fed funds rate? 2.39 %

   b. When do you think the neutral FFR will be achieved?

by the end 2023	by the end 2024	by the end 2025	by the end 2026	Later
77%	20%	3%	0%	0%

3. With economic growth slowing and inflation still rising, do you foresee a period of "stagflation" such as existed throughout the 1970s? Yes 16% No 84%

4. Has the crisis in Ukraine caused any meaningful changes in your expectations for 2022 on:

	Yes	No
a. US real GDP growth?	70%	30%
b. US CPI inflation?	97%	3%
c. Global real GDP growth?	97%	3%
d. US Fed's monetary policy?	55%	45%
e. ECB's monetary policy?	71%	29%

5. a. What is your estimate of the US federal government deficit for: FY 2022? $1.24 tril FY 2023? $1.01 tril
   b. Do you expect rising interest rates to provide a meaningful boost to the federal budget deficit? Yes 37% No 63%
   c. If so, will the increase in debt service costs restrain the use of fiscal policy to support economic growth? Yes 55% No 45%

6. Is COVID still a major factor in your near-term economic forecast? Yes 36% No 64%

7. How long do you expect supply-chain bottlenecks to provide a significant boost to inflation?

0-6 months	21%
7-9 months	36%
10-12 months	30%
13-24 months	12%
More than 24 months	0%

8. In your view, which of the following factors poses the biggest risk to global financial stability at present?

More intense financial instability in emerging economies triggered by e.g. a sovereign debt default in Russia	0%
A further escalation of the conflict in Ukraine accompanied by even higher energy and food prices	41%
Growing alarm on outlook for global growth triggered by eg higher food+energy prices/ebbing purch power/tighter global fiscal policies	9%
A much more aggressive response from Central Banks to persistently high levels of inflation	47%
The discovery of another dangerous mutation of the COVID virus that is both more transmissible and more immune to existing vaccines	3%

Databank:

2022 Historical Data

Monthly Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Retail and Food Service Sales (a)	4.9	0.3	....	....	....	....	....	....	....	....	....	....
Auto & Light Truck Sales (b)	15.03	14.07	....	....	....	....	....	....	....	....	....	....
Personal Income (a, current $)	0.0	....	....	....	....	....	....	....	....	....	....	....
Personal Consumption (a, current $)	2.1	....	....	....	....	....	....	....	....	....	....	....
Consumer Credit (e)	1.9	....	....	....	....	....	....	....	....	....	....	....
Consumer Sentiment (U. of Mich.)	67.2	62.8	59.4	....	....	....	....	....	....	....	....	....
Household Employment (c)	1199	548	....	....	....	....	....	....	....	....	....	....
Nonfarm Payroll Employment (c)	481	678	....	....	....	....	....	....	....	....	....	....
Unemployment Rate (%)	4.0	3.8	....	....	....	....	....	....	....	....	....	....
Average Hourly Earnings (All, cur. $)	31.57	31.58	....	....	....	....	....	....	....	....	....	....
Average Workweek (All, hrs.)	34.6	34.7	....	....	....	....	....	....	....	....	....	....
Industrial Production (d)	3.6	7.5	....	....	....	....	....	....	....	....	....	....
Capacity Utilization (%)	77.3	77.6	....	....	....	....	....	....	....	....	....	....
ISM Manufacturing Index (g)	57.6	58.6	....	....	....	....	....	....	....	....	....	....
ISM Nonmanufacturing Index (g)	59.9	56.5	....	....	....	....	....	....	....	....	....	....
Housing Starts (b)	1.657	1.769	....	....	....	....	....	....	....	....	....	....
Housing Permits (b)	1.895	1.865	....	....	....	....	....	....	....	....	....	....
New Home Sales (1-family, c)	788	772	....	....	....	....	....	....	....	....	....	....
Construction Expenditures (a)	1.3	....	....	....	....	....	....	....	....	....	....	....
Consumer Price Index (nsa, d)	7.5	7.9	....	....	....	....	....	....	....	....	....	....
CPI ex. Food and Energy (nsa, d)	6.0	6.4	....	....	....	....	....	....	....	....	....	....
PCE Chain Price Index (d)	6.1	....	....	....	....	....	....	....	....	....	....	....
Core PCE Chain Price Index (d)	5.2	....	....	....	....	....	....	....	....	....	....	....
Producer Price Index (nsa, d)	10.0	10.0	....	....	....	....	....	....	....	....	....	....
Durable Goods Orders (a)	1.6	-2.2	....	....	....	....	....	....	....	....	....	....
Leading Economic Indicators (a)	-0.5	0.3	....	....	....	....	....	....	....	....	....	....
Balance of Trade & Services (f)	-89.7	....	....	....	....	....	....	....	....	....	....	....
Federal Funds Rate (%)	0.08	0.08	....	....	....	....	....	....	....	....	....	....
3-Mo. Treasury Bill Rate (%)	0.15	0.31	....	....	....	....	....	....	....	....	....	....
10-Year Treasury Note Yield (%)	1.76	1.93	....	....	....	....	....	....	....	....	....	....

2021 Historical Data

Monthly Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Retail and Food Service Sales (a)	7.2	-2.8	11.4	0.9	-1.4	0.9	-1.6	1.2	0.7	1.8	0.7	-2.7
Auto & Light Truck Sales (b)	16.78	15.93	17.64	18.30	16.89	15.47	14.66	13.09	12.29	13.05	13.04	12.54
Personal Income (a, current $)	9.9	-7.2	21.0	-13.3	-2.0	0.3	1.3	0.4	-0.9	0.6	0.6	0.4
Personal Consumption (a, current $)	3.3	-1.1	5.2	1.0	0.0	1.1	0.1	1.1	0.6	1.4	0.6	-0.8
Consumer Credit (e)	-0.1	6.6	4.4	4.7	9.4	9.7	3.9	3.3	7.2	3.8	10.8	6.1
Consumer Sentiment (U. of Mich.)	79.0	76.8	84.9	88.3	82.9	85.5	81.2	70.3	72.8	71.7	67.4	70.6
Household Employment (c)	121	363	573	319	291	62	1092	463	639	428	1090	651
Nonfarm Payroll Employment (c)	520	710	704	263	447	557	689	517	424	677	647	588
Unemployment Rate (%)	6.4	6.2	6.0	6.0	5.8	5.9	5.4	5.2	4.7	4.6	4.2	3.9
Average Hourly Earnings (All, cur. $)	29.93	30.04	30.06	30.20	30.36	30.52	30.67	30.76	30.92	31.11	31.23	31.38
Average Workweek (All, hrs.)	35.0	34.6	34.9	34.9	34.9	34.8	34.8	34.7	34.8	34.8	34.8	34.8
Industrial Production (d)	-1.7	-4.9	1.8	17.9	16.4	10.2	6.6	5.4	4.5	4.7	5.0	3.4
Capacity Utilization (%)	75.0	72.7	74.8	74.8	75.3	75.7	76.2	76.1	75.1	76.1	76.6	76.3
ISM Manufacturing Index (g)	59.4	60.9	63.7	60.6	61.6	60.9	59.9	59.7	60.5	60.8	60.6	58.8
ISM Nonmanufacturing Index (g)	58.5	55.9	62.2	62.7	63.2	60.7	64.1	62.2	62.6	66.7	68.4	62.3
Housing Starts (b)	1.625	1.447	1.725	1.514	1.594	1.657	1.562	1.573	1.550	1.552	1.703	1.754
Housing Permits (b)	1.883	1.726	1.755	1.733	1.683	1.594	1.630	1.721	1.586	1.653	1.717	1.885
New Home Sales (1-family, c)	993	823	873	796	733	683	704	668	725	667	753	860
Construction Expenditures (a)	3.0	-1.1	1.0	0.3	0.7	1.0	0.1	1.0	1.0	0.9	1.0	0.8
Consumer Price Index (nsa, d)	1.4	1.7	2.6	4.2	5.0	5.4	5.4	5.3	5.4	6.2	6.8	7.0
CPI ex. Food and Energy (nsa, d)	1.4	1.3	1.6	3.0	3.8	4.5	4.3	4.0	4.0	4.6	4.9	5.5
PCE Chain Price Index (d)	1.4	1.6	2.5	3.6	4.0	4.0	4.2	4.2	4.4	5.1	5.6	5.8
Core PCE Chain Price Index (d)	1.5	1.5	2.0	3.1	3.5	3.6	3.6	3.6	3.7	4.2	4.7	4.9
Producer Price Index (nsa, d)	1.6	3.0	4.1	6.5	7.0	7.6	8.0	8.7	8.8	8.9	9.9	9.9
Durable Goods Orders (a)	2.4	1.3	1.3	-0.7	3.2	0.8	0.5	1.3	-0.4	0.1	3.2	1.2
Leading Economic Indicators (a)	0.6	-0.1	1.1	1.1	0.9	0.6	1.0	0.7	0.2	0.6	0.8	0.8
Balance of Trade & Services (f)	-65.1	-67.5	-71.4	-65.4	-67.3	-72.2	-69.7	-72.5	-81.2	-66.9	-80.1	-82.0
Federal Funds Rate (%)	0.09	0.08	0.07	0.07	0.06	0.08	0.10	0.09	0.08	0.08	0.08	0.08
3-Mo. Treasury Bill Rate (%)	0.08	0.04	0.03	0.02	0.02	0.04	0.05	0.05	0.04	0.05	0.05	0.06
10-Year Treasury Note Yield (%)	1.08	1.26	1.61	1.64	1.62	1.52	1.32	1.28	1.37	1.58	1.56	1.47

(a) month-over-month % change; (b) millions, saar; (c) month-over-month change, thousands; (d) year-over-year % change; (e) annualized % change; (f) $ billions; (g) level. Most series are subject to frequent government revisions. Use with care.

Calendar of Upcoming Economic Data Releases

Monday	Tuesday	Wednesday	Thursday	Friday
				April 1 Employment Situation (Mar) Construction (Feb) ISM Manufacturing (Mar) S&P Global Mfg PMI (Mar)
4 BEA Auto Sales (Mar) BEA Truck Sales (Mar) Manufacturers' Shipments, Inventories & Orders (Feb)	**5** International Trade (Feb) ISM Services PMI (Mar) S&P Global Services PMI (Mar) Kansas City Fed Labor Market Conditions Indicators (Mar)	**6** Public Debt (Mar) EIA Crude Oil Stocks Mortgage Applications	**7** Consumer Credit (Feb) Treasury Auction Allotments (Apr) Weekly Jobless Claims	**8** Wholesale Trade (Feb) Housing Affordability (Feb)
11	**12** CPI & Real Earnings (Mar) Cleveland Fed Median CPI(Mar) Monthly Treasury Statement (Mar) NFIB (Mar) Kansas City Financial Stress Index (Mar) OPEC Crude Oil Spot Prices (Mar)	**13** Producer Prices (Mar) Transportation Services Index (Feb) EIA Crude Oil Stocks Mortgage Applications	**14** Import & Export Prices (Mar) Advance Retail Sales (Mar) MTIS (Feb) Consumer Sentiment (Apr, Preliminary) Weekly Jobless Claims	**15** IP & Capacity Utilization (Mar) Empire State Mfg Survey (Apr) TIC Data (Feb)
18 Business Leaders Survey (Apr) Home Builders (Apr)	**19** New Residential Construction (Mar)	**20** Existing Home Sales (Mar) EIA Crude Oil Stocks Mortgage Applications	**21** Philadelphia Fed Mfg Business Outlook Survey (Apr) Composite Indexes (Mar) Weekly Jobless Claims	**22** S&P Global Flash PMIs (Apr) Alternate Measures of Labor Underutilization (Q1)
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May 2 ISM Manufacturing (Apr) S&P Global Mfg PMI (Apr) Construction (Mar)	**3** Manufacturers' Shipments, Inventories & Orders (Mar) JOLTS (Mar) First Time Housing Affordability (Q1) FOMC Meeting	**4** BEA Auto & Truck Sales (Apr) ADP Employment Report (Apr) International Trade (Mar) ISM Services PMI (Apr) S&P Global Services PMI (Apr) EIA Crude Oil Stocks Mortgage Applications FOMC Meeting	**5** Productivity & Costs (Q1) Public Debt (Apr) Challenger Employment Report (Apr) Weekly Jobless Claims	**6** Employment Situation (Apr) Consumer Credit (Mar)

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TP-53719-00TIE001-X004-014

Rates Scenario

May 11, 2022 | 13:12

Rates Scenario for May 11, 2022

Economist

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Michael is part of the team responsible for forecasting and analyzing the North American economy and financial m... (Read more)

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Rates Scenario for June 9, 2022

Forecast Summary

(avg.)	Actual	Forecasts									
	2022	2022					2022	2023			
	Apr	May	Jun	Jul	Aug	Sep	Q4	Q1	Q2	Q3	Q4
BoC overnight[1]	1.00	1.00	1.50	2.00	2.00	2.00	2.25	2.50	2.75	2.75	2.75
10-yr Canadas	2.70	3.00	3.00	3.05	3.05	3.10	3.10	3.20	3.15	3.05	2.95
Fed funds[1]	0.38	0.88	1.38	1.88	1.88	2.38	2.63	2.88	2.88	2.88	2.88
10-yr Treasuries	2.75	3.05	3.05	3.10	3.10	3.10	3.15	3.25	3.20	3.10	3.05
C$ per US$	1.26	1.28	1.27	1.27	1.26	1.25	1.24	1.24	1.24	1.25	1.25
US$/€	1.08	1.05	1.05	1.05	1.05	1.06	1.06	1.07	1.07	1.08	1.09
US$/£	1.29	1.24	1.24	1.24	1.24	1.25	1.25	1.25	1.26	1.26	1.27
¥/US$	126	130	130	131	131	131	132	132	131	130	129

[1] *end of period*

Sources: BMO Economics, Haver Analytics

Canada-U.S. Rates Outlook

Michael Gregory, CFA, Deputy Chief

- Since our last Rates Scenario (April 6), we expedited expected Federal Reserve and Bank of Canada rate hikes a bit, with the latter profile lifted by 25 bps. We also modestly raised bond yields, by as much as a quarter point.

- **For the Fed**, we now look for three more consecutive 50 bp moves instead of two before. On May 4, as expected, the FOMC raised the fed funds target range by 50 bps to 0.75%-to-1.00% (a 0.875% midpoint), with the statement asserting that *"ongoing increases in the target range will be appropriate."*

- This was the first 50-pointer since May 2000 and, unexpectedly, Chair Powell stated that *"additional 50 bp increases should be on the table at the next couple of meetings."* This unprecedented policy signalling was designed *"to avoid adding uncertainty to what is already an extraordinarily challenging and uncertain time."* This is what Powell meant when he first alerted, in a seminal speech on March 21, that the FOMC would be moving *"expeditiously"* to push the funds rates up to *"a more neutral level"*. Powell also said a 75 bp move *"is not something the committee is actively considering."*

- The FOMC's latest projections of the neutral rate, a level that neither helps nor hinders economic growth, range from 2.00% to 3.00% with a 2.375% median. **With Powell signalling the potential for 50 bp rate hikes on June 15 and July 27, we now judge the Fed will stay on this tightening track until at least September.** (Previously we judged the FOMC would shift from 50s to 25s as it converged on the neutral level.)

- Once hitting 2.375% in September, which was also the peak in policy rates last cycle, we still expect the Fed to temporarily pause in order to take stock of the inflation outlook and determine whether it's required *"to tighten beyond common measures of neutral and into a more restrictive stance."* Then, reflecting more policy caution, we look for the funds rate to be hoisted to the top of the neutral range via 25 bp actions every second meeting. **This puts the peak in rates at 2.875% in March** (three months earlier than we previously expected), and around the time Bank of Canada policy rates are still expected to peak.

- **For the Bank of Canada**, we now look for two more consecutive 50 bp moves instead of one before. On April 13, also as expected, the Bank of Canada raised its target for the overnight rate by 50 bps to 1.00%, with the statement alerting that *"interest rates will need to rise further."* This, too, was the first 50-pointer since May 2000. Somewhat surprisingly, the Bank ramped up its hawkish rhetoric. Governor Macklem said there was a *"need to normalise monetary policy reasonably quickly"*, raising rates *"forcefully if needed"*. The latter likely meant continued 50 bp increments although a 75-pointer wasn't ruled out. Macklem also said that there was a potential *"need to take rates modestly above neutral for a period."*

- And, unexpectedly, the Bank raised its estimated range for the neutral rate by 25 bps to 2%-to-3%. **This one-two punch (more hawkish rhetoric, higher neutral rates) led us to call for a couple of 50 bp rate hikes on June 1 and July 13** to get the policy rate to the bottom of the new range, which (at 2.00%) is already above the 1.75% peak from last cycle. Once there, as before, we expect a brief pause (*"it may be appropriate to pause hikes once we get closer to the neutral rate"*). Afterwards, we expect more cautious 25 bp moves every second meeting with the **policy rate peaking near the top of the neutral range (2.75%) by April**. The peak's timing is the same as before, but the level is 25 bps higher.

- **BoC and Fed policy appear to be on the same page. First**, there's the transparent quick/expeditious effort to get rates to the bottom/bottom half of the neutral range. **Second**, there's our expectation for pauses and smaller-sized moves as policy rates are ratcheted up within their neutral ranges. **Third**, there's the stated willingness to push rates above the neutral range if necessary. The first phase looks relatively certain, but there are widening confidence intervals around the second and third stages. Stubborn or accelerating inflation could compress the second phase and herald the third, tipping the risk of recession to at least even odds.

- On the other side, **global growth headwinds** from the war in Ukraine, sanctions on Russia and lockdowns in China could weigh more heavily than their flipside inflation tailwinds. High inflation's erosion of purchasing power could take a bigger bite out of real spending. And, even neutral-ranged rate hikes could be more impactful with quantitative tightening unfolding alongside. It's going to be an interesting rest of the year.

- ***QT cued:*** In their latest policy pronouncements, both central banks announced the start of quantitative tightening. **For the Fed, QT will start on June 1.** The final monthly runoff caps (above which flows will still be reinvested) are $60 billion for Treasuries (notes, bonds and TIPS) and $35 billion for MBS, phased in over three months. The initial thresholds were set at half these amounts, which will be held for three months before being lifted to the final figures on September 1. For the months in which maturities of Treasuries fall under the cap, T-bill holdings (currently $326 billion) will be run down by the amount of the shortfall. MBS

TD-5371-9-00TIE001-X004-014

under the cap, T-bill holdings (currently $526 billion) will be run down by the amount of the shortfall. MBS principal payments were $40.1 billion in the latest month, and we expect these flows to fall under their full cap in the not-too-distant future as higher mortgage rates further dampen refinancing activity and home sales. After a while, a persistent gap could cause the Fed to consider small amounts of outright MBS sales to make up for the shortfall.

- **The Bank of Canada started QT effective April 25.** Regular bond purchases in both the primary and secondary markets to replace maturing securities holdings were ended (these ran around a monthly $4-to-$5 billion pace). The Bank is allowing full runoff.
- In the absence of outright sales, the impact of QT on the bond market is more muted. However, central banks' absent rollovers still result in more securities having to be auctioned to the market which should apply some upward pressure on yields (other things equal). And they do drain liquidity, which ripples over other financial markets.
- ***Bond yields:*** Reflecting unfolding QT, stubborn inflation readings (see 0.6% m/m print for U.S core CPI) and more hawkish central bank rhetoric and action, we lifted our forecast for bond yields. The monthly average for 10-year Treasury yields is now expected to peak around 3¼% (up from 3% before), which is the highest level since 2011. And, importantly, we now expect the trend to remain above 3% through the end of next year (assuming recession is kept at bay).
- With the BoC and Fed following comparable policy paths, we judge Canada-U.S. yield spreads should stick to their recent ranges. Canadas could underperform if the Bank's QT weighs more heavily on Government of Canada bonds than the Fed's on Treasuries. And they could outperform if already higher U.S. inflation readings filter more into inflation expectations and risk premiums.

- ***U.S. dollar:*** In recent sessions, the trade-weighted unit has been flirting with two-year highs as the Fed's increasingly hawkish rhetoric and prospective actions have been in the vanguard of such developments among the major central banks. Meanwhile, increasing global economic risks owing to the war in Ukraine, sanctions on Russia and lockdowns in China have given the greenback an added boost. Presuming these risks eventually recede and other central banks catch up closer to the Fed in the tightening game, the U.S. dollar should weaken. But this could take a while; we see it stabilizing barely under current levels through the remainder of this year before dipping about 1¼% next year.
- ***Canadian dollar:*** Amid the U.S. dollar's ubiquitous strength, particularly due to the increasing global economic risks perceived by investors, the loonie has been unable to find any sustained lift from the array of factors that would typically provide thrust. These include up-trending commodity prices, improving trade fundamentals (Q1 posted the best result in more than 13 years), and a Bank of Canada that is sounding and acting as ardently hawkish as the Fed. Once the greenback at least stabilizes and, importantly, the Canadian economy is more noticeably outperforming its U.S. counterpart thanks to the commodities sector, the above factors should increasingly have more influence. We still see the loonie averaging around C$1.235 (81 US cents) by the end of this year.

Overseas

Jennifer Lee,

Senior Economist

- If anyone was hiring for a central banker, the ad would say something like this: "Must be able to change one's mind on the fly, and be able to clearly communicate why, in order to minimize disruption to financial markets."
- And central bankers have been very flexible lately, changing their stance as developments change. Take a look at the **BoE**. In early February, it raised rates 25 bps to 0.5% but four of the nine policymakers wanted a larger 50 bp move. Then Russia invaded Ukraine and the world was thrown into turmoil. The four hawks backed off at the March meeting and supported a 25 bp rate hike to 0.75% along with the other four, but one wanted to keep rates steady. At the April meeting, the war was still continuing, but inflation was worrying as it hit 30-year highs again. Three hawks returned, pushing for 50 bps, but were outnumbered by the rest who preferred a 25 bp hike to 1.0%. Alas, that wasn't the only disagreement. While "*most members*" felt that further tightening might still be appropriate in coming months, others didn't feel that way. All of this will come back to the economy and, while the BoE now looks for a 0.25% contraction in 2023, it also expects CPI

to peak above 10% in 2022Q4, and that is what will force Governor Bailey to tighten steadily this year.

- The **ECB** has also changed its stripes dramatically. It is still making monthly purchases from the APP but the program is expected to conclude in Q3; then, rate hikes could follow "*some time*" afterwards. This begs the question: When in Q3? President Lagarde had been cagey about the timing, but has recently revealed that it will likely be "early" in Q3, which puts a July rate hike into play. We see the deposit rate lifted first in July, followed by the refi rate in September and December. But do not rule out the possibility that the ECB will lift all the key rates (deposit, marginal lending, and refinancing rates) in one fell swoop.

- One of the biggest policy changes came from the **RBA**. Back in November, it finally stopped referring to a specific year (2023) when it expected core CPI to be sustainably within the 2%-to-3% range (and thus, lift the cash rate). We believed that the RBA's rate hike criteria had been met earlier this year, when the trimmed-mean measure of inflation was already within the target for two quarters in a row, and export and import prices had been surging. But, Governor Lowe was still "*patient*", that is, until April, when that adjective was dropped from the press release. The RBA then lifted the cash rate 25 bps in May to 0.35%, with more to come as inflation is expected to stay above target until 2024.

- That leaves the **BoJ**. The central bank nudged its inflation forecasts higher for the current fiscal year (was looking for 1.1% in January; now expects 1.9%), and the country is finally experiencing some inflation. Tokyo's core CPI hit an over seven-year high of 1.9% in April. However, the BoJ is looking beyond these pressures and is firmly glued to the sidelines, with Governor Kuroda repeating the oft-used phrase that they will not hesitate to ease further if necessary, given the downside risks to economic growth. This has and will continue to spark continued weakness in the yen.

Foreign Exchange Forecasts

(local currency per US$: avg.)	Actual 2022 Apr	Forecast 2022 May	Jun	Jul	Aug	Sep	2022 Q4	2023 Q1	Q2	Q3	Q4
Canadian Dollar											
C$ per US$	1.26	1.28	1.27	1.27	1.26	1.25	1.24	1.24	1.24	1.25	1.25
US$ per C$[1]	0.792	0.781	0.785	0.789	0.793	0.797	0.806	0.808	0.806	0.803	0.801
Trade-weighted	123.4	123.7	124.4	125.1	125.8	126.5	127.9	128.1	127.4	126.8	126.1
U.S. Dollar											
Trade-weighted[2]	117.3	120.2	120.2	120.2	120.2	120.2	120.2	120.0	119.6	119.2	118.9
European Currencies											
Euro[1]	1.08	1.05	1.05	1.05	1.05	1.06	1.06	1.07	1.07	1.08	1.09
Danish Krone	6.89	7.05	7.05	7.05	7.05	7.05	7.00	7.00	6.95	6.90	6.85
Norwegian Krone	8.91	9.65	9.65	9.65	9.65	9.65	9.65	9.65	9.55	9.50	9.45
Swedish Krone	9.56	10.00	10.00	10.00	10.00	10.00	10.00	9.95	9.90	9.80	9.75
Swiss Franc	0.95	0.98	0.98	0.99	0.99	0.99	1.00	1.00	0.99	0.99	0.98
U.K. Pound[1]	1.29	1.24	1.24	1.24	1.24	1.25	1.25	1.25	1.26	1.26	1.27
Asian Currencies											
Chinese Yuan	6.43	6.70	6.71	6.71	6.72	6.73	6.74	6.74	6.73	6.72	6.70
Japanese Yen	126	130	130	131	131	131	132	132	131	130	129
Korean Won	1,235	1,270	1,275	1,275	1,275	1,280	1,280	1,280	1,280	1,275	1,275
Indian Rupee	76.2	77.2	77.2	77.3	77.4	77.4	77.6	77.5	77.4	77.2	77.1
Singapore Dollar	1.37	1.38	1.39	1.40	1.41	1.42	1.44	1.45	1.45	1.44	1.44
Malaysian Ringgit	4.27	4.40	4.40	4.45	4.45	4.45	4.50	4.50	4.50	4.50	4.45
Thai Baht	33.8	34.5	34.5	34.5	34.6	34.6	34.7	34.7	34.7	34.6	34.5
Philippine Peso	52.0	52.6	52.6	52.6	52.6	52.6	52.6	53.1	53.7	54.4	55.1
Taiwan Dollar	29.1	29.7	29.7	29.8	29.8	29.9	30.0	30.0	29.9	29.9	29.8
Indonesian Rupiah	14,379	14,540	14,540	14,540	14,545	14,545	14,545	14,530	14,500	14,475	14,445
Other Currencies											
Australian Dollar[1]	0.736	0.700	0.699	0.697	0.696	0.694	0.691	0.693	0.698	0.703	0.708
New Zealand Dollar[1]	0.676	0.640	0.639	0.637	0.636	0.634	0.631	0.633	0.638	0.643	0.648
Mexican Peso	20.09	20.25	20.30	20.30	20.35	20.40	20.45	20.40	20.30	20.15	20.05
Brazilian Real	4.75	5.05	5.05	5.10	5.10	5.15	5.20	5.20	5.20	5.15	5.15
South African Rand	15.0	16.0	16.0	16.1	16.2	16.3	16.4	16.5	16.4	16.3	16.3
Cross Rates											
Versus Canadian Dollar											
Euro (C$/€)	1.36	1.34	1.34	1.33	1.33	1.32	1.31	1.32	1.33	1.34	1.36
U.K. Pound (C$/£)	1.63	1.59	1.58	1.57	1.57	1.56	1.55	1.55	1.56	1.57	1.58
Japanese Yen (¥/C$)	100	102	102	103	104	105	106	106	105	104	104
Australian Dollar (C$/A$)	0.93	0.90	0.89	0.88	0.88	0.87	0.86	0.86	0.87	0.88	0.88
Versus Euro											
U.K. Pound (£/€)	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.86
Japanese Yen (¥/€)	137	137	137	137	138	138	139	140	140	140	[illegible]

[1] (US$ per local currency); [2] Federal Reserve Broad Index

Sources: BMO Economics, Haver Analytics

(% : avg.)	Actual	Forecasts									
	2022	2022					2022	2023			
	Apr	May	Jun	Jul	Aug	Sep	Q4	Q1	Q2	Q3	Q4
Canada											
Overnight target (period end)	1.00	1.00	1.50	2.00	2.00	2.00	2.25	2.50	2.75	2.75	2.75
Overnight target	0.79	1.00	1.48	1.79	2.00	2.00	2.18	2.43	2.72	2.75	2.75
CORRA[2]	0.71	0.95	1.44	1.75	1.97	1.97	2.16	2.42	2.72	2.75	2.75
3-month bills	1.05	1.40	1.80	2.00	2.20	2.20	2.35	2.50	2.65	2.70	2.70
6-month	1.52	1.95	2.30	2.45	2.60	2.60	2.65	2.70	2.75	2.80	2.80
1-year	2.11	2.40	2.55	2.65	2.70	2.70	2.75	2.75	2.80	2.80	2.80
2-year bonds	2.46	2.60	2.65	2.65	2.65	2.70	2.75	2.80	2.85	2.80	2.80
3-year	2.50	2.65	2.70	2.70	2.75	2.75	2.80	2.85	2.90	2.90	2.85
5-year	2.62	2.75	2.80	2.80	2.85	2.85	2.90	2.95	3.00	2.95	2.90
7-year	2.61	2.85	2.85	2.85	2.90	2.90	2.95	3.00	3.05	3.00	2.90
10-year	2.70	3.00	3.00	3.05	3.05	3.10	3.10	3.20	3.15	3.05	2.95
30-year	2.66	2.95	3.00	3.00	3.05	3.10	3.15	3.25	3.20	3.15	3.05
1m BA	1.21	1.40	1.90	2.10	2.35	2.35	2.50	2.70	2.90	2.95	2.95
3m BA	1.54	1.90	2.30	2.50	2.65	2.65	2.75	2.85	2.95	3.00	3.00
Prime rate	2.99	3.20	3.68	3.99	4.20	4.20	4.38	4.63	4.92	4.95	4.95
United States											
Fed funds target (period end)	0.38	0.88	1.38	1.88	1.88	2.38	2.63	2.88	2.88	2.88	2.88
Fed funds target	0.38	0.81	1.13	1.42	1.88	2.03	2.42	2.67	2.88	2.88	2.88
EFFR[3]	0.33	0.76	1.08	1.39	1.85	2.01	2.40	2.66	2.88	2.88	2.88
SOFR[4]	0.29	0.72	1.04	1.35	1.81	1.98	2.38	2.64	2.87	2.87	2.87
3-month bills	0.76	0.90	1.40	1.65	1.85	2.10	2.40	2.60	2.80	2.80	2.80
6-month	1.26	1.45	1.80	2.00	2.20	2.40	2.65	2.75	2.90	2.90	2.90
1-year	1.89	2.00	2.25	2.35	2.45	2.60	2.70	2.85	2.90	2.90	2.90
2-year notes	2.54	2.65	2.65	2.70	2.75	2.75	2.85	2.95	2.95	2.95	2.90
3-year	2.72	2.85	2.85	2.90	2.90	2.90	2.95	3.00	3.00	3.00	2.95
5-year	2.78	2.95	3.00	3.00	3.00	3.00	3.05	3.10	3.10	3.00	2.95
7-year	2.80	3.05	3.05	3.05	3.10	3.10	3.10	3.15	3.15	3.05	3.00
10-year	2.75	3.05	3.05	3.10	3.10	3.10	3.15	3.25	3.20	3.10	3.05
30-year bonds	2.81	3.15	3.20	3.20	3.25	3.25	3.30	3.40	3.35	3.30	3.20
1m LIBOR[5]	0.60	0.85	1.40	1.65	1.90	2.20	2.50	2.75	2.95		
3m LIBOR[5]	1.11	1.40	1.85	2.05	2.30	2.50	2.75	2.90	3.05		
6m LIBOR[5]	1.65	2.00	2.35	2.50	2.70	2.85	3.05	3.10	3.15		
12m LIBOR[5]	2.36	2.70	2.85	2.95	3.05	3.15	3.25	3.35	3.35		
Prime rate	3.50	3.93	4.25	4.55	5.00	5.16	5.55	5.79	6.00	6.00	6.00
Other G7											
ECB Refi[1]	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.75	1.00	1.25	1.25
10yr Bund	0.79	1.00	1.05	1.10	1.15	1.25	1.35	1.40	1.45	1.45	1.50
BoE Repo[1]	0.75	1.00[7]	1.25	1.25	1.50	1.50	1.75	2.00	2.25	2.50	2.50
SONIA[6]	0.69	0.91	1.07	1.19	1.41	1.45	1.61	1.86	2.09	2.37	2.46
10yr Gilt	1.82	1.95	2.05	2.15	2.30	2.40	2.60	2.75	2.70	2.70	2.70
BoJ O/N[1]	-0.02	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
10yr JGB	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.26	0.27	0.28	0.30

[1] end of period; [2] Canadian Overnight Repo Rate Average; [3] Effective Fed Funds Rate; [4] Secured Overnight Financing Rate; [5] Most LIBOR rates ceased being published by

the provider as of December 31, 2021—However, some USD tenors will continue being published until June 30, 2023 including overnight along with 1, 3, 6 and 12 months; [5] Sterling Overnight Index Average; [2] actual value

Sources: BMO Economics, Haver Analytics

Disclosures

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04/06/2022	Michael Gregory	Rates Scenario	Rates Scenario for April 6, 2022
03/08/2022	Michael Gregory	Rates Scenario	Rates Scenario for March 8, 2022
02/08/2022	Michael Gregory	Rates Scenario	Rates Scenario for February 8, 2022
01/12/2022	Michael Gregory	Rates Scenario	Rates Scenario for January 12, 2022
12/08/2021	Michael Gregory	Rates Scenario	Rates Scenario for December 8, 2021

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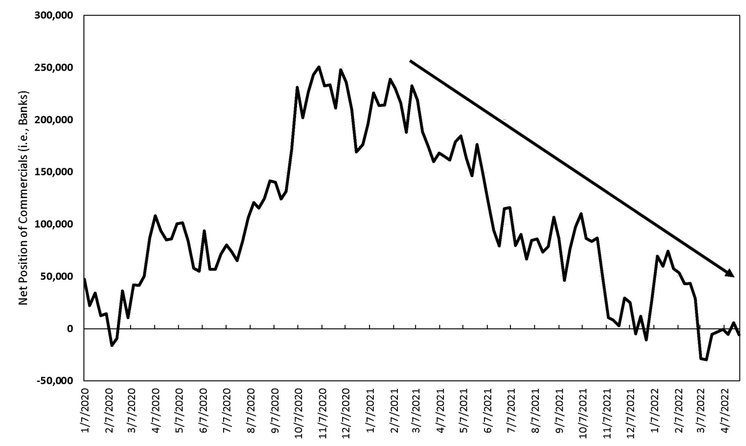
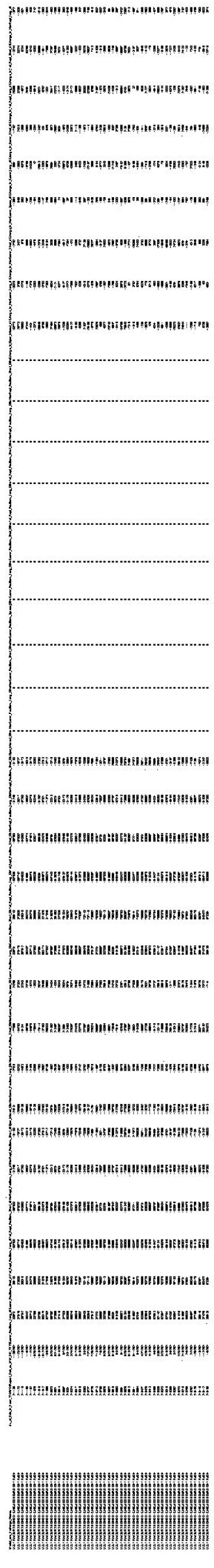
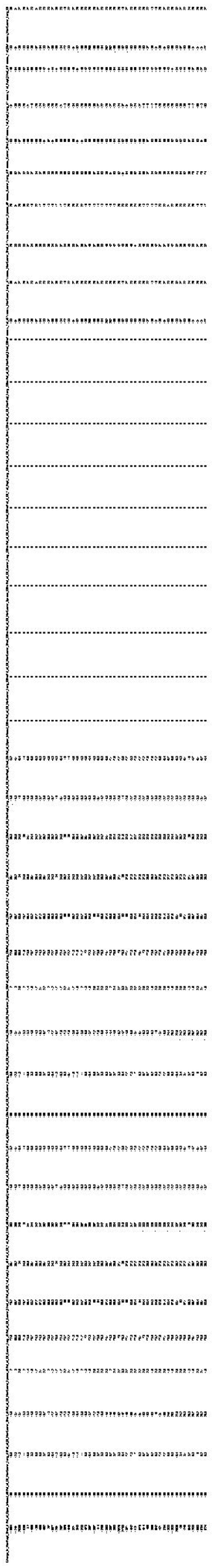
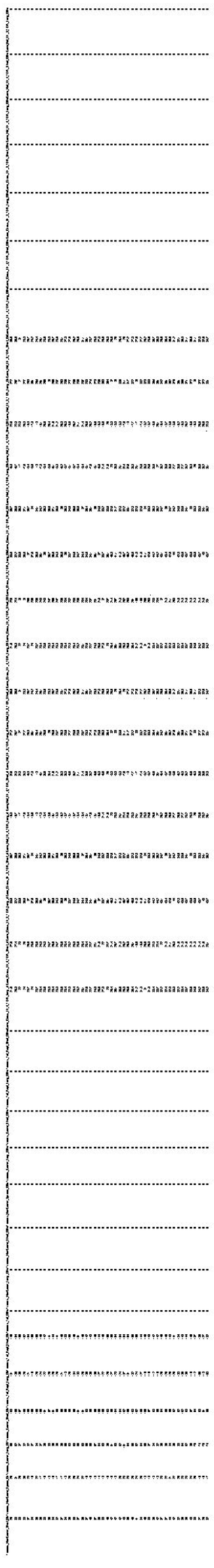
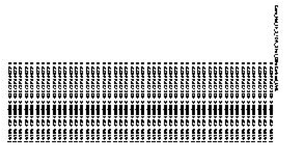
Market_and_Exchange_Names	As_of_Date_In_Form_YYMMDD	Report_Date_as_MM_DD_YYYY	Comm_Positions_Long_All	Comm_Positions_Short_All	Commercials - Net Position
UST BOND - CHICAGO BOARD OF TRADE	220426	4/26/2022	891428	897428	-6,000
UST BOND - CHICAGO BOARD OF TRADE	220419	4/19/2022	906624	900772	5,852
UST BOND - CHICAGO BOARD OF TRADE	220412	4/12/2022	887999	893273	-5,274
UST BOND - CHICAGO BOARD OF TRADE	220405	4/5/2022	874113	874613	-500
UST BOND - CHICAGO BOARD OF TRADE	220329	3/29/2022	810834	813957	-3,123
UST BOND - CHICAGO BOARD OF TRADE	220322	3/22/2022	819658	825052	-5,394
UST BOND - CHICAGO BOARD OF TRADE	220315	3/15/2022	805967	835719	-29,752
UST BOND - CHICAGO BOARD OF TRADE	220308	3/8/2022	797310	825917	-28,607
UST BOND - CHICAGO BOARD OF TRADE	220301	3/1/2022	810886	782067	28,819
UST BOND - CHICAGO BOARD OF TRADE	220222	2/22/2022	891876	848607	43,269
UST BOND - CHICAGO BOARD OF TRADE	220215	2/15/2022	902892	859982	42,910
UST BOND - CHICAGO BOARD OF TRADE	220208	2/8/2022	891085	837724	53,361
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	220201	2/1/2022	890253	832756	57,497
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	220125	1/25/2022	897501	823220	74,281
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	220118	1/18/2022	891364	831327	60,037
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	220111	1/11/2022	873843	804171	69,672
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	220104	1/4/2022	858118	830857	27,261
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211228	12/28/2021	850571	861225	-10,654
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211221	12/21/2021	875599	863525	12,074
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211214	12/14/2021	861405	866238	-4,833
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211207	12/7/2021	873875	848837	25,038
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211130	11/30/2021	885731	856143	29,588
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211123	11/23/2021	876170	873635	2,535
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211116	11/16/2021	857612	849319	8,293
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211109	11/9/2021	863487	853228	10,259
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211102	11/2/2021	852718	804275	48,443
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211026	10/26/2021	887603	800590	87,013
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211019	10/19/2021	887561	803824	83,737
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211012	10/12/2021	908174	821926	86,248
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	211005	10/5/2021	927032	817045	109,987
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210928	9/28/2021	907957	810625	97,332
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210921	9/21/2021	878006	801553	76,453
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210914	9/14/2021	874144	827635	46,509
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210907	9/7/2021	877928	791334	86,594
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210831	8/31/2021	903006	796262	106,744
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210824	8/24/2021	909245	830648	78,597
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210817	8/17/2021	865340	791975	73,365
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210810	8/10/2021	856937	770857	86,080
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210803	8/3/2021	866420	782143	84,277
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210727	7/27/2021	853940	787116	66,824
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210720	7/20/2021	876137	786002	90,135
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210713	7/13/2021	872231	792636	79,595
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210706	7/6/2021	866067	749932	116,135
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210629	6/29/2021	882839	768118	114,721
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210622	6/22/2021	873996	795037	78,959
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210615	6/15/2021	893891	799845	94,046
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210608	6/8/2021	915139	793993	121,146
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210601	6/1/2021	906672	756758	149,914
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210525	5/25/2021	981864	805367	176,497
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210518	5/18/2021	930469	784076	146,393
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210511	5/11/2021	919032	756141	162,891
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210504	5/4/2021	928191	743378	184,813
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210427	4/27/2021	938645	759609	179,036
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210420	4/20/2021	925044	763720	161,324
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210413	4/13/2021	907628	742963	164,665
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210406	4/6/2021	920918	752754	168,164
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210330	3/30/2021	921142	760969	160,173
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210323	3/23/2021	928017	752875	175,142
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210316	3/16/2021	927941	739359	188,582
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210309	3/9/2021	924857	705988	218,869
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210302	3/2/2021	939647	707193	232,454
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210223	2/23/2021	914249	726094	188,155
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210216	2/16/2021	916697	700781	215,916
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210209	2/9/2021	906339	676031	230,308
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210202	2/2/2021	904577	665840	238,737
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210126	1/26/2021	877494	663179	214,315
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210119	1/19/2021	866145	652571	213,574
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210112	1/12/2021	874279	648422	225,857
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	210105	1/5/2021	869139	673361	195,778
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201201	12/1/2020	867729	619526	248,203
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201229	12/29/2020	872978	696645	176,333
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201221	12/21/2020	850510	681391	169,119
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201215	12/15/2020	862193	652301	209,892
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201208	12/8/2020	867287	631544	235,743
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201201	12/1/2020	867729	619526	248,203
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201124	11/24/2020	911546	700401	211,145
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201117	11/17/2020	921449	688230	233,219
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201110	11/10/2020	906265	673759	232,506
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201103	11/3/2020	922754	672058	250,696
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201027	10/27/2020	925720	682776	242,944
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201020	10/20/2020	911259	684804	226,455
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201013	10/13/2020	903626	701752	201,874
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	201006	10/6/2020	906028	674930	231,098
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200929	9/29/2020	873537	702098	171,439
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200922	9/22/2020	864024	732743	131,281
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200915	9/15/2020	855697	731370	124,327
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200908	9/8/2020	853100	713167	139,933
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200901	9/1/2020	836903	695327	141,576
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200825	8/25/2020	821017	696364	124,653
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200818	8/18/2020	810996	695578	115,418
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200811	8/11/2020	780318	659767	120,551
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200804	8/4/2020	755005	648921	106,084
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200728	7/28/2020	743864	659936	83,928
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200721	7/21/2020	759147	694006	65,141
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200714	7/14/2020	755894	681924	73,970
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200707	7/7/2020	746986	666852	80,134
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200630	6/30/2020	733882	662532	71,350
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200623	6/23/2020	735538	678853	56,685
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200616	6/16/2020	719201	662192	57,009
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200609	6/9/2020	724624	630707	93,917
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200602	6/2/2020	740170	685048	55,122
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200526	5/26/2020	775957	718302	57,655
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200519	5/19/2020	754922	670797	84,125
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200512	5/12/2020	753417	651914	101,503
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200505	5/5/2020	753648	653269	100,379
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200428	4/28/2020	738337	652189	86,148
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200421	4/21/2020	752630	667565	85,065
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200414	4/14/2020	770628	676898	93,730
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200407	4/7/2020	786778	678740	108,038
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200331	3/31/2020	781878	695023	86,855
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200324	3/24/2020	846253	795916	50,337
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200317	3/17/2020	891848	850595	41,253
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200310	3/10/2020	911670	869880	41,790
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200303	3/3/2020	876007	865576	10,431
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200225	2/25/2020	885949	849786	36,163
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200218	2/18/2020	845902	855392	-9,490
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200211	2/11/2020	831062	847146	-16,084
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200204	2/4/2020	819001	804699	14,302
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200128	1/28/2020	744095	731808	12,287
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200121	1/21/2020	738982	704948	34,034
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200114	1/14/2020	730279	708060	22,219
U.S. TREASURY BONDS - CHICAGO BOARD OF TRADE	200107	1/7/2020	716686	669517	47,169

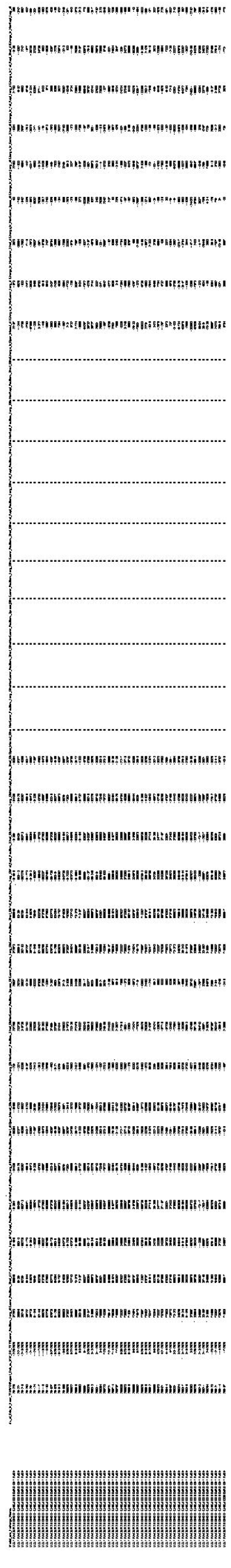


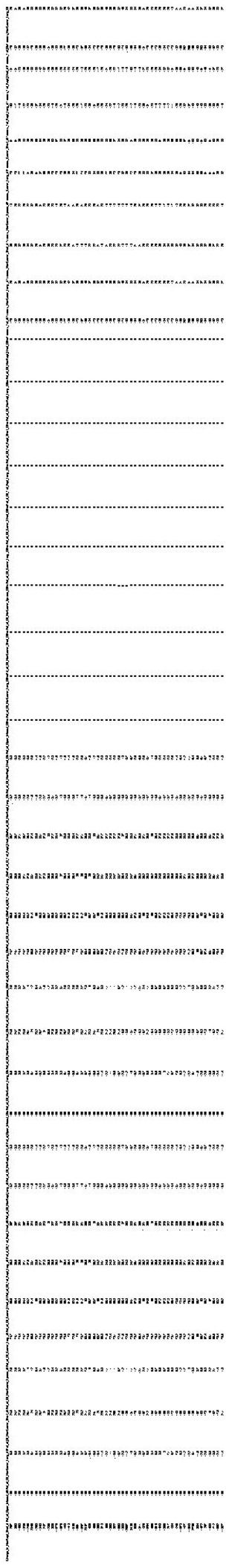


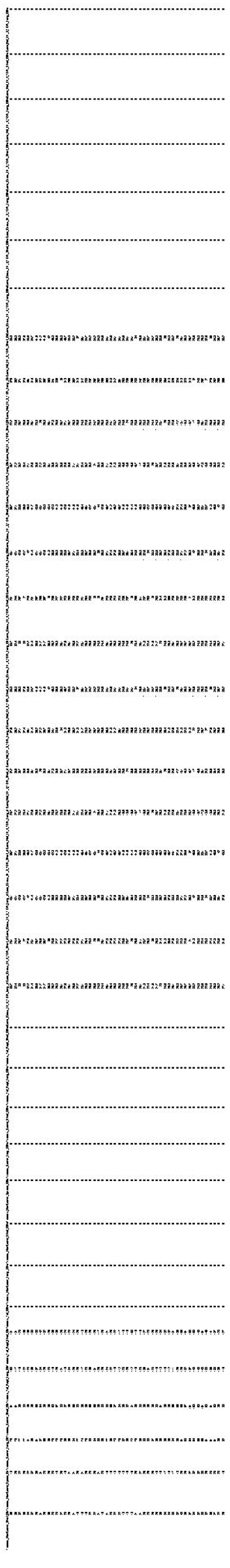












TP-53719-00TIE001-X004-016

Markets

Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks

By Justina Lee
March 11, 2021, 10:08 AM EST

- Investors fear sector has morphed into a big bet on low rates
- Yet history shows tech's link with bonds is far more complex

Don't fear Treasury yields killing off the stock market's golden goose just yet.

As the Nasdaq 100 Index recovers from a $1.5 trillion rout, there's good reason to think technology shares can defy machinations in U.S. bonds.

Studies from Deutsche Bank AG and Goldman Sachs Group Inc. show the world's biggest equity sector has a fickle relationship with Treasuries, if it has one at all. Quant powerhouse AQR Capital Management has found little evidence that yields drive how expensive megacaps trade relative to their cheaper counterparts.

And of course, secular economic trends have been powering the likes of Facebook Inc. and Amazon.com Inc. for years now -- when benchmark rates were far higher than current levels.

All that makes the Treasury-stock link more complex than it seems.

Low-Rate Trade?
Higher yields have made tech large-caps an underperformer lately

TP-53719-00TIE001-X004-016

Put another way, while the recent Treasury selloff has pummeled Big Tech, that doesn't mean bonds are a natural foe for a sector hitched to secular trends from 5G to automation.

"Many tech companies will continue to benefit for many years from very strong themes that will result in outsized earnings growth," said Terry Ewing, head of equities at Mediolanum International Funds, which oversees about $54 billion. "The dilemma for portfolio managers running a balanced mandate is that actually the de-rating we've seen in growth stocks has put them at a much more attractive level."

Ewing's funds began offloading a handful of tech stocks for cyclical names from the third quarter, just as rising expectations for an economic re-opening pushed yields higher in the world's biggest bond market.

As the U.S. yield curve steepened last month, $1.5 trillion of value was wiped off tech shares, while assets deemed less sensitive to duration risk like value stocks -- banks, oil drillers and commodity producers -- surged.

The Nasdaq 100 jumped nearly 2% on Thursday morning in New York, as 10-year Treasury yields traded little changed around 1.5%.

Quant Perspective

From the perspective of quants who dissect equities by their factors, there are a few ways to explain the last month's rotation.

Technology companies are typically dubbed growth stocks thanks to their strong expected profit expansion, often far into the future. That's in contrast to value shares, which trade with lower multiples due to their riskier businesses.

When rates fall, economic growth is typically muted. That makes a company like Netflix Inc. look like a a safer bet since it's riding the secular trend of streaming rather than ups and downs of the business cycle. Meanwhile the likes of Exxon Mobil Corp., tied to oil demand, look riskier.

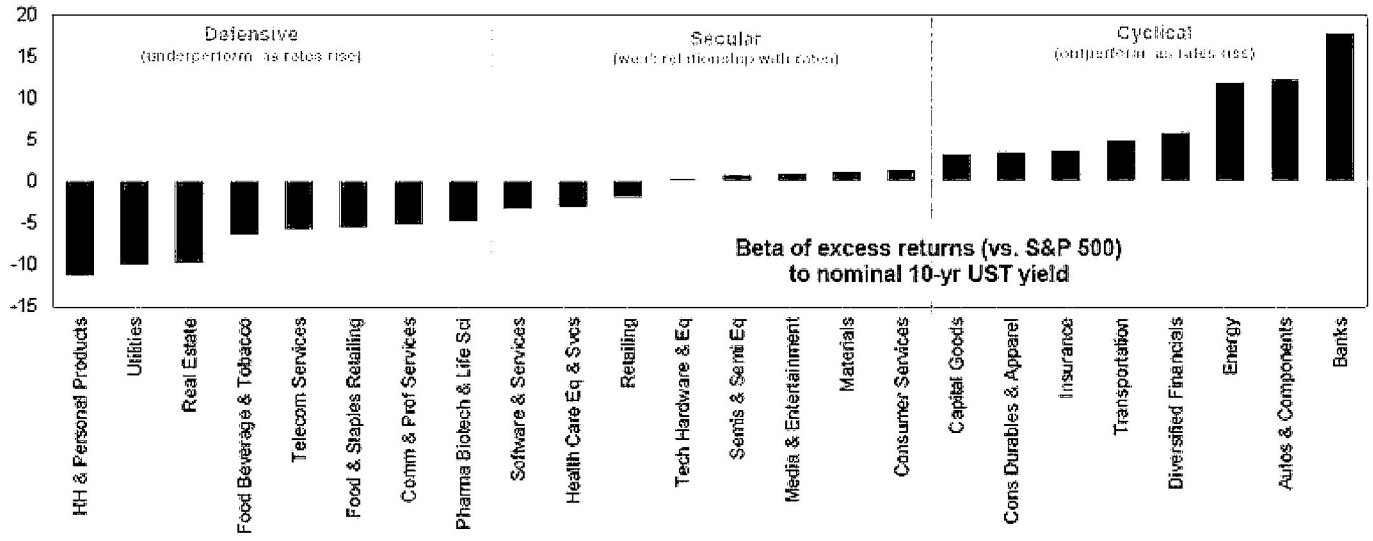
TP-53719-00TIE001-X004-016

In the post-crisis era of monetary easing, that's how the valuation dynamic played out: Netflix's long-term earnings were discounted at lower rates -- making it more expensive.

Now, opposing forces are in play. Rising yields are making the near-term cash flows of cheaper equities like Exxon Mobil more attractive.

"Sooner or later we will see pretty decent economic growth," said Georg Elsaesser, a quant portfolio manager at Invesco. "I would be more than surprised if that wouldn't be favorable for high-risk factors like value."

Exhibit 12: Sensitivity of industry group relative returns to nominal 10-year UST yield
beta calculated using monthly changes during last 5 years



Source: FactSet, Goldman Sachs Global Investment Research

Source: Goldman Sachs

Yet all these relationships are volatile -- and have far less explanatory power than commonly asserted.

Interest-rate changes only explain 19% of the returns posted by the growth factor versus value since 2018, Goldman Sachs strategists wrote in a note last month. That compares with 54% for cyclicals versus defensive.

In other words, industry-specific trends, not bonds, seem to be driving this tech-heavy part of the market.

TP-53719-00TIE001-X004-016

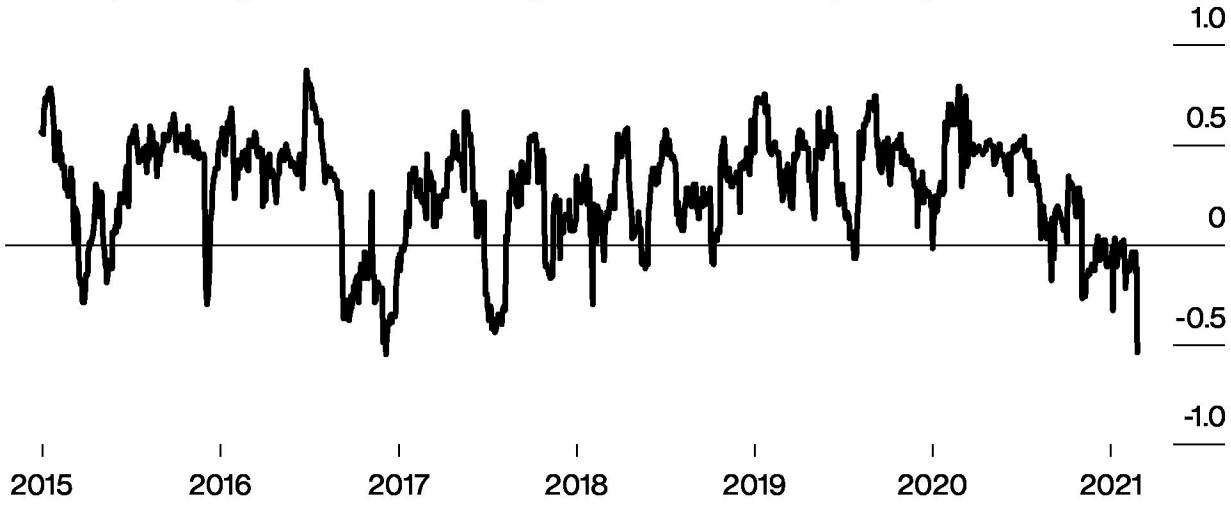
Similarly Deutsche Bank's quants find a zero beta, or sensitivity, between bonds and tech since 2015. In contrast, financials and energy had the most positive links with yields, and utilities and real estate the most negative.

According to Andreas Farmakas, a quantitative strategist at Deutsche Bank, this shows how the tech sector and Treasuries lack a direct and consistent link. In fact, these stocks in the past often rose with rates, with the latter seen as a sign of economic strength that could benefit corporate earnings.

It's Complicated

Tech stocks' relationship with Treasuries has been volatile in the short run

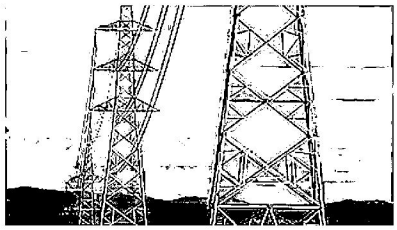
One-year rolling correlation between global tech and Treasury changes



Source: Deutsche Bank
Data show one-year rolling correlation between daily moves in global tech and in 10-year Treasury yields

That's not to say there isn't reason to fret recent co-movements.

"Given the ties between technology, the overbought Covid trade and ultimately equity indices -- they take up a large chunk -- the correlation flipped," Farmakas said.



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Inside GE's $400M Bet on Offshore Wind Ener

GE

In other words, bonds have lately turned from friend to foe -- and that's why quants like Invesco's Elsaesser are so reluctant to time markets.

TP-53719-00TIE001-X004-016

For its part, AQR last year called the link between interest rates and value -- which involves a bet against growth -- "suspect" since it varies greatly depending on the period, the markets and measurements studied.

All this suggests that once the initial reflation frenzy settles, there's no reason to fear bond yields will necessarily doom the tech trade. In fact Ewing at Mediolanum is eyeing some bargains in the months ahead.

"Somewhere along the second-half of this year going into next year it'll be prudent for investors to start considering moving to higher-quality names rather than cyclical recovery," he said.

In this article

GS
GOLDMAN SACHS GP
343.12 USD ▲ +1.10 +0.32%

DBK
DEUTSCHE BANK-RG
10.52 EUR ▼ -0.20 -1.88%

CL1
WTI Crude
65.45 USD/bbl. ▲ +1.01 +1.57%

NFLX
NETFLIX INC
512.64 USD ▲ +8.10 +1.60%

XOM
EXXON MOBIL CORP
62.46 USD ▲ +0.69 +1.11%

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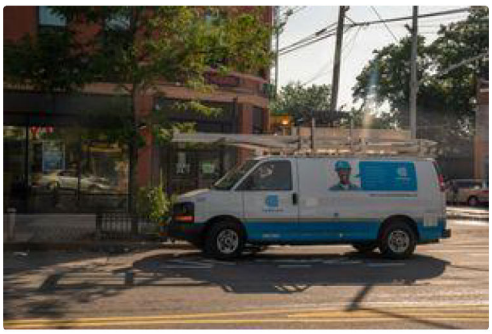
BARRON'S

UTILITIES

Utilities Have Been Soaring as Treasuries Get Crushed. That Isn't Supposed to Happen.

By Jacob Sonenshine Follow April 11, 2022 2:45 am ET



Investors often seek out utility stocks as a haven because demand for power is relatively stable. Above, a Consolidated Edison van in New York City.
David 'Dee' Delgado/Bloomberg

Utility stocks have soared recently, while yields on Treasury bonds have done the same. The two aren't supposed to rise at the same time—and now it seems utility stocks will struggle in the short run.

Normally, utility stocks and long-dated Treasury yields move in opposite directions. When the 10-year Treasury yield rises, it makes the dividend yield on a utility stock—a favorite option among people seeking steady payouts with little risk—relatively less attractive. That gives investors a reason to dump utility stocks.

At the same time, higher Treasury yields also reflect expectations for high inflation, a result of a strong economy, in the future. When the economy is growing briskly, investors often abandon utility stocks for those whose earnings are more likely to rise significantly in response to greater demand for goods and services.

That isn't what is happening now: Utility stocks have risen alongside Treasury yields. The Utilities Select Sector SPDR exchange-traded fund (XLU) has risen just over 18% since Feb. 23, the fund's low point after weeks of declines. The yield on 10-year Treasury debt, meanwhile, has jumped to 2.71% from 1.73% just after the end of February.

The rise in both utility stocks and Treasury yields makes sense given today's economic landscape. Investors expect the Federal Reserve to reduce its bondholdings as part of an effort to raise interest rates on debt of all sorts—short- and long-dated—as it seeks to bring inflation under control. The potential that the central bank will hold less debt is weighing on prices for Treasurys, which sends yields higher.

The likelihood that the Fed's efforts to control inflation will slow the economy significantly, perhaps bringing on a recession, meanwhile, is prompting investors to rush into defensive stocks like utilities, which see stable earnings growth even when economic growth slows down.

"The market expressed these macro fears through positioning with investors bidding up the more-defensive sectors," wrote Christopher Harvey, chief U.S. equity strategist at Wells Fargo, mentioning utilities' move higher.

Now, utility stocks appear to be due for losses in the near term. First off, at just under $77 a share, the utility fund trades at almost $10 above its 200-day moving average. That is, roughly speaking, the highest dollar amount above that average the fund has traded at since the late 1990s, according to BTIG data.

The shares' explosive move away from their longer-term trend is a sign they are due to slide. "Utilities are likely to pullback in the near-term," wrote Jonathan Krinsky, chief market technician at BTIG.

That makes sense given valuations of stocks in the fund. Its aggregate forward price/earnings ratio is about 10% higher than the 19.5 times for the S&P 500, according to FactSet. Utilities often trade at a slight premium to the S&P 500 during times of high economic uncertainty. In early March 2020, the utility fund traded at a multiple about 20% above the S&P 500's; historically, utility valuations tend to peak right around this level.

If a pullback does come, buying some shares might make sense. The utility fund is expected to achieve aggregate earnings-per-share growth of almost 8% in 2023—and by the end of this year, the stocks will be reflecting that earnings stream.

The comparable figure for the S&P 500 is 10%, but earnings estimates for the S&P 500 could decline if the economy slows down. Morgan Stanley strategists just upgraded the

utilities sector to Overweight, partly because the sector has seen some of the lowest variation in their profit estimates out of all of the index's sectors.

Utilities could provide portfolio protection once they pause from their recent run.

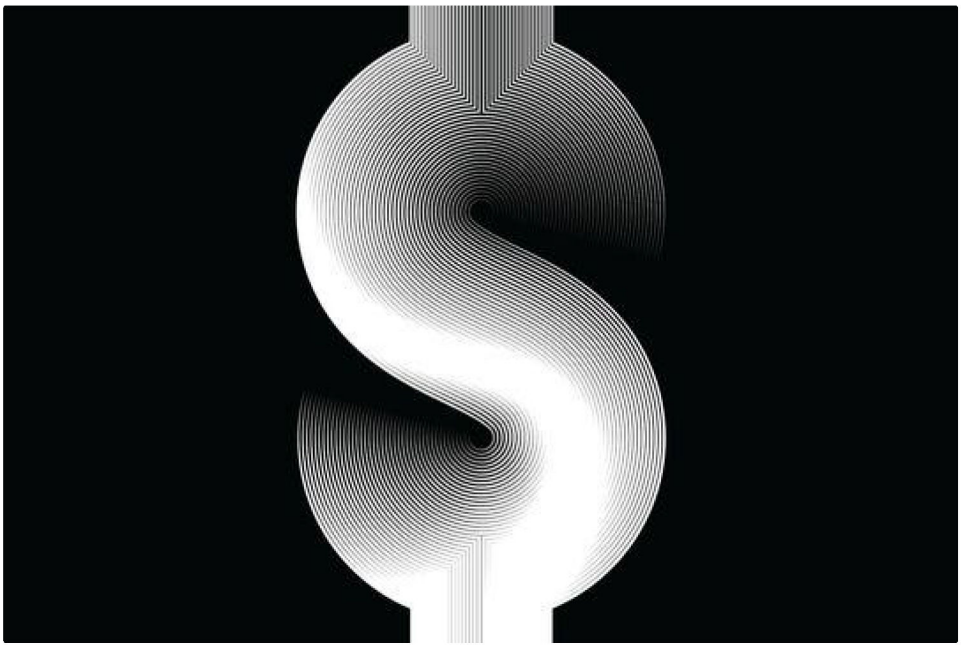
Write to Jacob Sonenshine at jacob.sonenshine@barrons.com

BARRON'S

MARKETS | BIG MONEY POLL

Bearish Now, Bullish Later: How Investors Are Sizing Up Stocks

By Nicholas Jasinski Follow Updated April 24, 2022 / Original April 22, 2022



Sergi Delgado

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Investors have been forced to rethink nearly all of their assumptions in the past two years. In this unusually tumultuous span, the world has seen a deadly pandemic, the quickest global economic recession and rebound in memory, unprecedented monetary- and fiscal-policy contortions, supply-chain disarray, armed conflict in Europe with nuclear overtones—the list goes on.

"We live in a very turbulent time; the range of possible outcomes is so much wider now," says Epoch Investment Partners' co-chief investment officer, Bill Priest, extending his arms out fully.

No wonder there is little consensus in *Barron's* latest Big Money poll, which surveys institutional investors from across the country. A third of poll respondents say they're bullish on the outlook for stocks in the coming year, almost a quarter are bearish, and the plurality—roughly 45%—describe themselves as neutral.

SEE ALSO

The Fed May Make Fewer Raises. Interest Rates Are Already Up.

The trend is clear, however. The same poll a year ago found 67% of respondents bullish. Six months ago, that proportion had declined to 50%. The ranks of bears and fence-sitters both have grown steadily as the pandemic bull market has aged and entered its next phase.

The optimists see good gains in store for the major U.S. stock indexes. On average, the bulls expect the S&P 500 to rise 14% from today's level through June 30, 2023. They expect the Dow Jones Industrial Average to add 9%, and the Nasdaq Composite to jump 20% in the same time frame.

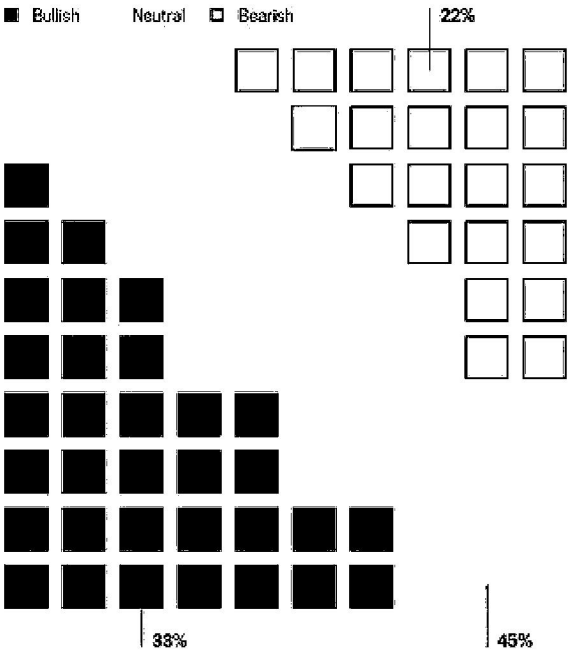
"It's not as bad as people think," says Sean Sebold, president at Sebold Capital Management in Lisle, Ill. "Yes, interest rates will rise, but earnings will also rise along with that. Profit margins continue to be very high, and employment is strong. It's growth slowing down, not ending."

On the opposite end of the sentiment spectrum, the bears foresee plenty of downside. Their mean forecast calls for a 5% to 8% decline for all three major indexes over the coming year.

Nonetheless, stocks are still the place to be, Big Money investors largely agree. Almost 60% call equities the most attractive asset class today, and a similar proportion expect U.S. equities to return 6% to 10% annually over the next decade, even with bumps along the way.

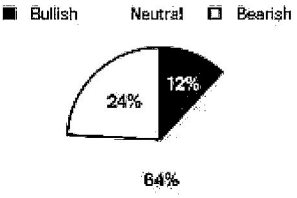
Barron's conducts the Big Money poll each spring and fall, with help from Beta Research in Woodbury, N.Y. The latest poll closed in mid-April and drew responses from 112 money managers.

▷ **Describe your investment outlook for the U.S. equities in the next 12 months.**



▷ **Is the U.S. stock market overvalued, undervalued, or fairly valued at current levels?**

▷ **Are your clients bullish, bearish, or neutral about U.S. stocks?**



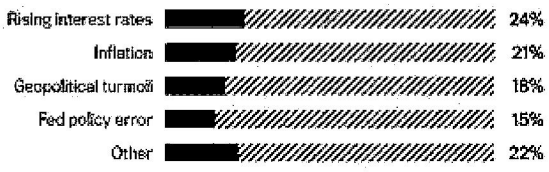
▷ **Where do you expect the following market measures to trade as of Dec. 31, 2022, and June 30, 2023, if you are...**

Bullish	12/31/22	6/30/23
DJIA	36,573	37,962
S&P 500	4792	5013
Nasdaq Composite	15,029	15,791

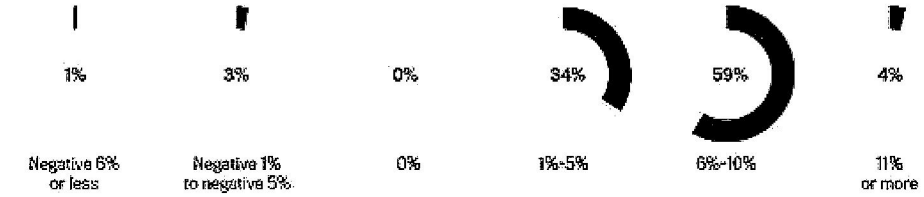
Bearish	12/31/22	6/30/23
DJIA	32,414	32,153
S&P 500	4127	4130
Nasdaq Composite	12,548	12,526

▷ **Have you been a net buyer or seller of U.S. equities this year?**

▷ **What is the biggest risk that the stock market will face in the next six months?**



▷ **What will U.S. equities return on an average annualized basis over the next decade?**



Note: Some numbers don't add up to 100% due to rounding.

Investors who spoke with *Barron's* over the past two weeks say they are repositioning their portfolios for a new world of higher interest rates and more-volatile trading, and trying to be humble about the uncertainty in the economic and market outlooks.

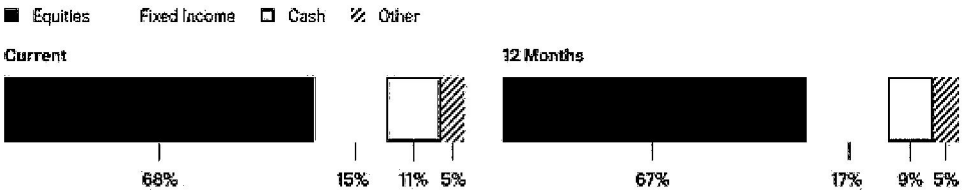
One matter on which there is broad consensus is that interest rates are going up and economic growth is set to decelerate. There is less appetite among investors for the kinds of riskier, long-duration investments that thrived for most of the past 15 years.

"Big picture, this era of low inflation, low interest rates is over," says John Moffet, principal at Hourglass Capital in Houston.

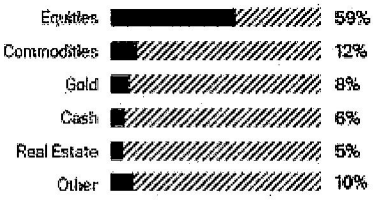
That's a recipe for outperformance by value stocks over growth, 73% of respondents say. It also means higher bond yields, and thus lower bond prices. About half of Big Money investors expect the 10-year U.S. Treasury note to yield more than 3% in a year, up from 2.9% recently and 1.6% at the beginning of 2022. They expect the Federal Reserve's benchmark interest-rate target to continue rising through year end, with most expecting at least another 1.5 percentage points of hikes this year.

"Maybe they'll end up raising rates all the way into 2023; maybe they'll look at the data and have a big recession fear and take a pause," says John Chalker, managing director at fixed-income-focused LM Capital Group. "For us, it's more about the direction, and right now it's clear that that's [interest rates moving] higher."

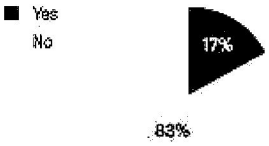
▷ Describe your current asset allocation and your expected allocation in 12 months.



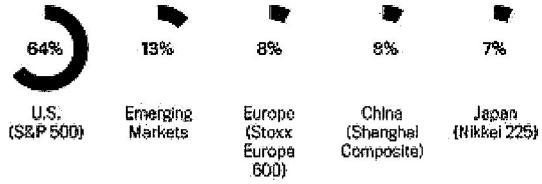
▷ Which asset class do you consider most attractive today?



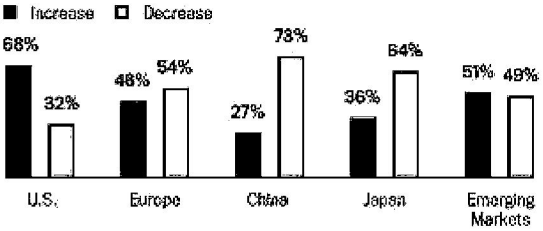
▷ Do you recommend adding cryptocurrency to investment portfolios?



▷ Which major equity market will perform best in the next 12 months?



▷ Do you plan to increase or decrease your equity holdings in these markets in the next 12 months?



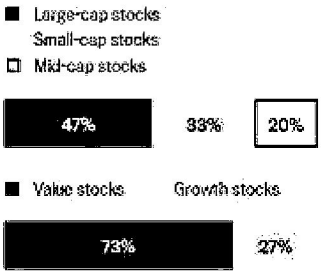
▷ Which industry do you currently favor most?

Energy	34%
Technology	16%
Healthcare	15%
Financials	12%
Industrials	8%

▷ Which industry looks least appealing to you now?

Utilities	22%
Consumer Discretionary	17%
Technology	17%
Communication Services	8%
Financials	8%

▷ In each category, which equity investment will perform best in the next 12 months?



▷ Predict the levels of the following a year from now.

Oil, Nymex ($/barrel)	$101.30
Gold (per troy ounce)	$2,001.13
Bitcoin	$42,067.67

Note: Some numbers don't add up to 100% due to rounding.

In recent polls, Big Money managers have given the Federal Reserve high marks for its management of the early quarters of the Covid-19 economic crisis in 2020. The Fed

introduced emergency measures that included dropping interest rates to near zero and buying tens of billions of dollars of assets a month.

Now, with inflation running hot, economic growth slowing, and asset bubbles everywhere, the general view in the spring survey is that the Fed is behind the curve on tightening. Big Money managers grade the central bank C, on average, for its current monetary-policy stance.

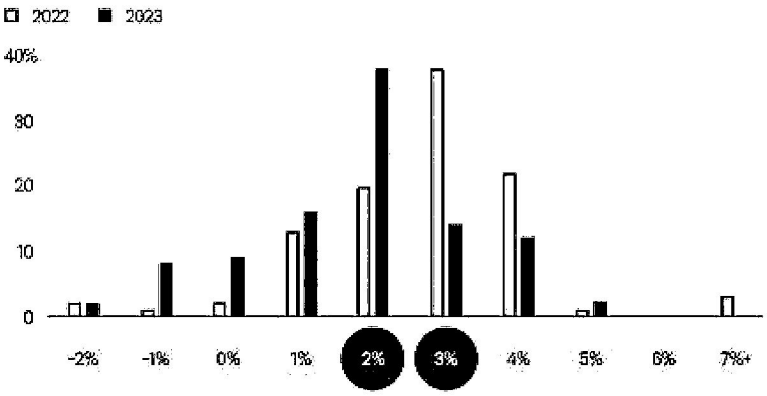
"They should have started the process of raising rates sooner so they could be more patient with the pace of increases," one respondent said in write-in comments. "Now, they are going to be overly aggressive trying to play catch-up, and will probably go too far and slow demand down too much."

"Too late on tightening monetary policy," wrote another investor. "Same mistake as the 1970s!"

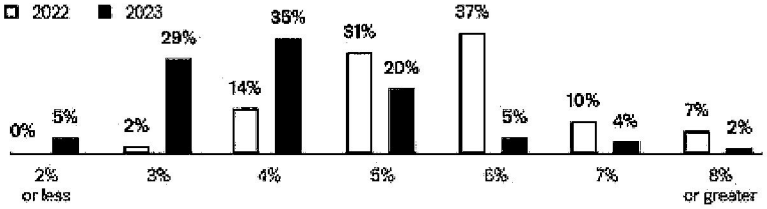
"Afraid we will be sent into a recession by too much tightening," summed up a third.

THE ECONOMY

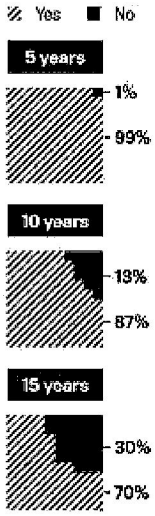
▷ Predict the growth rate of real U.S. GDP in 2022 and 2023.



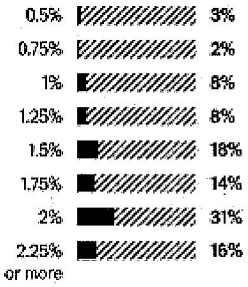
▷ Predict the year-over-year U.S. inflation rate (CPI) at year-end 2022 and year-end 2023.



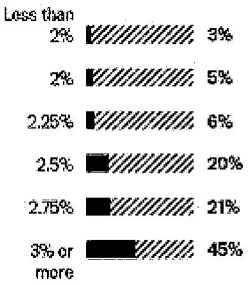
▷ Do you expect the dollar to remain the world's reserve currency in the next...



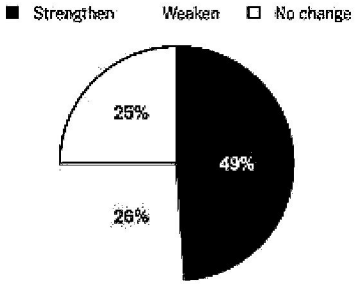
▷ What will the federal-funds rate target be as of Dec. 31?



▷ What will the 10-year Treasury note yield one year from now?

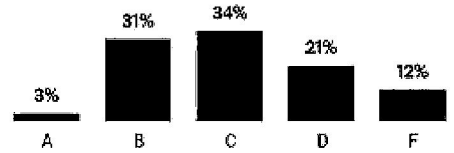


▷ Will the U.S. Dollar Index (DXY) strengthen, weaken, or stay the same in the next 12 months?

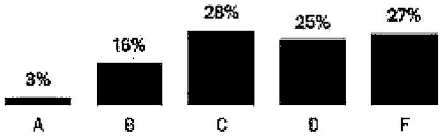


POLICY

▷ How would you grade current U.S. monetary policy?



▷ How would you grade current U.S. fiscal policy?



Note: Some numbers don't add up to 100% due to rounding.
Uncredited

Poll respondents forecast 2022 growth in real U.S. gross domestic product of about 3%, on average, following a 5.7% increase in 2021 and a decrease of 3.4% in 2020. Next year, respondents see about 2% GDP growth. Some 19% see the economy shrinking or not growing at all in 2023.

Inflation won't disappear overnight, say the Big Money managers, but the upward pressure on prices should begin to ease in coming quarters. More than two-thirds of respondents expect a 5% or 6% increase in the U.S. consumer price index for all of 2022, down from 7.0% in 2021. They see inflation moderating next year to about 4%, on average. But that's still a lightning-fast rate of price growth for recent times.

"We think inflation will continue at a relatively high level, maybe not the 7% or 8% that we've seen in recent months, but certainly something well above 2%," says Chalker, whose San Diego–headquartered firm manages about $5 billion. "The Russia-Ukraine conflict only pressures inflation to go higher, and we don't expect that to be resolved before the end of this year."

As Fed-driven liquidity drains from the market, the valuation multiple on stocks will fall, say Big Money managers. The companies with the pricing power to control their own fates in an inflationary environment should deliver the strongest earnings.

Among industry sectors, growth-oriented and bond-proxy groups are least appealing to investors these days. Blame the Fed and rising interest rates for that. Applying a higher discount rate to far-off cash flows reduces their present value, while more generous bond yields present greater competition to dividend-paying stocks. About 17% of respondents call the consumer-discretionary and technology sectors the least appealing for the coming year, while 22% single out utilities.

Big Money investors' favorite sector for the coming year is energy, which has already enjoyed a massive run in 2022, as oil prices have soared. Close to 34% of respondents cited it as most attractive, followed by about 16% pointing to tech, 15% to healthcare, and 12% selecting financials. In short, there's little agreement there, either.

For energy companies, high oil and gas prices mean greater profits and free cash flow, which promises increased dividends and shareholder returns. On average, Big Money investors expect oil to remain above $100 a barrel a year from now, about even with current levels.

For Moffet's firm, which manages about $400 million, the opportunities lie in old-economy companies with defensible businesses, whose stocks trade at relatively cheap

valuations that give them a cushion in a volatile market.

He points to several stocks in the energy, financial, and materials sectors, including Exxon Mobil (ticker: XOM), that are well capitalized and boast high free-cash-flow yields and safe and generous dividend payouts. Citigroup (C) is another example, with solid loan growth and expanding net income margins. Moffet also likes Outfront Media (OUT), one of the largest companies in U.S. billboard advertising. Its costs are relatively fixed, while its rates can increase against an inflationary backdrop. The stock yields north of 4%.

Priest, a member of the *Barron's* Roundtable, whose New York–based firm manages about $32 billion, is focused on long-term trends. Rising defense spending, plus a post-Covid-19 recovery in airplane travel, should be tailwinds for aerospace names, including Raytheon Technologies (RTX), he says, while the transition to 5G wireless services will benefit industry challenger T-Mobile US (TMUS).

Priest also expects continued growth in the demand for computer chips, no matter what interest rates and Vladimir Putin do, and calls that the best way to play future trends, including cloud computing, autonomous driving, and more. He favors Taiwan Semiconductor Manufacturing (TSM), Broadcom (AVGO), and ON Semiconductor (ON) in that space.

Finally, he likes dominant software companies whose high market share, necessary products, and wide profit margins could insulate them from macro pressures. Google's parent, Alphabet (GOOGL), is one. "Their valuations may go up and down with interest rates, but you still want to be there," Priest says.

Sebold sees opportunity in picking up newly discounted tech stocks whose prices have deteriorated faster than their issuers' business prospects this year. "Some of these stocks have been cut in half, but have their growth prospects really been cut in half, too?" he asks.

In particular, Sebold likes Microsoft (MSFT), Apple (AAPL), and Nvidia (NVDA). All are large, cash-generating businesses. Some 35% of Big Money investors called Tesla (TSLA) the most overvalued stock in the market.

As for speculative, unprofitable, and richly valued shares, Sebold says, "[Many] are essentially call options; their prices are 100% based on sentiment. In a rising-rate

environment, there's little appetite for that."

Staying home is a popular strategy among Big Money investors—and not in the Covid-19 lockdown sense of the term. Two-thirds of respondents expect to increase their U.S. equity holdings in the next 12 months, while largely reducing their overseas exposure. China is a particularly sour pick: Nearly three-quarters of money managers foresee reducing their equity holdings in the world's second-largest economy in the coming year. A majority plan to be net sellers in Japan and Europe, as well, while the group is split about emerging markets.

The past few years have left both professional and retail investors dazed and more than a little confused. Our fall 2022 Big Money poll should indicate whether America's money managers have a better sense of the market's path—or not.

Write to Nicholas Jasinski at nicholas.jasinski@barrons.com

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Fiscal Year Ended December 31 , 2021

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number	Registrant, State of Incorporation or Organization, Address of Principal Executive Offices, Telephone Number, and IRS Employer Identification No.	Commission File Number	Registrant, State of Incorporation or Organization, Address of Principal Executive Offices, Telephone Number, and IRS Employer Identification No.
1-11299	ENTERGY CORPORATION (a Delaware corporation) 639 Loyola Avenue New Orleans , Louisiana 70113 Telephone (504) 576-4000 72-1229752	1-35747	ENTERGY NEW ORLEANS, LLC (a Texas limited liability company) 1600 Perdido Street New Orleans , Louisiana 70112 Telephone (504) 670-3700 82-2212934
1-10764	ENTERGY ARKANSAS, LLC (a Texas limited liability company) 425 West Capitol Avenue Little Rock , Arkansas 72201 Telephone (501) 377-4000 83-1918668	1-34360	ENTERGY TEXAS, INC. (a Texas corporation) 2107 Research Forest Drive The Woodlands , Texas 77380 Telephone (409) 981-2000 61-1435798
1-32718	ENTERGY LOUISIANA, LLC (a Texas limited liability company) 4809 Jefferson Highway Jefferson , Louisiana 70121 Telephone (504) 576-4000 47-4469646	1-09067	SYSTEM ENERGY RESOURCES, INC. (an Arkansas corporation) 1340 Echelon Parkway Jackson , Mississippi 39213 Telephone (601) 368-5000 72-0752777
1-31508	ENTERGY MISSISSIPPI, LLC (a Texas limited liability company) 308 East Pearl Street Jackson , Mississippi 39201 Telephone (601) 368-5000 83-1950019		

Securities registered pursuant to Section 12(b) of the Act:

Registrant	Title of Class	Trading Symbol	Name of Each Exchange on Which Registered
Entergy Corporation	Common Stock, $0.01 Par Value	ETR	New York Stock Exchange
	Common Stock, $0.01 Par Value	ETR	NYSE Chicago, Inc.
Entergy Arkansas, LLC	Mortgage Bonds, 4.875% Series due September 2066	EAI	New York Stock Exchange
Entergy Louisiana, LLC	Mortgage Bonds, 4.875% Series due September 2066	ELC	New York Stock Exchange
Entergy Mississippi, LLC	Mortgage Bonds, 4.90% Series due October 2066	EMP	New York Stock Exchange
Entergy New Orleans, LLC	Mortgage Bonds, 5.0% Series due December 2052	ENJ	New York Stock Exchange
	Mortgage Bonds, 5.50% Series due April 2066	ENO	New York Stock Exchange
Entergy Texas, Inc.	5.375% Series A Preferred Stock, Cumulative, No Par Value (Liquidation Value $25 Per Share)	ETI/PR	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

Registrant	Title of Class
Entergy Texas, Inc.	Common Stock, no par value

Indicate by check mark if the registrants are well-known seasoned issuers, as defined in Rule 405 of the Securities Act.

	Yes	No
Entergy Corporation	ü	
Entergy Arkansas, LLC	ü	
Entergy Louisiana, LLC	ü	
Entergy Mississippi, LLC	ü	
Entergy New Orleans, LLC		ü
Entergy Texas, Inc.	ü	
System Energy Resources, Inc.		ü

Indicate by check mark if the registrants are not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

	Yes	No
Entergy Corporation		ü
Entergy Arkansas, LLC		ü
Entergy Louisiana, LLC		ü
Entergy Mississippi, LLC		ü
Entergy New Orleans, LLC		ü
Entergy Texas, Inc.		ü
System Energy Resources, Inc.		ü

Indicate by check mark whether the registrants (1) have filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrants were required to file such reports), and (2) have been subject to such filing requirements for the past 90 days. Yes þ No o

Indicate by check mark whether the registrants have submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrants were required to submit such files). Yes þ No o

Indicate by check mark whether each registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Securities Exchange Act of 1934.

	Large Accelerated Filer	Accelerated Filer	Non-accelerated Filer	Smaller reporting company	Emerging growth company
Entergy Corporation	ü				
Entergy Arkansas, LLC			ü		
Entergy Louisiana, LLC			ü		
Entergy Mississippi, LLC			ü		
Entergy New Orleans, LLC			ü		
Entergy Texas, Inc.			ü		
System Energy Resources, Inc.			ü		

If an emerging growth company, indicate by check mark if the registrants have elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Entergy Corporation	☑
Entergy Arkansas, LLC	
Entergy Louisiana, LLC	
Entergy Mississippi, LLC	
Entergy New Orleans, LLC	
Entergy Texas, Inc.	
System Energy Resources, Inc.	

Indicate by check mark whether the registrants are shell companies (as defined in Rule 12b-2 of the Exchange Act.) Yes ☐ No þ

Common Stock Outstanding		**Outstanding at January 31, 2022**
Entergy Corporation	($0.01 par value)	203,027,662

System Energy Resources, Inc. meets the requirements set forth in General Instruction I(1) of Form 10-K and is therefore filing this Form 10-K with reduced disclosure as allowed in General Instruction I(2). System Energy Resources, Inc. is reducing its disclosure by not including Part III, Items 10 through 13 in its Form 10-K.

The aggregate market value of Entergy Corporation Common Stock, $0.01 Par Value, held by non-affiliates as of the end of the second quarter of 2021 was $ 20.0 billion based on the reported last sale price of $99.70 per share for such stock on the New York Stock Exchange on June 30, 2021. Entergy Corporation is the sole holder of the common stock of Entergy Texas, Inc. and System Energy Resources, Inc. Entergy Corporation is the direct and indirect holder of the common membership interests of Entergy Utility Holding Company, LLC, which is the sole holder of the common membership interests of Entergy Arkansas, LLC, Entergy Louisiana, LLC, Entergy Mississippi, LLC, and Entergy New Orleans, LLC.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement of Entergy Corporation to be filed in connection with its Annual Meeting of Stockholders, to be held May 6, 2022, are incorporated by reference into Part III hereof.

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This combined Form 10-K is separately filed by Entergy Corporation and its six "Registrant Subsidiaries:" Entergy Arkansas, LLC, Entergy Louisiana, LLC, Entergy Mississippi, LLC, Entergy New Orleans, LLC, Entergy Texas, Inc., and System Energy Resources, Inc. Information contained herein relating to any individual company is filed by such company on its own behalf. Each company makes representations only as to itself and makes no other representations whatsoever as to any other company.

The report should be read in its entirety as it pertains to each respective reporting company. No one section of the report deals with all aspects of the subject matter. Separate Item 7 and 8 sections are provided for each reporting company, except for the Notes to the financial statements. The Notes to the financial statements for all of the reporting companies are combined. All Items other than 7 and 8 are combined for the reporting companies.

FORWARD-LOOKING INFORMATION

In this combined report and from time to time, Entergy Corporation and the Registrant Subsidiaries each makes statements as a registrant concerning its expectations, beliefs, plans, objectives, goals, projections, strategies, and future events or performance. Such statements are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "may," "will," "could," "project," "believe," "anticipate," "intend," "expect," "estimate," "continue," "potential," "plan," "predict," "forecast," and other similar words or expressions are intended to identify forward-looking statements but are not the only means to identify these statements. Although each of these registrants believes that these forward-looking statements and the underlying assumptions are reasonable, it cannot provide assurance that they will prove correct. Any forward-looking statement is based on information current as of the date of this combined report and speaks only as of the date on which such statement is made. Except to the extent required by the federal securities laws, these registrants undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

Forward-looking statements involve a number of risks and uncertainties. There are factors that could cause actual results to differ materially from those expressed or implied in the forward-looking statements, including (a) those factors discussed or incorporated by reference in Item 1A. Risk Factors, (b) those factors discussed or incorporated by reference in Management's Financial Discussion and Analysis, and (c) the following factors (in addition to others described elsewhere in this combined report and in subsequent securities filings):

- resolution of pending and future rate cases and related litigation, formula rate proceedings and related negotiations, including various performance-based rate discussions, Entergy's utility supply plan, and recovery of fuel and purchased power costs, as well as delays in cost recovery resulting from these proceedings;
- regulatory and operating challenges and uncertainties and economic risks associated with the Utility operating companies' participation in MISO, including the benefits of continued MISO participation, the effect of current or projected MISO market rules and market and system conditions in the MISO markets, the allocation of MISO system transmission upgrade costs, the MISO-wide base rate of return on equity allowed or any MISO-related charges and credits required by the FERC, and the effect of planning decisions that MISO makes with respect to future transmission investments by the Utility operating companies;
- changes in utility regulation, including with respect to retail and wholesale competition, the ability to recover net utility assets and other potential stranded costs, and the application of more stringent return on equity criteria, transmission reliability requirements or market power criteria by the FERC or the U.S. Department of Justice;
- changes in the regulation or regulatory oversight of Entergy's owned or operated nuclear generating facilities and nuclear materials and fuel, including with respect to the planned shutdown and sale of Palisades, and the effects of new or existing safety or environmental concerns regarding nuclear power plants and fuel;
- resolution of pending or future applications, and related regulatory proceedings and litigation, for license modifications or other authorizations required of nuclear generating facilities and the effect of public and political opposition on these applications, regulatory proceedings, and litigation;
- the performance of and deliverability of power from Entergy's generation resources, including the capacity factors at Entergy's nuclear generating facilities;
- increases in costs and capital expenditures that could result from changing regulatory requirements, changing economic conditions, and emerging operating and industry issues;
- the commitment of substantial human and capital resources required for the safe and reliable operation and maintenance of Entergy's nuclear generating facilities;
- Entergy's ability to develop and execute on a point of view regarding future prices of electricity, natural gas, and other energy-related commodities;

- the prices and availability of fuel and power Entergy must purchase for its Utility customers, and Entergy's ability to meet credit support requirements for fuel and power supply contracts;

FORWARD-LOOKING INFORMATION (Continued)

- volatility and changes in markets for electricity, natural gas, uranium, emissions allowances, and other energy-related commodities, and the effect of those changes on Entergy and its customers;
- changes in law resulting from federal or state energy legislation or legislation subjecting energy derivatives used in hedging and risk management transactions to governmental regulation;
- changes in environmental laws and regulations, agency positions or associated litigation, including requirements for reduced emissions of sulfur dioxide, nitrogen oxide, greenhouse gases, mercury, particulate matter and other regulated air emissions, heat and other regulated discharges to water, requirements for waste management and disposal and for the remediation of contaminated sites, wetlands protection and permitting, and changes in costs of compliance with environmental laws and regulations;
- changes in laws and regulations, agency positions, or associated litigation related to protected species and associated critical habitat designations;
- the effects of changes in federal, state, or local laws and regulations, and other governmental actions or policies, including changes in monetary, fiscal, tax, environmental, trade/tariff, domestic purchase requirements, or energy policies;
- the effects of full or partial shutdowns of the federal government or delays in obtaining government or regulatory actions or decisions;
- uncertainty regarding the establishment of interim or permanent sites for spent nuclear fuel and nuclear waste storage and disposal and the level of spent fuel and nuclear waste disposal fees charged by the U.S. government or other providers related to such sites;
- variations in weather and the occurrence of hurricanes and other storms and disasters, including uncertainties associated with efforts to remediate the effects of hurricanes (including from Hurricane Laura, Hurricane Delta, Hurricane Zeta, and Hurricane Ida), ice storms, or other weather events and the recovery of costs associated with restoration, including accessing funded storm reserves, federal and local cost recovery mechanisms, securitization, and insurance, as well as any related unplanned outages;
- effects of climate change, including the potential for increases in extreme weather events and sea levels or coastal land and wetland loss;
- the risk that an incident at any nuclear generation facility in the U.S. could lead to the assessment of significant retrospective assessments and/or retrospective insurance premiums as a result of Entergy's participation in a secondary financial protection system and a utility industry mutual insurance company;
- changes in the quality and availability of water supplies and the related regulation of water use and diversion;
- Entergy's ability to manage its capital projects, including completion of projects timely and within budget and to obtain the anticipated performance or other benefits, and its operation and maintenance costs;
- Entergy's ability to purchase and sell assets at attractive prices and on other attractive terms;
- the economic climate, and particularly economic conditions in Entergy's Utility service area and events and circumstances that could influence economic conditions in those areas, including power prices, and the risk that anticipated load growth may not materialize;
- changes to federal income tax laws and regulations, including the continued impact of the Tax Cuts and Jobs Act and its intended and unintended consequences on financial results and future cash flows;
- the effects of Entergy's strategies to reduce tax payments;
- changes in the financial markets and regulatory requirements for the issuance of securities, particularly as they affect access to capital and Entergy's ability to refinance existing securities and fund investments and acquisitions;
- actions of rating agencies, including changes in the ratings of debt and preferred stock, changes in general corporate ratings, and changes in the rating agencies' ratings criteria;
- changes in inflation and interest rates;
- the effects of litigation and government investigations or proceedings;

FORWARD-LOOKING INFORMATION (Concluded)

- changes in technology, including (i) Entergy's ability to implement new or emerging technologies, (ii) the impact of changes relating to new, developing, or alternative sources of generation such as distributed energy and energy storage, renewable energy, energy efficiency, demand side management and other measures that reduce load and government policies incentivizing development of the foregoing, and (iii) competition from other companies offering products and services to Entergy's customers based on new or emerging technologies or alternative sources of generation;
- Entergy's ability to effectively formulate and implement plans to reduce its carbon emission rate and aggregate carbon emissions, including its commitment to achieve net-zero carbon emissions by 2050, and the potential impact on its business of attempting to achieve such objectives;
- the effects, including increased security costs, of threatened or actual terrorism, cyber-attacks or data security breaches, natural or man-made electromagnetic pulses that affect transmission or generation infrastructure, accidents, and war or a catastrophic event such as a nuclear accident or a natural gas pipeline explosion;
- the effects of a global event or pandemic, such as the COVID-19 global pandemic, including economic and societal disruptions; volatility in the capital markets (and any related increased cost of capital or any inability to access the capital markets or draw on available bank credit facilities); reduced demand for electricity, particularly from commercial and industrial customers; increased or unrecoverable costs; supply chain, vendor, and contractor disruptions; delays in completion of capital or other construction projects, maintenance, and other operations activities, including prolonged or delayed outages; impacts to Entergy's workforce availability, health, or safety; increased cybersecurity risks as a result of many employees telecommuting; increased late or uncollectible customer payments; regulatory delays; executive orders affecting, or increased regulation of, Entergy's business; changes in credit ratings or outlooks as a result of any of the foregoing; or other adverse impacts on Entergy's ability to execute on its business strategies and initiatives or, more generally, on Entergy's results of operations, financial condition, and liquidity;
- Entergy's ability to attract and retain talented management, directors, and employees with specialized skills;
- Entergy's ability to attract, retain, and manage an appropriately qualified workforce;
- changes in accounting standards and corporate governance;
- declines in the market prices of marketable securities and resulting funding requirements and the effects on benefits costs for Entergy's defined benefit pension and other postretirement benefit plans;
- future wage and employee benefit costs, including changes in discount rates and returns on benefit plan assets;
- changes in decommissioning trust fund values or earnings or in the timing of, requirements for, or cost to decommission Entergy's nuclear plant sites and the implementation of decommissioning of such sites following shutdown;
- the decision to cease merchant power generation at all Entergy Wholesale Commodities nuclear power plants by mid-2022, including the implementation of the planned shutdown and sale of Palisades;
- the effectiveness of Entergy's risk management policies and procedures and the ability and willingness of its counterparties to satisfy their financial and performance commitments; and
- Entergy and its subsidiaries' ability to successfully execute on their business strategies, including their ability to complete strategic transactions that Entergy may undertake.

DEFINITIONS

Certain abbreviations or acronyms used in the text and notes are defined below:

Abbreviation or Acronym	Term
AFUDC	Allowance for Funds Used During Construction
ALJ	Administrative Law Judge
ANO 1 and 2	Units 1 and 2 of Arkansas Nuclear One (nuclear), owned by Entergy Arkansas
APSC	Arkansas Public Service Commission
ASU	Accounting Standards Update issued by the FASB
Board	Board of Directors of Entergy Corporation
Cajun	Cajun Electric Power Cooperative, Inc.
capacity factor	Actual plant output divided by maximum potential plant output for the period
City Council	Council of the City of New Orleans, Louisiana
COVID-19	The novel coronavirus disease declared a pandemic by the World Health Organization and the Centers for Disease Control and Prevention in March 2020
D.C. Circuit	U.S. Court of Appeals for the District of Columbia Circuit
DOE	United States Department of Energy
Entergy	Entergy Corporation and its direct and indirect subsidiaries
Entergy Corporation	Entergy Corporation, a Delaware corporation
Entergy Gulf States, Inc.	Predecessor company for financial reporting purposes to Entergy Gulf States Louisiana that included the assets and business operations of both Entergy Gulf States Louisiana and Entergy Texas
Entergy Gulf States Louisiana	Entergy Gulf States Louisiana, L.L.C., a Louisiana limited liability company formally created as part of the jurisdictional separation of Entergy Gulf States, Inc. and the successor company to Entergy Gulf States, Inc. for financial reporting purposes. The term is also used to refer to the Louisiana jurisdictional business of Entergy Gulf States, Inc., as the context requires. Effective October 1, 2015, the business of Entergy Gulf States Louisiana was combined with Entergy Louisiana.
Entergy Louisiana	Entergy Louisiana, LLC, a Texas limited liability company formally created as part of the combination of Entergy Gulf States Louisiana and the company formerly known as Entergy Louisiana, LLC (Old Entergy Louisiana) into a single public utility company and the successor to Old Entergy Louisiana for financial reporting purposes.
Entergy Texas	Entergy Texas, Inc., a Texas corporation formally created as part of the jurisdictional separation of Entergy Gulf States, Inc. The term is also used to refer to the Texas jurisdictional business of Entergy Gulf States, Inc., as the context requires.
Entergy Wholesale Commodities	Entergy's non-utility business segment primarily comprised of the ownership, operation, and decommissioning of nuclear power plants, the ownership of interests in non-nuclear power plants, and the sale of the electric power produced by its operating power plants to wholesale customers
EPA	United States Environmental Protection Agency
ERCOT	Electric Reliability Council of Texas
FASB	Financial Accounting Standards Board
FERC	Federal Energy Regulatory Commission
FitzPatrick	James A. FitzPatrick Nuclear Power Plant (nuclear), previously owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment, which was sold in March 2017
Grand Gulf	Unit No. 1 of Grand Gulf Nuclear Station (nuclear), 90% owned or leased by System Energy

DEFINITIONS (Continued)

Abbreviation or Acronym	Term
GWh	Gigawatt-hour(s), which equals one million kilowatt-hours
HLBV	Hypothetical liquidation at book value
Independence	Independence Steam Electric Station (coal), owned 16% by Entergy Arkansas, 25% by Entergy Mississippi, and 7% by Entergy Power, LLC
Indian Point 2	Unit 2 of Indian Point Energy Center (nuclear), previously owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment, which ceased power production in April 2020 and was sold in May 2021
Indian Point 3	Unit 3 of Indian Point Energy Center (nuclear), previously owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment, which ceased power production in April 2021 and was sold in May 2021
IRS	Internal Revenue Service
ISO	Independent System Operator
kV	Kilovolt
kW	Kilowatt, which equals one thousand watts
kWh	Kilowatt-hour(s)
LDEQ	Louisiana Department of Environmental Quality
LPSC	Louisiana Public Service Commission
Mcf	1,000 cubic feet of gas
MISO	Midcontinent Independent System Operator, Inc., a regional transmission organization
MMBtu	One million British Thermal Units
MPSC	Mississippi Public Service Commission
MW	Megawatt(s), which equals one thousand kilowatts
MWh	Megawatt-hour(s)
Nelson Unit 6	Unit No. 6 (coal) of the Nelson Steam Electric Generating Station, 70% of which is co-owned by Entergy Louisiana (57.5%) and Entergy Texas (42.5%) and 10.9% of which is owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment
Net debt to net capital ratio	Gross debt less cash and cash equivalents divided by total capitalization less cash and cash equivalents
NRC	Nuclear Regulatory Commission
NYPA	New York Power Authority
Palisades	Palisades Nuclear Plant (nuclear), owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment
Parent & Other	The portions of Entergy not included in the Utility or Entergy Wholesale Commodities segments, primarily consisting of the activities of the parent company, Entergy Corporation
Pilgrim	Pilgrim Nuclear Power Station (nuclear), previously owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment, which ceased power production in May 2019 and was sold in August 2019
PPA	Purchased power agreement or power purchase agreement
PRP	Potentially responsible party (a person or entity that may be responsible for remediation of environmental contamination)
PUCT	Public Utility Commission of Texas

DEFINITIONS (Concluded)

Abbreviation or Acronym	Term
Registrant Subsidiaries	Entergy Arkansas, LLC, Entergy Louisiana, LLC, Entergy Mississippi, LLC, Entergy New Orleans, LLC, Entergy Texas, Inc., and System Energy Resources, Inc.
River Bend	River Bend Station (nuclear), owned by Entergy Louisiana
RTO	Regional transmission organization
SEC	Securities and Exchange Commission
System Agreement	Agreement, effective January 1, 1983, as modified, among the Utility operating companies relating to the sharing of generating capacity and other power resources. The agreement terminated effective August 2016.
System Energy	System Energy Resources, Inc.
TWh	Terawatt-hour(s), which equals one billion kilowatt-hours
Unit Power Sales Agreement	Agreement, dated as of June 10, 1982, as amended and approved by the FERC, among Entergy Arkansas, Entergy Louisiana, Entergy Mississippi, Entergy New Orleans, and System Energy, relating to the sale of capacity and energy from System Energy's share of Grand Gulf
Utility	Entergy's business segment that generates, transmits, distributes, and sells electric power, with a small amount of natural gas distribution
Utility operating companies	Entergy Arkansas, Entergy Louisiana, Entergy Mississippi, Entergy New Orleans, and Entergy Texas
Vermont Yankee	Vermont Yankee Nuclear Power Station (nuclear), previously owned by an Entergy subsidiary in the Entergy Wholesale Commodities business segment, which ceased power production in December 2014 and was disposed of in January 2019
Waterford 3	Unit No. 3 (nuclear) of the Waterford Steam Electric Station, owned by Entergy Louisiana
weather-adjusted usage	Electric usage excluding the effects of deviations from normal weather
White Bluff	White Bluff Steam Electric Generating Station, 57% owned by Entergy Arkansas

ENTERGY CORPORATION AND SUBSIDIARIES

MANAGEMENT'S FINANCIAL DISCUSSION AND ANALYSIS

Entergy operates primarily through two business segments: Utility and Entergy Wholesale Commodities.

- The **Utility** business segment includes the generation, transmission, distribution, and sale of electric power in portions of Arkansas, Mississippi, Texas, and Louisiana, including the City of New Orleans; and operation of a small natural gas distribution business.
- The **Entergy Wholesale Commodities** business segment includes the ownership, operation, and decommissioning of nuclear power plants located in the northern United States and the sale of the electric power produced by its operating plants to wholesale customers. Entergy Wholesale Commodities also provides services to other nuclear power plant owners and owns interests in non-nuclear power plants that sell the electric power produced by those plants to wholesale customers. See " **Entergy Wholesale Commodities Exit from the Merchant Power Business** " below for discussion of the operation and planned shutdown and sale of each of the Entergy Wholesale Commodities nuclear power plants, including the planned shutdown and sale of Palisades, the only remaining operating plant in Entergy Wholesale Commodities' merchant nuclear fleet.

Following are the percentages of Entergy's consolidated revenues generated by its operating segments and the percentage of total assets by operating segment. Net income or loss generated by the operating segments is discussed in the sections that follow.

	% of Revenue			% of Total Assets		
Segment	**2021**	**2020**	**2019**	**2021**	**2020**	**2019**
Utility	94	91	88	100	96	96
Entergy Wholesale Commodities	6	9	12	2	7	8
Parent & Other (a)	—	—	—	(2)	(3)	(4)

See Note 13 to the financial statements for further financial information regarding Entergy's business segments.

(a) Parent & Other includes eliminations, which are primarily intersegment activity.

Hurricane Ida

In August 2021, Hurricane Ida caused extensive damage to the Entergy distribution and, to a lesser extent, transmission systems across Louisiana resulting in widespread power outages. Total restoration costs for the repair and/or replacement of the electrical system damaged by Hurricane Ida for Entergy Louisiana and Entergy New Orleans are currently estimated to be approximately $2.7 billion. Also, Utility revenues in 2021 were adversely affected by extended power outages resulting from the hurricane.

Entergy has recorded accounts payable for the estimated costs incurred that were necessary to return customers to service. Entergy recorded corresponding regulatory assets of approximately $1.1 billion and construction work in progress of approximately $1.6 billion. Entergy recorded the regulatory assets in accordance with its accounting policies and based on the historic treatment of such costs in its service area because management believes that recovery through some form of regulatory mechanism is probable. There are well-established mechanisms and precedent for addressing these catastrophic events and providing for recovery of prudently incurred storm costs in accordance with applicable regulatory and legal principles. Because Entergy has not gone through the regulatory process regarding these storm costs, there is an element of risk, and Entergy is unable to predict with

certainty the degree of success it may have in its recovery initiatives, the amount of restoration costs that it may ultimately recover, or the timing of such recovery.

1

Entergy is considering all available avenues to recover storm-related costs from Hurricane Ida, including federal government assistance and securitization financing. In September 2021, Entergy Louisiana filed an application at the LPSC seeking approval of certain ratemaking adjustments in connection with the issuance of approximately $1 billion of shorter-term mortgage bonds to provide interim financing for restoration costs associated with Hurricane Ida, which bonds were issued in October 2021. Also in September 2021, Entergy Louisiana sought approval for the creation and funding of a $1 billion restricted escrow account for Hurricane Ida restoration costs. In September 2021, Entergy New Orleans withdrew $39 million from its funded storm reserves. In February 2022, Entergy New Orleans filed with the City Council a securitization application requesting that the City Council review Entergy New Orleans's storm reserve and increase the storm reserve funding level to $150 million, to be funded through securitization. Storm cost recovery or financing will be subject to review by applicable regulatory authorities.

Results of Operations

2021 Compared to 2020

Following are income statement variances for Utility, Entergy Wholesale Commodities, Parent & Other, and Entergy comparing 2021 to 2020 showing how much the line item increased or (decreased) in comparison to the prior period.

	Utility	Entergy Wholesale Commodities	Parent & Other (a)	Entergy
	(In Thousands)			
2020 Net Income (Loss) Attributable to Entergy Corporation	$1,800,223	($64,951)	($346,938)	$1,388,334
Operating revenues	1,873,960	(244,705)	5	1,629,260
Fuel, fuel-related expenses, and gas purchased for resale	878,372	15,357	(4)	893,725
Purchased power	362,066	5,339	4	367,409
Other regulatory charges (credits) - net	97,019	—	—	97,019
Other operation and maintenance	179,005	(213,173)	163	(34,005)
Asset write-offs, impairments, and related charges	—	237,002	—	237,002
Taxes other than income taxes	44,050	(36,121)	(479)	7,450
Depreciation and amortization	128,953	(57,624)	(129)	71,200
Other income (deductions)	75,588	(87,105)	9,063	(2,454)
Interest expense	43,153	(9,098)	14,976	49,031
Other expenses	(1,723)	(85,248)	—	(86,971)
Income taxes	546,520	(130,318)	(103,322)	312,880
Preferred dividend requirements of subsidiaries and noncontrolling interest	(18,064)	—	(28)	(18,092)
2021 Net Income (Loss) Attributable to Entergy Corporation	$1,490,420	($122,877)	($249,051)	$1,118,492

(a) Parent & Other includes eliminations, which are primarily intersegment activity.

Results of operations for 2021 include a charge of $340 million ($268 million net-of-tax), reflected in "Asset write-offs, impairments, and related charges," as a result of the sale of the Indian Point Energy Center in May 2021. See Note 14 to the financial statements for further discussion of the sale of the Indian Point Energy Center.

Results of operations for 2020 include resolution of the 2014-2015 IRS audit, which resulted in a reduction in deferred income tax expense of $230 million that includes a $396 million reduction in deferred income tax expense at Utility related to the basis of assets contributed in the 2015 Entergy Louisiana and Entergy Gulf States Louisiana business combination, including the recognition of previously uncertain tax positions, and deferred income tax expense of $105 million at Entergy Wholesale Commodities and $61 million at Parent and Other resulting from the revaluation of net operating losses as a result of the release of the reserves. See Note 3 to the financial statements for further discussion of the IRS audit resolution.

Operating Revenues

Utility

Following is an analysis of the change in operating revenues comparing 2021 to 2020:

	Amount
	(In Millions)
2020 operating revenues	$9,171
Fuel, rider, and other revenues that do not significantly affect net income	1,409
Retail electric price	404
Volume/weather	55
System Energy provision for rate refund	25
Return of unprotected excess accumulated deferred income taxes to customers	(19)
2021 operating revenues	**$11,045**

The Utility operating companies' results include revenues from rate mechanisms designed to recover fuel, purchased power, and other costs such that the revenues and expenses associated with these items generally offset and do not affect net income. "Fuel, rider, and other revenues that do not significantly affect net income" includes the revenue variance associated with these items.

The retail electric price variance is primarily due to:

- an increase in Entergy Arkansas's formula rate plan rates effective May 2021;
- increases in Entergy Louisiana's overall formula rate plan revenues, including an interim increase effective April 2020 due to the inclusion of the first-year revenue requirement for the Lake Charles Power Station, an increase in the transmission recovery mech anism e ffective September 2020, an interim increase effective December 2020 due to the inclusion of the first-year revenue requirement for the Washington Parish Energy Center, and increases in the transmission and distribution recovery mechanisms effective September 2021;
- increases in Entergy Mississippi's formula rate plan rates effective April 2020, April 2021, and July 2021;
- an interim increase in Entergy New Orleans's formula rate plan revenues resulting from the recovery of New Orleans Power Station costs, effective November 2020, and a rate increase effective November 2021; and
- the implementation of the generation cost recovery rider, which includes the first-year revenue requirement for the Montgomery County Power Station, effective January 2021, an increase in the transmission cost recovery factor rider effective March 2021, and an increase in the distribution cost recovery factor rider effective March 2021, each at Entergy Texas.

See Note 2 to the financial statements for further discussion of the regulatory proceedings discussed above.

The volume/weather variance is primarily due to an increase of 3,574 GWh, or 3%, in billed electricity usage, including the effect of more favorable weather on residential sales and an increase in industrial usage, partially offset by a decrease in weather-adjusted residential usage and a decrease in usage during the unbilled sales period. The increase in industrial usage is primarily due to an increase in demand from expansion projects, primarily in the transportation, metals, and chemicals industries, and an increase in demand from cogeneration customers. The decrease in weather-adjusted residential usage was primarily due to the impact that the COVID-19 pandemic had on prior year usage.

The System Energy provision for rate refund variance is due to a provision for rate refund recorded in 2020 to reflect a one-time credit of $25 million provided for in the Federal Power Act section 205 filing made by System Energy in December 2020. The one-time credit was made in the first quarter 2021. See Note 2 to the financial statements for further discussion of the proceedings involving System Energy at the FERC.

The return of unprotected excess accumulated deferred income taxes to customers resulted from activity at the Utility operating companies in response to the enactment of the Tax Cuts and Jobs Act. The return of unprotected excess accumulated deferred income taxes began in second quarter 2018. In 2021, $87 million was returned to customers through reductions in operating revenues as compared to $68 million in 2020. There is no effect on net income as the reductions in operating revenues were offset by reductions in income tax expense. See Note 2 to the financial statements for further discussion of regulatory activity regarding the Tax Cuts and Jobs Act.

Billed electric energy sales for Utility for the years ended December 31, 2021 and 2020 are as follows:

	2021	2020	% Change
	(GWh)		
Residential	35,669	35,173	1
Commercial	26,818	26,466	1
Industrial	49,819	47,117	6
Governmental	2,438	2,414	1
Total retail	114,744	111,170	3
Sales for resale	16,656	13,658	22
Total	131,400	124,828	5

See Note 19 to the financial statements for additional discussion of operating revenues.

Entergy Wholesale Commodities

Operating revenues for Entergy Wholesale Commodities decreased from $943 million for 2020 to $698 million for 2021 primarily due to the shutdown of Indian Point 2 in April 2020 and the shutdown of Indian Point 3 in April 2021.

Following are key performance measures for Entergy Wholesale Commodities for 2021 and 2020:

	2021	2020
Owned capacity (MW) (a)	1,205	2,246
GWh billed	11,328	20,581
Entergy Wholesale Commodities Nuclear Fleet		
Capacity factor	97%	93%
GWh billed	9,836	18,863
Average energy price ($/MWh)	$54.56	$40.33
Average capacity price ($/kW-month)	$0.26	$1.92
Refueling outage days:		
Palisades	—	52

(a) The reduction in owned capacity is due to the shutdown of the 1,041 MW Indian Point 3 plant in April 2021.

Other Income Statement Items

Utility

Other operation and maintenance expenses increased from $2,478 million for 2020 to $2,657 million for 2021 primarily due to:

- an increase of $49 million in compensation and benefits costs in 2021 primarily du e to higher incentive-based compensation accruals in 2021 as compared to prior year, lower healthcare claims activity in 2020 as a result of the COVID-19 pandemic, an increase in healthcare cost rates, and an increase in net periodic pension and other postretirement benefits costs as a result of a de crease in the discount rate used to value the benefit liabilities. See " **Critical Accounting Estimates** " below and Note 11 to the financial statements for further discussion of pension and other postretirement benefit costs;
- an increase of $28 million in distribution operations expenses primarily due to higher reliability costs;
- an increase of $27 million primarily due to an increase in contract costs related to customer solutions and sustainability initiatives, including customer service center support and enhanced customer billing;
- an increase of $20 million in non-nuclear generation expenses primarily due to higher expenses associated with plants placed in ser vice, including the Lake Charles Power Station, which began commercial operation in March 2020; the New Orleans Power Station, which began commercial operation in May 2020; the Washington Parish Energy Center, purchased in November 2020; and the Montgomery County Power Station, which began commercial operation in January 2021;
- an increase of $16 million in nuclear generation expenses primarily due to higher nuclear labor costs, including contract labor, and a higher scope of work performed in 2021 as compared to 2020;
- an increase of $15 million as a result of the amount of transmission costs allocated by MISO. See Note 2 to the financial statements for further information on the recovery of these costs;
- the effects of recording final judgments to resolve claims in the Waterford 3 damages case and the Grand Gulf damages case in 2020 and the River Bend damages case in 2021, each against the DOE related to spent nuclear fuel storage costs. The damages awarded include the reimbursement of approximately $18 million in 2020 of spent nuclear fuel storage costs previously recorded as other operation and maintenance expense compared to the reimbursement of approximately $4 million in 2021. See Note 8 to the financial statements for discussion of the spent nuclear fuel litigation;

- lower nuclear insurance refunds of $13 million; and
- several individually insignificant items.

The increase was partially offset by a decrease of $19 million in meter reading expenses as a result of the deployment of advanced metering systems and a gain of $15 million, recorded in 2021, on the sale of a pipeline.

Taxes other than income taxes increased primarily due to increases in ad valorem taxes resulting from higher assessments and increases in franchise taxes resulting from an increase in revenue collected.

Depreciation and amortization expenses increased primarily due to additions to plant in service, including the Lake Charles Power Station, the Montgomery County Power Station, and the Washington Parish Energy Center.

Other regulatory charges (credits) - net includes:

- regulatory charges of $44 million, recorded in the fourth quarter 2020 at Entergy Arkansas, to reflect the 2019 historical year netting adjustment included in the APSC's December 2020 order in the 2020 formula rate plan proceeding. See Note 2 to the financial statements for discussion of Entergy Arkansas's 2020 formula rate plan filing;
- regulatory credits of $47 million, recorded in 2020 at Entergy Arkansas, to reflect the amortization of the 2018 historical year netting adjustment reflected in the 2019 formula rate plan filing. See Note 2 to the financial statements for discussion of Entergy Arkansas's 2019 formula rate plan filing;
- the reversal in 2021 of the remaining $39 million regulatory liability for Entergy Arkansas's 2019 historical year netting adjustment as part of its 2020 formula rate plan proceeding. See Note 2 to the financial statements for discussion of Entergy Arkansas's 2020 formula rate plan filing;
- regulatory charges of $33 million, recorded in the fourth quarter 2020 at Entergy Louisiana, due to a settlement with the IRS related to the uncertain tax position regarding Hurricane Katrina and Hurricane Rita Louisiana Act 55 financing because the savings will be shared with customers. See Note 3 to the financial statements for further discussion of the settlement and savings obligation;
- regulatory charges of $29 million, recorded in the first quarter 2020 at Entergy Louisiana, due to a settlement with the IRS related to the uncertain tax position regarding the Hurricane Isaac Louisiana Act 55 financing because the savings will be shared with customers. See Note 3 to the financial statements for further discussion of the settlement and savings obligation;
- regulatory credits of $20 million, recorded in the second quarter 2021 at Entergy Mississippi, to reflect the effects of the joint stipulation reached in the 2021 formula rate plan filing proceeding. See Note 2 to the financial statements for discussion of Entergy Mississippi's 2021 formula rate plan filing; and
- regulatory credits of $19 million, recorded in the fourth quarter 2021 at Entergy Mississippi, to reflect that the 2021 earned return is below the formula bandwidth. See Note 2 to the financial statements for discussion of Entergy Mississippi's formula rate plan filings.

In addition, Entergy records a regulatory charge or credit for the difference between asset retirement obligation-related expenses and nuclear decommissioning trust earnings plus asset retirement obligation related costs collected in revenue.

Other inco me increased pri marily due to changes in decommissioning trust fund activity, including portfolio rebalancing of the decommissioning trust funds in 2021, partially offset by a decrease in the allowance for equity funds used during construction due to higher construction work in progress in 2020, including the Lake Charles Power Station project and the Montgomery County Power Station project.

Interest expense increased primarily due to:

- the issuances by Entergy Louisiana of $1.1 billion of 0.62% Series mortgage bonds, $300 million of 2.90%

Series mortgage bonds, and $300 million of 1.60% Series mortgage bonds, each in November 2020;

- the issuances by Entergy Louisiana of $500 million of 2.35% Series mortgage bonds and $500 million of 3.10% Series mortgage bonds, each in March 2021;
- the issuance by Entergy Louisiana of $1 billion of 0.95% Series mortgage bonds in October 2021;