

Monthly — March 17, 2023

U.S. Economic Outlook: March 2023

Table of Contents

1. [The U.S. Economic Outlook](#)
2. [U.S. Forecast Table](#)
3. [Changes to U.S. Forecast](#)
4. [Sector Analysis](#)
5. [International Forecast Tables](#)
6. [Calendar](#)

The Economic Outlook Has Just Become More Uncertain

- The economic and financial landscape has changed dramatically over the past week due to the current banking crisis that is leading to an elevated level of volatility in financial markets. We are explicitly assuming that authorities will take the necessary steps in coming weeks and months to stave off another global financial crisis à la 2008. After all, authorities proved remarkably adept in 2008 and again in 2020 with implementation of policies and programs that alleviated tensions, at least in part, in financial markets.
- That said, there likely will be lasting economic consequences, because financial market conditions have tightened considerably over the past week. Lingered uncertainty likely will keep credit spreads wider in coming weeks and months, and many banks likely will tighten lending standards, at least in the near term. In our view, credit growth to the non-financial sector likely will downshift, which will exert headwinds on U.S. GDP growth in coming quarters.
- We forecast that businesses will pare back fixed investment spending in coming quarters and that they will also start to rein in their hiring plans as well. A vicious circle will start to take hold in which tighter financial conditions lead to slower growth, which begets further financial tightening, leading to even slower growth, etc. We look for U.S. real GDP to contract 1.2% later this year and into early 2024.
- In our view, the recent volatility in financial markets that has clouded the economic outlook will lead the FOMC to pause its tightening cycle at its next regularly scheduled policy meeting on March 22. But if, as we assume, financial markets stabilize in coming weeks, then we look for the Committee to hike rates by 25 bps at its May 3 meeting and by another 25 bps on June 14. We then look for the FOMC to remain on hold until Q4-2023. We forecast the Committee will begin an easing cycle starting at the end of this year as the pace of economic contraction deepens and as inflation recedes.
- This forecast is predicated on our assumption that authorities will use their toolkit to contain the current crisis. However, if authorities are unable or unwilling to use those tools, then tensions in financial markets could become even more acute, which would have more dire economic consequences than outlined herein.

The Economic Outlook Has Just Become More Uncertain

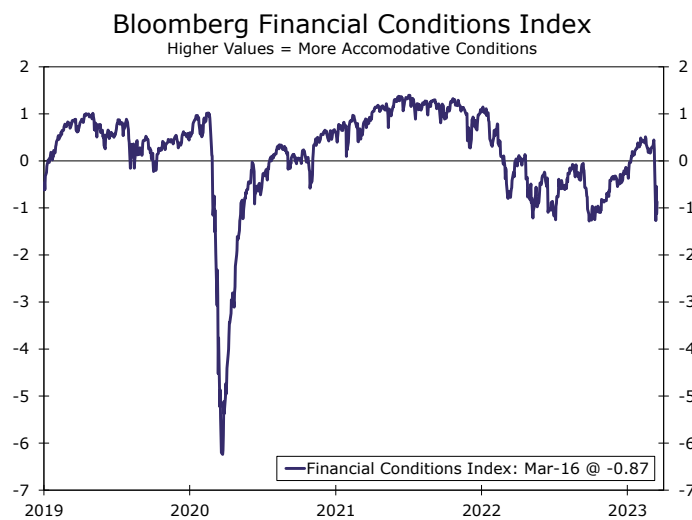
Up until a week ago, our outlook for the U.S. economy was more or less constructive, at least by the standards of 2007-2009 and 2020. Yes, the economy has an inflation problem, which has led the FOMC to tighten monetary policy aggressively over the past year. In our view, this monetary tightening in conjunction with the eroding effects of inflation on real income growth would lead to a modest U.S. recession in 2023. In our *U.S. Economic Outlook* in February, we forecasted that the peak-to-trough decline in real GDP would amount to only 0.9% between Q2-2023 and Q1-2024. To put that number into perspective, note that U.S. real GDP contracted 3.8% during the Q4-2007 to Q2-2009 downturn and by nearly 10% in early 2020. In short, we anticipated that the U.S. economy would experience a recession this year, but it would be much less severe than the past two economic downturns.

The economic and financial landscape has changed dramatically over the past week due to the recent banking crisis in the United States and the associated turmoil in financial markets. The situation is very fluid at present, and the uncertainty associated with our economic outlook has risen markedly. Every forecast is based on a set of underlying assumptions, which often are implicit. But in uncertain times, it becomes a forecaster's duty to make some of their most important assumptions explicit.

In that regard, we are explicitly assuming that authorities will take the necessary steps in coming weeks and months to stave off another global financial crisis à la 2008. It is difficult to determine at this time exactly what concrete steps will be required. Much will depend on the course of events in coming days and weeks. But authorities, especially the U.S. Federal Reserve, proved remarkably adept in 2008 and again in 2020 with implementation of policies and programs that alleviated tensions, at least in part, in financial markets. These measures helped to cushion the blow to real economic activity during those episodes. We assume that authorities will use the tools they have developed in recent years, and perhaps new ones, to contain the current crisis.

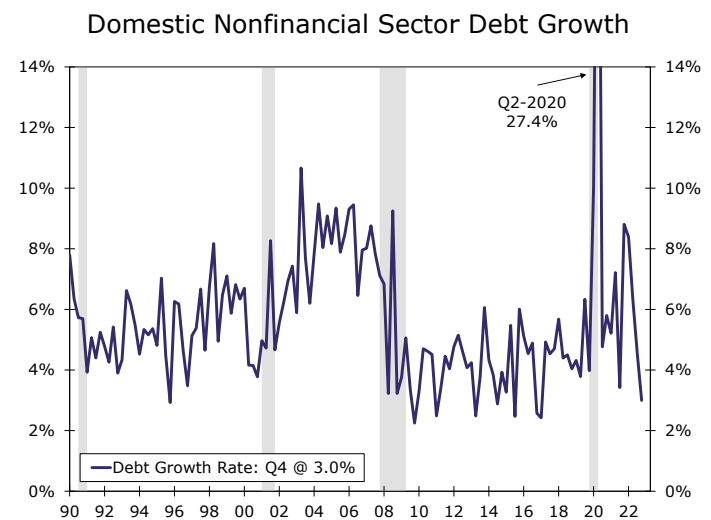
But recent developments undoubtedly will have lasting consequences, even if authorities are successful in containing the current crisis. Financial market conditions have tightened considerably over the past week ([Figure 1](#)). Equity prices have fallen and credit spreads have widened. Volatility in financial markets may eventually subside, but lingering uncertainty likely will keep credit spreads wider in coming weeks and months. Many banks likely will tighten lending standards, at least in the near term. Bank regulations may be tightened. In short, credit growth to the non-financial sector, which has slowed in recent quarters, likely will downshift further in coming months ([Figure 2](#)). Tighter financial conditions and slower credit growth will exert headwinds on U.S. GDP growth in coming quarters.

Figure 1



Source: Bloomberg Finance L.P. and Wells Fargo Economics

Figure 2



Source: Federal Reserve Board and Wells Fargo Economics

We Look for Recession Starting in the Second Half of 2023

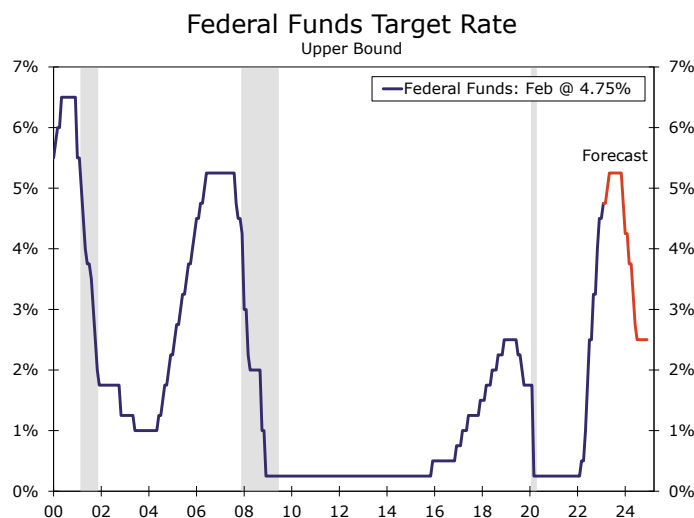
We have been forecasting for some time that the U.S. economy would slip into a modest recession this year. As noted previously, this forecast was based on our assessment that the Federal Reserve would need to slow growth in the economy sufficiently to bring inflation back to the Fed's 2% inflation target. Recent developments in financial markets are compounding the Fed's efforts to slow the pace of economic activity, which raises the probability of recession, in our view. Accordingly, we look for real GDP growth to turn negative in the second half of this year as businesses pare back fixed investment spending. As growth slows, businesses likely will rein in their hiring plans as well. Slower employment growth will cause income growth to slow, which will then weigh on consumer spending. A vicious circle will take hold in which tighter financial conditions lead to slower growth, which begets further financial tightening, leading to even slower growth, etc. Consequently, we look for real GDP growth to remain negative through early 2024, with a peak-to-trough decline of around 1.2%.

Given the momentum behind consumer prices at present, we expect inflation to remain elevated in the near term. Specifically, we look for the core rate of PCE inflation, which is the Fed's preferred gauge of consumer price inflation, to average 4.7% year-over-year in Q1-2023, which is down only incrementally from the 4.8% rate that was registered in the fourth quarter of 2022. However, the modest recession we are forecasting should bring inflation lower over the course of the year. The rise in the unemployment rate, which we anticipate will increase from 3.6% in February to more than 5% by early next year, should lead to deceleration in prices of services. We look for the core rate of PCE inflation to fall to 3.4% by the end of this year before receding further to 2.2% by the end of 2024.

This revised economic outlook will have some implications for Fed policy going forward. As we discussed in a recent [report](#), we believe that the recent turbulence in financial markets will lead the FOMC to pause in its tightening cycle at its next regularly scheduled policy meeting on March 22. But if our assumption that authorities manage to ringfence the current banking crisis proves to be correct, then financial market volatility should subside and Fed policymakers will turn their attention back to incoming economic data. If the labor market remains generally tight in the near term and inflation remains well above the Fed's target of 2%, then we would envision the FOMC raising rates by 25 bps at its meeting on May 3 and by another 25 bps on June 14. In short, we forecast that the FOMC will raise its target range for the federal funds rate to 5.00%-5.25% by June from its current setting of 4.50%-4.75% ([Figure 3](#)).

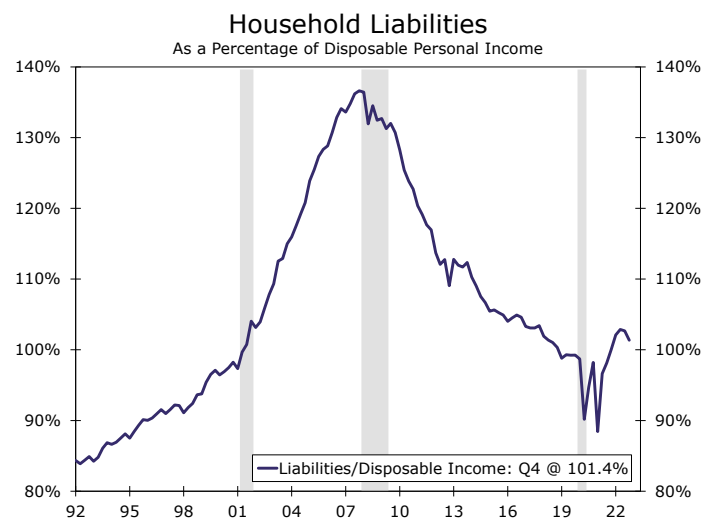
We then look for the Committee to keep rates on hold until the fourth quarter despite signs of weakening economic activity starting this summer. In our view, the FOMC wants to be confident that inflation is returning to its 2% target before it begins to relax its restrictive policy stance. But as the pace of economic contraction gathers steam and as inflation recedes further, we look for the FOMC to begin an easing cycle that starts at the end of this year and extends through Q3-2024.

Figure 3



Source: Federal Reserve Board and Wells Fargo Economics

Figure 4



Source: Federal Reserve Board and Wells Fargo Economics

We have been writing since last summer that the recession in our forecast likely will be modest. That expectation remains our base case due, at least in part, to the solid financial position of the household sector. As shown in [Figure 4](#), the liabilities-to-income ratio in the household sector has receded considerably since its peak in 2007. That is, the household sector is significantly less leveraged today than it was during the housing bubble that began about 20 years ago. In addition, the banking system is better capitalized today than in was on the eve of the 2008 global financial crisis, which we discussed in more detail in the [report](#) we referenced previously.

That said, the forecast we outline in this document is predicated on our assumption that authorities will use their toolkit to contain the current crisis. However, if authorities are unable or unwilling to use those tools, then tensions in financial markets could become even more acute, which would have more dire economic consequences than outlined herein. The situation remains very fluid, and events could turn in unexpected ways. We will continue to closely monitor the situation and will make revisions to our outlook, as needed, on a prompt basis.

U.S. Forecast Table

Wells Fargo U.S. Economic Forecast																
	Actual								Forecast							
	2021				2022				2023				2024			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Real Gross Domestic Product (a)	6.3	7.0	2.7	7.0	-1.6	-0.6	3.2	2.7	0.7	1.2	-0.9	-2.6	-1.2	3.4	2.3	2.6
Personal Consumption	10.8	12.1	3.0	3.1	1.3	2.0	2.3	1.4	2.8	0.8	-0.2	-3.2	-1.3	2.4	2.1	2.2
Business Fixed Investment	8.9	9.9	0.6	1.1	7.9	0.1	6.2	3.3	1.8	1.4	-2.8	-4.8	-3.3	0.9	3.3	4.4
Equipment	6.1	14.0	-2.2	1.6	11.4	-2.0	10.6	-3.2	-3.4	-0.2	-4.0	-8.4	-6.2	0.4	3.5	4.1
Intellectual Property Products	15.6	12.6	7.4	8.1	10.8	8.9	6.8	7.4	6.9	3.8	-1.8	-1.8	-0.6	2.2	3.8	5.5
Structures	1.9	-2.5	-6.7	-12.7	-4.3	-12.7	-3.6	8.5	2.6	-1.0	-2.5	-3.2	-2.9	-1.8	1.3	1.7
Residential Investment	11.6	-4.9	-5.8	-1.1	-3.1	-17.8	-27.1	-25.9	-11.5	-8.7	-4.5	-2.4	-1.4	3.2	4.4	5.7
Government Purchases	6.5	-3.0	-0.2	-1.0	-2.3	-1.6	3.7	3.6	2.8	1.7	1.6	1.4	1.2	1.1	1.0	0.9
Net Exports	-1164.5	-1203.9	-1267.5	-1297.6	-1488.7	-1430.5	-1268.8	-1238.4	-1237.1	-1241.4	-1224.0	-1187.1	-1162.3	-1154.8	-1156.7	-1157.1
Pct. Point Contribution to GDP	-1.0	-0.6	-1.1	-0.2	-3.1	1.2	2.9	0.5	0.0	-0.1	0.3	0.7	0.5	0.2	0.0	0.0
Inventory Change	-83.0	-143.6	-48.6	197.6	214.5	110.2	38.7	136.3	51.9	77.9	36.4	10.4	-8.8	46.8	51.9	57.1
Pct. Point Contribution to GDP	-2.5	-0.8	2.0	5.0	0.2	-1.9	-1.2	1.5	-1.7	0.5	-0.8	-0.5	-0.4	1.1	0.1	0.1
Nominal GDP (a)	11.7	13.8	9.0	14.3	6.6	8.5	7.7	6.7	5.2	3.8	1.1	-1.0	0.5	5.9	5.1	5.3
Real Final Sales	9.2	7.9	0.7	1.9	-1.8	1.3	4.5	1.2	2.4	0.7	0.0	-2.1	-0.8	2.3	2.2	2.5
Retail Sales (b)	15.1	32.7	15.2	17.7	12.6	8.4	9.4	6.7	5.6	1.4	-0.9	-3.1	-5.2	-3.5	-1.7	0.8
Inflation Indicators (b)																
PCE Deflator	1.9	4.0	4.5	5.7	6.4	6.6	6.3	5.7	4.9	3.8	3.2	2.7	1.9	1.9	2.1	2.3
"Core" PCE Deflator	1.7	3.5	3.9	4.7	5.3	5.0	4.9	4.8	4.7	4.4	3.9	3.4	2.6	2.3	2.2	2.2
Consumer Price Index	1.9	4.8	5.3	6.8	8.0	8.6	8.3	7.1	5.8	4.1	3.3	2.8	2.3	2.3	2.6	2.8
"Core" Consumer Price Index	1.5	3.7	4.0	5.0	6.3	6.0	6.3	6.0	5.6	5.2	4.5	3.9	3.4	2.9	2.8	2.7
Producer Price Index (Final Demand)	2.9	6.9	8.4	9.7	10.8	11.0	8.9	7.3	4.4	1.8	1.6	1.3	1.5	1.7	2.0	2.4
Employment Cost Index	2.6	2.9	3.7	4.0	4.5	5.1	5.0	5.1	4.6	4.1	3.8	3.6	3.5	3.5	3.4	3.3
Real Disposable Income (b)	14.5	-4.4	-1.5	-0.4	-12.8	-5.7	-3.8	-1.4	3.0	3.8	3.2	2.0	0.8	1.0	1.3	2.0
Nominal Personal Income (b)	16.1	2.1	4.9	6.9	-3.5	3.2	4.6	5.6	6.0	5.4	4.1	2.6	2.1	2.2	2.7	3.7
Industrial Production (a)	3.1	6.5	3.5	4.8	4.7	5.0	1.3	-2.4	-3.9	-4.1	-5.2	-7.7	-5.1	-0.1	1.2	1.3
Capacity Utilization	75.6	77.2	78.0	78.8	79.4	80.0	79.9	79.1	78.2	77.4	76.4	74.9	74.0	73.9	74.2	74.4
Corporate Profits Before Taxes (b)	16.1	39.2	15.3	22.3	10.9	7.7	5.5	3.0	1.0	-4.0	-5.0	-5.5	-2.0	1.0	3.0	8.0
Corporate Profits After Taxes	13.8	37.5	14.0	20.7	6.1	5.0	3.5	1.6	2.8	-3.7	-5.7	-5.1	-2.0	0.9	3.1	7.9
Federal Budget Balance (c)	-1133	-532	-538	-378	-291	153	-860	-421	-570	-83	-326	-446	-598	-107	-349	-497
Trade Weighted Dollar Index (d)	104.2	102.7	105.3	108.2	109.6	114.7	121.4	116.6	117.3	115.8	114.8	113.3	111.8	110.0	108.3	106.5
Nonfarm Payroll Change (e)	618	487	663	655	561	329	423	284	338	145	38	-142	-233	-67	92	150
Unemployment Rate	6.2	5.9	5.1	4.2	3.8	3.6	3.6	3.6	3.5	3.6	3.9	4.5	5.2	5.1	4.9	4.7
Housing Starts (f)	1.58	1.59	1.57	1.68	1.72	1.65	1.45	1.40	1.39	1.35	1.24	1.14	1.12	1.26	1.40	1.42
Light Vehicle Sales (g)	16.7	16.7	13.3	13.0	14.1	13.3	13.4	14.3	15.2	14.8	14.0	13.6	14.4	15.4	16.3	16.6
Crude Oil - Brent - Front Contract (h)	60.9	68.6	72.5	79.0	95.7	109.8	95.5	87.9	82.2	82.8	77.3	70.0	70.3	78.0	80.0	81.0
Quarter-End Interest Rates (i)																
Federal Funds Target Rate	0.25	0.25	0.25	0.25	0.50	1.75	3.25	4.50	4.75	5.25	5.25	4.75	3.75	2.75	2.50	2.50
Secured Overnight Financing Rate	0.01	0.05	0.05	0.05	0.29	1.50	2.98	4.30	4.55	5.05	5.05	4.55	3.60	2.60	2.35	2.35
3 Month LIBOR*	0.19	0.15	0.13	0.21	0.96	2.29	3.75	4.77	5.05	5.30	-	-	-	-	-	-
Prime Rate	3.25	3.25	3.25	3.25	3.50	4.75	6.25	7.50	7.75	8.25	8.25	7.75	6.75	5.75	5.50	5.50
Conventional Mortgage Rate	3.14	3.04	2.98	3.21	4.27	5.58	6.01	6.36	6.40	6.20	5.75	5.40	5.35	5.10	4.90	4.75
3 Month Bill	0.03	0.05	0.04	0.06	0.52	1.72	3.33	4.42	4.80	5.05	4.95	4.45	3.45	2.45	2.35	2.35
6 Month Bill	0.05	0.06	0.05	0.19	1.06	2.51	3.92	4.76	4.85	5.05	4.75	3.85	2.95	2.45	2.40	2.40
1 Year Bill	0.07	0.07	0.09	0.39	1.63	2.80	4.05	4.73	4.45	4.60	4.10	3.10	2.65	2.50	2.45	2.50
2 Year Note	0.16	0.25	0.28	0.73	2.28	2.92	4.22	4.41	4.15	4.20	3.50	2.90	2.65	2.55	2.55	2.65
5 Year Note	0.92	0.87	0.98	1.26	2.42	3.01	4.06	3.99	3.75	3.65	3.15	2.85	2.75	2.70	2.70	2.80
10 Year Note	1.74	1.45	1.52	1.52	2.32	2.98	3.83	3.88	3.60	3.50	3.15	2.90	2.85	2.80	2.80	2.85
30 Year Bond	2.41	2.06	2.08	1.90	2.44	3.14	3.79	3.97	3.75	3.70	3.45	3.35	3.30	3.25	3.25	3.30

Forecast as of: March 17, 2023

Notes: (a) Compound Annual Growth Rate Quarter-over-Quarter

(b) Year-over-Year Percentage Change

(c) Quarterly Sum - Billions USD; Annual Data Represents Fiscal Yr.

(d) Federal Reserve Advanced Foreign Economies Index, 2006=100 - Quarter End

(e) Average Monthly Change

(f) Millions of Units - Annual Data - Not Seasonally Adjusted

(g) Quarterly Data - Average Monthly SAAR; Annual Data - Actual Total Vehicles Sold

(h) Quarterly Average of Daily Close

(i) Annual Numbers Represent Averages

*3 Month LIBOR will no longer be published after June 30, 2023

Source: U.S. Department of Commerce, U.S. Department of Labor, IHS Markit, Federal Reserve Board and Wells Fargo Economics

Changes since Previous U.S. Economic Outlook

Changes to the Wells Fargo U.S. Economic Forecast																		
	Actual								Forecast									
	2021				2022				2023				2024				Actual	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	2021	2022
Real Gross Domestic Product (a)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.22	1.33	0.49	1.02	-1.02	-1.07	0.55	0.04	-0.04	0.00	-0.01
Personal Consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.72	2.72	-0.03	0.83	-1.51	-1.31	0.70	0.07	-0.19	0.00	-0.05
Business Fixed Investment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.59	0.35	0.41	1.38	0.11	-0.49	-0.05	0.02	0.02	0.00	0.17
Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	-1.43	-1.13	3.22	0.42	-0.82	0.00	-0.02	-0.01	0.00	0.03
Intellectual Property Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.11	1.88	1.81	0.00	0.00	-0.15	0.00	0.00	0.00	0.00	0.14
Structures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.13	1.30	0.80	-0.10	-0.60	-0.60	-0.30	0.20	0.20	0.00	0.45
Residential Investment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Government Purchases	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	0.50	-0.05	0.15	0.00	0.00	0.00	-0.15	-0.15	0.00	-0.01
Net Exports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.9	-25.9	-6.7	-0.9	0.2	-2.8	-0.2	0.3	6.2	0.0	-1.5
Pct. Point Contribution to GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.40	0.38	0.11	0.02	-0.06	0.05	0.01	0.12	0.00	-0.01
Inventory Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	-9.8	-5.8	-1.3	-0.1	-0.5	-0.3	-0.4	-0.4	0.0	1.6
Pct. Point Contribution to GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	-0.32	0.08	0.09	0.03	-0.01	0.00	0.00	0.00	0.00	0.01
Nominal GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	3.23	0.69	1.11	-1.45	-1.55	0.80	0.54	0.42	0.00	0.01
Real Final Sales	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.22	1.64	0.41	0.93	-1.05	-1.07	0.55	0.04	-0.04	0.00	-0.01
Retail Sales (b)	0.00	0.00	0.00	0.04	-0.06	0.00	0.00	0.02	3.33	2.98	2.62	1.40	-1.98	-1.83	-1.63	-0.53	0.01	-0.01
Inflation Indicators (b)																		
PCE Deflator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.61	0.65	0.66	0.42	-0.16	-0.15	-0.04	0.18	0.00	0.04
"Core" PCE Deflator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.64	0.82	0.88	0.71	0.14	-0.06	-0.13	-0.06	0.00	0.03
Consumer Price Index	0.01	-0.04	-0.03	0.04	0.02	-0.02	-0.03	0.01	0.31	0.65	0.85	0.59	0.20	0.18	0.21	0.38	0.00	-0.01
"Core" Consumer Price Index	0.01	-0.02	-0.02	0.02	0.02	0.00	-0.02	0.01	0.32	0.87	1.20	1.08	0.70	0.30	0.05	-0.02	0.00	0.00
Producer Price Index (Final Demand)	0.00	-0.06	0.02	0.03	-0.02	-0.07	0.00	0.07	0.48	0.62	0.54	0.20	-0.24	-0.30	-0.22	0.08	0.00	0.00
Employment Cost Index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.27	-0.23	-0.18	-0.16	-0.15	-0.14	-0.17	-0.14	0.00	0.00
Real Disposable Income (b)	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.88	1.06	1.03	0.52	0.05	-0.33	-0.61	-0.81	-0.97	0.00	0.34
Nominal Personal Income (b)	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.87	0.71	0.85	0.53	0.11	0.04	-0.24	-0.33	-0.28	0.00	0.34
Industrial Production (a)	0.00	0.00	0.00	0.00	0.00	0.00	-0.46	-0.70	-0.28	0.20	-0.17	-1.95	-0.37	1.68	0.05	0.03	0.00	-0.11
Capacity Utilization	0.00	0.00	0.00	0.00	0.00	0.00	-0.09	-0.23	-0.39	-0.35	-0.38	-0.76	-0.82	-0.51	-0.50	-0.50	0.00	-0.08
Corporate Profits Before Taxes (b)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-1.00	-3.50	-4.00	-3.50	-1.80	3.00	0.00	0.00
Corporate Profits After Taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	-0.99	-3.51	-4.00	-3.49	-1.81	2.92	0.00	0.00
Federal Budget Balance (c)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-96.06	32.91	13.15	-61.90	-67.28	-61.08	-59.74	-73.78	0.00	0.01
Trade Weighted Dollar Index (d)	-0.04	-0.07	-0.04	-0.05	-0.07	-0.18	-0.19	-0.11	3.00	2.25	2.25	2.25	2.50	2.25	2.00	1.75	-0.05	-0.14
Nonfarm Payroll Change (e)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-7.00	32.67	70.00	78.33	20.00	-100.00	-108.33	0.00	8.33	0.00	-1.75
Unemployment Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	-0.03	-0.20	-0.18	0.40	0.50	0.35	0.43	0.00	0.00
Housing Starts (f)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.16	0.08	-0.08	-0.15	-0.11	-0.03	0.09	0.06	0.00	0.00
Light Vehicle Sales (g)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	-0.33	-0.33	0.00	0.00	0.00	0.00
Crude Oil - Brent - Front Contract (h)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-2.85	-4.17	-6.67	-10.67	-8.00	-4.00	-2.00	0.00	0.00	0.00
Quarter-End Interest Rates (i)																		
Federal Funds Target Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	0.00	-0.50	-0.50	-0.50	-0.25	-0.25	0.00	0.00
Secured Overnight Financing Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	-0.05	-0.55	-0.50	-0.50	-0.25	-0.25	0.00	0.00
3 Month LIBOR*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15	0.00	-	-	-	-	-	-	0.00	0.00
Prime Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	0.00	-0.50	-0.50	-0.50	-0.25	-0.25	0.00	0.00
Conventional Mortgage Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.15	0.05	0.00	-0.10	0.00	0.00
3 Month Bill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15	0.00	-0.10	-0.50	-0.50	-0.50	-0.25	-0.25	0.00	0.00
6 Month Bill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15	0.00	-0.25	-0.80	-0.70	-0.35	-0.25	-0.25	0.00	0.00
1 Year Bill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	-0.30	-0.60	-1.00	-0.60	-0.30	-0.25	-0.20	0.00	0.00
2 Year Note	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.30	-0.10	-0.35	-0.35	-0.30	-0.25	-0.20	-0.10	0.00	0.00
5 Year Note	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.10	-0.15	-0.20	-0.20	-0.15	-0.10	0.00	0.00	0.00
10 Year Note	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.10	-0.10	-0.20	-0.15	-0.15	-0.10	-0.05	0.00	0.00
30 Year Bond	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	0.00	0.05	0.00	0.00

Forecast as of: March 17, 2023

Notes: (a) Compound Annual Growth Rate Quarter-over-Quarter

(b) Year-over-Year Percentage Change

(c) Quarterly Sum - Billions USD; Annual Data Represents Fiscal Yr.

(d) Federal Reserve Advanced Foreign Economies Index, 2006=100 - Quarter End

(e) Average Monthly Change

(f) Millions of Units - Annual Data - Not Seasonally Adjusted

(g) Quarterly Data - Average Monthly SAAR; Annual Data - Actual Total Vehicles Sold

(h) Quarterly Average of Daily Close

(i) Annual Numbers Represent Averages

*3 Month LIBOR will no longer be published after June 30, 2023

Source: U.S. Department of Commerce, U.S. Department of Labor, IHS Markit, Federal Reserve Board and Wells Fargo Economics

Personal Consumption Expenditures

- To the extent that access to credit is diminished by the recent flare-ups in the banking sector, our sense is that tightening in borrowing conditions will have a more material impact on businesses than households.
- Consumer spending can maintain some of its momentum through a continued draw-down of the more than \$800 billion still left in excess savings and the seven consecutive months of real income growth thanks to a sturdy job market.
- As the excess savings dry up and as the labor market begins to soften later this year; we suspect the lack of credit will become more evident in spending. We have real spending slowing in Q2-2023 before posting larger declines in the second half of the year than we had previously.

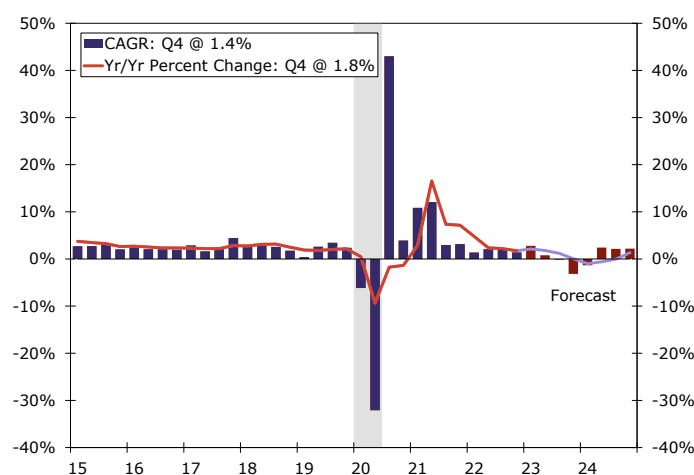
Diminished access to credit tied to the recent panic in the banking sector and accompanying tightening in borrowing conditions will likely have a more material impact on businesses than households. That is not to say the staying power of consumer spending has occurred in the absence of credit. To be sure, credit card borrowing in particular has increased significantly over the past year, but the twin engines of consumer spending at present are the more than \$800 billion still left in excess savings and the seven consecutive months of real income growth thanks to a sturdy job market.

Investment: Equipment, Intellectual Property Products and Inventories

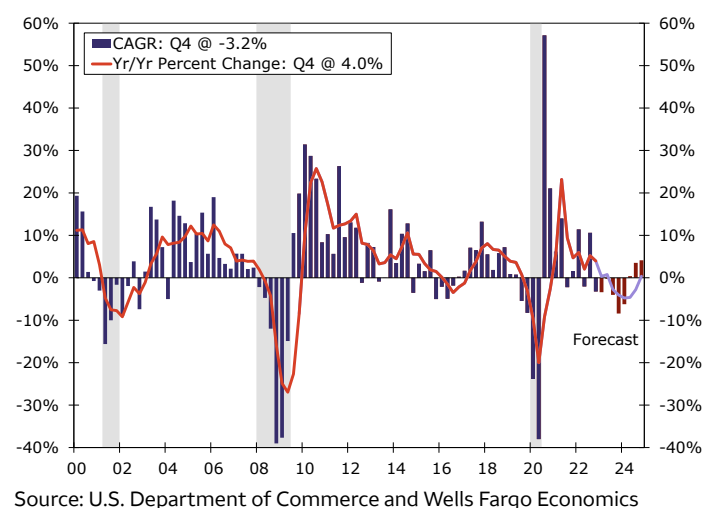
- After having already declined in two of the past three quarters, we now have equipment spending declining all the way out until the middle part of 2024.
- Intellectual property spending will likely see some carryover in momentum through the first half of 2023, but even this high-flying category could succumb to the tightening in credit and deteriorating economic backdrop more broadly.
- Inventories are still depleted despite recent restocking efforts, so massive swings that typically characterize turning points in the economic cycle may be somewhat less pronounced this time.

Equipment spending is shaping up to be weak in the first quarter after having fallen in two of the three prior quarters. Not all industries are struggling, but as a whole, the fact that industrial production has been flat or fallen in seven out of the past 10 months suggests that to an extent manufacturing is already in recession. Still, the current cycle has been characterized by significant strength in intellectual property outlays. Inventories are always a bit of a wild card, but in the wake of supply chain challenges and big moves, stockpiles of key commodities are already a bit depleted, which is a bit unusual going into recession. Eventually lots of government dollars flowing into the semiconductor industry will encourage more business spending; but in the near term, the biggest way that shows up is through increased demand for heavy construction equipment as new facilities are erected.

Real Personal Consumption Expenditures



Real Equipment Investment



Investment: Residential

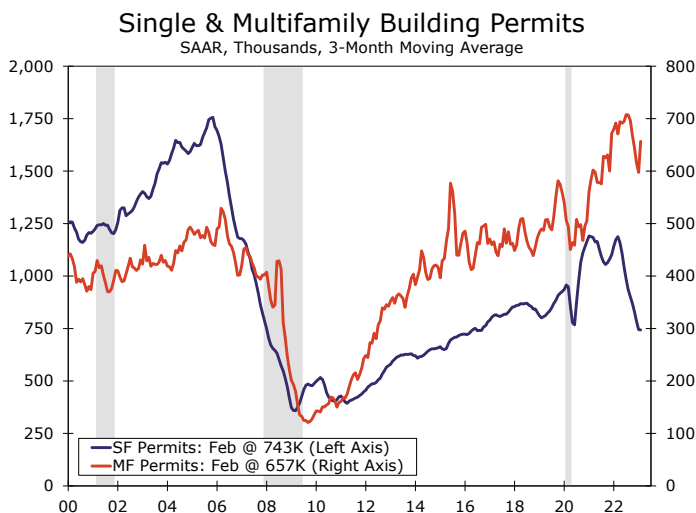
- We continue to expect residential investment to be a drag on headline GDP growth throughout 2023. While there have been signs activity is starting to stabilize, elevated new home inventories are likely to weigh on single-family construction. Overall, tighter lending standards and a potential recession will likely become significant headwinds for residential activity.

The recent uptick in mortgage rates dashed hopes that lower financing costs would help revitalize the residential sector. Since our last economic outlook, the average 30-year fixed rate mortgage rate has risen to 6.60% from 6.09% according to Freddie Mac. Single-family outlays continue to drag on total residential investment, which fell for the eighth straight month in January, dropping 0.6%. However, an uptick in new home sales seems to be fueling builder optimism as low inventories of existing homes as well as successful use of incentives and discounts have shifted buyer demand toward new construction. Against this backdrop, total housing starts improved in February, ending a five-month skid. Still, tighter lending standards and a potential recession stand to be major headwinds for the residential sector this year, even as easing material price inflation and returning buyers help support activity in the near term.

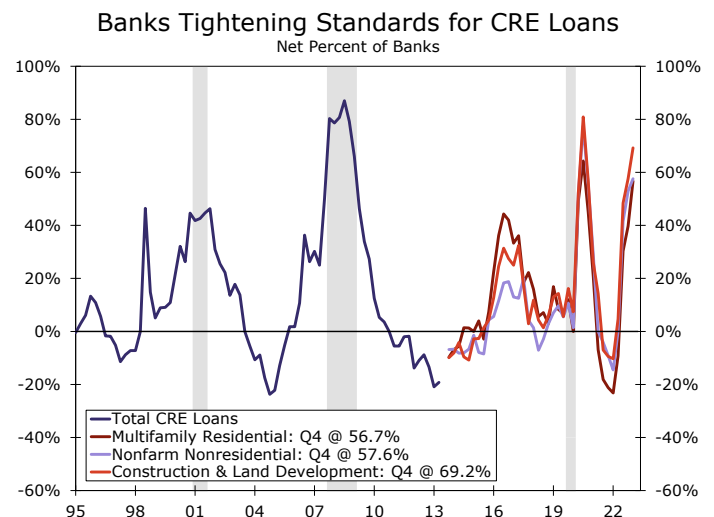
Investment: Nonresidential Structures

- We have revised up our forecast for structures investment for the first quarter following strengthening nonresidential construction outlays. Looking ahead, we suspect that stricter lending standards will produce steeper drops in nonresidential investment over the medium term.

Private nonresidential construction spending rose 0.9% in January, bouncing back from December's 0.7% decline. This reversal was largely driven by a resurgence in private manufacturing outlays, which were up more than 50% year-over-year. Meanwhile, high financing costs and a more moderate pace of consumer spending have started to weigh on retail and warehouse construction. The recent turmoil in financial markets is likely to yield tighter lending standards and a slightly deeper recession, which would weigh heavy on nonresidential investment. Consequently, we've revised down our structures forecast for 2023.



Source: U.S. Department of Commerce and Wells Fargo Economics



Source: Federal Reserve Board and Wells Fargo Economics

Labor Market

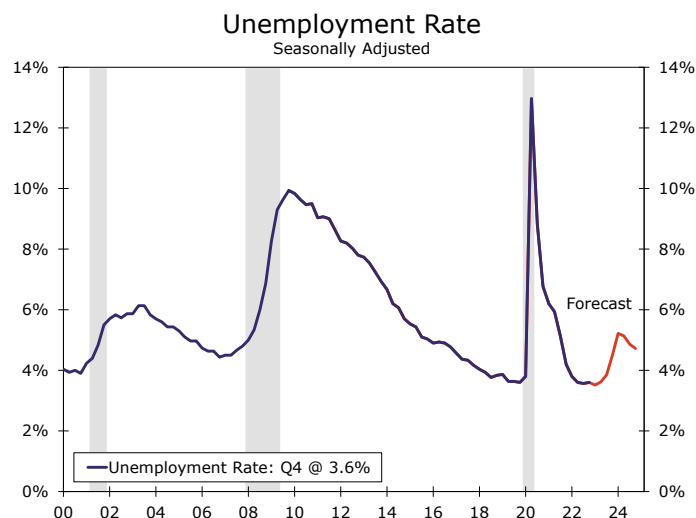
- We forecast nonfarm payrolls to decelerate in the coming months and to start outright contracting in Q4 of this year.
- We look for the monthly unemployment rate to peak at 5.3% in Q1-2024, up from a peak of 4.9% in last month's update.

Our outlook for the labor market has weakened in line with our broader expectations for a somewhat deeper recession than was in our economic forecast last month. In the near term, the labor market has remained resilient. Nonfarm payrolls have grown at an average monthly pace of 408K through the first two months of the year, and jobless claims have remained at low levels despite challenges in a couple of sectors, such as technology. We would not be surprised if the recent resilience is sustained for at least the next few months. But, as the lagged effect of tighter monetary policy and financial system stress flow through to the real economy, much slower job growth likely will prevail as the year progresses. That said, even a peak unemployment rate of 5.3% would be one of the milder labor market contractions of the past 50 years.

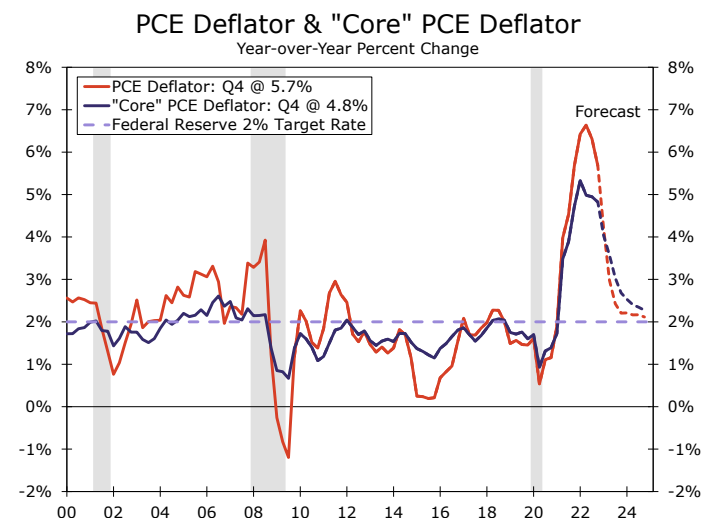
Inflation

- The solid momentum in inflation indicated by the most recent monthly readings as well as annual revisions have led us to raise our inflation forecasts for this year. We now look for the year-over-year rate of core PCE inflation to end this year at 3.4% compared to 2.7% in our February monthly.
- A slightly more severe recession than we previously anticipated should help keep price growth on a downward path through 2024, but we do not expect core PCE inflation to fully return to 2.0% over our forecast horizon.

Data over the past month have revealed that inflation continues to wield troubling momentum. Annual revisions to the Consumer Price Index and PCE deflator showed a stronger pace of core inflation heading into the current year, while further solid readings for core CPI in January and February led to the three-month annualized rate quickening to 5.2%. We believe the downward trend in inflation remains in place as supply chain strains continue to ease and deteriorating consumer finances make it more difficult for businesses to raise prices. However, the inertia of inflation suggests that a return to the Fed's 2% target will not be quick or painless. Even as a recession takes hold later this year, we estimate core PCE inflation will still be running a little over 2% annualized in the fourth quarter of this year.



Source: U.S. Department of Labor and Wells Fargo Economics



Source: U.S. Department of Commerce and Wells Fargo Economics

Fiscal Policy

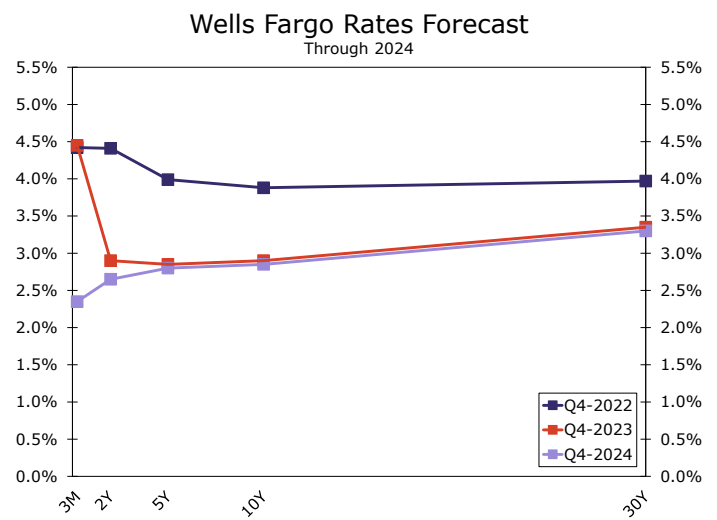
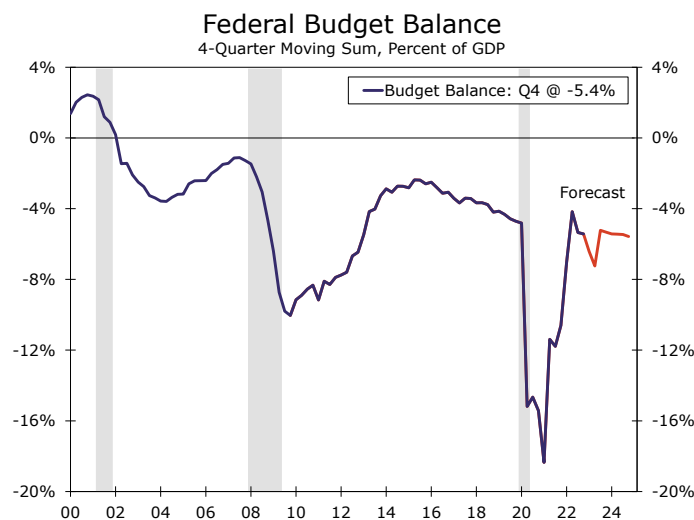
- Our federal budget deficit forecast for FY 2023 and FY 2024 has widened from \$1.35T and \$1.25T, respectively, to \$1.40T and \$1.50T.
- Our base case for the debt ceiling X-date remains early August, but the range of possible outcomes remains wide.

Our outlook for the federal budget deficit this fiscal year and next has changed amid updated fiscal projections from the Congressional Budget Office as well as revisions to our own economic forecast as outlined in this report. The near-term deficit revisions do not materially impact our expectations for the debt ceiling X-date, which we still believe lies in early August. That said, the range of possible outcomes remains wide. An X-date as early as June or as late as September is still plausible. In our view, federal tax receipts in April will be the primary determinant of X-date timing, and this data will slowly be released starting in a little over one month.

Monetary Policy & Interest Rates

- We expect the FOMC to hold the federal funds rate steady at its March 22 FOMC meeting followed by two 25 bps rate hikes in May and June.
- We look for the first policy rate *cuts* to occur toward the end of the year, with significantly more monetary policy easing in 2024.
- Our forecast for the 10-year Treasury yield at year-end is 2.90%, down from 3.10% in our previous forecast.

Some readers may notice that our current forecast for the peak federal funds rate, which we see rising to a range of 5.00%-5.25%, is the same as our forecast last month. After all, the downturn we are forecasting is a bit deeper in our current forecast than it was a month ago. But in the absence of the recent banking crisis, we would have looked for even more Fed tightening than we did in February due to recent data indicating the U.S. economy has more near-term resilience than we anticipated a month ago. In the near term, we think Treasury yields can move somewhat higher as financial market stresses ease and more monetary policy tightening is priced into the market. But as the economy rolls over and rate cuts come into focus, we think yields will be falling steadily in the second half of the year and into 2024.



Net Exports

- We forecast net exports to be a fairly neutral force on real GDP growth in the first quarter.

The U.S. trade balance widened to a deficit of \$68.3 billion in January as imports outpaced exports. The January data position trade to be a fairly neutral force on real GDP growth in the quarter, and we expect some payback in both import and export growth in February and March, as we're skeptical January strength in trade flows will be maintained. Further out, we've pared back our expectations for import growth a bit, consistent with the weaker growth profile we now expect from equipment investment and consumer demand. Our outlook for growth in exports has come up modestly with an improving global backdrop.

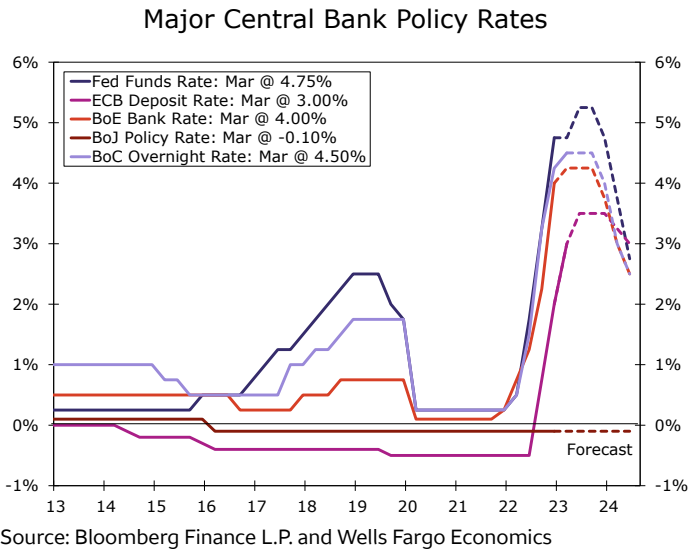
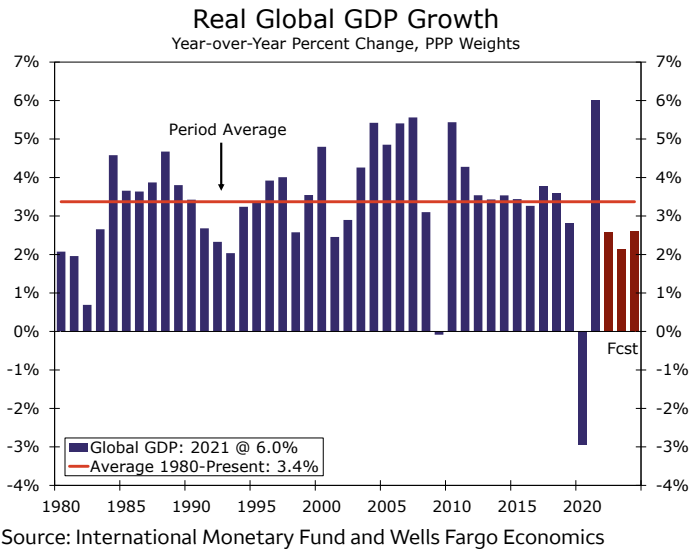
International Developments & the U.S. Dollar

- The global growth outlook continues to improve, and we now expect the global GDP to grow 2.2% in 2023, up from the 1.6% estimate we made last fall. Most notably, Chinese growth prospects have improved as the economy reopens, while we also see slightly firmer growth in the Eurozone and Switzerland. Overall, we now forecast global GDP growth of 2.2% in 2023 and 2.6% in 2024.
- Despite the more resilient activity outlook, and persisting underlying inflation pressures, we still believe most major foreign central banks are nearing the end of their tightening cycles, with recent financial strains likely to encourage an end to rate hikes in the months ahead. Our outlook for peak policy rates in the Eurozone, United Kingdom and Canada are unchanged from a month ago. In contrast, we have made slight upward revisions to our forecast for peak policy rates in Switzerland and Mexico.
- Given resilient growth and further monetary tightening in early 2023, we see a brief period of U.S. dollar strength for now. However, our longer-term outlook remains for gradual U.S. dollar depreciation later this year, as the U.S. falls into recession and the Fed cuts rates in late 2023.
- For further reading on the global economy, please see our most recent [International Economic Outlook](#).

One continuing theme this month has been a further improvement in the global growth outlook. In addition to the resilience of the U.S. economy to date, another key development has been an improvement in China's economic prospects, as Zero-COVID restrictions have been lifted and the economy reopened. The increase in China's February PMIs, to 52.6 for the manufacturing sector and 56.3 for service sector, point to increased momentum. We believe that momentum can continue and have revised our forecast for 2023 China GDP growth up to 5.5%. Improving confidence surveys are also evident elsewhere, including across Europe, as receding energy prices and headline inflation are seen as less of a drag on the economy. The Eurozone and Switzerland are two economies where we have also revised our 2023 growth outlook higher compared to a month ago. Altogether, we now forecast global GDP growth of 2.2% for 2023 and 2.6% for 2024, meaning we now anticipate the global economy will avoid recession this year.

While headline inflation is receding, underlying inflation pressures are proving quite persistent in some countries. Indeed, for the OECD region the CPI excluding food and energy held steady at 7.2% year-over-year in January. More recently, core CPI inflation in the Eurozone quickened to 5.6% in February, while in the U.S. the rate of decline in core inflation has slowed in recent months, printing at 5.5% for February. By themselves, these persistent underlying inflationary pressures might be suggestive of even more forceful tightening from major central banks to restore price stability. However, recent U.S. and European financial market strains have also entered policymakers' calculus, providing an offset to these inflationary pressures, and will likely still encourage an end to rate hikes in the months ahead. Accordingly, we still see most major central banks as near the end of their tightening cycles. Our forecast for peak policy rate in the Eurozone (3.50%) and the United Kingdom (4.25%) are unchanged from a month ago, and we suspect the Bank of Canada has already reached the end of its tightening cycle. Only for the Swiss National Bank (1.75%) and the Central Bank of Mexico (11.50%) do we forecast a slightly higher peak policy rate than we did a month ago.

Given resilient growth and some further central bank tightening in early 2023, we see a brief period of U.S. dollar strength for now. However, our longer-term outlook remains for gradual U.S. dollar depreciation later this year, as the U.S. economy falls into recession, and the Fed cuts interest rates from late 2023.



Wells Fargo International Economic Forecast

	GDP				CPI			
	2021	2022	2023	2024	2021	2022	2023	2024
Global (PPP Weights)	6.2%	2.6%	2.2%	2.6%	4.7%	7.1%	5.0%	3.7%
Advanced Economies ¹	5.4%	2.8%	0.9%	1.2%	3.1%	7.9%	4.8%	2.4%
United States	5.9%	2.1%	1.0%	0.3%	4.7%	8.0%	4.0%	2.5%
Eurozone	5.5%	3.5%	0.3%	1.6%	2.6%	8.4%	5.7%	2.4%
United Kingdom	7.6%	4.0%	-0.6%	1.5%	2.6%	9.1%	6.5%	2.3%
Japan	2.1%	1.0%	0.9%	1.5%	-0.2%	2.5%	2.3%	1.2%
Canada	5.0%	3.4%	0.5%	1.5%	3.4%	6.8%	3.7%	2.1%
Switzerland	4.2%	2.1%	0.3%	1.7%	0.6%	2.8%	2.1%	1.2%
Australia	5.2%	3.7%	1.5%	2.4%	2.8%	6.6%	4.3%	2.9%
New Zealand	5.6%	2.4%	1.5%	1.5%	3.9%	7.2%	4.2%	2.5%
Sweden	5.1%	2.7%	-0.4%	1.7%	2.7%	8.3%	6.8%	2.2%
Norway	3.9%	3.8%	1.1%	0.8%	3.5%	5.8%	4.1%	2.5%
Developing Economies ¹	6.7%	2.4%	3.1%	3.7%	5.9%	6.5%	5.2%	4.7%
China	8.4%	3.0%	5.5%	5.0%	0.9%	2.0%	2.3%	2.2%
India	8.7%	6.7%	5.7%	6.7%	5.5%	6.7%	4.7%	5.0%
Mexico	4.7%	3.1%	1.1%	2.2%	5.7%	7.9%	5.6%	3.6%
Brazil	5.0%	3.0%	0.5%	2.2%	8.3%	9.0%	5.0%	4.0%

Forecast as of: March 17, 2023

¹Aggregated Using PPP Weights

Source: International Monetary Fund and Wells Fargo Economics

Wells Fargo International Interest Rate Forecast

(End of Quarter Rates)

	Central Bank Key Policy Rate					2024	
	2023					2024	
	Current	Q1	Q2	Q3	Q4	Q1	Q2
United States	4.75%	4.75%	5.25%	5.25%	4.75%	3.75%	2.75%
Eurozone ¹	3.00%	3.00%	3.50%	3.50%	3.50%	3.25%	3.00%
United Kingdom	4.00%	4.25%	4.25%	4.25%	3.75%	3.00%	2.50%
Japan	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%
Canada	4.50%	4.50%	4.50%	4.50%	4.00%	3.00%	2.50%
Switzerland	1.00%	1.50%	1.75%	1.75%	1.75%	1.50%	1.25%
Australia	3.60%	3.60%	3.60%	3.60%	3.60%	3.60%	3.35%
New Zealand	4.75%	4.75%	5.25%	5.25%	5.25%	5.25%	5.00%
Sweden	3.00%	3.00%	3.25%	3.25%	3.25%	3.25%	3.00%
Norway	2.75%	3.00%	3.00%	3.00%	3.00%	2.75%	2.50%
China ³	11.00%	10.75%	10.75%	10.75%	10.75%	10.50%	10.50%
India	6.50%	6.50%	6.75%	6.75%	6.50%	6.25%	5.75%
Mexico	11.00%	11.25%	11.50%	11.50%	11.00%	10.00%	9.00%
Brazil	13.75%	13.75%	13.75%	13.25%	12.75%	12.25%	11.75%
	2-Year Note					2024	
	2023					2024	
	Current	Q1	Q2	Q3	Q4	Q1	Q2
United States	3.88%	4.15%	4.20%	3.50%	2.90%	2.65%	2.55%
Eurozone ²	2.42%	2.65%	2.90%	2.80%	2.65%	2.50%	2.40%
United Kingdom	3.25%	3.35%	3.35%	3.15%	2.85%	2.45%	2.35%
Japan	-0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Canada	3.50%	3.65%	3.70%	3.30%	2.90%	2.70%	2.60%
	10-Year Note					2024	
	2023					2024	
	Current	Q1	Q2	Q3	Q4	Q1	Q2
United States	3.40%	3.60%	3.50%	3.15%	2.90%	2.85%	2.80%
Eurozone ²	2.15%	2.35%	2.50%	2.45%	2.40%	2.35%	2.30%
United Kingdom	3.29%	3.40%	3.35%	3.20%	2.95%	2.60%	2.50%
Japan	0.32%	0.40%	0.40%	0.30%	0.25%	0.20%	0.20%
Canada	2.73%	2.90%	2.85%	2.80%	2.75%	2.70%	2.70%

Forecast as of: March 17, 2023

¹ ECB Deposit Rate ² German Government Bond Yield ³ Reserve Requirement Ratio Major Banks

Source: Bloomberg Finance L.P. and Wells Fargo Economics

This Month's Economic Calendar

Monday	Tuesday	Wednesday	Thursday	Friday
March 20	21	22	23	24
	Existing Home Sales (SAAR) January 4.00M Canada CPI (YoY) January 5.9%	FOMC Rate Decision (Upper Bound) Previous 4.75% Powell* (Fed Chair) Speaks after the FOMC decision Brazil Selic Rate Previous 13.75%	New Home Sales (SAAR) January 670K Bank of England Bank Rate Previous 4.00% Japan CPI (YoY) January 4.3%	Durable Goods Orders (MoM) January -4.5%
27	28	29	30	31
	S&P CoreLogic C-S National HPI (YoY) December 5.76% Consumer Confidence February 102.9		Bank of Mexico Overnight Rate Previous 11.00%	Personal Income & Spending (MoM) January 0.6%; 1.8% (Income; Spending) Eurozone CPI (YoY) February 8.5%
April 3	4	5	6	7
Construction Spending (MoM) January -0.1% ISM Manufacturing February 47.7	JOLTS Job Openings January 10,824K Reserve Bank of Australia Cash Rate Previous 3.60%	ISM Services February 55.1 Trade Balance January -\$68.3B	Reserve Bank of India Cash Reserve Ratio Previous 4.50%	Nonfarm Payrolls February 311K Good Friday [U.S. Markets Closed]
10	11	12	13	14
Consumer Credit January \$14.8B China CPI (YoY) February 1.0%		CPI (YoY) February 6.0% Core CPI (YoY) February 5.5% Bank of Canada Rate Decision Previous 4.50% FOMC Meeting Minutes	PPI Final Demand (YoY) February 4.6%	Import Price Index (MoM) February -0.1% Retail Sales (MoM) February -0.4% Industrial Production (MoM) January 0.0%

Note: (W) = Wells Fargo Estimate, (C) = Consensus Estimate, * = voting FOMC member in 2022, Purple = Market Moving Releases

Source: Bloomberg Finance L.P., Federal Reserve System, U.S. Department of Labor, U.S. Department of Commerce, Institute for Supply Management, Conference Board and Wells Fargo Economics

Subscription Information

To subscribe please visit: www.wellsfargo.com/economicsemail

Via The Bloomberg Professional Services at WFRE

Economics Group

Jay H. Bryson, Ph.D.	Chief Economist	704-410-3274	Jay.Bryson@wellsfargo.com
Sam Bullard	Senior Economist	704-410-3280	Sam.Bullard@wellsfargo.com
Nick Bennenbroek	International Economist	212-214-5636	Nicholas.Bennenbroek@wellsfargo.com
Tim Quinlan	Senior Economist	704-410-3283	Tim.Quinlan@wellsfargo.com
Sarah House	Senior Economist	704-410-3282	Sarah.House@wellsfargo.com
Azhar Iqbal	Econometrician	212-214-2029	Azhar.Iqbal@wellsfargo.com
Charlie Dougherty	Senior Economist	212-214-8984	Charles.Dougherty@wellsfargo.com
Michael Pugliese	Senior Economist	212-214-5058	Michael.D.Pugliese@wellsfargo.com
Brendan McKenna	International Economist	212-214-5637	Brendan.Mckenna@wellsfargo.com
Jackie Benson	Economist	704-410-4468	Jackie.Benson@wellsfargo.com
Shannon Seery	Economist	332-204-0693	Shannon.Seery@wellsfargo.com
Nicole Cervi	Economic Analyst	704-410-3059	Nicole.Cervi@wellsfargo.com
Jessica Guo	Economic Analyst	212-214-1063	Jessica.Guo@wellsfargo.com
Karl Vesely	Economic Analyst	704-410-2911	Karl.Vesely@wellsfargo.com
Patrick Barley	Economic Analyst	704-410-1232	Patrick.Barley@wellsfargo.com
Jeremiah Kohl	Economic Analyst	704-410-1437	Jeremiah.J.Kohl@wellsfargo.com
Coren Burton	Administrative Assistant	704-410-6010	Coren.Burton@wellsfargo.com

Required Disclosures

This report is produced by the Economics Group of Wells Fargo Bank, N.A. ("WFBNA"). This report is not a product of Wells Fargo Global Research and the information contained in this report is not financial research. This report should not be copied, distributed, published or reproduced, in whole or in part. WFBNA distributes this report directly and through affiliates including, but not limited to, Wells Fargo Securities, LLC, Wells Fargo & Company, Wells Fargo Clearing Services, LLC, Wells Fargo Securities International Limited, Wells Fargo Securities Europe S.A., and Wells Fargo Securities Canada, Ltd. Wells Fargo Securities, LLC is registered with the Commodity Futures Trading Commission as a futures commission merchant and is a member in good standing of the National Futures Association. WFBNA is registered with the Commodity Futures Trading Commission as a swap dealer and is a member in good standing of the National Futures Association. Wells Fargo Securities, LLC and WFBNA are generally engaged in the trading of futures and derivative products, any of which may be discussed within this report.

This publication has been prepared for informational purposes only and is not intended as a recommendation offer or solicitation with respect to the purchase or sale of any security or other financial product nor does it constitute professional advice. The information in this report has been obtained or derived from sources believed by WFBNA to be reliable, but has not been independently verified by WFBNA, may not be current, and WFBNA has no obligation to provide any updates or changes. All price references and market forecasts are as of the date of the report. The views and opinions expressed in this report are not necessarily those of WFBNA and may differ from the views and opinions of other departments or divisions of WFBNA and its affiliates. WFBNA is not providing any financial, economic, legal, accounting, or tax advice or recommendations in this report, neither WFBNA nor any of its affiliates makes any representation or warranty, express or implied, as to the accuracy or completeness of the statements or any information contained in this report and any liability therefore (including in respect of direct, indirect or consequential loss or damage) is expressly disclaimed. WFBNA is a separate legal entity and distinct from affiliated banks and is a wholly owned subsidiary of Wells Fargo & Company. © 2023 Wells Fargo Bank, N.A.

Important Information for Non-U.S. Recipients

For recipients in the United Kingdom, this report is distributed by Wells Fargo Securities International Limited ("WFSIL"). WFSIL is a U.K. incorporated investment firm authorized and regulated by the Financial Conduct Authority ("FCA"). For the purposes of Section 21 of the UK Financial Services and Markets Act 2000 ("the Act"), the content of this report has been approved by WFSIL, an authorized person under the Act. WFSIL does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). The FCA rules made under the Financial Services and Markets Act 2000 for the protection of retail clients will therefore not apply, nor will the Financial Services Compensation Scheme be available. For recipients in the EFTA, this report is distributed by WFSIL. For recipients in the EU, it is distributed by Wells Fargo Securities Europe S.A. ("WFSE"). WFSE is a French incorporated investment firm authorized and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers. WFSE does not deal with retail clients as defined in the Directive 2014/65/EU ("MiFID2"). This report is not intended for, and should not be relied upon by, retail clients.

SECURITIES: NOT FDIC-INSURED - MAY LOSE VALUE - NO BANK GUARANTEE