EDITORIAL

US: THE SOBERING RECORD OF REAL GDP FORECASTS DURING RECESSIONS

Economic forecasting in the run-up to and during recessions is particularly challenging. An analysis of the Federal Reserve of Philadelphia's survey of professional forecasters shows that, since 1968, forecast errors during recessions are significantly higher than during non-recession periods. Moreover, forecast errors during recessions are predominantly positive, so forecasts tend to be too optimistic, even if they concern the next quarter. At the current juncture, there is broad consensus, if not unanimity, that downside risks to growth dominate due to the multiple headwinds and uncertainties. The historical forecast record is another reason to be mindful of these risks.

A recession is a period of high uncertainty: how much will demand, activity, employment, and corporate profits decline? How long will it last? For economic forecasters, it is a stressful period: the pressure to produce good forecasts rises proportionally to the difficulty of doing so because during a recession, the economy is in a state of flux. The relationships between the components of final demand -consumption, capital formation, exports- and their drivers become less predictable due to confidence effects, financial constraints, non-linearities, etc.

In 2018, a working paper of the IMF concluded that *"while forecasts in recession years are revised each month, they do not capture the onset of recessions in a timely way and the extent of output decline during recessions is missed by a wide margin."*[1] This result held for private as well as public sector forecasts.

Capturing the onset of a recession is particularly difficult: when will the tipping point be reached whereby an economy reacts to recent shocks in such a way that it corresponds to a recession? The IMF paper gives a sobering conclusion for advanced and emerging economies, but what about forecasts for the US specifically? The question is important given the weight of the US in the world.

Chart 1 shows the forecast errors of the Survey of Professional Forecasters (SPF) conducted by the Federal Reserve Bank of Philadelphia.[2][3] The forecasts concern those made in the current quarter for the next quarter (henceforth labeled as Q-1).

At first glance it seems that recessions tend to be marked by large positive forecast errors, which implies that the depth of the recessions was underestimated. To analyse this in detail, chart 2 distinguishes between recession and non-recession periods and shows the results for various forecast horizons.[4] The metric that is used is the root mean squared error (RMSE).[5] One would expect an improvement of the forecast quality -a decline in the RMSE- when the forecast horizon shortens.

1. Zidong An, João Tovar Jalles, and Prakash Loungani, *How Well Do Economists Forecast Recessions?*, IMF working paper 18/39, March 2018. The authors analyse GDP forecasts for 63 countries for the years 1992 to 2014. The private sector forecasts are taken from Consensus Economics and the public sector forecasts are from the IMF.

2. *"The Survey of Professional Forecasters is the oldest quarterly survey of macroeconomic forecasts in the United States. The survey began in 1968 and was conducted by the American Statistical Association and the National Bureau of Economic Research. The Federal Reserve Bank of Philadelphia took over the survey in 1990."* (Source: Federal Reserve Bank of Philadelphia).

3. The forecasts concern the growth of real GDP versus the previous quarter on a seasonally adjusted annualized rate.

4. Q-4 refers to the forecast made for the quarter under review 4 quarters ago. Data for 2020 have been excluded, considering the extreme swings related to the Covid-19 pandemic. Data start in 1968 Q4 but some data for Q-4 forecasts are missing in the early years of the survey. Data are available for all forecast horizons as of 1973 Q4.

5. Given that some forecast errors are positive and others negative, they are first squared before calculating the average, after which the square root of the average is calculated.

REAL GDP GROWTH: FORECAST ERROR (FORECAST MINUS REALISED)

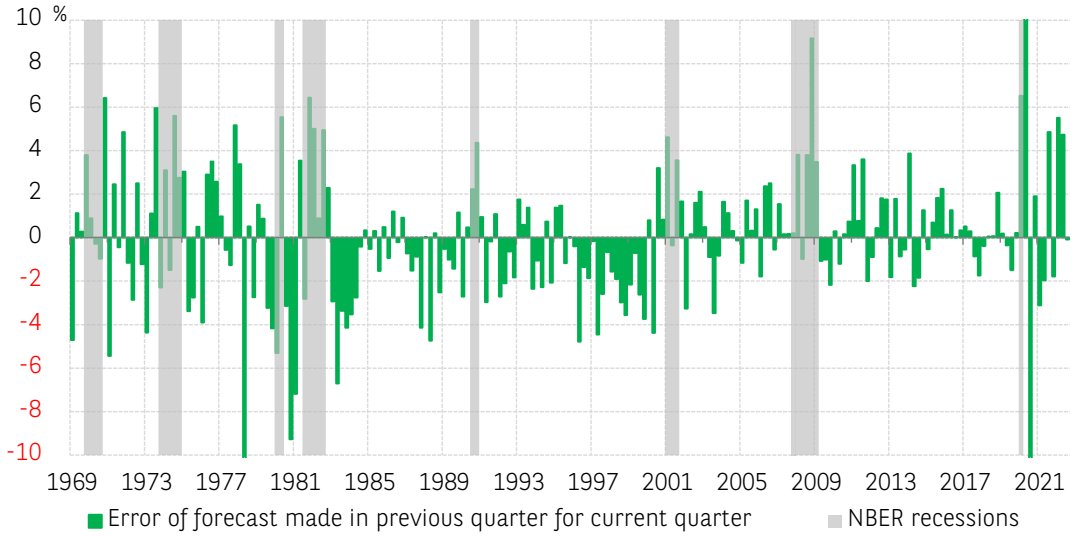

CHART 1

SOURCE: SURVEY OF PROFESSIONAL FORECASTERS, FEDERAL RESERVE BANK OF PHILADELPHIA, NBER, BNP PARIBAS

REAL GDP GROWTH: AVERAGE FORECAST ERROR (FORECAST MINUS REALISED)

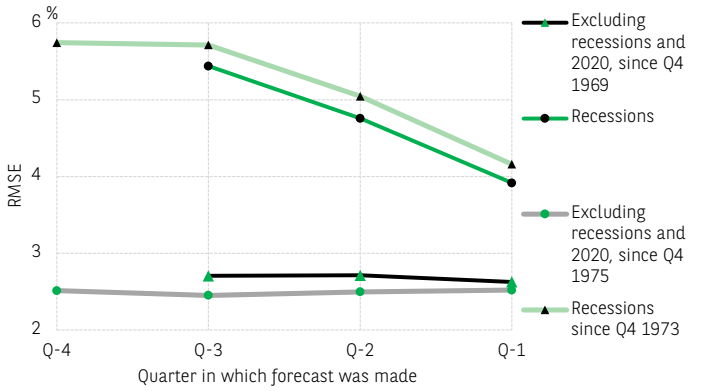

CHART 2 SOURCE: SURVEY OF PROFESSIONAL FORECASTERS, FEDERAL RESERVE OF PHILADELPHIA, BNP PARIBAS

This is indeed the case during recession periods, but outside these, the RMSE is stable across the different forecast horizons. The forecast errors for periods when the US was in recession are also considerably higher compared to non-recession periods.

For longer forecast horizons -four or three quarters ahead-, this could reflect that recessions come as a surprise. For shorter horizons, including quarters when the economy was already in recession when the forecasts were made, it could be the result of new shocks and hard to anticipate dynamics during the recession. Another interpretation is that it is extremely difficult to anticipate the contraction of GDP during recessions.

Finally, as shown by the table, forecasts covering periods when the US was in recession, are too optimistic by a wide margin: this is the case for 70% of the forecasts for the next quarter and the number increases to 89% for the four quarters ahead forecast. At the current juncture, there is broad consensus, if not unanimity, amongst forecasters that downside risks to growth dominate due to the multiple headwinds and uncertainties. The historical forecast record also underpins this distribution of risks.

William De Vijlder

US REAL GDP GROWTH: FORECAST ERROR DURING RECESSION QUARTERS (FORECAST MINUS REALISED)

Recession quarters	Forecast horizon			
	Q-1	Q-2	Q-3	Q-4
1969 Q4	3.8	4.4	6.2	5.97
1970 Q1	0.9	2.0	2.1	non available
1970 Q2	-0.3	0.0	1.9	non available
1970 Q3	-1.0	-1.7	-1.3	non available
1973 Q4	-2.3	-0.7	-0.5	0.34
1974 Q1	3.1	5.7	7.0	7.43
1974 Q2	-1.5	-1.5	1.8	2.15
1974 Q3	5.6	6.0	5.8	7.25
1974 Q4	2.7	5.2	5.3	4.20
1980 Q1	-5.3	-2.7	-0.3	1.15
1980 Q2	5.5	5.2	10.6	9.24
1981 Q3	-2.8	-1.9	-1.4	0.05
1981 Q4	6.4	7.6	8.1	8.51
1982 Q1	5.0	9.5	10.1	10.65
1982 Q2	0.9	1.4	2.1	1.09
1982 Q3	4.9	5.9	6.9	5.87
1990 Q3	2.2	2.1	2.1	3.70
1990 Q4	4.4	5.5	6.3	5.93
2001 Q1	4.6	4.3	3.9	4.14
2001 Q2	-0.3	0.7	0.2	0.06
2001 Q3	3.6	4.9	4.9	4.80
2007 Q4	0.2	0.4	0.7	0.44
2008 Q1	3.8	4.3	4.5	4.68
2008 Q2	-1.0	0.0	0.6	0.69
2008 Q3	3.8	4.9	4.8	4.76
2008 Q4	9.2	10.3	11.3	11.24
2009 Q1	3.5	6.2	6.9	7.70
Percentage of quarters with positive forecast errors	70%	74%	85%	89%

TABLE 1 SOURCE: SURVEY OF PROFESSIONAL FORECASTERS, FEDERAL RESERVE OF PHILADELPHIA, BNP PARIBAS

In the US, during recessions, forecast errors from the Survey of Professional Forecasters are predominantly positive, so forecasts tend to be too optimistic, even if they concern the next quarter. This implies that during recessions, risks of negative growth surprises dominate.