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Over 2019 and the first half of 2020, the Federal Reserve (the Fed) carried out its first-ever comprehensive and public review of the monetary policy framework (strategy, tools and communication practices) it employs to achieve its dual mandate of maximum employment and price stability (the latter being interpreted as a level of annual inflation of 2%). According to the Fed, two structural transformations that have taken place in recent years stand out among the reasons for this strategy review. First, the flattening of the Phillips curve, i.e. the reduced sensitivity of prices to the degree of economic slack, which weakens the link between inflation and unemployment.¹ And second, the decline in the natural rate of interest,² as a result of structural changes, such as population ageing and low productivity growth, which makes it more likely that interest rate cuts in recessions may be constrained by the existence of an effective lower bound (ELB).

The review of the Fed's monetary policy framework was based on three pillars. First, a discussion of possible changes to the monetary policy strategy to make it more robust to the problem of the ELB. Second, an analysis of the effectiveness of the unconventional instruments employed since the 2008 global financial crisis (essentially large-scale asset purchase programmes and forward guidance), and also a comparison with international experience with other unconventional measures. Third, an assessment of the communication policy and innovations made over the last decade.

On 27 August, at the annual monetary policy meeting organised by the Federal Reserve Bank of Kansas City, the Chairman of the Fed, Jerome Powell, presented the conclusions of the first pillar, i.e. the monetary policy strategy review. These conclusions were incorporated into the "Statement on Longer Run Goals and Monetary Policy Strategy".³ First, average inflation targeting was adopted, with the aim of achieving inflation that averages 2% over

time. Thus, following a period in which inflation runs persistently below 2%, the Fed has committed itself to temporarily pushing inflation rates moderately above this threshold. The new inflation target has been described as flexible, insofar as no specific system for calculating average inflation has been defined: key aspects, such as the time period over which the average is calculated and the order of magnitude of the inflation deviations that will be tolerated, have yet to be specified. Accordingly, the Fed has modified its monetary policy strategy in line with proposals⁴ advocating make-up strategies, under which periods of persistently below-target inflation, like the present one, are made up for (hence the name) by subsequent periods in which monetary policy remains accommodative for some time in order to provide monetary stimulus to raise inflation rates above the target.

A higher incidence of episodes in which the ELB is reached entails a risk that inflation expectations will become deanchored: if inflation remains persistently below 2%, the fall in its average level may lead to a downward revision in the inflation expectations of economic agents and lower actual inflation rates, since the latter incorporate inflation expectations. In a setting in which the scope to reduce interest rates is constrained by the lower bound, the deanchoring of inflation expectations may therefore push up real interest rates (defined as the difference between the nominal interest rate and expected inflation), thus reducing the capacity of monetary policy to stimulate aggregate demand and prices.

The new average inflation target adopted by the Fed tolerates inflation running temporarily slightly above 2% to keep average inflation at its target level, the aim being to reduce the risk of a deanchoring of inflation expectations and the consequent loss of scope for monetary policy stimulus. Yet some quantitative analyses based on dynamic general equilibrium models warn that this type of make-up strategy may generate an excessive increase in

1 J. Powell (2020), "New Economic Challenges and the Fed's Monetary Policy Review", presented at the conference *Navigating the Decade Ahead: Implications for Monetary Policy*, Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, 27 August.

2 The natural or neutral interest rate is defined as that which would prevail in an equilibrium scenario with perfectly flexible prices and wages. Its relevance to monetary policy derives from the fact that when the real interest rate stands below its natural level, excess aggregate demand ensues, which generates inflationary pressures (the opposite occurs when the real rate stands above the natural rate).

3 The "Statement on Longer-Run Goals and Monetary Policy Strategy" is the formal document describing how the US central bank interprets its dual mandate and its decision-making framework. It was introduced in January 2012. The changes to the *Statement* made on 27 August were approved unanimously by the Federal Open Market Committee (FOMC).

4 A summary of the various proposals discussed in the Federal Reserve's strategy review can be found in S. Párraga, P. del Río and J. L. Vega (2019), "The Federal Reserve Review of its Monetary Policy Framework", *Analytical Articles, Economic Bulletin*, 4/2019, Banco de España. See, also, the 2018 *Annual Report*, Banco de España.

inflation in the medium term, especially if agents have adaptive expectations or the central bank's credibility is imperfect.⁵ The Fed attempts to mitigate this problem by pointing out that inflation rates will only be pushed moderately above 2% and only temporarily.

The Fed has also changed its formulation of the maximum employment objective, emphasising that this is a broad-based and inclusive goal. The new definition stresses the importance of access to the labour market, especially for low-income groups, and how low aggregate unemployment rates encourage the participation of such groups in the labour market.⁶ Given the recent evidence that high employment rates do not lead to marked inflationary pressures, even when the economy has little slack and unemployment rates are very low, the Fed has committed itself not to raise interest rates or withdraw monetary stimulus as long as inflation remains moderate, provided that no other risks compromising the achievement of its objectives emerge. Specifically, following this review, the Fed has indicated that it will assess "shortfalls" from its maximum employment objective, rather than "deviations" as previously.

Other notable changes in the new Statement include confirmation that the federal funds rate is the main monetary policy tool, and the commitment to adjust the monetary policy strategy and its long-term objectives each year. Lastly, following the example of other central banks,⁷ the Fed will carry out comprehensive reviews of the monetary policy framework every five years.

The impact on the financial markets of the announcement of this review of the Fed's strategy is analysed below using "event study" methodology. This methodology is based on calculating the change in the financial indicators

of interest within a short time window around the event in question, in order to isolate the impact of the event from that of other factors, such as economic or, in the current context, epidemiological news. These studies are regularly carried out to assess monetary policy announcements by central banks, such as those affecting their asset purchase programmes or reference interest rates.⁸

Chairman Powell's speech, in which, as mentioned above, he announced the conclusions of the first pillar of the monetary policy strategy review, began at 15:10 CET on 27 August, at the same time as a press release was published setting out the content of the new strategy. Accordingly, the start of the time window for this exercise is set at 15:00 CET, while the end of the window is set at close of trading on each market on 27 August. The size of the window selected represents a reasonable balance between two considerations. First, the need for the narrowest possible window around the event analysed, to avoid the influence of other factors on the financial indicators of interest. Second, the fact that, for an announcement of this type, on such a complex question as a change in monetary policy strategy, investors may have needed more time to process the implications for market valuations than is normally the case for specific monetary policy measures.⁹

Chart 1 shows the intraday changes in the yields on different US sovereign debt maturities (normalised to zero at 15:00 CET). Following a brief initial dip, US Treasury bond yields increased substantially over the rest of the session, mainly at the longest maturities. This climb in yields appears to have been driven by the increase in the inflation risk premium, which would be consistent with the greater impact observed on yields at the longest maturities.¹⁰ The difference in behaviour

5 See, for example, B. S. Bernanke, M. T. Kiley and J. M. Roberts (2019), "Monetary Policy Strategies for a Low-Rate Environment", *American Economic Association – Papers and Proceedings*, Vol. 109, pp. 421-426.

6 S. Aaronson, M. C. Daly, W. L. Wascher and D. W. Wilcox (2019). "Okun revisited: who benefits most from a strong economy", *Finance and Economics Discussion Series*, 2019-072, Board of Governors of the Federal Reserve System.

7 The Bank of Canada, for example, reviews its inflation targeting framework every five years. The European Central Bank (ECB) reviewed its strategy in 2003, after five years of experience following the introduction of the euro and the common monetary policy, and in January 2020 it initiated a new review which it expects to conclude in mid-2021.

8 For the United States, see, for example, J. Gagnon, M. Raski, J. Remache and B. Sack (2011), "The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases", *International Journal of Central Banking*, Vol. 7(1), pp. 3-43. For the euro area, see C. Altavilla, G. Carboni and R. Motto (2015), "Asset purchase programmes and financial markets: lessons from the euro area", *ECB Working Paper Series*, No 1864, and M. Ampudia and S. Van den Heuvel (2018), "Monetary Policy and Bank Equity Values in a Time of Low Interest Rates", *ECB Working Paper Series*, No 2199.

9 In the literature on event studies of the effects of monetary policy measures it is normal to use windows of less than one hour. For example, in their analysis of the ECB's monetary policy measures, M. Ampudia and S. Van den Heuvel (2018) use a window starting 10 minutes before and ending 20 minutes after the usual ECB press release (announcing the measures), i.e. a 30-minute window.

10 From an investor's standpoint, the inflation risk premium is the additional return demanded for the possible loss of purchasing power owing to an increase in consumer prices when holding long-term debt instead of purchasing short-term debt and rolling it over. See J. C. Berganza and A. Fuertes (2018), "The flattening of the yield curve in the United States", *Analytical Articles, Economic Bulletin*, 1/2018, Banco de España.

across maturities can also be seen in Chart 2, which shows the change in the various yields between the start and end of the time window considered, the bonds with the longest maturities being those with the largest increases in yields. Even 2-year bond yields, which are more sensitive to reference interest rates and less sensitive to the term premium, rose slightly.

Another market segment in which the announcement of the Fed's new strategy may have had some impact is inflation swaps.¹¹ These financial instruments capture agents' expectations of future inflation developments up until their maturity, as well as a risk premium linked to the

possibility that inflation may actually be higher than expected. Accordingly, they can be used to assess the approximate effectiveness of the announcement in terms of raising investors' inflation expectations. Chart 3 shows the change in inflation swap rates during the time window considered. The increase in swap rates observed is smaller than in the case of government debt. One possible explanation for the more limited impact on inflation swaps is that investors may have doubts about the effectiveness of the change in strategy in terms of increasing the inflation rate in the medium and long term. This would mean that, insofar as increases in actual inflation

Chart 1
US GOVERNMENT DEBT INTEREST RATES
(NORMALISED TO ZERO AT 15:00 CET)

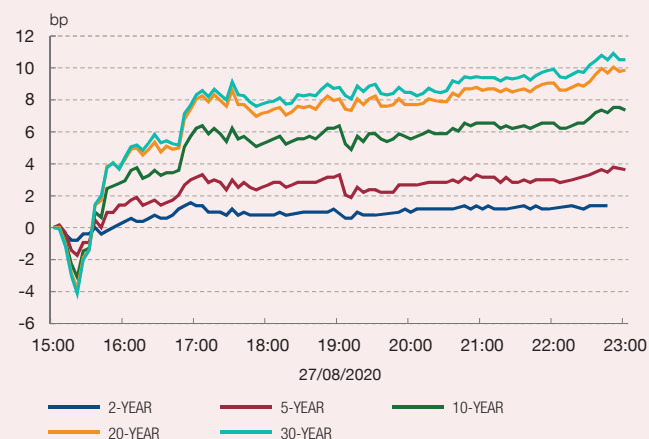


Chart 2
US GOVERNMENT DEBT INTEREST RATES
CHANGE FROM 15:00 CET ON 27 AUGUST TO CLOSE

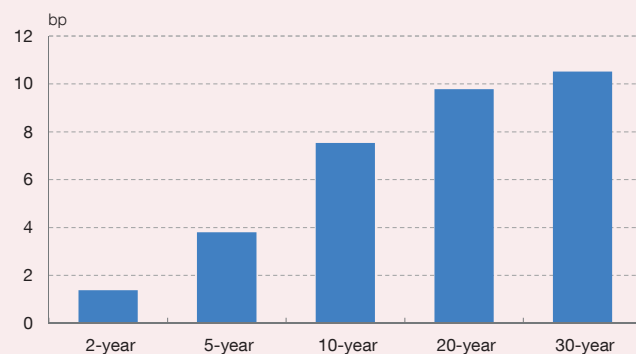


Chart 3
US INFLATION SWAP RATES
CHANGE FROM 15:00 CET ON 27 AUGUST TO CLOSE

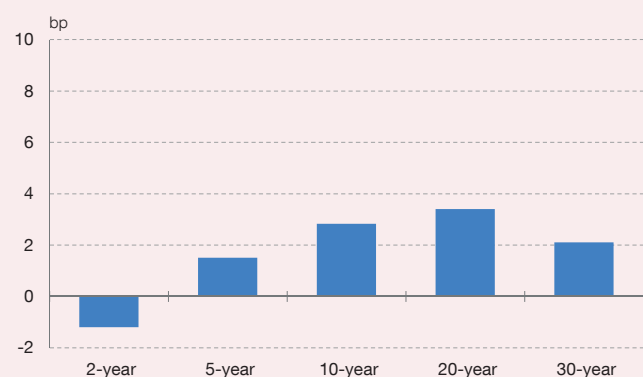
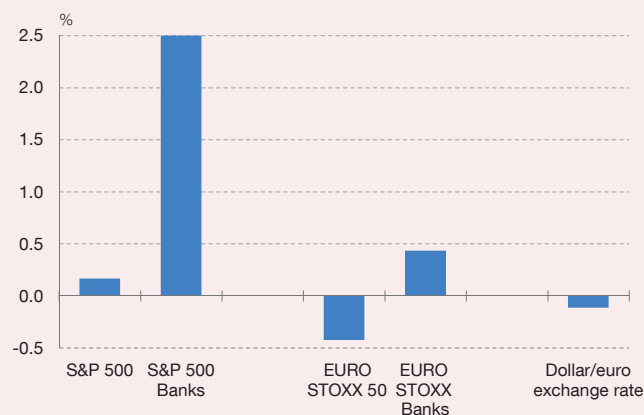


Chart 4
STOCK MARKET INDICES AND EXCHANGE RATE
CHANGE FROM 15:00 CET ON 27 AUGUST TO CLOSE



SOURCE: Thomson Reuters Eikon.

11 In an inflation swap, party A agrees to pay party B a fixed rate as consideration for receiving payments indexed to the level of inflation.

confirming the effectiveness of the new strategy are not observed, swap rates (and in particular, the genuine inflation expectations component implicit in these rates) may be barely affected.¹² Another possible explanation is that the Fed's announcement had already been partly discounted by investors, since the monetary policy strategy review was a lengthy, public and highly transparent process.¹³

Lastly, stock market developments in the United States and the euro area – with a particular focus on the banking industry – are analysed, along with the dollar/euro exchange rate. Chart 4 shows the percentage change in these variables during the time window considered.¹⁴ No significant changes occurred in the S&P 500 and EURO

STOXX 50 indices, which would suggest that investors did not envisage that the Fed's new strategy might have a significant effect on corporate profits or on its discount rate. However, the banking industry indices did rise significantly, especially in the United States. This would be consistent with a steeper yield curve resulting from higher longer-term government debt yields, and, therefore, an improved profit outlook for the banking industry.¹⁵ As regards the exchange rate, the dollar appreciated slightly, in line with the higher US government debt yields, although this movement was very small. Nonetheless, the more accommodative stance of the Fed's new strategy was reflected in a depreciation of the dollar during the days immediately following the announcement.

12 When the same analysis is carried out using Treasury Inflation Protected Securities (TIPS) similar results are obtained. TIPS are inflation-indexed bonds with returns that, when compared with those on unindexed bonds of the same maturity, give an alternative estimate of inflation expectations at different horizons.

13 In addition, the greater impact on sovereign bonds may have been due to the lack of detail regarding implementation of the Fed's new strategy, which would increase the uncertainty over future interest rates and also the term premium.

14 In the case of the US stock market indices, as the session began at 15:30 CET, the change reflects the difference between close of business on 26 August and 27 August.

15 The banking industry is sensitive to the slope of the yield curve due to its intermediation business, which is based on the transformation of returns on assets and liabilities according to their maturities. Thus, banks' liabilities, mainly deposits, are remunerated at short-term interest rates, while their assets, mainly loans, are remunerated in line with longer-term interest rates.