Tapering, profit and equity prices

Is a market correction unavoidable when the Fed starts tapering?

Gilles Moëc,
AXA Group Chief Economist,
Head of AXA IM Research
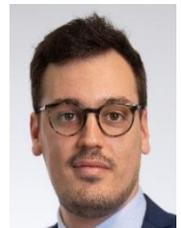
Hugo Le Damany,
Economist
Macro Research – Core Investments

Key points

- As the US Federal Reserve's tapering announcement is likely imminent, we offer an econometric quantification of the effect of the Fed's quantitative easing (QE) programme on US equity prices, also taking into account interest rates, earnings and market stress

- Over the last two years, QE appears to explain nearly all the gains in equity prices in the S&P 500 index. However, we find that the information technology (IT) sector has been much more sensitive to QE than the rest of the index

- This does not necessarily mean that a correction is unavoidable when tapering starts. In our model, it is only when the Fed actively *reduces* its balance sheet by selling the securities it has acquired during QE that equity prices would be squeezed. We use our model to simulate what pace of Fed asset offloading would be consistent with stable equity prices

- Our model suggests that *actual* corporate earnings have no bearing on the equity valuation of IT stocks – contrary to what we find for the rest of the index. Only expected earnings seem to matter, and they have little connection with actual ones.

The equity market has been through a spectacular rebound since the autumn of last year. However, uncertainty over the next steps for the recovery in the global economy may impair further progress, given supply-side disruptions which are hampering output, pushing up input prices and potentially depressing margins. But the future trajectory for monetary policy is also likely to be crucial.

We are facing an imminent downscaling of quantitative easing (QE) by the Federal Reserve (Fed), the Bank of England (BoE) and, later, the European Central Bank (ECB), alongside a general shift of expectations towards an earlier lift-off for policy rates.

QE is, by construction, a bubble-making machine. It pushes asset prices above their fundamental level by generating positive wealth effects and reducing the cost of capital. Symmetrically, one would expect a reversion to fundamentals when QE stops, eliminating the 'central bank froth' component of the market.

We seek in this note to quantify these mechanisms in an econometric approach, by estimating models identifying the respective impact of fundamentals, conventional and unconventional monetary policy on US equity prices over the last 15 years.

Our model

We consider four different variables in this approach. First, we use corporate profits for each sector, as measured by the US national accounts, as a proxy for fundamentals. This allows us to easily derive a trajectory for this variable from our GDP forecasts (the share of profits in GDP is relatively stable in the short run). Second, to capture the Fed's unconventional policy we use the change in the size of its balance sheet. It is a synthetic indicator which has the benefit of looking through the changes over time in the Fed's specifications of its QE programmes. Third, the Fed Funds Rate, as both a proxy of the discount rate to apply to equities and of the level of support the Fed is providing to the economy in normal conditions – i.e. when the lower bound has not been hit and conventional policy suffices. Fourth, the VIX volatility index as an indicator of market stress.

We distinguish in our estimations two sectors: Information technology (IT) and 'everything else'. Their sensitivity to fundamentals and monetary policy are likely to differ. Given the rising share of IT stocks in US indices, this is likely to trigger some instability in how aggregate equity prices behave. We discuss in more details the definition of these variables in the explained box below.

There is a high risk of instability in our models, since the relative weight of conventional versus unconventional policy has varied over time – before the global financial crisis, unconventional instruments had not been used in the US since the 1950s. We thus checked for breakpoints in the coefficients estimated for the balance sheet variable. In total then we have four explanatory variables, whose impact on equity prices are estimated across two sub-periods and two components of the S&P 500 index.

Do realised profits actually matter?

The key results are summarised in the tables found in the appendix below. A 1% change in profits lifts non-IT equity valuations by 0.27%. To get a better sense of the magnitude of the relationship, the annual standard deviation of US corporate profits – outside the IT sector – stands at 16%. Hence, the normal variability of profits would trigger changes in equity prices to the tune of 4.5%. Conversely, and in line with our expectation, **the impact of the corporate profits variable in IT**

is counter-intuitive. For this sector, the coefficient is actually negative (higher earnings would depress equity prices), but it is fairer to say that it is statistically different from zero only at the 10% confidence threshold. We think this reflects the fact that in IT, the epitome of growth equity, investors do not derive their expectations for future profits – theoretically the driver of valuations – from current or recent realised profits. They are ready to tolerate very low or even falling levels of realised profits as they anticipate potentially disruptive results in the future. Conversely, investors visibly use realised profits as a good proxy for future earnings in the rest of the economy.

Incidentally, on the basis of these results, the correlation between equity prices and the actual state of the economy, as reflected by profits in the national accounts, should loosen as the share of IT in US equity indices grows.

QE matters more and more

Another of our assumptions is confirmed by our estimations: **high tech is much more sensitive to variations in the size of the Fed's balance sheet than the rest of the index**. This difference in sensitivity across sectors is true for the entire estimation period, even though the break we identify points to an increase in the role of the balance sheet over time. The break appears in 2010 for the S&P 500 excluding IT, and 2016 for IT. Over the last five years, a 1% rise in the Fed's balance sheet would boost valuations by 0.8% in IT, against 0.5% in the rest of the economy. Between the two sub-periods, the sensitivity of equity prices to QE has tripled in both sectors. Note that the introduction of non-conventional policy in our equations still left a role for the Fed's policy rate, with a similar impact across sectors (elasticity of 0.1).

This reflects to some extent the fact that IT stocks are "long duration" and should thus be more sensitive to changes in long-term interest rates, which of course affects QE. But when we introduced the US 10Y yield in our equations, although the estimates confirmed the specific sensitivity of the IT sectors to this variable, they only marginally reduced the explanatory power of the Fed's balance sheet. There seems to be a "quantity effect" which goes far beyond the mechanical impact on long-term rates. We would suggest that investing in IT companies entails a higher level of risk-taking, which is more readily envisaged when liquidity is particularly ample – a side-effect of QE – and when interest rates have hit record low levels.


Explainer: Our process in detail

In our estimates, we used price indices per sector, published by Standard & Poor (S&P). They follow the Global Industry Classification Standard (GICS), now largely adopted in finance. We focused our study on the global S&P 500 index and its Information Technology (IT) component. We extracted corporate profits by industry published by the US Bureau of Economic Analysis (BEA), but we rearranged the figures as the IT sector doesn't exist per se. Following the GICS classification, we built the IT corporate profit component. Then, we subtracted it from the total to obtain global corporate profit without the IT sector. A scale-up modification was performed to adjust for negative profits at the beginning of the 2000s. The VIX, published by the Chicago Board Options Exchange (CBOE), is a good proxy for stress in financial markets. This index is a financial benchmark designed to be a market estimate of the expected volatility of the S&P 500 Index and is calculated by using the midpoint of real-time S&P 500 Index option bid/ask quotes. Our last inputs were the Federal Reserve balance sheet to gauge market liquidity and the Fed Funds Rate to take into account the monetary policy stance. Our sample starts in the fourth quarter (Q1) of 2003 and finishes in Q2 2021. The BEA doesn't publish quarterly data before Q1 2001, while the Fed's data for its balance sheet starts in Q4 2002.

Exhibit 1 – Model does a good job at explaining equity price…

S&P - Evolution of S&P excluding Information Technology sector
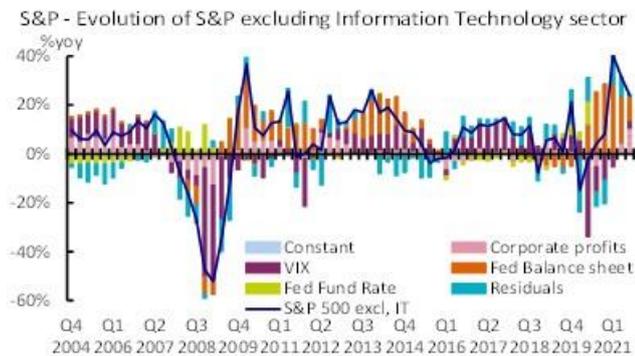
Exhibit 2: …across the two sectors

S&P - Information Technology sector evolution
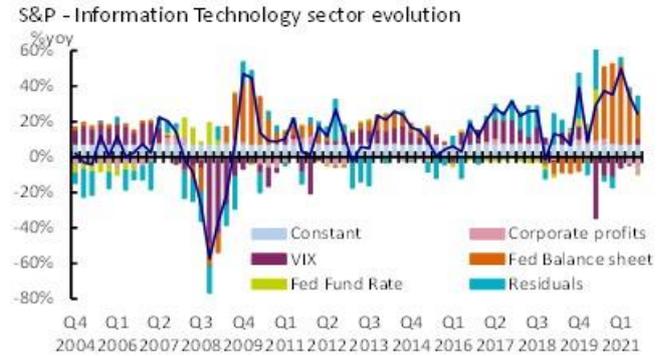
Exbhits 1 and 2 suggest our equations do a good job of predicting the inflexions in equity prices across the two sectors over the last 15 years, with fairly small residuals. They also illustrate how dependent the equity market has become on QE in the last two years – this variable alone explains the near-entirety of the valuation gains. At first glance, this would suggest that the market would correct brutally when the Fed terminates its QE programme. Judging by our model, though, things would be more complicated than that.

Stock versus flow

In our equations, what matters is the change in the size of the Fed's balance sheet. Since tapering is a gradual reduction in the pace of purchasing, and since the Fed would continue reinvesting the maturing bonds it already holds, its balance sheet would actually continue rising, to stabilise only in the middle of 2022 (with a six-month tapering). This would be consistent with a still positive – albeit shrinking – contribution from the Fed's balance sheet to equity prices in year-on-year (yoy) terms, as illustrated in Exhibit 1. This is an alternative angle to the point often made by central banks, which is that when it comes to QE, stocks matter at least as much as flows.

Exhibit 1: Tapering is not necessarily consistent with equity correcting

Tapering and S&P excl IT forecast
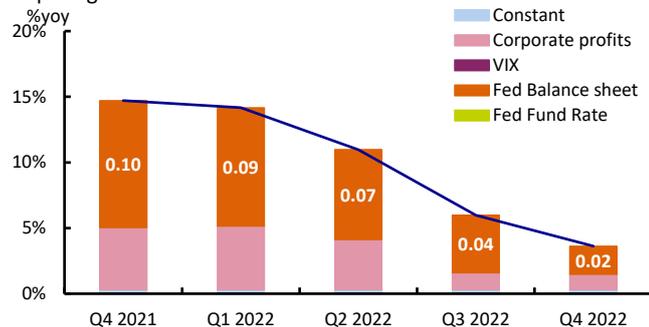

Source: AXA IM Research, 29 October 2021

We have at least one example to verify the conclusion from our model. After the 'taper tantrum' of mid-2013, the Fed terminated its QE programme in 2014, thus stabilising its balance sheet. Equity prices stalled but did not decline in yoy terms. Of course, we cannot discard the possibility that this time, tapering would trigger generic stress in the market. What appears to have

saved equities after 2013 was several years of peace and quiet, encapsulated in the decline of the VIX index, triggering a positive contribution to equity prices (visible in Exhibits 1 and 2). However, over the last 15 years, there has been zero correlation between VIX and the change in the Fed's balance sheet. We don't see why a link would appear now.

Since unconventional policies were deployed massively during the global financial crisis of 2008-2009 the market has rarely seen the central bank offload its balance sheet in large quantities, i.e. selling back into the market the bonds acquired through QE. However, the Fed's balance sheet declined from the end of 2017 to 2019, which is reflected in the negative contribution of this variable to equity prices at the time which can be seen in Exhibits 1 and 2. The market did not tank but its performance was overall mediocre.

To show how sensitive the market could be to this in the future, we have computed what annual rate of decline in the Fed's balance sheet would be needed to bring it back to its pre-pandemic level in 5, 10 and 20 years. Using the relative elasticity of non-IT equity to profits and changes in the Fed's balance sheet, we have also computed what growth rate in profits would be needed to offset the impact on equity prices of such offloading (Exhibit 4). Only the slowest pace (20 years) would protect against a decline in equity prices if profits remained on their past trend. From an equity market point of view, it would thus be that decision – the speed of the balance sheet normalisation – rather than the pace of tapering which will be key for the Fed.

Exhibit 2: Offloading will need to be slow not to be disruptive

How corporate profits may have to change to offset balance sheet contraction
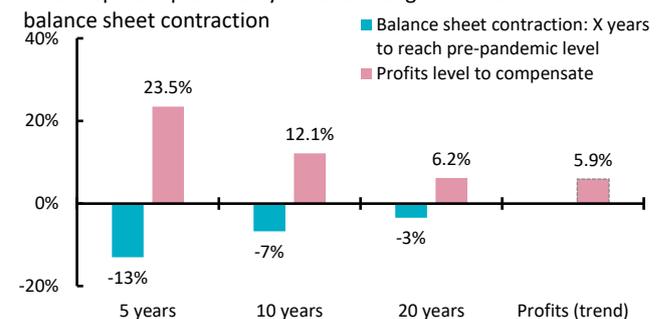
Source: BEA and AXA IM Research, 2 November 2021

APPENDIX

Table 1: Model estimated excluding IT
Method: Least square with breaks
Frequency: Quarterly
Sample: Q1 2004-Q2 2021
Dependent variable: S&P 500 excluding IT yoy (log)

Variables	Coefficient
Q1 2004 – Q3 2010	
Fed balance sheet yoy (log)	0.15***
Q4 2010 – Q2 2021	
Fed balance sheet yoy (log)	0.48***
Non-breaking variables	
C	0.0
Corporate profits excluding IT yoy (log)	0.27***
VIX (z-score)	-0.1***
d(FFR)	-0.08**

RMSE=0.078
Durbin Watson=1.93
Adjusted R-squared=0.73
p_values <1%=*** ; <5%=** ; <10%=*

Source: AXA IM Research, 29 October 2021

Table 2: Model estimated on IT alone
Method: Least square with breaks
Frequency: Quarterly
Sample: Q1 2004-Q2 2021
Dependent variable: S&P 500 IT yoy (log)

Variables	Coefficient
Q1 2004 – Q2 2016	
Fed balance sheet yoy (log)	0.28***
Q3 2016 – Q2 2021	
Fed balance sheet yoy (log)	0.76***
Non-breaking variables	
C	0.08***
Corporate profits excluding IT yoy (log)	-0.21*
VIX (z-score)	-0.105***
d(FFR)	-0.08**

RMSE=0.11
Durbin Watson=1.43
Adjusted R-squared=0.61
p_values <1%=*** ; <5%=** ; <10%=*

Source: AXA IM Research, 29 October 2021

Our Research is available on line: http://www.axa-im.com/en/insights

Insights Hub
The latest market and investment insights, research and expert views at your fingertips

www.axa-im.com/insights