KfW Research
Economics in Brief

Effects of quantitative tightening by the ECB and Fed on inflation and GDP

No. 239, 11 August 2023

Authors: Dr Felix Schmidt, phone +49 69 7431-9386, felix.schmidt@kfw.de; Marius Lange, phone +49 69 7431-69244, marius.lange@kfw.de;
Dr Jens Herold Esteves

Interest hikes and QT follow era of ultra-loose monetary policy

After a years-long, low-interest-rate environment, the COVID-19 pandemic and the Ukraine war have led to rapidly rising inflation rates. In order to fight inflation, the Fed began to lift benchmark rates in March and the ECB in July 2022. In addition, the central banks first rolled back their asset purchase programmes after years of quantitative easing (QE) before taking the further step of unwinding their asset holdings. While an end to the benchmark rate cycle in the euro area and the US is already foreseeable, quantitative tightening (QT) will keep central banks busy for a long time.

Empirical research on QE and QT

Studies on the consequences of unconventional monetary policy have often examined the effects of an expansion of the central bank balance sheet. In their meta-study, Fabo et al.[1] analysed 54 empirical studies and concluded that a balance sheet expansion by 1% of GDP increases the price level in the euro area by 0.11% (US 0.21%). The effect on GDP is 0.16% (US 0.17%). Under the assumption that the effects are symmetrical, the findings of Fabo et al. can be applied to QT. As the findings of Fabo et al. refer to the cumulative effect of the impact of QT at the end of the assessed time period in the research papers underlying the meta-study, it is not possible to make a statement about the temporal component of the effect.

Effects of quantitative tightening

The ECB reduced its asset holdings under the Asset Purchase Programme (APP) by an average EUR 15 billion per month between the beginning of March and the end of June. Its reinvestments under the APP ended in July. Assets worth nearly EUR 150 billion will expire in the second half of the year,[2] so that the full balance sheet rundown under the APP will amount to just under EUR 210 billion by the end of 2023. That represents around 1.6% of euro area GDP of the year 2022. According to Fabo et al., this will lead to a cumulative 0.17% drop in the euro area price level and a 0.25% reduction in GDP. In the US, the balance sheet rundown by the Fed was USD 47.5 billion each month from June up to and including August 2022. Since September 2022, the rundown has doubled to USD 95 billion per month. This will result in a quantitative tightening of USD 1.66 trillion in total by the end of 2023, which is roughly 6.5% of US GDP of the year 2022. The significantly larger balance sheet drawdown also has a stronger downward effect of -1.4% on the price level and -1.1% on GDP compared with the euro area. However, it must also be considered that besides the reduction of the APP portfolio, the repayments on longer-term refinancing operations (LTRO) are contributing very significantly to the ECB's quantitative tightening. Repayments amounted to roughly EUR 1 trillion between the summer of 2022 and June 2023. But the effects of this type of quantitative tightening cannot be compared one-to-one with a reduction in asset holdings and are therefore not included in the calculation. The repayment of the LTROs, however, tends to reinforce the effects described.

Quantitative tightening as a substitute for additional interest hikes

A comparative study by Wieland et al. (2016)[3] with 8 macro-econometric models for the euro area and 12 models for the US found that lifting the benchmark interest rate by one percentage point reduces GDP by 0.46% in the euro area and by 0.48% in the US. These findings can be transferred to the effects calculated above. This means that an additional benchmark interest rate hike of around 60 basis points in the euro area and 230 basis points in the US would be needed to make up for the calculated effects of the current quantitative tightening on GDP.

Conclusion and perspective

The ECB's and the Fed's fight against inflation continues. The rough calculations presented here indicate that the central banks' current monetary policy may already be more clearly in restrictive territory than the benchmark interest rate alone suggests. This supports the assumption that benchmark rates should soon have reached their peak in both the euro area and in the US. The balance sheet rundowns, however, are likely to be continued. The above calculations provide a rough indication as to how large the effects of QT on inflation and GDP are (and could be in future) and how many interest hikes they substitute. However, it is important to note that the calculations were made under simplified assumptions such as a symmetrical and linear effect of QT. Furthermore, no reliable statements can be made about the temporal component of the effects. Nevertheless, these estimates can act as a guide in order to better assess the quantitative effects of monetary policy reversal in the euro area and the US.

[1] Fabo B. et al. (2021): Fifty shades of QE: Comparing findings of central bankers and academics. Journal of Monetary Economics 120, 1–20.

[2] https://www.ecb.europa.eu/mopo/implement/app/html/index.en.html

[3] Wieland et al. (2016): Chapter 15 – New Methods for Macro-Financial Model Comparison and Policy Analysis. Handbook of Macroeconomics 2, 1241–1319.

One Pager

ISSN 2195-1403 Note: This paper contains the opinion of the authors and does not necessarily represent the position of KfW.