

'QUANTITATIVE EASING'

WEBINAR PRESENTATION

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What is 'quantitative easing'?

- ❑ 'Quantitative easing' or 'QE' is a form of 'unconventional monetary policy' intended to stimulate economic activity, reduce unemployment and/or achieve a higher rate of inflation than the one currently prevailing
 - as distinct from the 'conventional' monetary policy tool for achieving those objectives which is to reduce interest rates
- ❑ Specifically, 'QE' refers to the purchase of financial assets by a central bank, with a view to achieving the same goals as might otherwise be pursued by cutting interest rates
 - most commonly, the 'financial assets' purchased by central banks as part of a 'quantitative easing' policy are government bonds ... but different central banks have also purchased mortgage- and other asset-backed securities, corporate bonds, commercial paper and exchange-traded funds (equities)
 - some central banks have also made loans as part of their 'QE' programs – most commonly to banks, but (in some instances) also to securities markets dealers, local governments, and businesses
- ❑ The word 'quantitative' is used in this context because central banks which adopt it typically specify, in advance, the quantity of assets which they intend to purchase, or the amount of loans which they intend to provide
 - this is usually stated either as an aggregate amount of assets which the central bank plans to purchase over a specified period (such as six months or a year), or alternatively as an amount per week
 - as distinct from 'conventional monetary policy' where the central bank specifies a price – ie, the 'official' interest rate
- ❑ In order to fund the purchase of financial assets, or the provision of loans, a central bank 'creates money'
 - when it purchases bonds (usually by way of 'reverse auctions' or tenders) it pays for them by crediting the seller's bank account, which shows up (in the financial system) as an increase in the seller's bank's deposits at the central bank
 - likewise when a central bank makes loans to commercial banks, it credits their accounts with the central bank

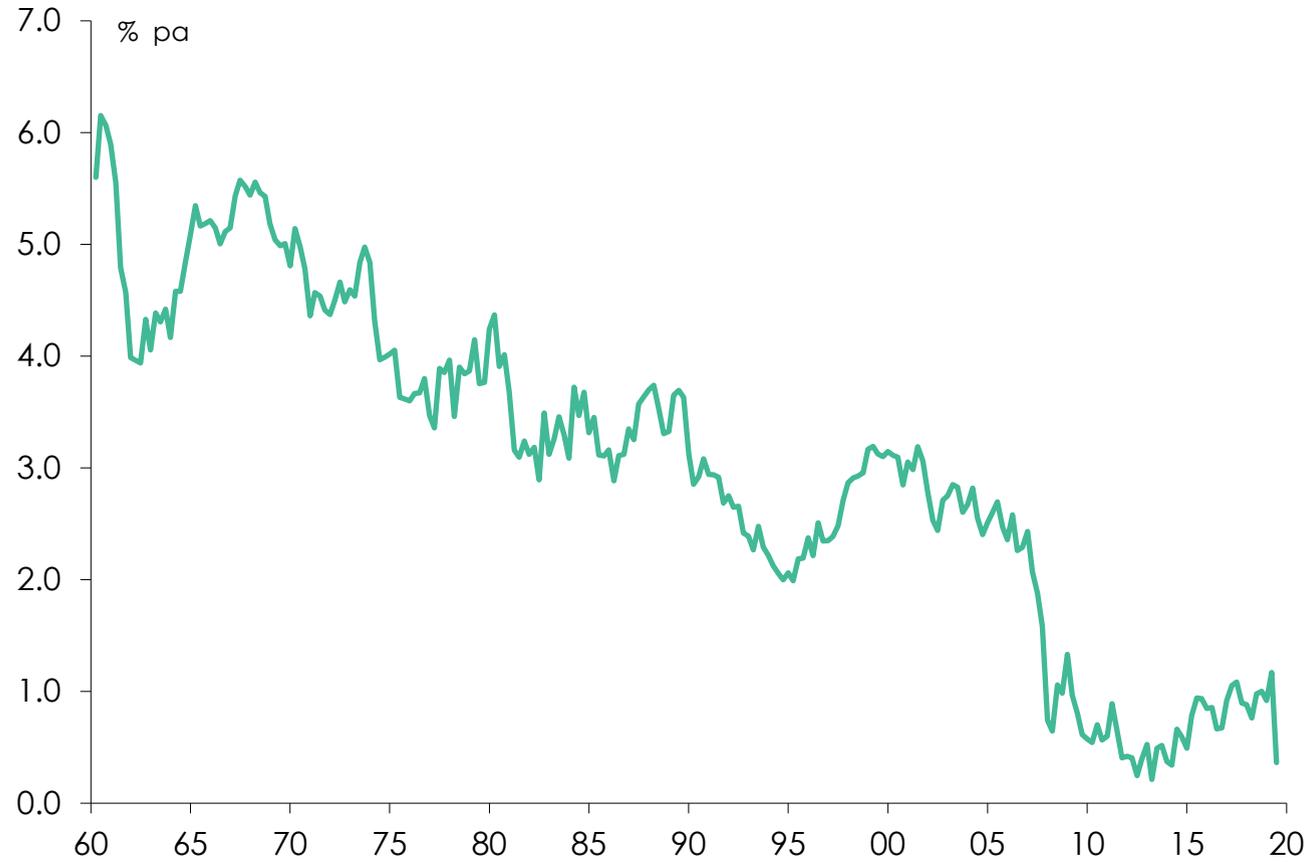
What 'quantitative easing' isn't

- ❑ 'Quantitative easing' is not 'printing money' in the way that Weimar Germany did in 1922 and 1923, Hungary did towards the end of World War II, any number of 'banana republics' in the 1970s and 1980s, or more recently Zimbabwe and Venezuela
 - in those instances central banks did (literally) print enormous quantities of bank notes to finance government spending (or in Weimar Germany's case, 'reparations' after World War I)
 - which did result in 'too much money chasing too few goods' and massive currency depreciations fuelling further inflation
- ❑ Nor is 'quantitative easing' about financing government deficits
 - no 'advanced economy' central bank is directly buying government bonds from governments (in the so-called 'primary market')
 - 'QE' does make government deficits easier to finance by allowing governments to sell new debt at lower interest rates than would be possible – but that isn't the reason why central banks are doing 'QE'
 - 'QE' is not 'Modern Monetary Theory' (MMT)
- ❑ And it's not about supplying 'emergency liquidity' during financial crises
 - which is something that central banks have routinely done in such circumstances (dating back at least to the 1870s)

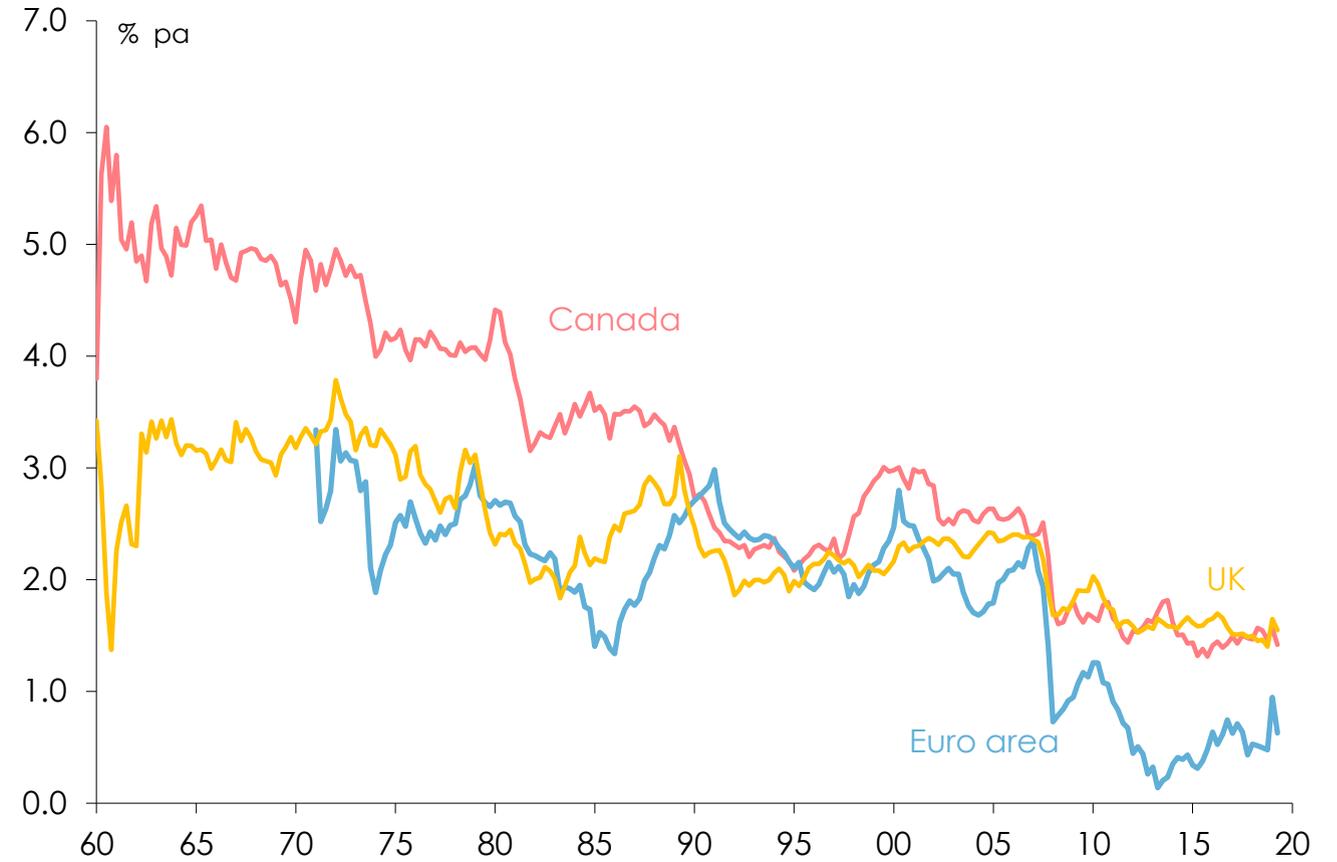


Central banks' adoption of 'quantitative easing' as a tool of monetary policy is a response to the decline in the 'natural' rate of interest

The 'natural' real rate of interest in the US – r^*



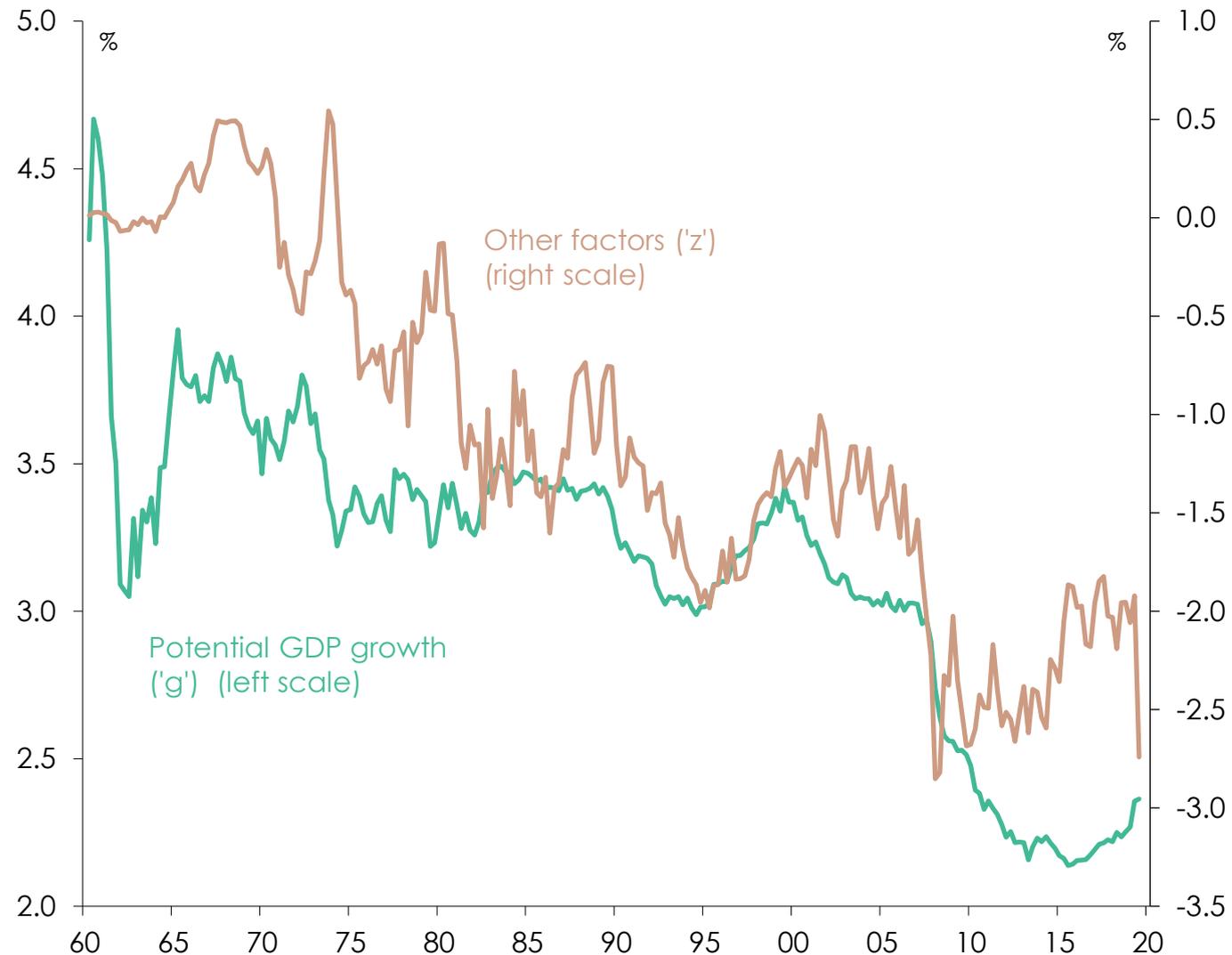
r^* in other 'advanced' economies



- ❑ Economic theory going back to the Swedish economist Knut Wicksell (1936) has postulated that there is a 'natural' real (ie, after inflation) interest rate which (all else being equal) is consistent with an economy operating at its sustainable, full-employment level – economists call this 'natural' rate ' r^* ' (r-star)

Why has the 'natural' rate of interest declined?

Determinants of r^* in the US

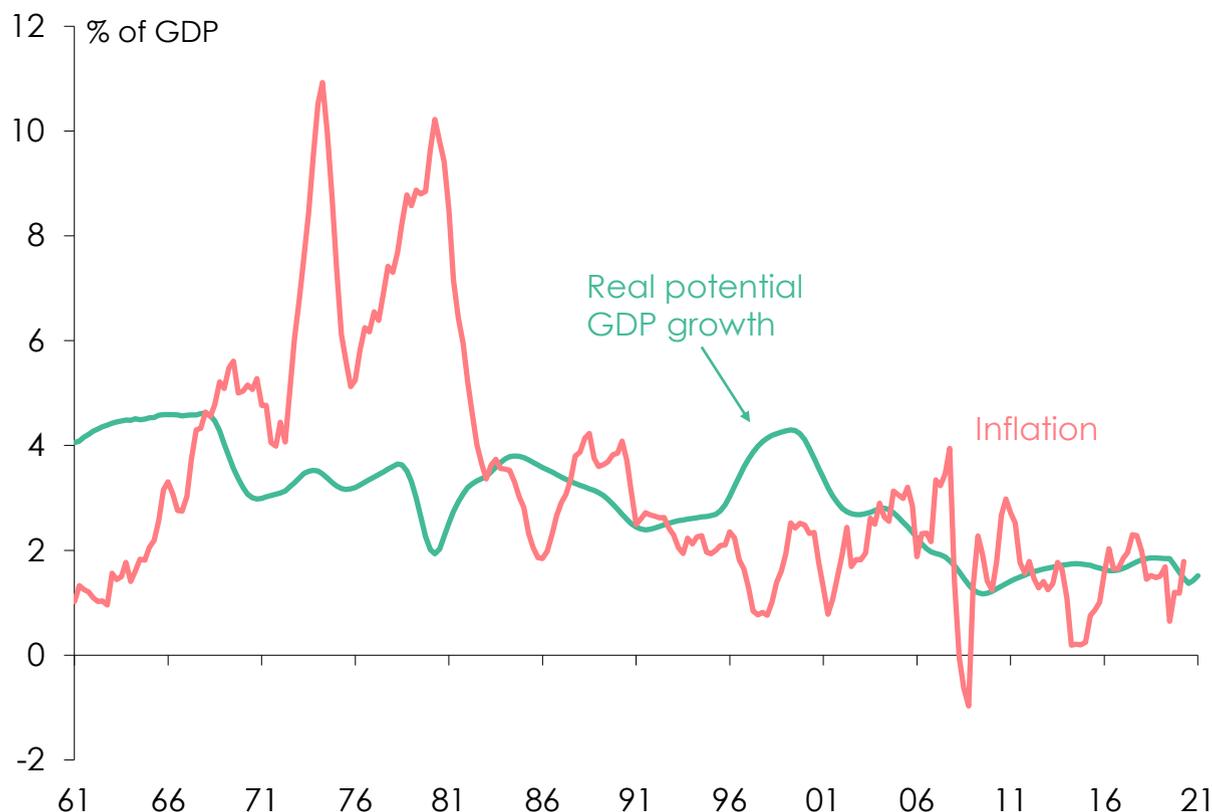


Source: Thomas Laubach and John Williams, [Measuring the Natural Rate of Interest](#), *Review of Economics and Statistics* Vol. 85, no.4, November 2003, pp1063-70; Federal Reserve Bank of New York, [R-star](#).

- Potential GDP growth ('g') in the US and other 'advanced' economies has slowed over the past two decades for a number of reasons
 - slower population growth – and in particular, slower growth in the working-age population due to ageing
 - decline in labour force participation in the US, and slower increases in labour force participation in other economies
 - slower growth in labour productivity
- A number of explanations have been offered for the other factors ('z') that have contributed to the decline in r^*
 - what former US Federal Reserve Chairman Ben Bernanke described as the 'global savings glut' arising from the build-up of very large savings in 'emerging' markets (particularly East Asia, and oil-producing nations) and in some European countries, which has pushed down interest rates
 - lower levels of business and public investment in 'advanced' economies, which have reduced the demand for loans, which has also pushed down interest rates
 - increased demand for 'risk-free' assets (like government bonds) from pension funds, which has pushed down the yield (interest rate) on those assets
 - lower expectations of returns from riskier assets, which has pushed their yields lower as well

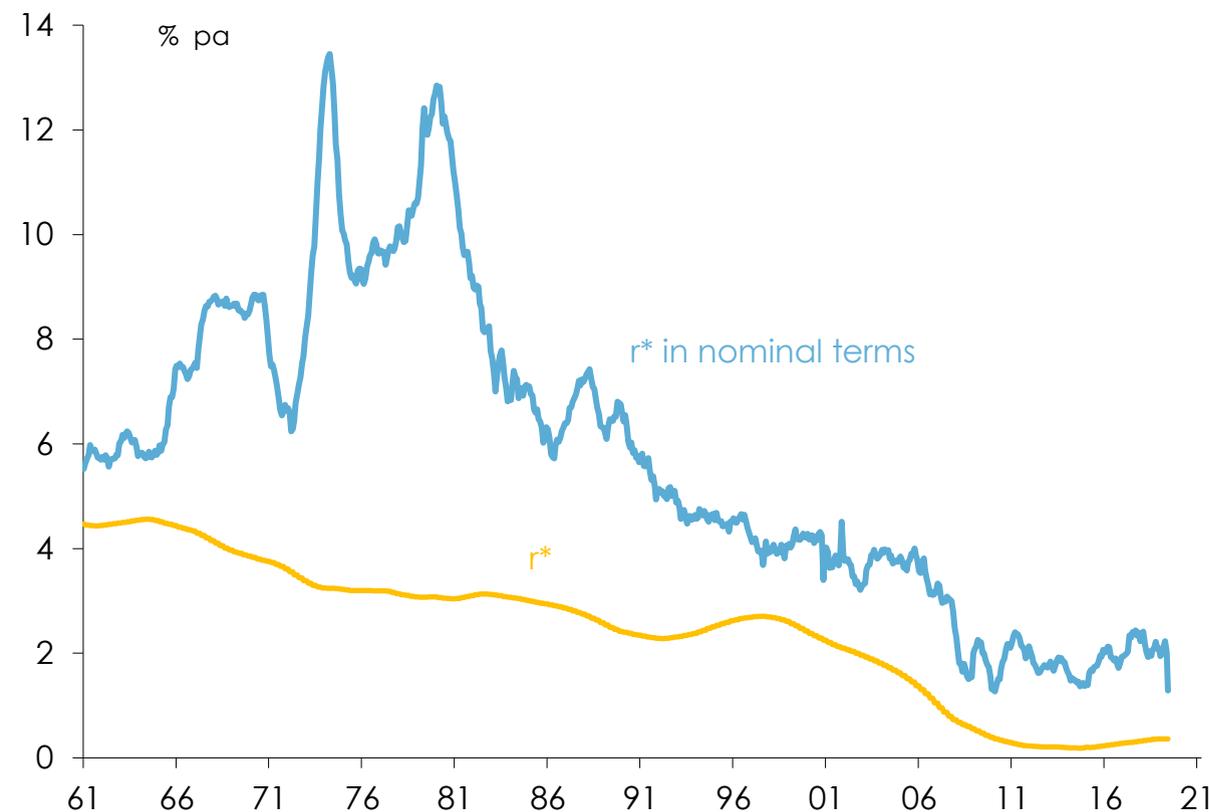
As potential GDP growth has slowed and inflation has come down, the nominal interest rate consistent with r^* has fallen significantly

US real potential GDP growth and inflation



- Real potential GDP growth has slowed from 4½% pa in the 1960s, to 3½ % pa in the 1970s & 80s, 3% in the 1990s, 2¾% in the 2000s and just 1½-1¾% in the 2010s – while inflation has dropped from an average of 6½% pa (and a peak of over 10%) in the 1970s to less than 2% pa in the 2010s

Real (inflation-adjusted) and nominal r^*

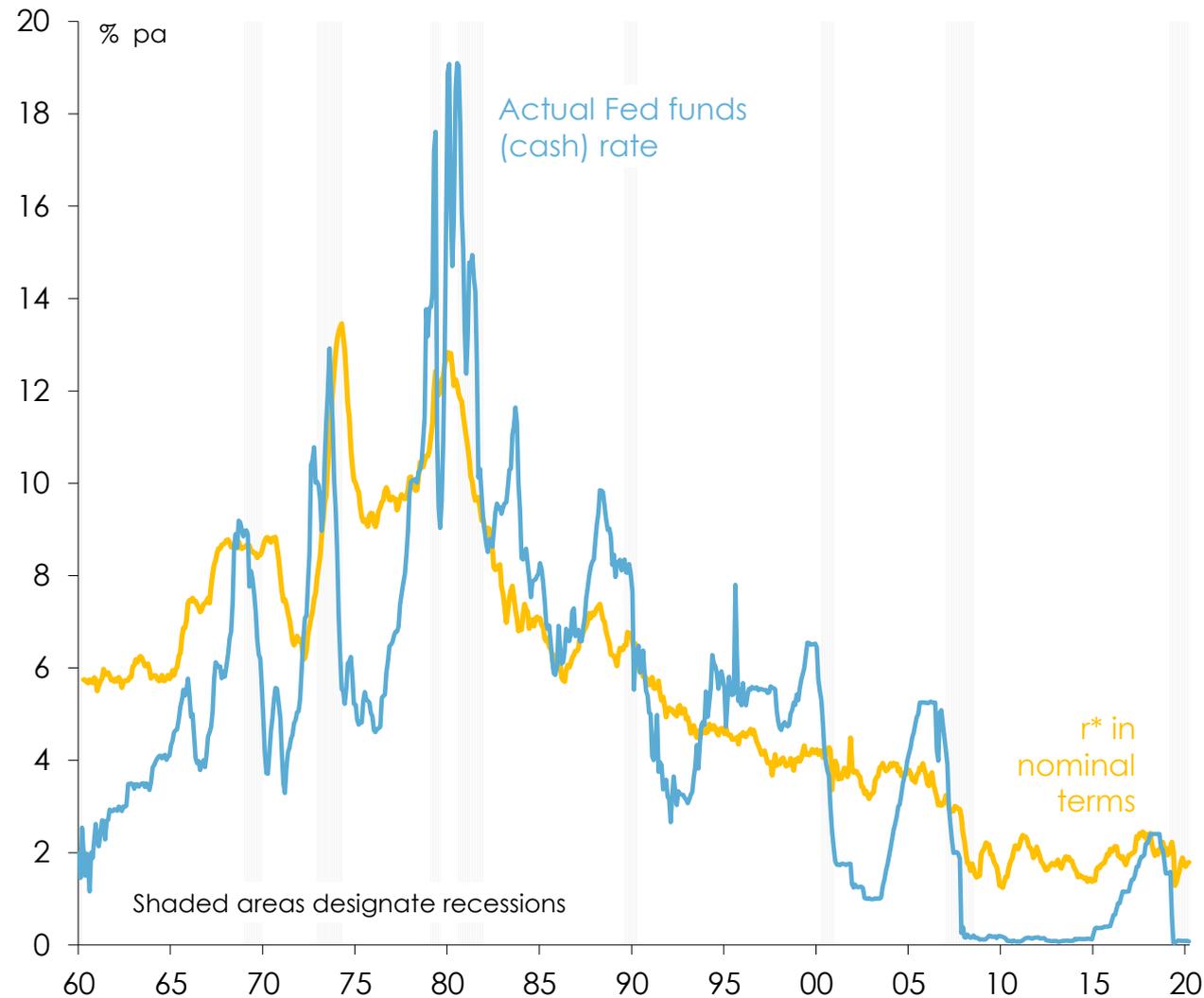


- As a result, the nominal (pre-inflation) interest rate consistent with r^* has dropped from an average of over 10% between the mid-1970s and early 1980s to less than 2% over the past 10 years

Sources: US [Congressional Budget Office](#) (estimates of potential GDP); [Bureau of Economic Analysis](#) (estimates of inflation as measured by the implicit price deflator of personal consumption expenditures). 'Nominal r^* ' is r^* (expressed in real, ie after-inflation, terms as shown in the previous slide), plus the twelve-months-to-increase in the implicit price deflator of personal consumption expenditures.

Over the past 4-5 decades, central banks have moved actual interest rates above or below r^* according to their economic policy objectives

US r^* and the actual Fed funds (cash) rate

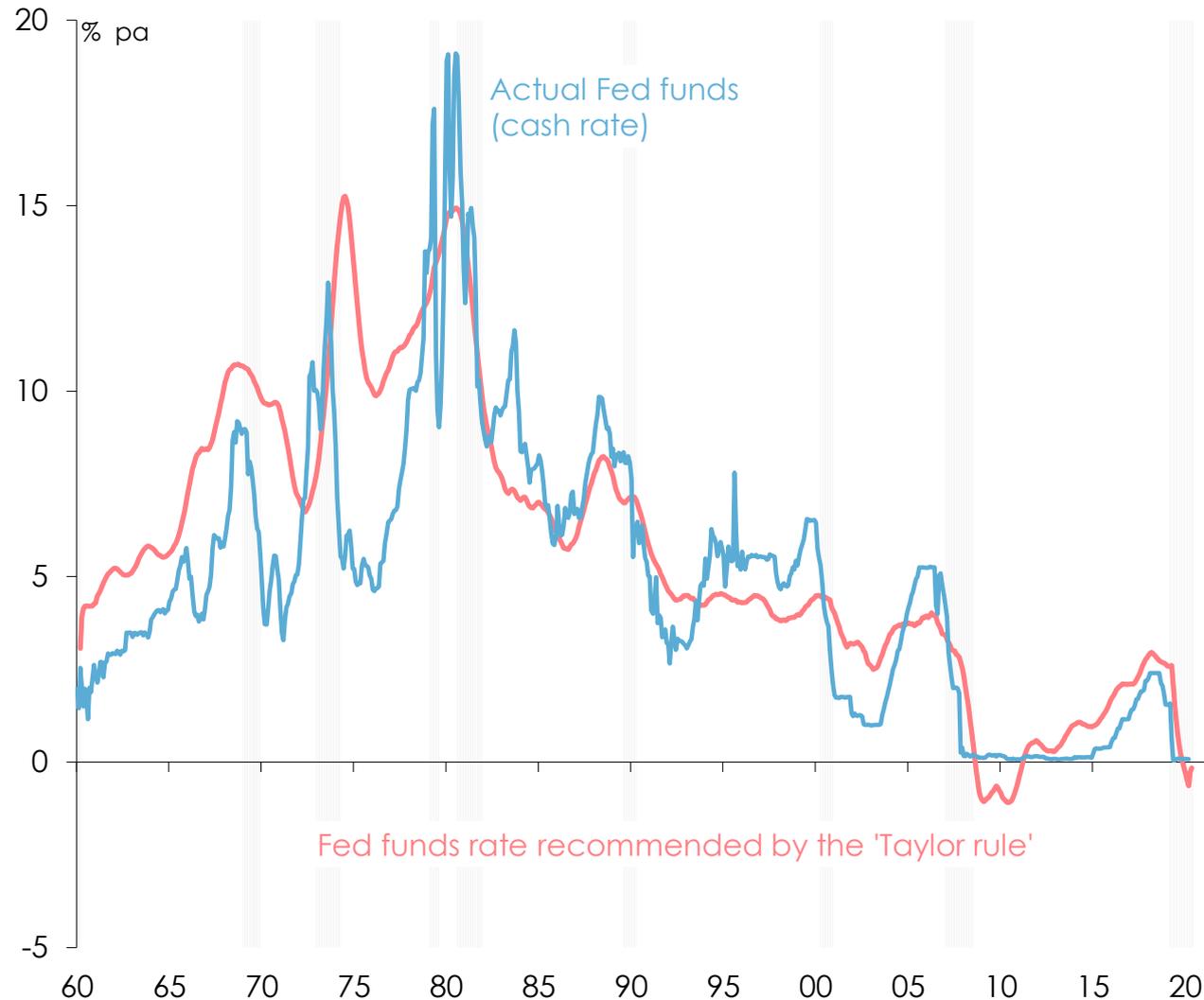


- ❑ r^* is a theoretical, long-term concept – the interest rate that can be expected when the economy is operating at ‘full employment’ and growing at its ‘potential rate’
- ❑ The economy is hardly ever in this ideal state of affairs
 - it is almost always operating either at less than ‘full employment’ (that is, with a ‘negative output gap’ between actual and potential GDP)
 - or it is operating at ‘over-full’ employment – in which case it is likely that inflation will be running at a faster rate than the central bank’s inflation target
- ❑ For that reason, actual (observed) interest rates are almost never equal to r^*
- ❑ Rather, the central bank (the Federal Reserve in the US) sets its policy interest rate (the ‘fed funds rate’ in the US) above or below r^* according to whether it
 - wants to stimulate faster economic growth – in order to ward off a potential recession, or to promote a recovery from a recession that’s already happened (in which case it will set actual interest rates below r^*)
 - or wants to slow economic growth in order to reduce inflation when it is above its target (in which case it will set actual interest rates above r^*)

Sources: Federal Reserve Bank of New York, [R-star](#); Board of Governors of the Federal Reserve System, [Selected Interest Rates \(H.15\)](#).

During the past decade, the decline in r^* combined with sluggish growth and low inflation has rendered conventional monetary policy less effective

The actual fed funds rate and the 'recommended' rate according to a widely-followed 'rule'



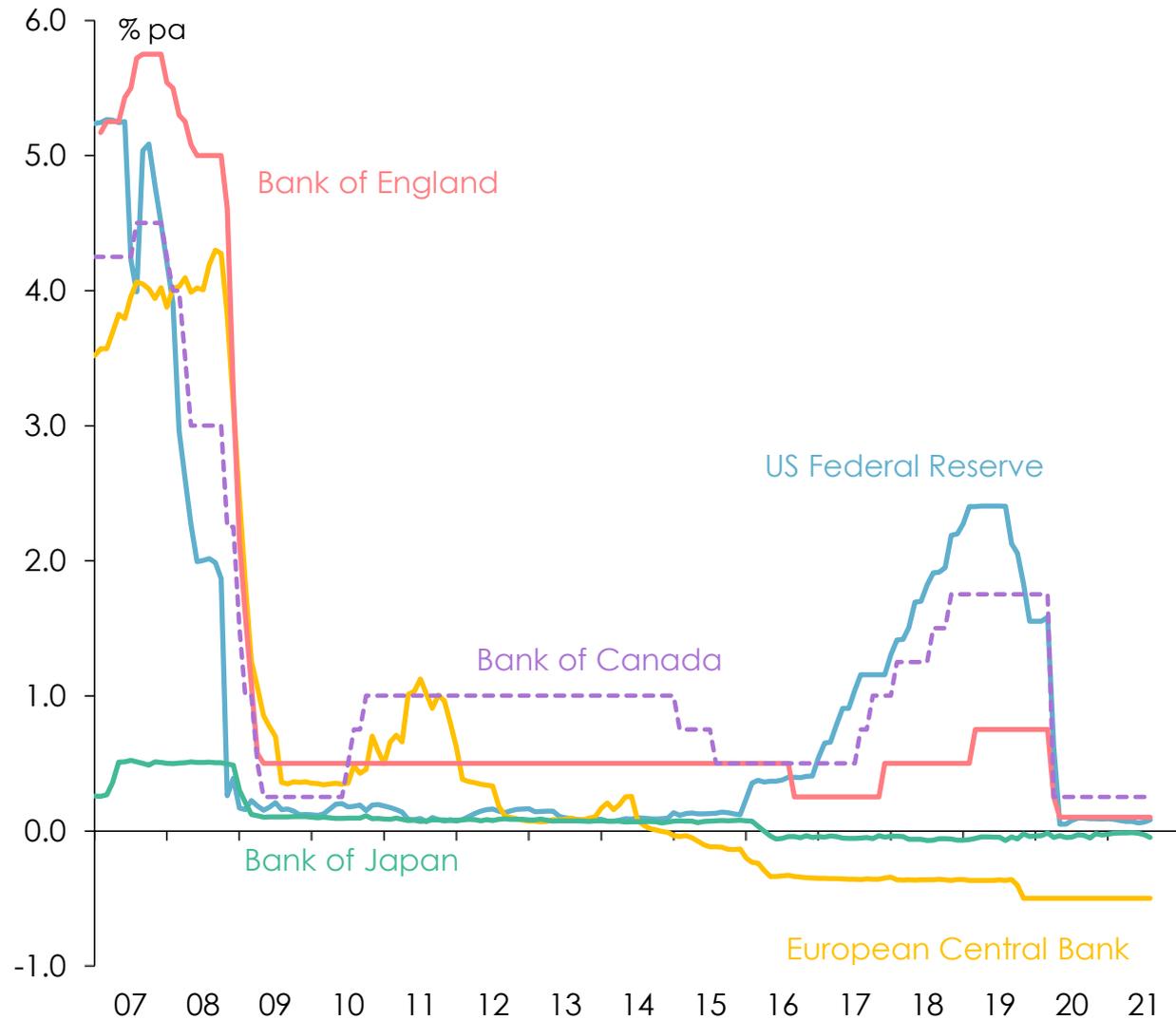
- ❑ Central banks set their monetary policy interest rates in order to achieve their objectives which are usually expressed in terms of 'low and stable inflation' and 'full employment'
- ❑ Many central banks appear to be guided, at least in part, by a 'rule' that has come to be known as the 'Taylor rule'

$$r = p + 0.5 \times (p - p^*) + 0.5 \times (y - y^*)$$

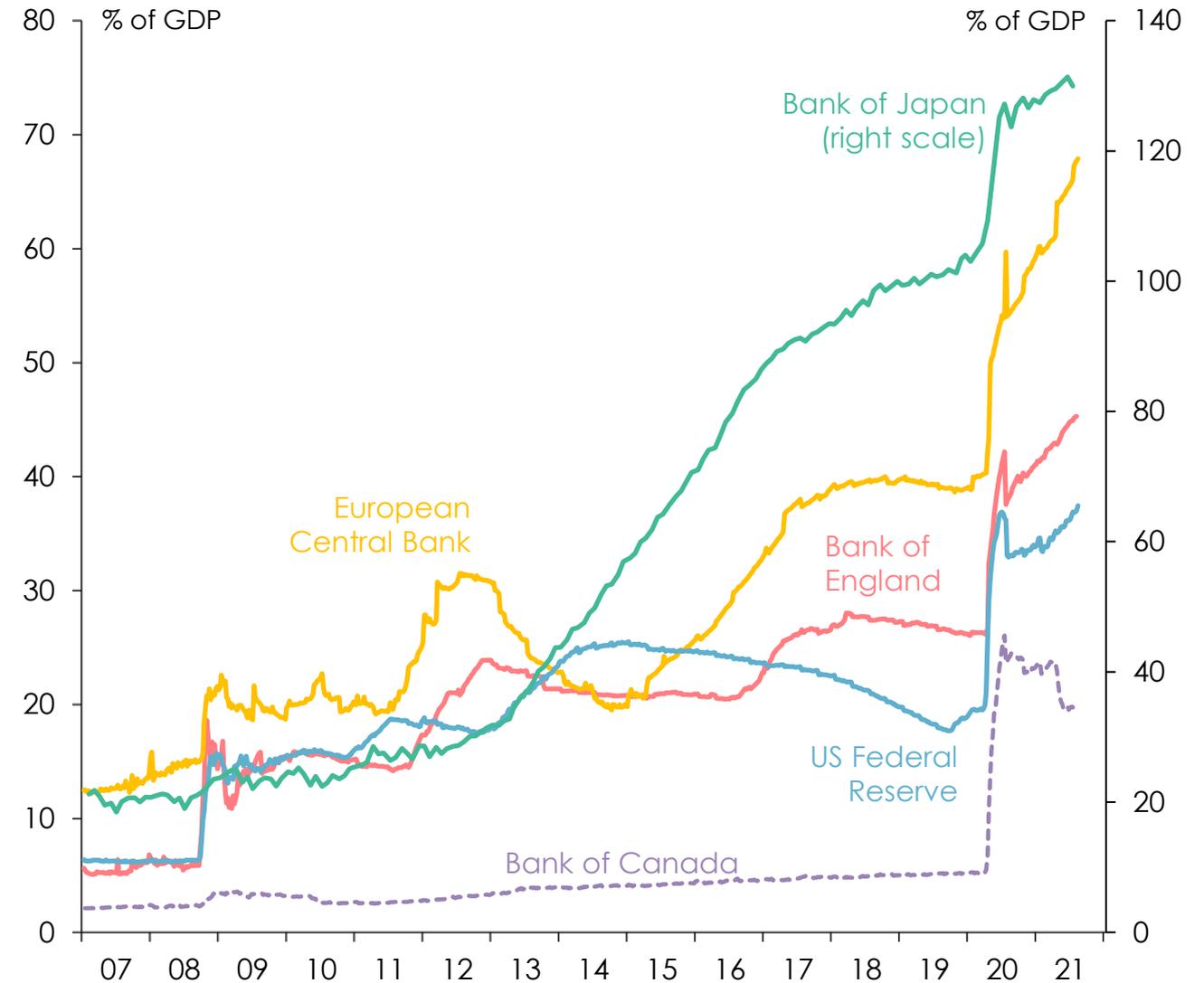
- where 'r' is the interest rate, 'p' is the actual inflation rate, 'p*' is the central bank's target for inflation, 'y' is the level of real GDP, and 'y*' is potential GDP
- in other words, the policy interest rate should be set equal to the inflation rate *plus* an equally-weighted average of the difference between actual inflation and the inflation target and the difference between actual and potential GDP ('the output gap')
- ❑ Since the onset of the global financial crisis the 'Taylor rule' (and others like it) have on two separate occasions implied that central banks should be instituting negative interest rates
 - something which presents a number of conceptual and practical difficulties for many central banks

So, as more central banks confront the 'zero lower bound' for interest rates, more of them have turned to 'quantitative easing'

Major central bank policy interest rates



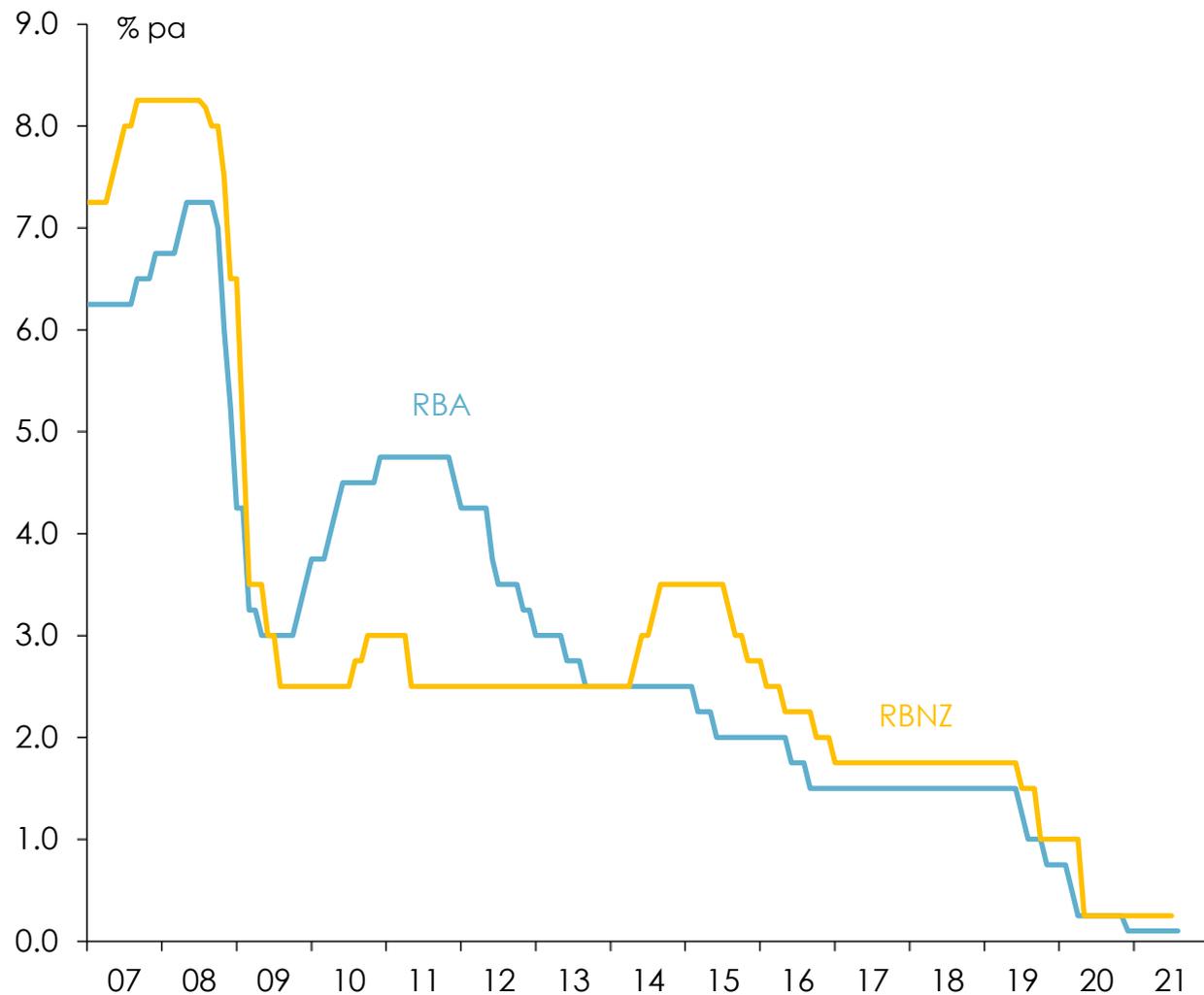
Major central bank balance sheets



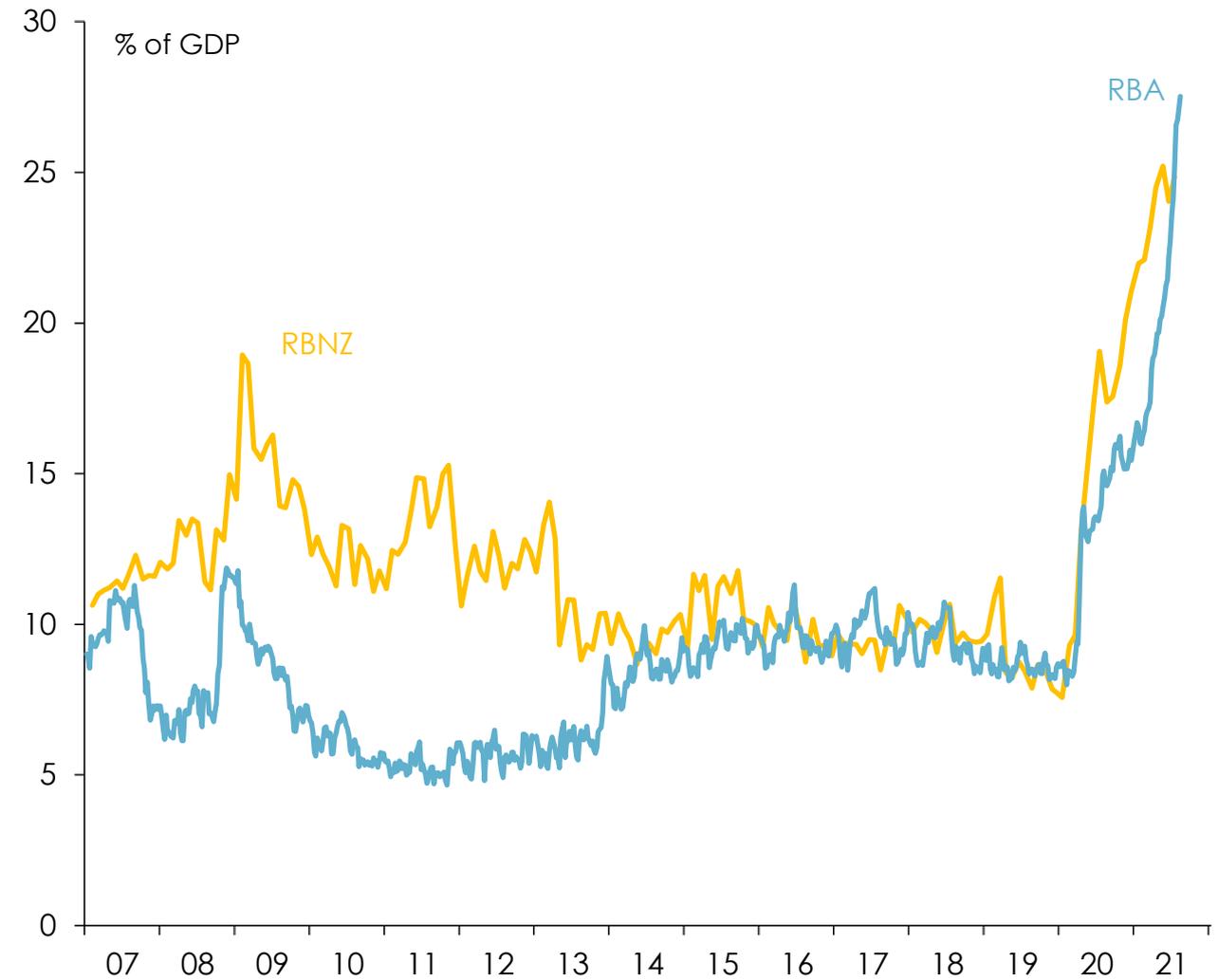
Note: estimates of central bank assets as a pc of GDP in Q2 2020 were inflated by the sharp drop in nominal GDP in that quarter: conversely, declines in estimates of central bank assets as a pc of GDP in Q3 2020 are in large part due to rebounds in nominal GDP. Sources: [US Federal Reserve](#); [European Central Bank](#); [Bank of Japan](#); [Bank of England](#); [Bank of Canada](#); national statistical agencies; Corinna.

The RBA and RBNZ didn't come close to the zero lower bound during the GFC, but they have during Covid, so they have adopted 'QE' too

RBA and RBNZ policy interest rates



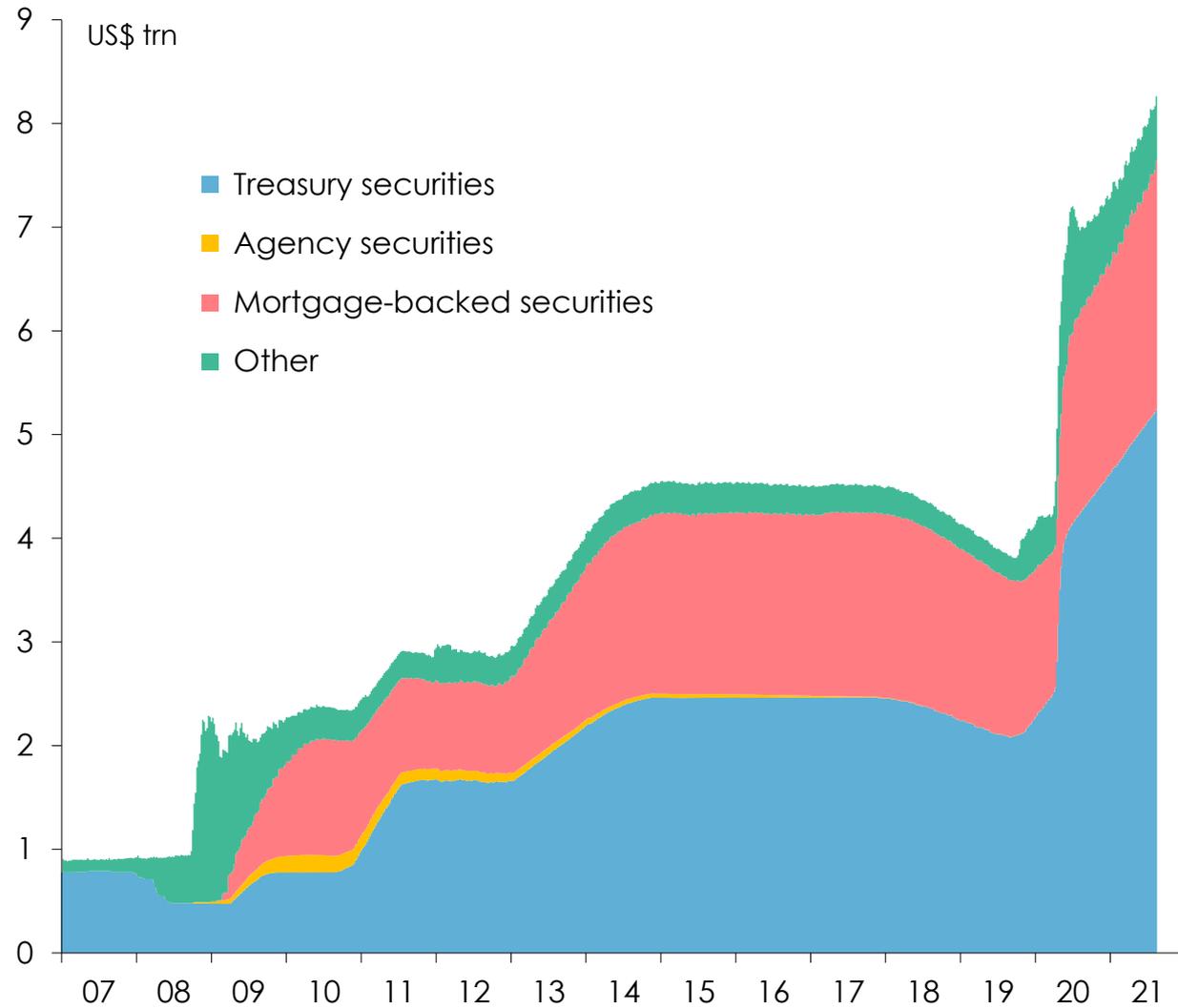
RBA and RBNZ balance sheets



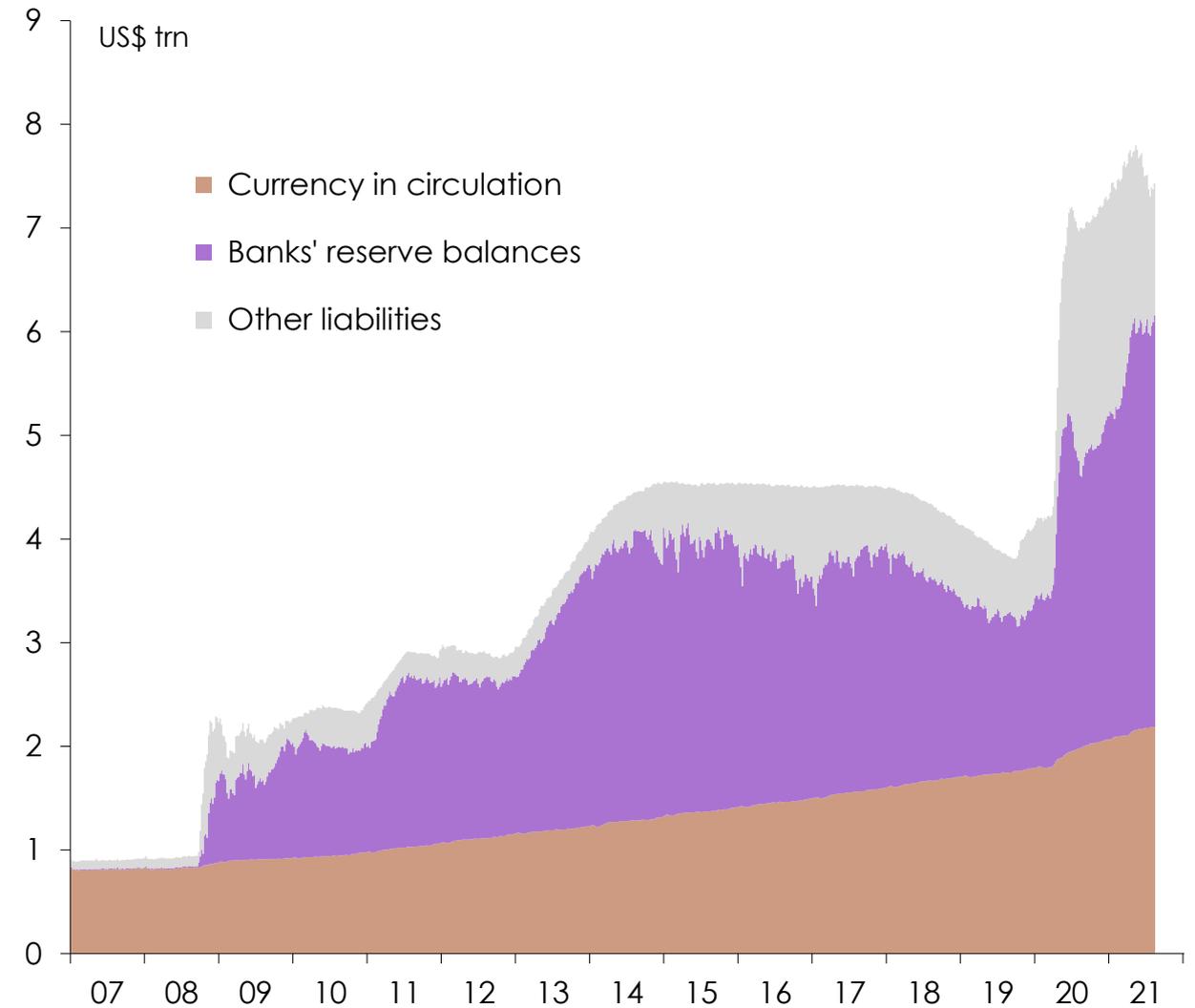
Sources: Reserve Bank of Australia, [Interest Rates and Yields - Money Market - Monthly \(E1.1\)](#) and [Liabilities and assets - summary \(A1\)](#); Reserve Bank of New Zealand, [Wholesale Interest Rates - B2 monthly](#) and [Reserve Bank statistical balance sheet \(R3\)](#); Corinna.

The Fed has bought mostly US Government bonds and mortgage-backed securities – and most of the new ‘money’ has ended up as bank reserves

US Federal Reserve assets



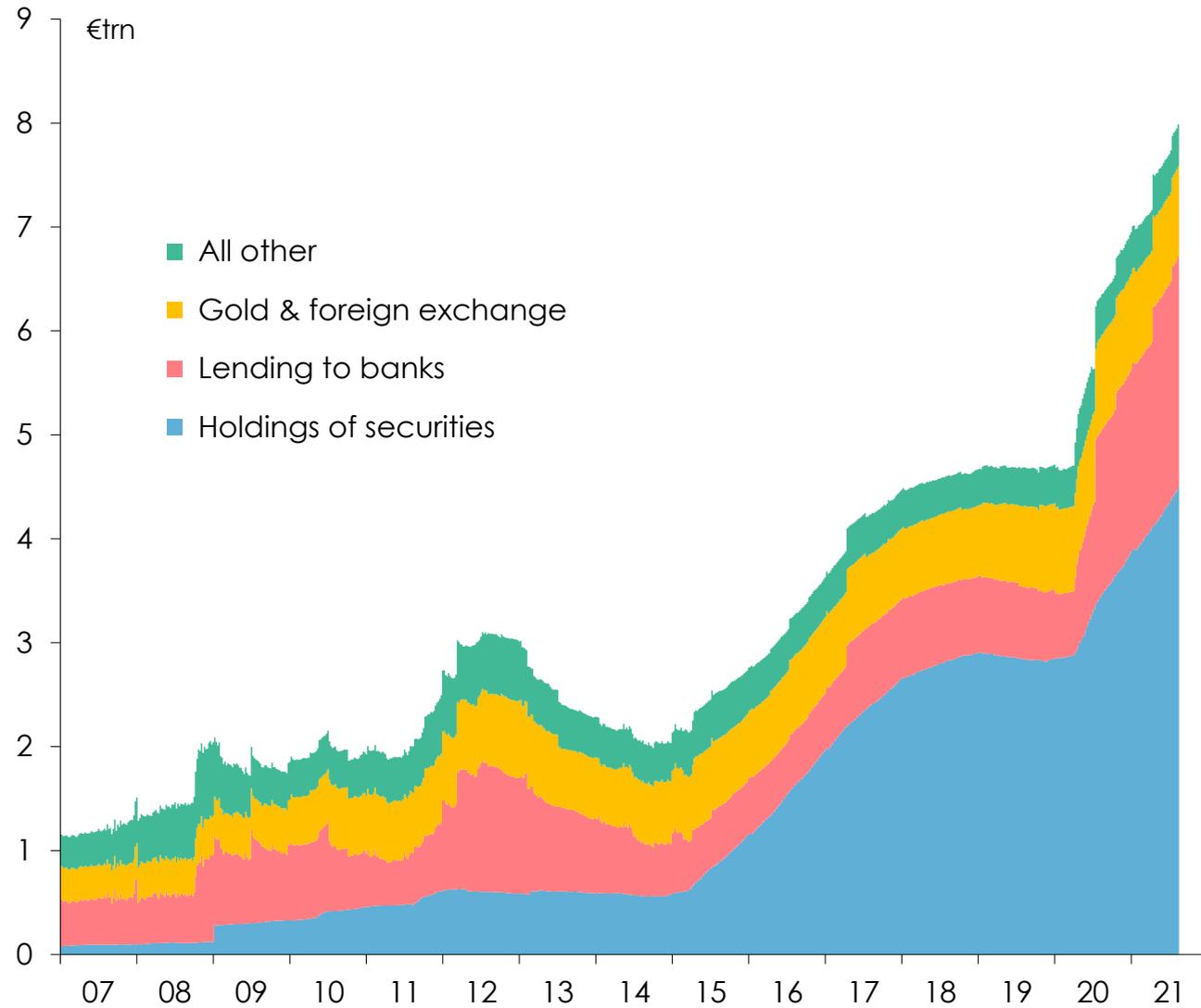
US Federal Reserve liabilities



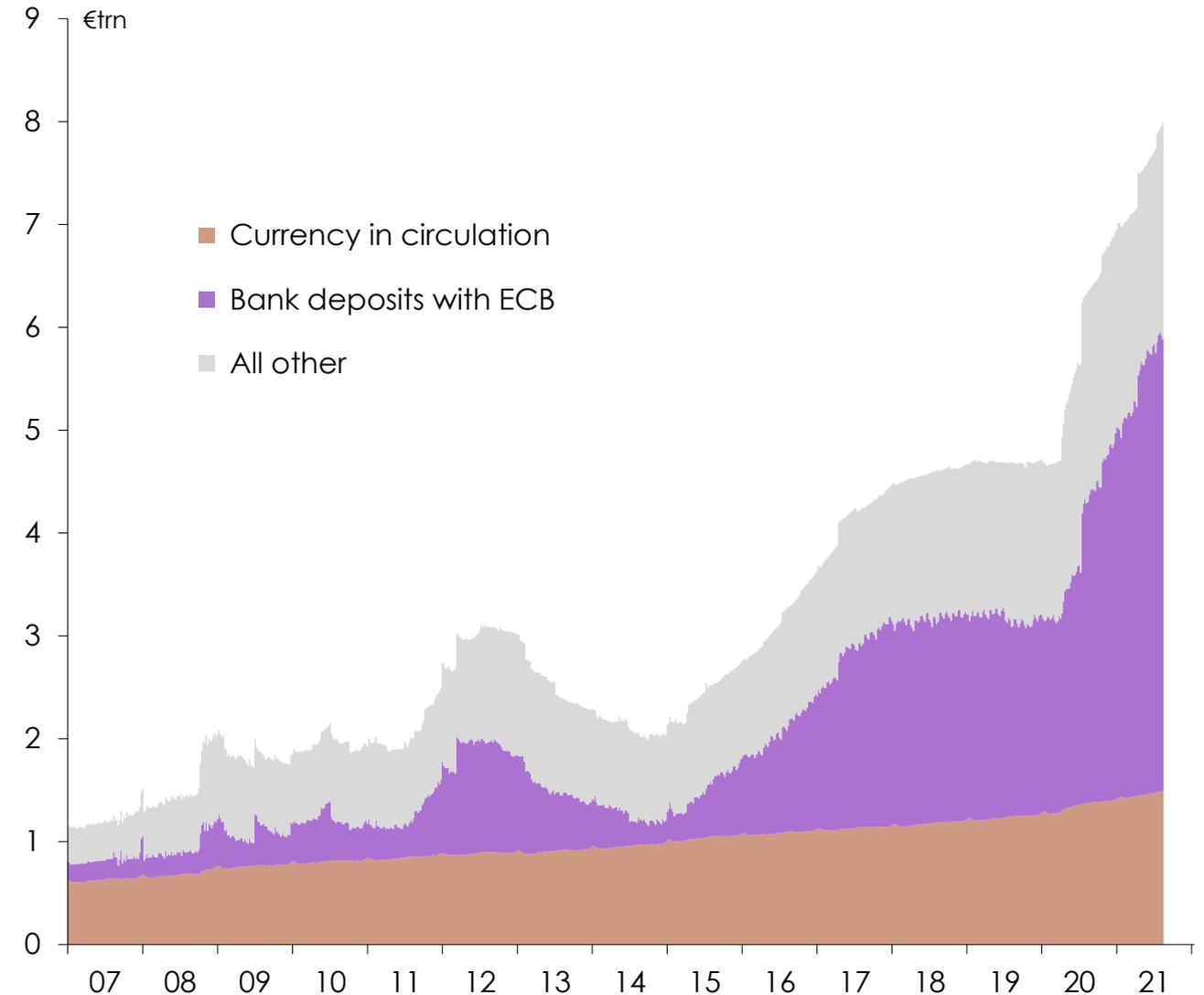
Source: US Federal Reserve, [Factors Affecting Reserve Balances - H.4.1.](#)

Lending to banks has been a larger part of the ECB's 'QE' than the Fed's, but again most of the new money has ended up as bank deposits with it

European Central Bank assets



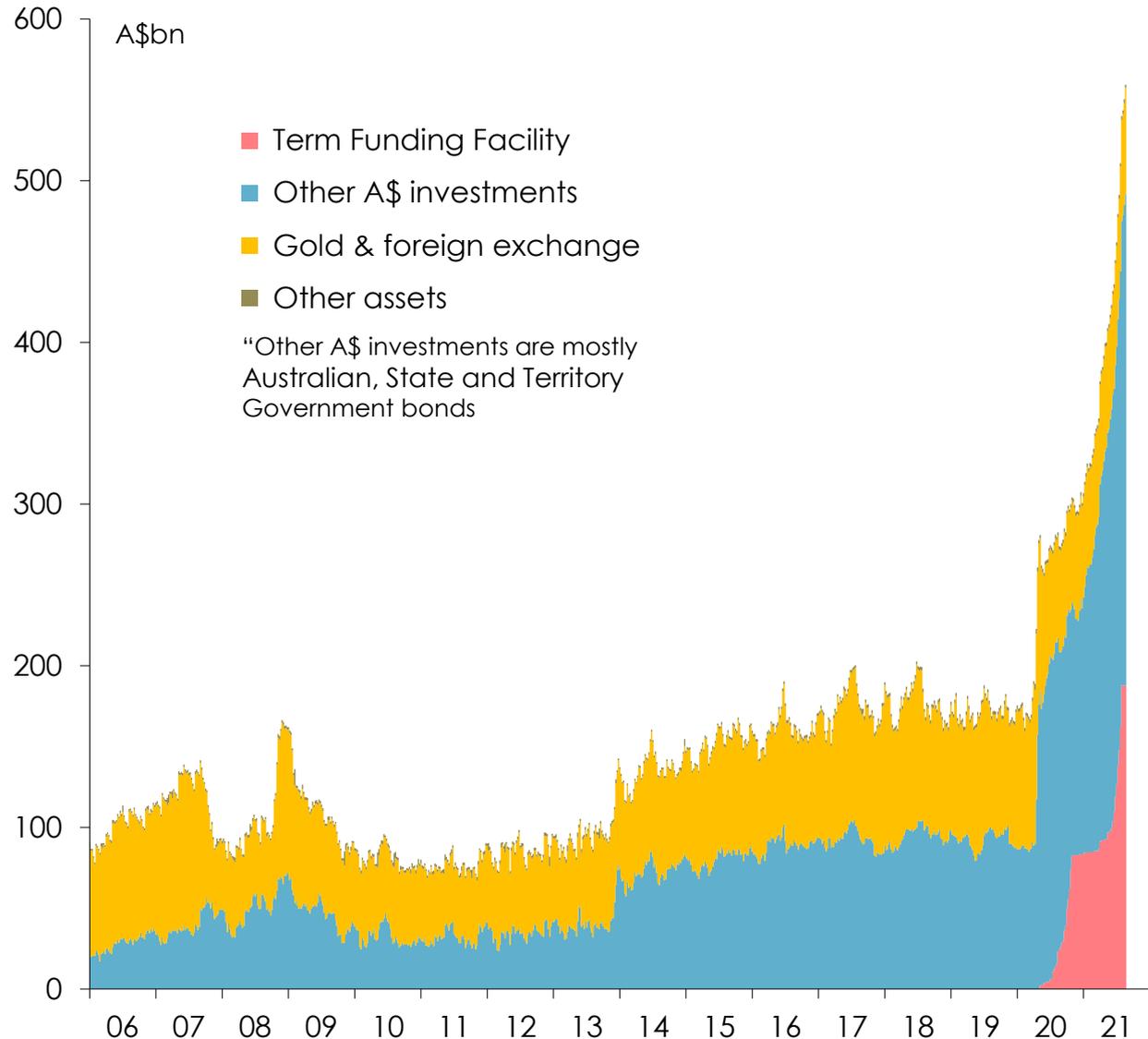
European Central Bank liabilities



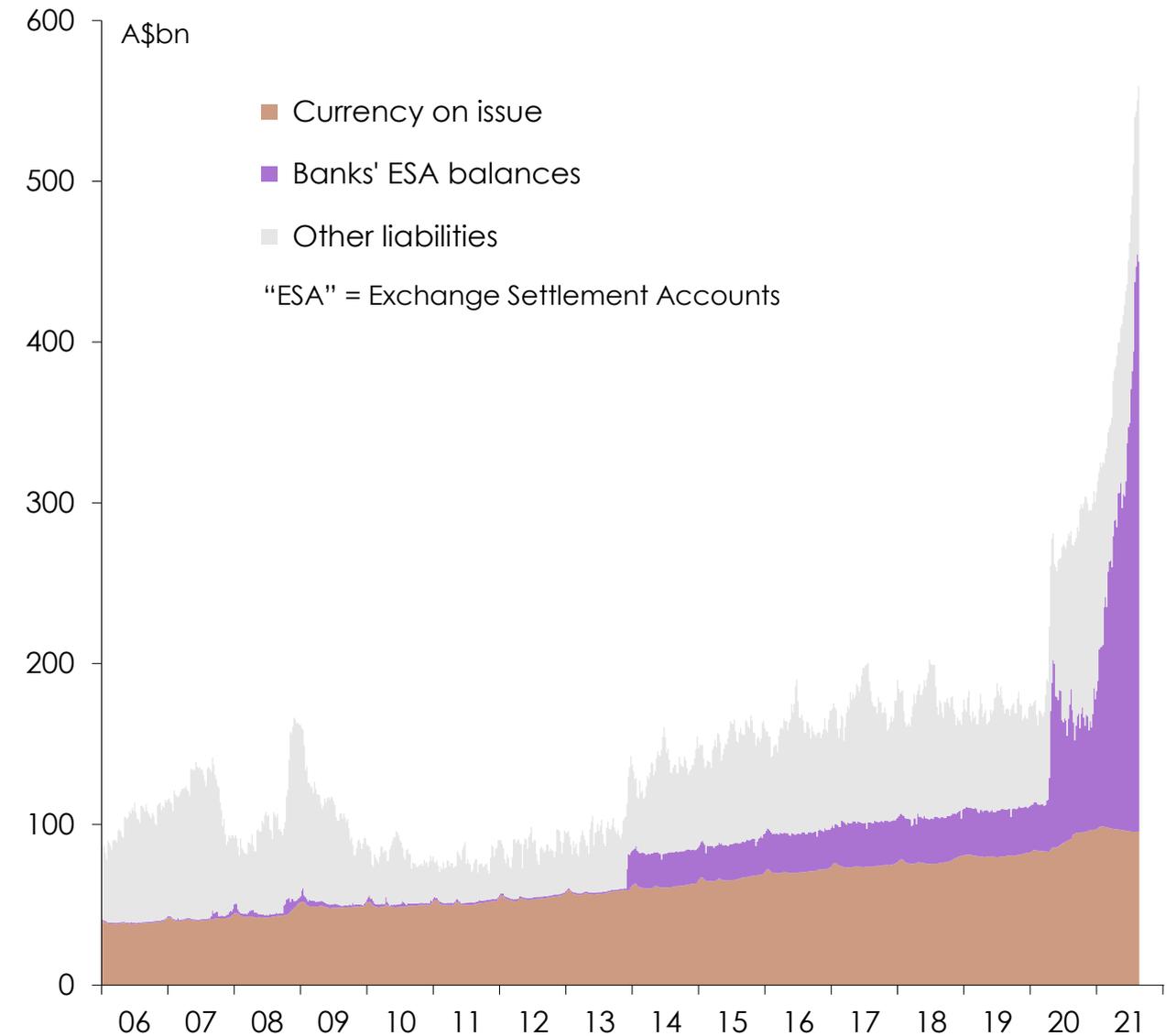
Source: European Central Bank, [Statistical Data Warehouse: Eurosystem balance sheet](#).

The RBA's QE has taken the form of bond purchases plus its Term Funding Facility – and the counterpart has been a huge rise in banks' ESA balances

Reserve Bank of Australia assets



Reserve Bank of Australia liabilities



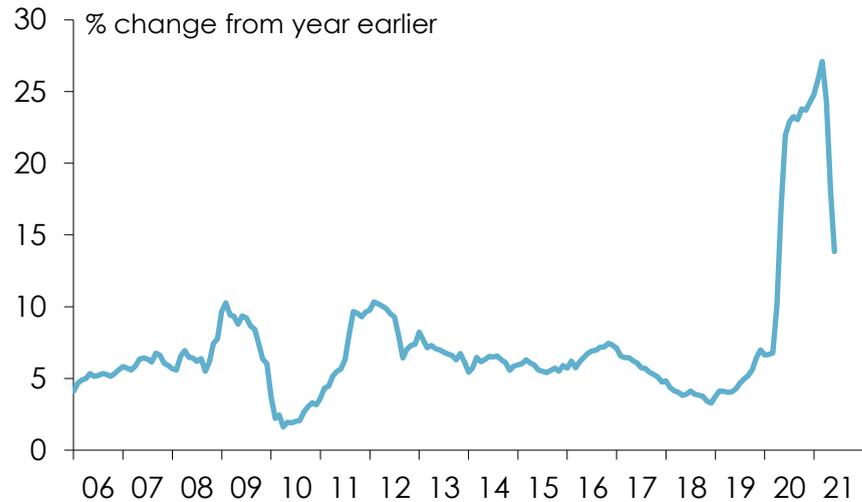
Source: Reserve Bank of Australia, [Liabilities and Assets - Summary - A1](#) and [Monetary policy operations - Current - A3](#).

What are central banks trying to achieve through ‘quantitative easing’?

- ❑ **The principal purpose of ‘QE’ is to ‘ease monetary policy by other means’ when the scope for ‘conventional’ monetary policy has been exhausted**
 - because official interest rates have reached as low as they can practically go (for most central banks, that means zero)
- ❑ **Purchasing government bonds can help lower interest rates which central banks don’t directly control**
 - while interest rates in ‘floating rate’ loans generally move in line with central banks’ ‘official’ cash rates, interest rates on fixed rate loans are typically priced off longer-term bond yields, which central banks don’t directly control
 - but by purchasing large quantities of government bonds, central banks push up the prices of bonds (implying reductions in bond yields) which then leads to lower fixed rates (important in countries where most mortgages are at fixed rates, or where a lot of business borrowing is done at fixed rates from banks, or via corporate bond markets)
- ❑ **By pushing down longer-term bond yields, central banks can re-inforce their ‘forward guidance’ as to how long interest rates will stay at very low levels**
 - this has been an explicit objective of (for example) the RBA’s purchase of three-year bonds since November last year
- ❑ **Purchasing government bonds can also encourage investors to be more willing to purchase riskier assets**
 - when central banks buy bonds from banks, pension funds, and other holders of them, those sellers then have to do something with the ‘money’ they receive – if they put that money into other types of bonds, shares, or other assets (eg property) it pushes up their prices, increases wealth and thereby (so it is hoped) encourages more economic activity
 - since the prices of most long-term assets (including shares and property) are influenced by movements in bond yields, pushing bond yields down also contributes indirectly to boosting asset prices
- ❑ **Purchasing other types of financial assets help keep their yields down**
 - the Fed’s large-scale purchases of mortgage-backed securities during the GFC were crucial in preventing a blow-out in mortgage interest rates
- ❑ **Direct lending to banks can help reduce funding costs and boost the supply of credit to the private sector**

'QE' resulted in much faster 'money supply' growth during the early months of Covid-19 than it did during and after the global financial crisis

US M2



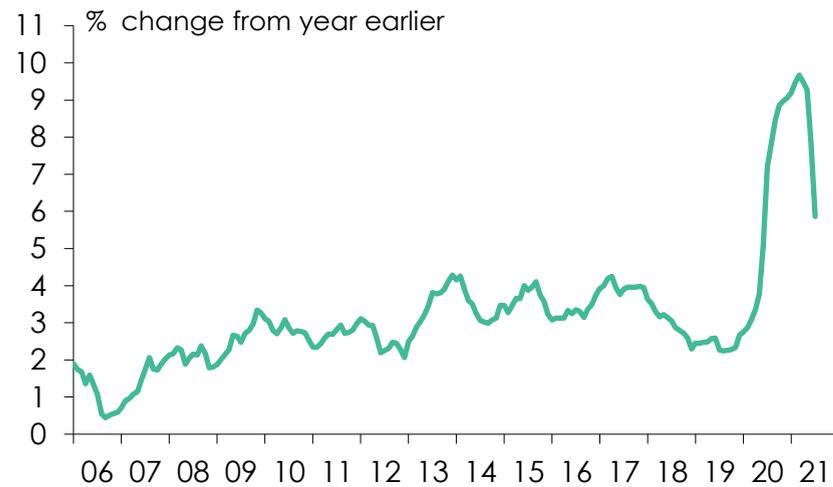
Euro area M2



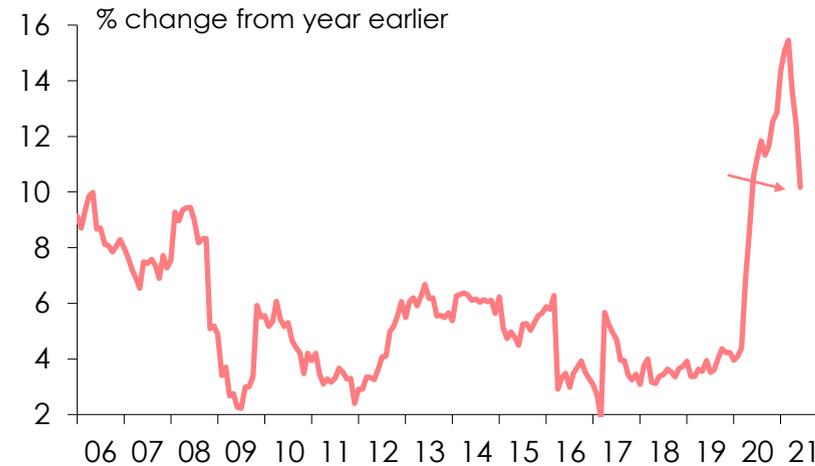
Australia M3



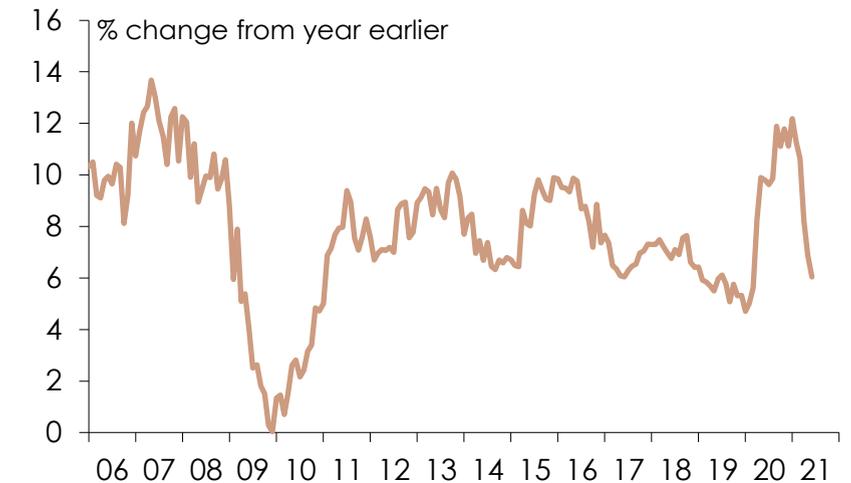
Japan M2 + CDs



UK M2



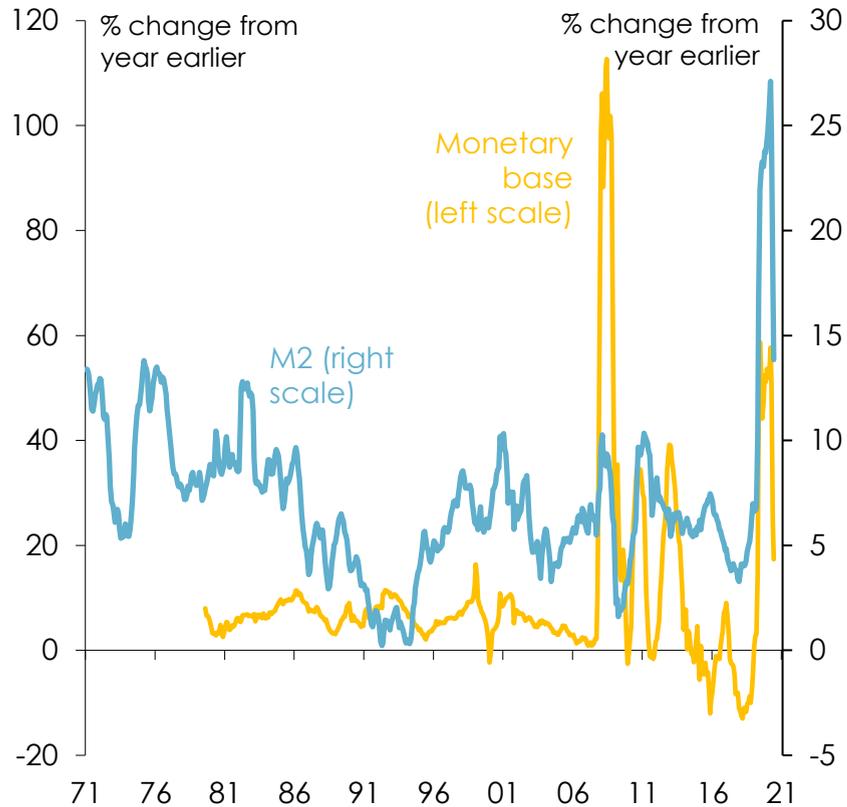
New Zealand M3



Sources: US Federal Reserve; European Central Bank; Bank of Japan; Bank of England; RBA; RBNZ.

A 'monetarist' interpretation of why ultra-easy monetary policy hasn't (and probably won't) generate markedly higher inflation

US 'money supply' measures



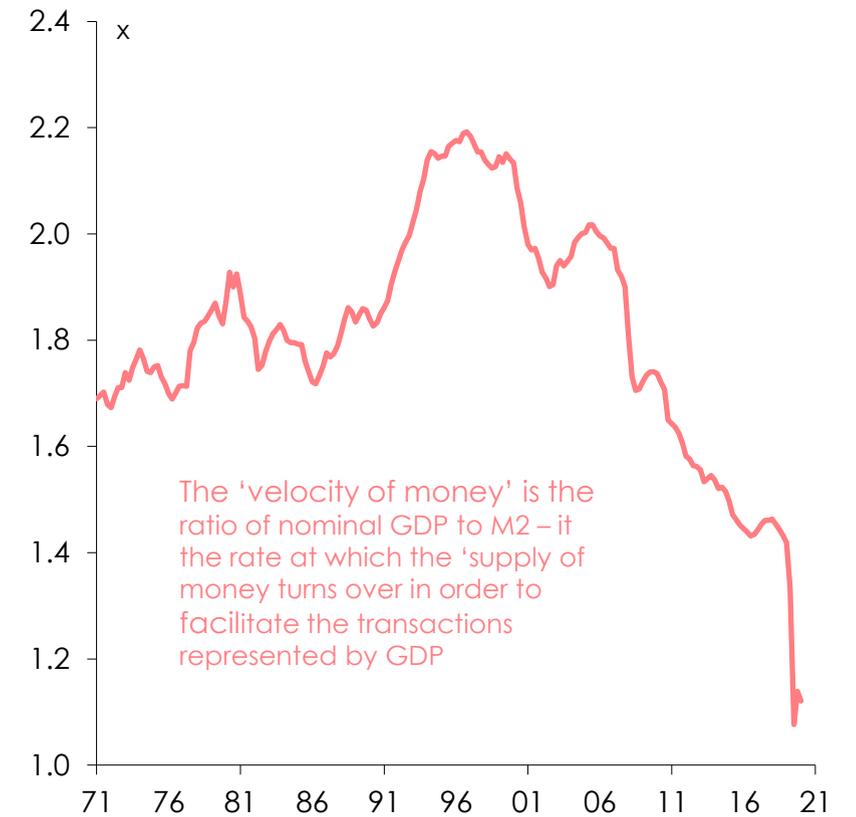
M2 has grown more rapidly than at any time since 1860 (even though base money has been growing less rapidly than during the financial crisis)

The US 'money multiplier'



M2 didn't accelerate at all during the GFC because the 'money multiplier' (the rate at which the banking system turns base money into credit) had collapsed

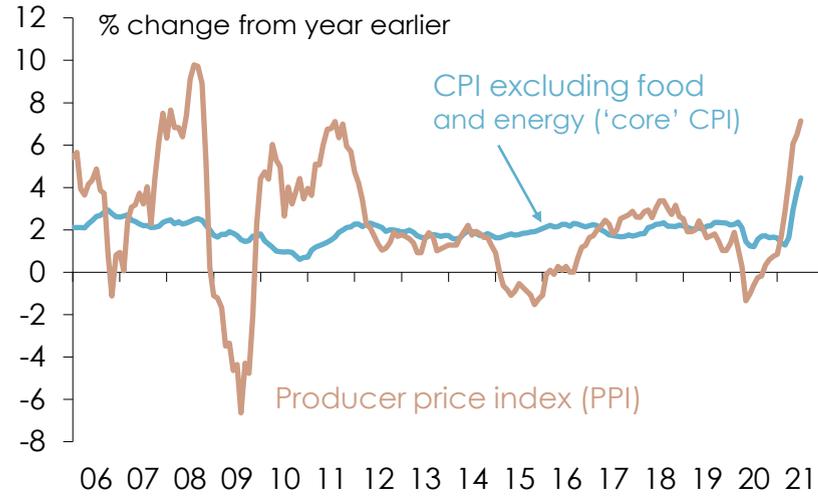
The US 'velocity of money'



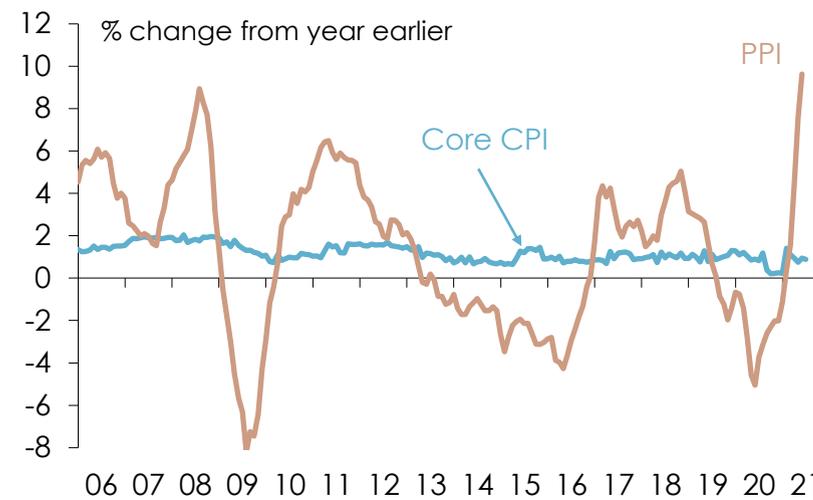
Rapid money supply growth isn't generating higher inflation because the 'velocity of money' has collapsed - the money is 'sitting' at the Fed

'QE' hasn't resulted in faster consumer price inflation – despite recurring episodes of 'upstream' price pressures, as at present

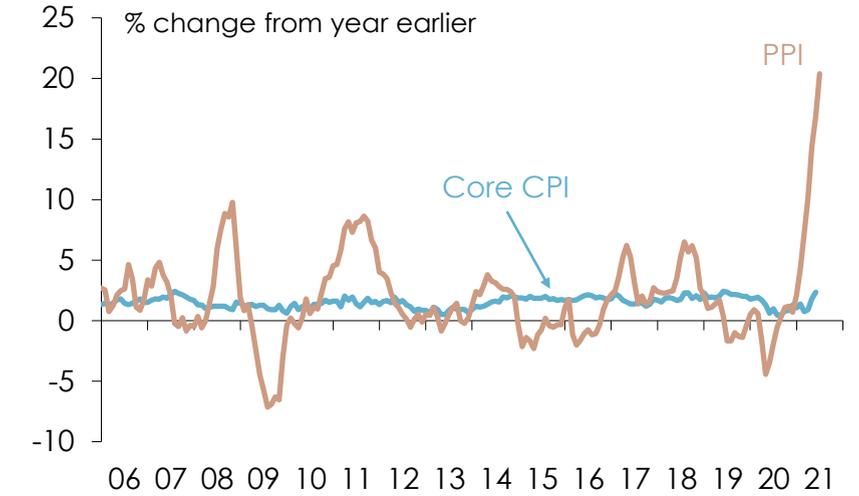
United States



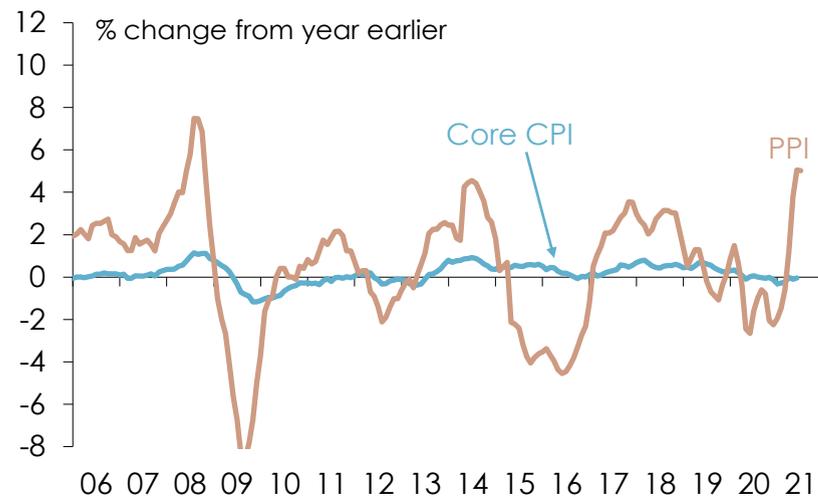
Euro area



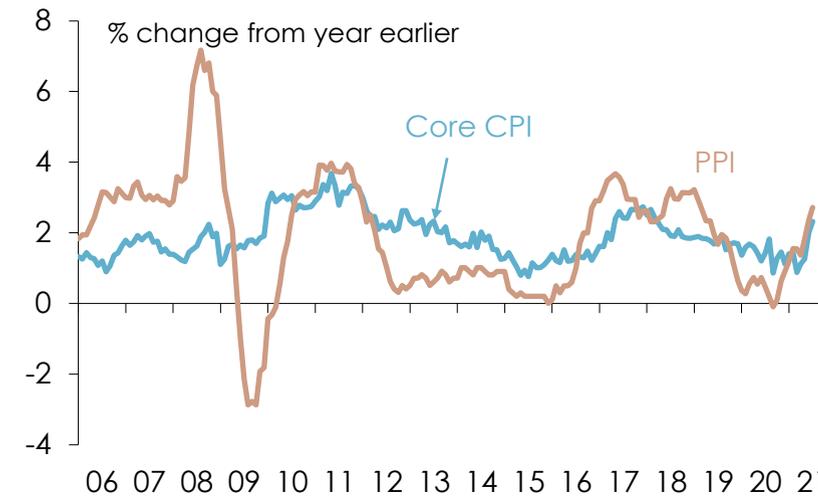
Canada



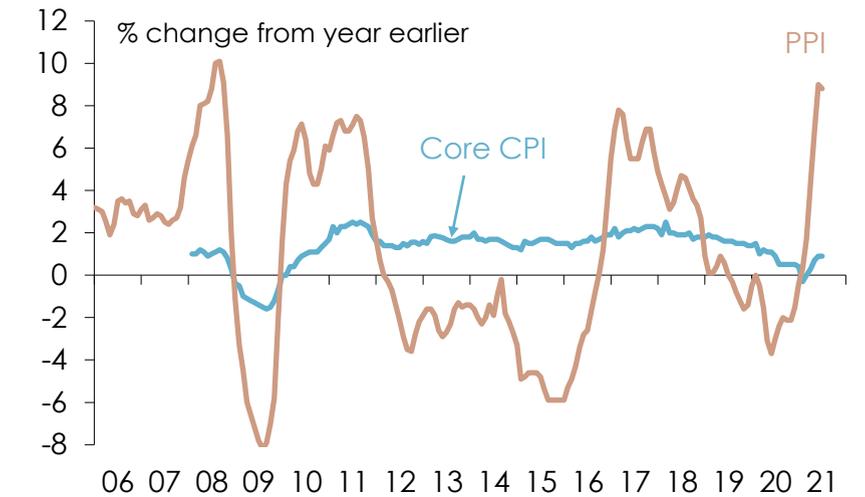
Japan



United Kingdom



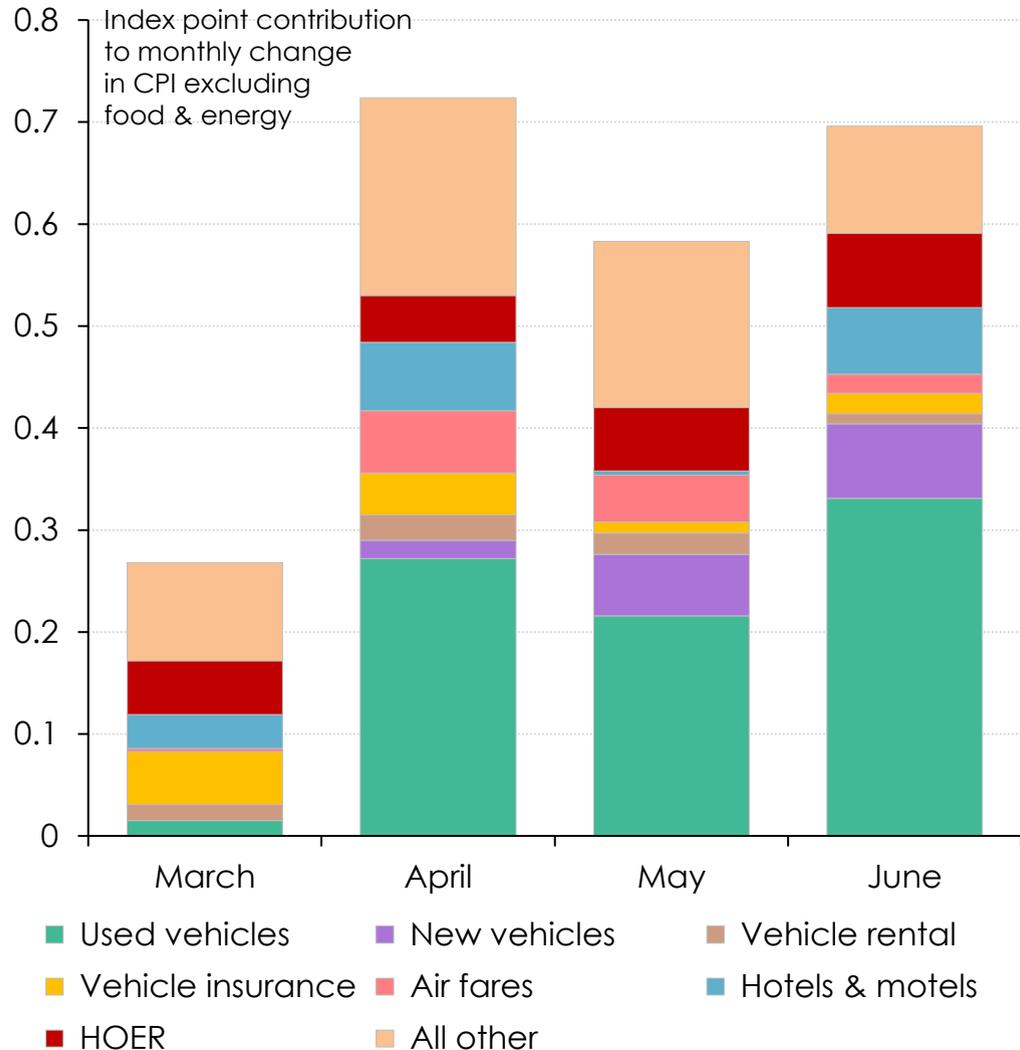
China



Sources: [US Bureau of Labor Statistics](#); [Statistics Bureau of Japan](#); [Eurostat](#); [UK Office for National Statistics](#); [Statistics Canada](#); [China National Bureau of Statistics](#).

65% of the increase in the 'core' US CPI over the past three months has come from six items which represent 13% of the 'core' CPI basket

Contributions to recent monthly changes in CPI excluding food and energy



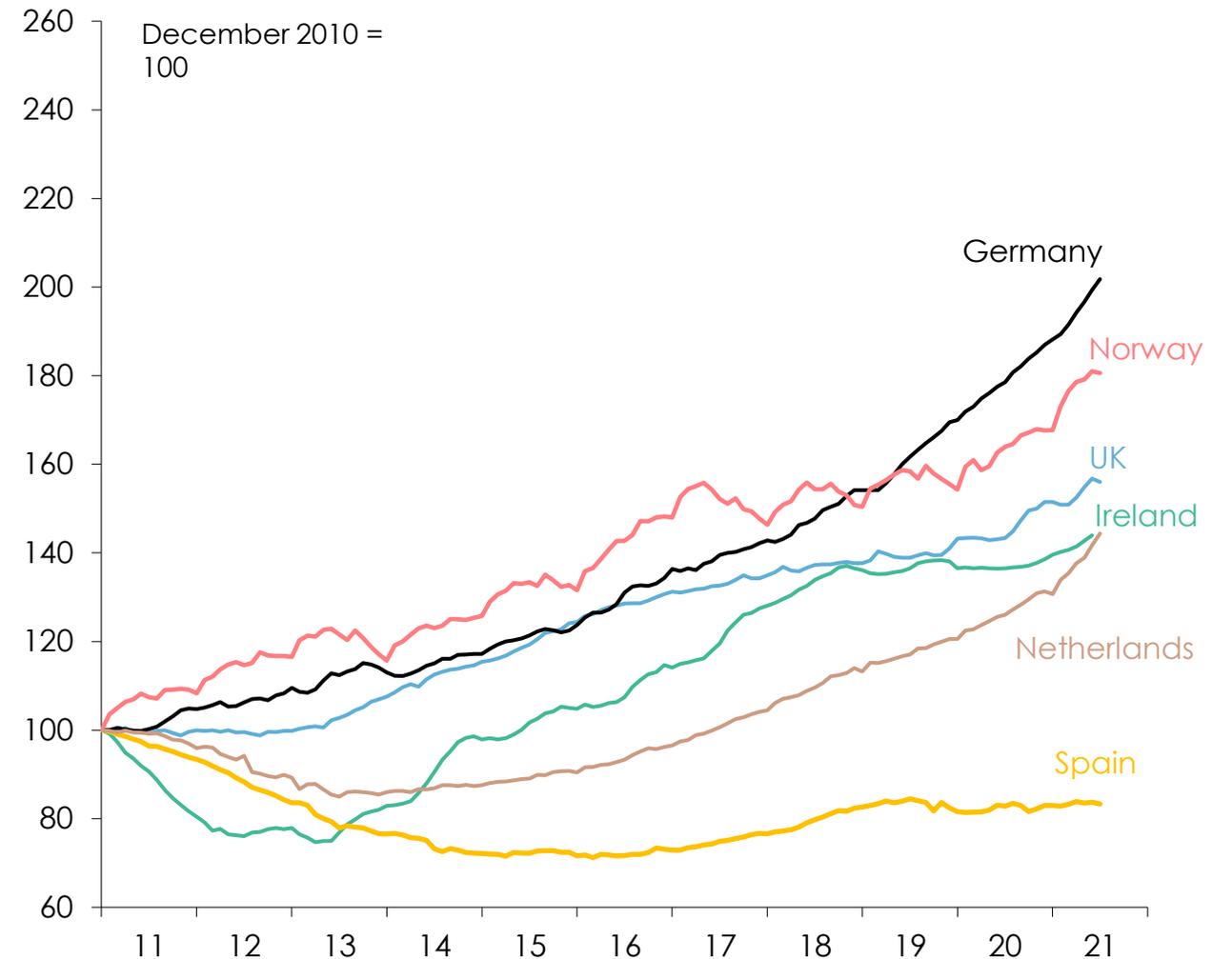
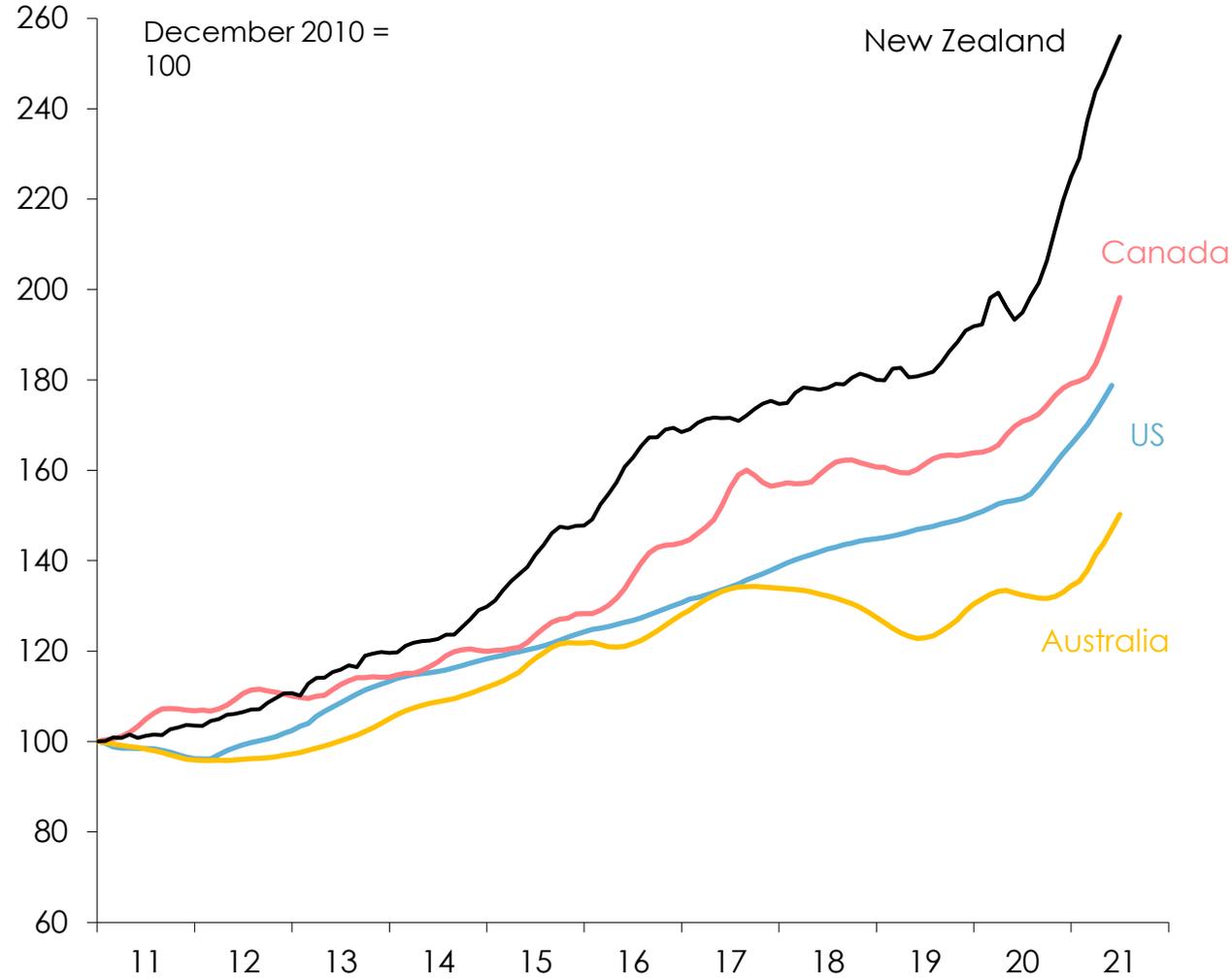
Price indices for items which have contributed most to recent monthly changes in the 'core' US CPI (rebased to December 2019 = 100)



Note: 'HOER' = home-owners' equivalent rent (a measure of the 'imputed rent' notionally paid by owner-occupiers to themselves), and which accounts for 28½% of the CPI excluding food and energy. Source: US Bureau of Labor Statistics, Consumer Price Index Table 6; Corinna.

'QE' has almost certainly contributed to more rapid inflation of house prices (although it's not the only factor)

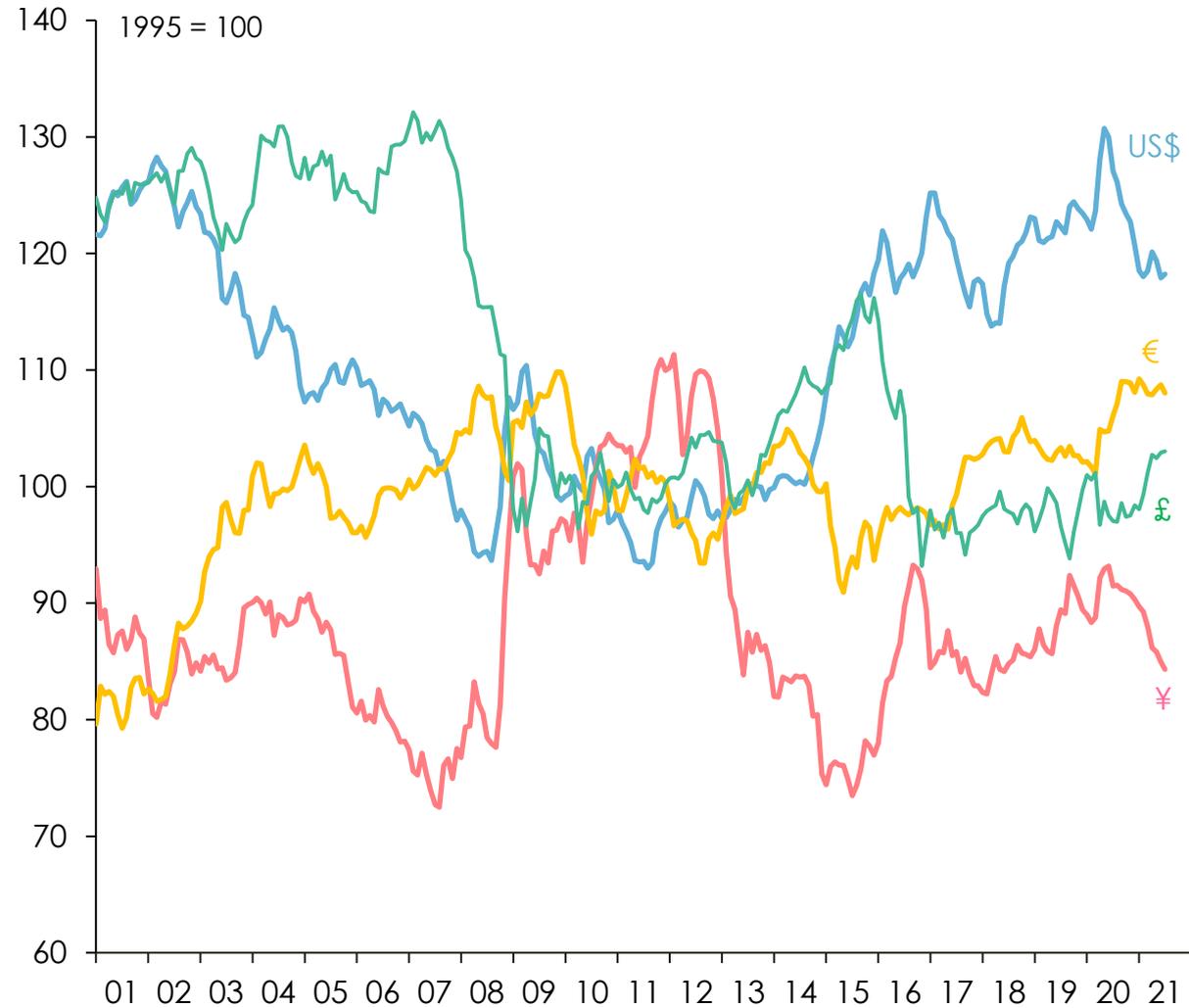
House price indices



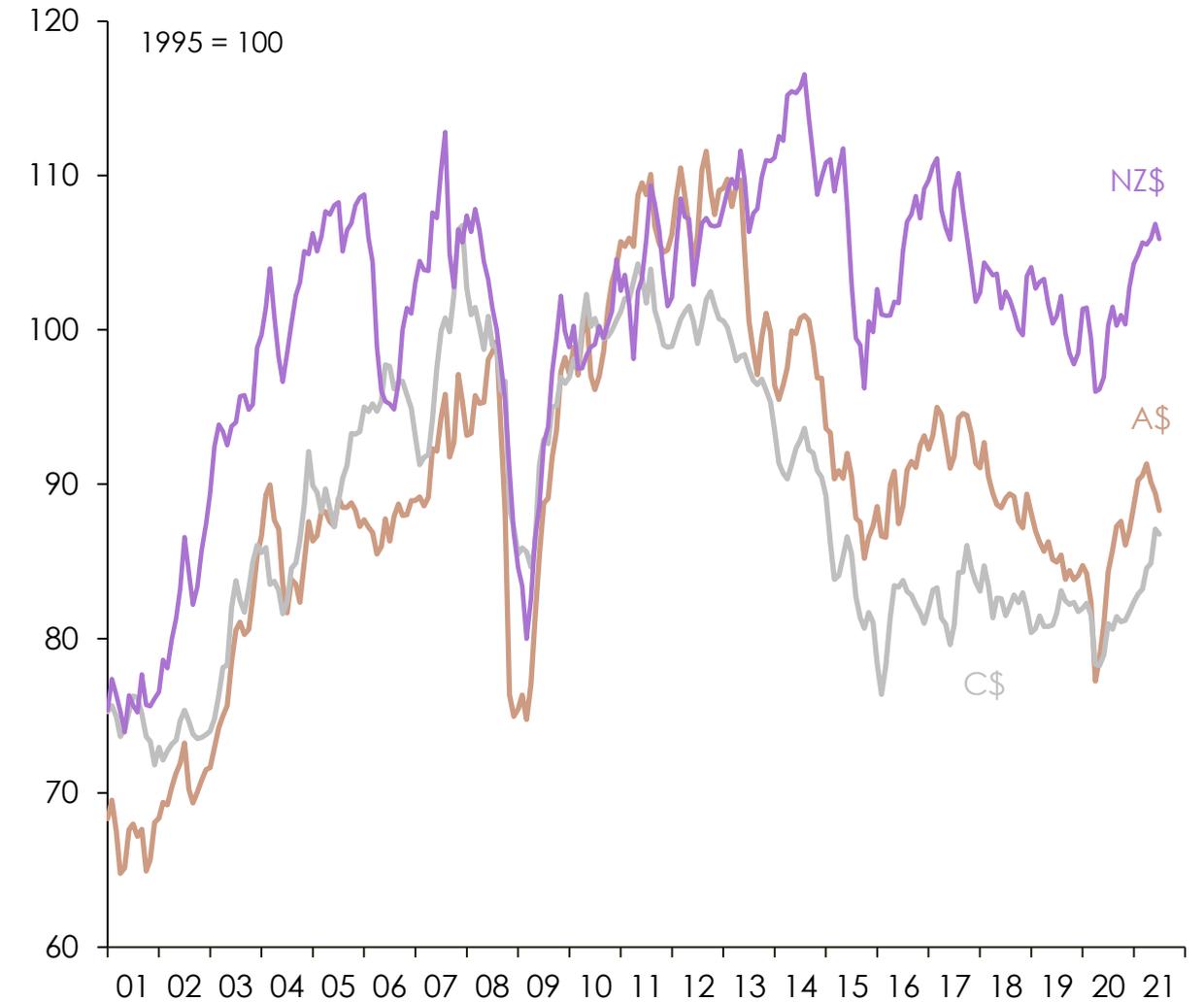
Note: House price indices shown in these charts are those published by [S&P-CoreLogic Case Shiller national](#) (United States); [Teranet-National Bank](#) (Canada); [CoreLogic](#) (Australia); [Real Estate Institute of New Zealand](#); [Europace hauspreisindex](#) (Germany); [Halifax house price index](#) (UK); [Central Statistics Office RPII](#) (Ireland); [Fotocasa real estate index](#) (Spain); [Statistics Netherlands](#); [Eiendom Norge](#) (Norway). These indices have been chosen for their timeliness and widespread recognition; they do not necessarily all measure the same thing in the same way. For more comprehensive residential property price data see the quarterly database maintained by the [Bank for International Settlements](#).

Contrary to what was often predicted, the currencies of countries whose central banks adopted 'QE' have not collapsed

Trade-weighted indices of currencies of major economies 'doing QE'



Trade-weighted indices of currencies of other economies 'doing QE'



Source: Bank for International Settlements, [Effective exchange rate indices](#).

Has 'QE' been effective in meeting central banks' objectives?

- ❑ 'QE' does appear to have enabled central banks to achieve 'easier' monetary conditions than would have been possible had they relied solely on 'conventional' monetary policy tools (official cash rates)
 - the Committee on the Global Financial System (chaired by RBA Governor Phillip Lowe) concluded that “asset purchase programs proved to be very effective tools ... although their performance was not uniform, prompting central banks to adapt their operations or complement them with other, at times novel, unconventional monetary policy tools”
 - the general consensus of academic research seems to be that central bank asset purchases equivalent to about 1½% of GDP have an effect that is roughly the same as a ¼ pc point reduction in the official cash rate
- ❑ In Australia the RBA estimates that its bond purchase program has resulted in a fall in longer-term government bond yields of around 30 basis points (0.3 pc pts)
- ❑ The RBA also argues that its bond purchase program has resulted in the exchange rate being lower than it would have been otherwise
 - indeed, it would seem that concern about possible appreciation of the A\$ was an important factor prompting the RBA to launch its longer-term Bond Purchase Program in November last year
 - In December last year RBA Governor Lowe explained that “we found ourselves in the position of having relatively high longer-term bond yields compared with other countries, despite the short-term policy rate being similar across countries. These relatively high bond yields were putting unhelpful upward pressure on the value of our own currency”
- ❑ What's less clear is how successful 'QE' (or other monetary policy tools, 'conventional' or 'unconventional') have been in achieving central banks' ultimate aims of returning inflation to their targets and promoting faster economic growth

Sources: Bank for International Settlements Committee on the Global Financial System, [Unconventional monetary policy tools: a cross-country analysis](#), CGFS Papers No. 63, October 2019; Joseph E Gagnon and Brian Sack, [QE: A User's Guide](#), Petersen Institute for International Economics, October 2018; Phillip Lowe, [Unconventional Monetary Policy: Some Lessons from Overseas](#), Address to Australian Business Economists, 26th November 2019; Guy Debelle, [Monetary Policy During Covid](#), Shann Memorial Lecture, 6th May 2021; Phillip Lowe, [Opening Statement to the House of Representatives Committee on Economics](#), 2bd December 2020; Richard Finlay, Dmitry Takov and Michelle Xiang, [An Initial Assessment of the Reserve Bank's Bond Purchase Program](#), Reserve Bank of Australia Bulletin, June 2021, pp. 18-26.

Has 'QE' had some 'unintended consequences' or side-effects?

- ❑ Many people believe (and some central bankers have conceded) that 'QE' has contributed to increased inequality in the distribution of wealth
 - by pushing up the prices of financial and real assets (shares and property) which are disproportionately owned by richer households
 - however some (including the RBA's Deputy Governor Guy Debelle) counter that by saying that 'QE' has helped reduce inequality by preventing bigger rises in unemployment and/or contributing to faster falls in unemployment
- ❑ Separately from its distributional implications, 'QE' may have increased the risk of financial instability by its effects on asset prices
 - if 'QE' has 'artificially' inflated asset prices, there could be a greater risk of financial instability (or worse) if and when central banks eventually stop purchasing bonds, or even begin reducing their holdings
 - some possible evidence for this concern surfaced during the so-called 'taper tantrum' in 2013, when 'emerging market' stocks and currencies fell sharply in response to 'talk' from the Fed about 'tapering' its bond purchases – although when the Fed actually did scale back its bond purchases in 2018-19 there were far fewer effects
- ❑ There remains a great deal of uncertainty about the 'other side' of 'QE'
 - apart from the Fed during 2018-19 there has been no instance of a central bank exiting from 'QE' – no-one really knows how to do 'quantitative tightening' or what its effects might
 - although almost all central banks currently doing 'QE' have indicated that they intend to 'taper' or terminate their asset purchase programs before starting to raise official interest rates

Q & A

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