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Growth is being battered internationally by overtight monetary policies which have forced money and credit to contract in recent months. Having lost credibility by presiding over a huge unexpected rise in inflation, central banks are trying to repair it by these dangerous policies of overkill. They could trigger another financial crisis from the concealed damage to banks' balance sheets. Fiscal policy too in the UK and the EU is turning deflationary, fed by fears about rising debt, a view backed by the IMF and the OECD; yet this too is counter-productive as rising tax rates kill off growth and so push the debt/GDP ratio up unsustainably in the long term. Official thinking around the world needs to escape from these monetary and fiscal traps, to restore the macroeconomic stability that has been lost.

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Fiscal policy as a counter-cyclical stabilisation tool is opposed by the UK Treasury and largely incapacitated in the Eurozone by the growth and stability pact. Yet recent research shows that using it increases welfare substantially. One important aspect is that it reduces the likelihood of hitting the Zero Lower Bound for interest rates because it takes part of the stabilisation burden from monetary policy.

The Julian Hodge Institute of Applied Macroeconomics

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The Julian Hodge Institute of Applied Macroeconomics was launched in autumn 1999 in a new collaboration between the Cardiff Business School of Cardiff University and Julian Hodge Bank. The aim of the Institute is to carry out research into the behaviour of the UK economy, and to study in particular its relationship with the other economies of Europe. This research has been given added urgency by the ongoing discussions about the UK's adoption of the Euro in place of the Pound. The new Institute has aimed to develop research relevant to this important debate.

The Institute embraces the original Liverpool Research Group in Macroeconomics, which is now based at Cardiff Business School and is pursuing a research programme involving the estimation and use of macroeconomic models for forecasting and policy analysis. It is grateful for financial support to the Jane Hodge Foundation, the Economic and Social Research Council, Esmée Fairbairn Charitable Trust, the Wincott Foundation and Cardiff Business School.

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UK FISCAL AND MONETARY POLICY HAVE BOTH LOST THEIR WAY- WORSENING RECESSION PROSPECTS AND DAMAGING LONG TERM GROWTH

Patrick Minford

We are suffering from monetary instability produced by large central bank mistakes abetted by poor fiscal policies. It is hard not to be alarmed by the sharp recent rises in long term interest rates around the world, including here where the rises under Liz Truss's brief government look modest by comparison. It is astonishing that the world has gone from virtually zero interest rates a few years ago to rates of 5% or more today and the latest expectation that central banks will keep them there for some time even as inflation continues to fall. This is represented as central banks 'making sure' that inflation is well and truly stamped on.

This monetary volatility is a far cry from the central aim of monetary policy which is to keep inflation and the economy stable in the face of supply and demand shocks. Central banks around the developed world from the end of the 1980s either got independence to set monetary policy or had de facto independence formally recognised, with the explicit objective of creating such stability. However since the Covid crisis they have signally failed to do so, first creating a massive monetary expansion and ensuing inflation as supply bottlenecks and the Ukraine war caused commodity shortages; interest rates were driven to zero by these policies, causing widespread capital misallocation at this zero price. As the resulting inflation took off, they were slow to reverse these expansionary policies, and then belatedly reversed into sharp rises in interest rates, apparently in panic at their loss of credibility. And here we are, with them continuing to panic and threatening the continuation of these high rates. Yet the growth of money and credit is now turning negative month on month, with year on year growth negative too.

This account of events applies, with some differences in the percentages, across the most developed economies, including the US, the EU and ourselves. So what policy conclusions should we draw for today from the mess we are in?

The first must be to stop this monetary overkill, fed by central bank panic and insecurity. Inflation is now falling steadily as a result of sharp monetary tightening that has caused money supply growth to go into reverse. Central banks are focusing on signs of market vigour- eg in some parts of the labour market- as if this is a harbinger of more inflation. It is not; inflation resulted from those past policies and wages were driven by that inflation, in a process of pure catch-up on the unexpected inflation spike and are not themselves the cause of inflation. As inflation comes down, wage increases will respond to that expectation and come down too. Some policymakers talk of expectations extrapolating the past, but the data strongly rejects any such

Table 1: Summary of Forecast

	2019	2020	2021	2022	2023	2024	2025
GDP Growth ¹	1.6	-10.4	8.7	4.3	0.6	0.9	1.9
Inflation CPI	1.7	0.9	2.5	9.1	7.5	3.5	2.0
Wage Growth	3.5	1.6	5.9	6.0	7.2	4.2	3.4
Survey Unemployment	3.8	4.5	4.5	3.7	4.1	3.0	2.9
Exchange Rate ²	78.3	78.2	81.4	79.1	80.4	79.7	79.4
3 Month Interest Rate	0.8	0.2	0.1	2.0	5.0	4.3	3.0
5 Year Interest Rate	0.6	0.1	0.8	2.5	4.1	4.2	3.0
Current Balance (£bn)	-63.3	-60.3	-10.8	-77.3	-42.7	-14.7	1.5
PSBR (£bn)	64.3	312.9	121.5	130.5	112.2	42.3	29.9

¹Expenditure estimate at factor cost

²Sterling effective exchange rate, Bank of England Index (2005 = 100)

theory. So central banks should calm down and respect the evidence that inflation responds to prior monetary expansion.

Failure to do this risks provoking another financial crisis. Financial institutions are nursing large capital losses on their bond holdings; and, much as with subprime mortgages in the 2008 crisis it is impossible to know where this could blow up the financial system; several smaller banks and one large one, Credit Suisse, have already collapsed.

So both monetary analysis and commonsense caution join in urging central banks to ease off the current ferocity of their approach and avoid dangerous overkill. By that route we can return the sooner to a stable low inflation rate and a recovering economy; central banks would return to that task, having learnt the lessons from their massive mistakes of the recent past. There is no political appetite to go back on their independence at this point. But more mistakes along these lines could well create one.

There are other policy lessons to be learnt from the policy mistakes of not just the Covid episode but also of the decade and a half since the 2008 crisis. Near- zero interest rates began after the crisis, as the job of stimulating recovery was largely passed to central banks, as governments retrenched after their large bailouts. At the same time regulation on banks was sharply tightened. The result was that central banks printed money, driving rates down close to zero, but failed to stimulate bank lending. So recovery was weak and inflation low, encouraging yet more money printing, which eventually pushed interest rates to zero even on the longest maturities. Meanwhile productivity growth collapsed- not just here but across the whole OECD.

There would have been a healthier recovery if governments had supported demand and bank regulation had been postponed to a much later date. Governments should also have pursued growth policies; instead the OECD concocted a plan to raise corporation tax rates, putting a floor, yet to be fixed, beneath them.

So another major lesson of the recent past is that government fiscal policy has an important role to play in the economy, both in demand management and in keeping tax low and friendly to entrepreneurs- see chapter 3 of this Bulletin for recent research underpinning this point. Yet another is that regulation should be cautious and focus on long term stability, and not aggravate the business cycle. Had this been done after the 2008 crisis, interest rates would not have gone to zero, with all the damage done to capitalism by the availability of free capital; why raise the productivity of capital if it is free? Furthermore, large dominant firms get the advantage as small firms cannot borrow at these zero rates; so monopoly thrives.

Unfortunately the consensus holds that fiscal policy should be stopped by short-sighted 'fiscal rules', which were begun here by George Osborne after the 2008 crisis. These helped to push interest rates to zero, while the government embarked on cuts to necessary infrastructure and core public services, abandoning plans for lower, flatter tax rates that were then under discussion. We are now learning the hard way that such policies drive growth lower; ironically, this in turn undermines long run fiscal prospects as revenues stall with the economy flatlining.

This government still has the chance to learn from these mistakes, and the Bank of England can quickly retreat from overkill towards renewed monetary stability. Mistakes are human; but humans are adaptable and can learn. So can policymakers.

Inflation, monetary policy and forecasting- how to use models and data

The columns of the financial press are full of central bank failures to forecast inflation and the need for them therefore to 'change their models' of the economy. But this reveals great confusion about the roles of models and forecasts. Models of the economy that try to mirror the causal nexus connecting people's decisions with economic shocks and policy responses are not good vehicles for forecasting; their aim is to understand the effects of policy on the economy so as to craft better policy rules. They only forecast well as far ahead as shocks can be foreseen, which is not very far. By contrast we have a variety of relationships between current and past events which can be projected forward to give reasonable forecasts from the events that have already occurred- call them 'event relationships'. Examples of these are 'price pipeline' relations between input and output prices, where we can use past commodity price changes to forecast future retail price changes as they work downstream. Another example is the relation between money supply growth and later inflation; the linkage here relies on the underlying equilibrium in which money and credit growth is linked to spending growth, while the supply of goods grows only slowly over time; price increases create equilibrium between supply and demand. So once we have observed the money supply growth we can be fairly sure that the inflation will follow. For some reason central banks have

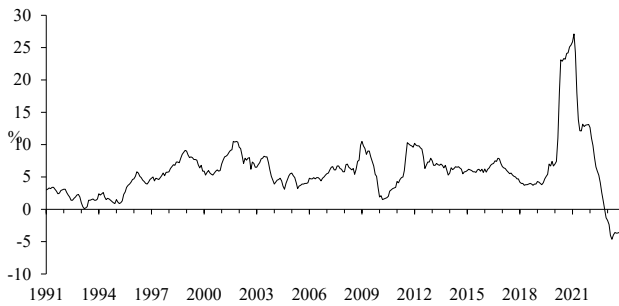
ignored this relation which could have helped them forecast better over the past three years.

Many commentators have compared these central bank forecasts unfavourably with weather forecasting, which has become increasingly accurate. But weather forecasts sensibly rely on exploiting event relationships between past and current weather events by deploying huge computers filled with information about the recent past from all over the world. For them the equivalent models of causal nexus would consist of the applied physics of weather systems; using these for forecasting would be difficult because the shocks to these systems are large and volatile, quite like those to the economy. The moral of their success for economists is their use of event relationships between current and past data to project future events from known recent past ones. Good forecasters use these techniques, regardless of what their theoretical models may tell them, because these last need too much unavailable information to use reliably for projection.

As far as recent inflation is concerned, the huge swings in 'broad' money supply growth (this is the counterpart of general credit growth) during and after Covid have given us excellent forecast material. One has only to glance at the swings in the US, the UK and the Eurozone- all shown below- to see this at work. Inflation took off in all three about a year and a half later, as the later charts show all too clearly. As for the sharp decline in inflation, similarly money supply growth has dived sharply since the interest rate tightening of 2022, and inflation has dived sharply after it.

It seems that central banks tried to use their causal models in which interest rates affect people's decisions directly, to forecast how the economy would develop and with it inflation. But these models are complex and reacting constantly to a large set of volatile shocks. They are better used after the event to analyse the causal nexus, not projected to give forecasts. Central banks would have been better off ignoring them and using the available recent information for forecasts from event relationships. With money supply growth now negative year on year in all three, they should be worried now about 'overkill' provoking another financial crisis. Their aim should be the return to monetary stability and the avoidance of these recent sharp swings in money supply growth.

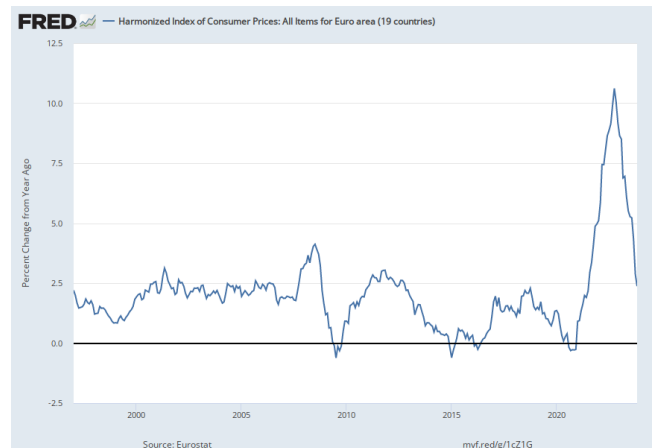
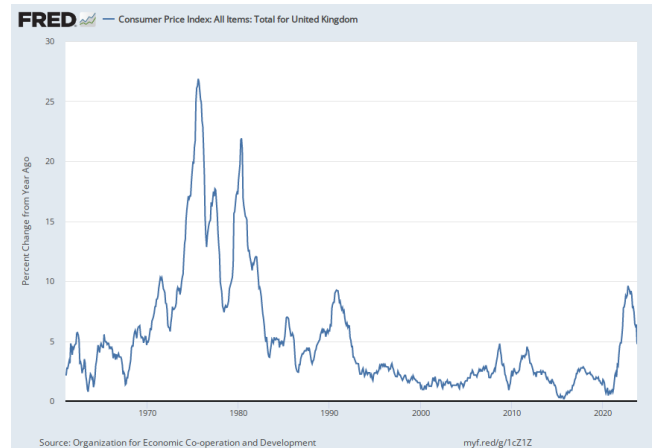
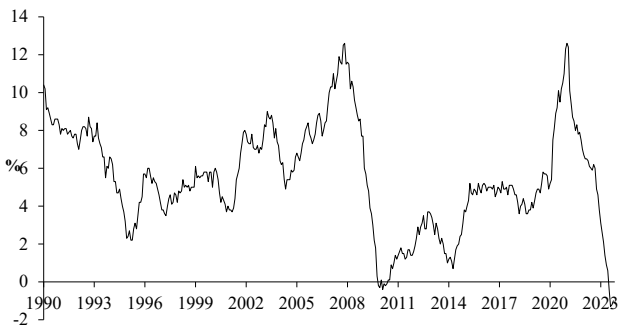
U.S.: Growth in M2 (Yr - on - Yr)



UK: M4 Growth



Eurozone M3 Growth



The Laffer Curve is blowing up the SNP- supplying lessons for the UK

Wisdom can be found in unexpected places, as is demonstrated by the recent forecast report of the Scottish Fiscal Commission on the SNP government's finances and tax policies, which says that the rises in top Scottish tax rates just announced will bring in only modest amounts.

"Behavioural responses", it outlines, will cause big reductions largely offsetting the gains calculated on "static" assumptions of no taxpayer response. The new 48pc top rate, it says, will bring in virtually nothing at all.

This use of "dynamic costing" is a most welcome contribution from Scotland's equivalent of the Office for Budget Responsibility (OBR). It reminds us of the debate on the Laffer Curve triggered by Nigel Lawson's famous Budget of 1988, when he abolished the 60pc top rate of income tax. The late Chancellor argued that it actually reduced tax revenues, owing to its effects on the labour supply of those paying it; they reduced effort, switched activities to lower tax areas, left the country or otherwise found legal ways to avoid the tax. In later research on UK data, I found strong evidence of such Laffer effects, joining other international evidence¹.

¹ Minford, P. and Ashton, P. (1991) "The Poverty Trap and the Laffer Curve--What Can the GHS tell us?" Oxford Economic Papers, 1991, vol. 43, issue 2, 245-7.

If this analysis can happen north of the border, why not in the UK generally? It has been very largely ignored by both the Treasury and the OBR, which have failed to evaluate the supply-side effects on tax revenue of our top marginal tax rates, not simply the 45pc notional top rate but also the 60pc rate created by the withdrawal of the personal allowance at the 40pc threshold. All hell broke loose over the proposal to abolish the 45pc rate in 2022's Truss-Kwarteng mini-Budget, even though its abolition would probably have raised tax revenue.

But dynamic costing should not stop at these basic effects on revenue due to labour supply shifts. The effects go far further, to impacts on capital investment and productivity growth from both business taxes like corporation tax and the higher rates of income tax paid by entrepreneurs on their profits. These do two key things: they reduce the return on capital, reducing investment and capital through substitution with labour. Also, more radically and with much bigger long-term growth consequences, they reduce the return to innovation, alias productivity growth. The rise in these, and allied disincentives, accounts for our dreadful growth performance in recent years.

Again, much research supports these effects on growth, as does the most casual look around the world at successful cases of growth, whether Texas among US states, or Poland in recent decades, or China under Deng Xiao Ping (versus today's slowing under Xi Jinping's interventionism). The best accessible review of the postwar evidence on how growth is damaged by tax is still the Institute of Economic Affairs's *Sharper axes, lower taxes*, published in 2011 and edited by Professor Philip Booth.

Our Cardiff work based on the simplest of ideas - that a firm's owner-managers will divert energy to innovation if its returns exceed the costs in tax, regulation and lost wage income - predicts that low marginal tax rates and light regulation spur growth. And richer entrepreneurs are less worried about the downside because they have a stronger balance sheet.

One of the challenges for the tax-growth nexus is establishing causation and not just association - and opponents of the low-tax agenda exploit this problem. To overcome it requires building causal models of growth and testing their ability to replicate the facts of economies' behaviour. With today's powerful computers and recent advances in econometrics we are able to do this by simulating these causal models and checking how well their simulations statistically match that behaviour - a roundabout procedure known as 'indirect inference'.

In research carried out by my colleagues and me, and with our PhD students (some still unpublished) at Cardiff, we have found that this model can satisfyingly explain trends in growth and inequality in the UK both recently and over the

last century and a half, as well as in the postwar US, and across Chinese regions².

The UK effects are clearly visible in our lived experience since the Thatcher reforms of the 1980s, largely retained during the 1990s but since then progressively reversed by ill-considered, mostly EU-led, regulation combined with rising marginal tax rates. On GDP per capita, we had overtaken France and Germany by 2000 as those reforms took effect, only to fall back relatively since then.

Yet for all the declinist talk of our parlous situation, we have the world's eighth largest manufacturing sector, we are a leading world centre for business and financial services, and we rank second in Europe on the EY rankings for foreign investment attractiveness. The growth prospect can be turned around if only this Government would pay attention to the case for cutting down our high marginal tax rates on income and business. This should go hand in hand with the generally agreed agenda for liberalising business regulation and development planning.

The trouble has been that the community of commentators has forgotten the supply-side lessons of Lawson and Thatcher, and drifted into thinking that productivity growth is unexplainable and "exogenous", i.e. nothing to do with government policy. Hence the view that tax can be raised to pay for redistribution and public services at no cost to the economy's performance. This view is convenient for those on the political left, who are strongly represented in that community, but both theory and evidence contradict it, as we are now discovering with a vengeance.

This Conservative Government tells us it believes in low tax and good business incentives. Yet its record seems to reveal opposite beliefs, in line with its Labour rivals for power. It is time for it to revert to its true principles and restore the economy's health and dynamism. Much is at stake, with an election coming that could well see the emergence of a damaging left-wing agenda concealed under an apparently conservative cloak designed to fool the voters. That could really drive a stake through our still-revivable business culture.

This Government needs to find once more the courage of its real convictions. For the SNP, it is already too late.

The Hunt Autumn Budget Statement- too little, too late but better than nothing

The recent Budget/Autumn Statement was a pathetic but half-hearted apology to Liz Truss for being right on growth. Pretty much all the ideas in her plans for raising the growth rate were adopted where they did not cost any money-housing reform, freeports, tougher conditions on benefits.

² Our latest model of UK and regional growth is published at <https://link.springer.com/article/10.1007/s11079-021-09633-7>. Earlier work on the UK includes <https://link.springer.com/article/10.1007/s11079-019-09536-8>;

<https://www.sciencedirect.com/science/article/pii/S0264999318309829>; and <https://link.springer.com/article/10.1007/s11079-020-09598-z>; the work on Chinese regions is at https://carbsecon.com/wp/E2023_12.pdf.

But how far will they be put into action? The record of action is weak- remember this government retreated from planning reform when the voters in Buckinghamshire revolted to the LibDems. As for the tax cuts part of the apology, they are far too hesitant to fire much growth at all.

Start with business tax cuts. Making 100% investment allowances permanent nowhere near offsets the raising of corporation tax to 25%. The reason is that it entirely misses the point of why business innovates which is to make a profit from new ways of doing things; that is now being taxed at 25% unless it involves an investment in 'fixed capital' when it will have some tax rebated. So even this sort of innovation will still face higher taxation. Meanwhile all the innovation, such as most in service industries that dominate British industry these days, involves little or no such investment in, needing instead expenditure on ideas and new skills. So based on our Cardiff model of growth, this expensing extension brings in perhaps about a 0.2% pa rise in productivity growth, whereas cutting corporation tax back to 19% would have pushed growth up by about 2% pa.

The extension of business rates tax relief and protection for small businesses is welcome but changes the growth prospect hardly at all. Why not abolish IR35 as part of this section? That would bring more entrepreneurs into the economy.

The cuts in the NI rates by 2% are welcome as they lower marginal tax rates on work. This will have a small but positive one-off effect on labour supply and so GDP, of 1% according to our model. The problem is that by the inflation stealth tax from not indexing tax thresholds, marginal tax rates have climbed sharply, with a fifth of taxpayers due to pay the top 40% rate by 2027/8 according to the IFS. This will have a severe disincentive effect on innovation, being perfectly designed to hit entrepreneurial marginal income. It is now urgent to bring back indexation and to reverse these effects of previous non-indexation.

It is ironic in the extreme that a full-blooded reversal of our ruinous rise in tax rates was prevented by the fear of excessive debt. The present high tax rates, by stopping growth, ensure long run fiscal ruin, the debt/GDP ratio spiralling upwards out of control over the next decade- as we explain in the next section. So by cutting rates now and restarting growth the fiscal outlook would massively improve. Another excuse was fear of igniting inflation; but improving growth would reduce inflation by increasing supply.

This government has been following damaging short-termist policies that have destroyed growth. It is beginning to realise the urgent need to roll them back. But this rewind is too little, too late, if better than nothing. More must follow- and soon.

The government must stop its obsession with short term fiscal rules and flawed measures of the deficit so as to avoid long term insolvency due to the collapse in long term growth

Our projections of the government finances suggest that present policies are unsustainable because they cause zero growth. Here they are in the Table following. If you look at the last but one column showing the debt/GDP ratio, you can see that after current record tax rates bring the ratio down, it then reverses towards and past 100% again, climbing indefinitely. This is because zero growth stops tax revenue rising so spending is doomed to outstrip it- of course voters will not tolerate cutbacks in key areas like the NHS which devour increasing funding.

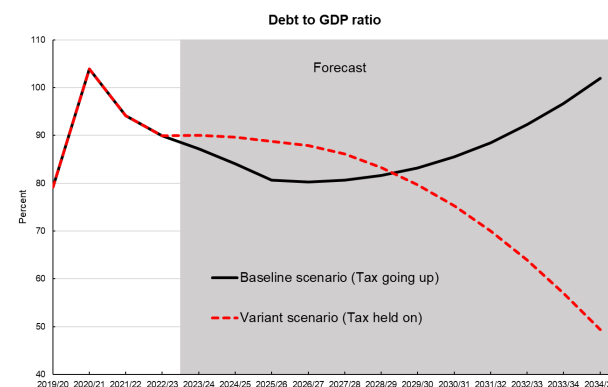
The policy alternative was clearly set out by Liz Truss, even if sadly its implementation failed against a sea of opposition, especially within the Bank and Treasury. This was to gear tax and other policies to create growth. Even if in the short term the revenues were reduced. In the following chart we show how the debt ratio would move in this case. It rises in the short term before falling steadily later as growth raises tax revenues strongly. Compare this with the scenario if taxes had not been raised: then the debt ratio rises in the short term but falls steadily in the long run.

Table 1: Public Finances Variant Forecast if No Tax Rises

	Nom PSBR ¹ (£bn)	Nom GDP (£bn)	REDL Spend ² (£bn)	Pension Spend ³ (£bn)	Welfare Spend ⁴ (£bn)	Other Non-debt ⁵ (£bn)	Total Non-debt ⁶ (£bn)	PSBR /GDP % ⁷	Spend /GDP % ⁸	Nom Debt (£bn)	Debt Interest ⁹ (£bn)	Debt /GDP % ¹⁰	Gross Taxes ¹¹ (£bn)	Tax Rate % ¹²
2019/20	64.3	2316.4	320.8	41.0	227.0	254.5	843.3	2.8	36.4	1835.2	49.6	79.2	928.6	35.8
2020/21	312.7	2068.0	434.5	41.9	245.4	342.9	1064.7	15.6	51.5	2147.9	41.0	103.9	793.0	38.3
2021/22	122.3	2412.6	413.8	42.8	244.3	266.6	967.5	5.2	40.1	2270.2	72.5	94.1	917.7	38.0
2022/23	152.0	2695.1	415.5	46.3	259.9	335.6	1057.3	5.6	39.2	2422.2	114.7	89.9	1020.0	37.8
2023/24	125.9	2831.6	424.7	49.1	291.3	351.9	1117.1	4.4	39.5	2548.1	114.2	90.0	1105.4	39.0
2024/25	123.8	2982.6	447.4	50.6	306.9	376.9	1181.9	4.1	39.6	2671.8	113.6	89.6	1171.7	39.3
2025/26	109.9	3133.2	470.0	51.7	322.4	396.0	1240.0	3.5	39.6	2781.7	111.9	88.8	1242.0	39.6
2026/27	82.5	3258.5	488.8	52.7	335.3	411.8	1288.5	2.5	39.5	2864.3	110.5	87.9	1316.5	40.4
2027/28	52.7	3388.9	508.3	53.7	348.7	428.3	1339.0	1.6	39.5	2917.0	109.2	86.1	1395.5	41.2
2028/29	20.5	3524.4	528.7	54.8	362.6	445.4	1391.5	0.6	39.5	2937.5	108.2	83.3	1479.2	42.0
2029/30	-14.7	3665.4	549.8	55.9	377.1	463.2	1446.1	-0.4	39.5	2922.8	107.2	79.7	1568.0	42.8
2030/31	-51	3812.0	571.8	57.0	392.2	481.8	1502.8	-1.4	39.4	2869.7	106.2	75.3	1662.0	43.6
2031/32	-84.8	3964.5	594.7	58.2	407.9	501.0	1561.8	-2.4	39.4	2774.9	105.2	70.0	1761.8	44.4
2032/33	-140.3	4123.1	618.5	59.3	424.2	521.1	1623.1	-3.4	39.4	2634.6	104.1	63.9	1867.5	45.3
2033/34	-189.9	4288.0	643.2	60.5	441.2	541.9	1688.6	-4.4	39.3	2444.8	102.8	57.0	1979.5	46.2
2034/35	-245.8	4459.5	668.9	61.7	458.8	563.6	1753.1	-5.5	39.3	2206.9	101.4	49.4	2088.3	47.1

Table 2: Public Finances Baseline Forecast with Actual Tax Rises

	Nom PSBR ¹ (£bn)	Nom GDP (£bn)	REDL Spend ² (£bn)	Pension Spend ³ (£bn)	Welfare Spend ⁴ (£bn)	Other Non-debt ⁵ (£bn)	Total Non-debt ⁶ (£bn)	PSBR /GDP % ⁷	Spend /GDP % ⁸	Nom Debt (£bn)	Debt Interest ⁹ (£bn)	Debt /GDP % ¹⁰	Gross Taxes ¹¹ (£bn)	Tax Rate % ¹²
2019/20	64.3	2316.4	320.8	41.0	227.0	254.5	843.3	2.8	36.4	1835.2	49.6	79.2	928.6	35.8
2020/21	312.7	2068.0	434.5	41.9	245.4	342.9	1064.7	15.6	51.5	2147.9	41.0	103.9	793.0	38.3
2021/22	122.3	2412.6	413.8	42.8	244.3	266.6	967.5	5.2	40.1	2270.2	72.5	94.1	917.7	38.0
2022/23	152.0	2695.1	415.5	46.3	259.9	335.6	1057.3	5.6	39.2	2422.2	114.7	89.9	1020.0	37.8
2023/24	125.9	2831.6	424.7	49.1	291.3	351.9	1117.1	4.4	39.5	2468.1	114.2	87.2	1185.4	41.9
2024/25	123.8	2982.6	447.4	50.6	306.9	376.9	1181.9	4.1	39.6	2506.9	113.4	84.1	1256.5	42.1
2025/26	109.9	3133.2	470.0	51.7	322.4	396.0	1240.0	3.5	39.6	2526.5	111.5	80.6	1331.9	42.5
2026/27	82.5	3258.5	488.8	52.7	335.3	411.8	1288.5	2.5	40.3	2566.2	109.7	80.3	1385.5	42.5
2027/28	52.7	3388.9	508.3	53.7	348.7	428.3	1339.0	1.9	41.1	2627.7	108.1	80.6	1441.7	42.5
2028/29	20.5	3524.4	528.7	54.8	362.6	445.4	1391.5	0.6	41.9	2712.4	106.6	81.6	1411.4	42.5
2029/30	109.8	3691.5	549.8	55.9	377.1	463.2	1446.1	3.2	42.6	2822.2	105.3	83.2	1441.7	42.5
2030/31	136.6	3849.3	571.8	57.0	392.2	481.8	1502.8	3.9	43.4	2958.8	104.3	85.5	1470.5	42.5
2031/32	165.4	3964.5	594.7	58.2	407.9	501.0	1561.8	4.7	44.3	3124.3	103.5	88.5	1499.9	42.5
2032/33	196.2	3996.1	618.5	59.3	424.2	521.1	1623.1	5.5	45.1	3320.5	103.0	92.3	1529.9	42.5
2033/34	229.2	3671.0	643.2	60.5	441.2	541.9	1688.6	6.2	45.9	3549.7	102.9	96.7	1560.5	42.5
2034/35	264.4	3744.5	668.9	61.7	458.8	563.6	1753.1	7.1	46.8	3814.2	103.1	101.9	1591.7	42.5



We have done these projections in the usual way the UK's public finances are reported, which is in money terms. This includes debt interest which also contains the inflation element on index-linked debt. In these long run projections inflation reduces the ratio of debt to money GDP as it enters nominal/money GDP. In the long run all the different measures of inflation are about the same.

However, in the short run they are not and getting a true picture of the evolving finances requires a different approach, whereby the true real cost of new debt is correctly measured- taking continuous account of inflation. The true cost of public debt is the resource cost to taxpayers. This is the money cost of taxes divided by the consumer price index. The latter measures the money cost of one unit of consumption; this in turn is what the consumer sacrifices in utility by giving up this unit. So when we measure public spending and taxes, we should convert them into resource costs to taxpaying households by dividing their money costs by the consumer price index, the CPIH (CPI including housing costs) published by the ONS.

This resource cost of the public finances tells us what these finances imply for the amount of resources that need to be taken from households by the government now or in the future by paying off future debt. Expressed in this way the public accounts budget constraint can be written as:

Change in real debt= real G- real T +Real Debt interest
+Change in real debt market value

By contrast the traditional money accounts are written:
Change in money debt = money G - money T + Money Debt interest

In the first case the 'real values' are all obtained by dividing by the CPIH, the best measure of consumer prices. The real value of debt is then divided by real GDP, the volume of output, obtained from nominal GDP by dividing through by the measure of home output prices, the 'GDP deflator' which is the home cost of production, a totally different index from CPIH.

In the second case, the money debt is simply divided by nominal GDP, which is real GDP times the GDP deflator. But owing to the fact that CPIH and the GDP deflator diverge-often by a lot- in the short run, this creates mismeasurement; and this means people are misled about the true short run state of the finances.

To illustrate this mismeasurement, we show the accounts both ways in what follows.

In the Table below we show the traditional accounts in money terms and then in resource terms in 2022 prices, as correctly measured. We begin by repeating our Table showing the cash accounting of the public finances in our current baseline forecast, where taxes are projected to stay high and growth consequently drops to nil over the long term. This type of long term projection can be done as here

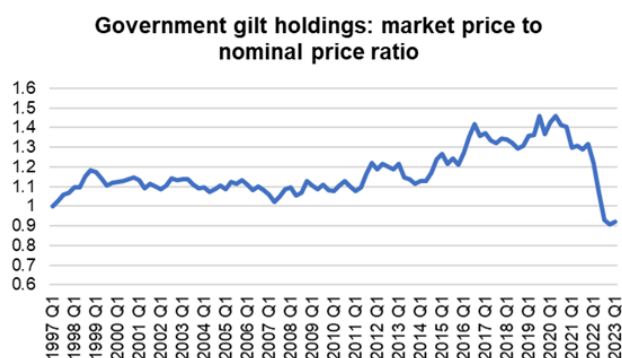
in nominal terms, then expressed as a percent of nominal GDP, because over the long term all the price deflators move roughly in line.

However we then show how these cash accounts need to be adjusted to give an accurate short run picture, using real resource accounting and to take account of market movements in the value of debt, as well as the differing movements in the price indices.

What these figures show is that real debt interest at recent inflation rates has been negative. This reflects the fact that inflation has exceeded nominal interest on non-indexed debt and on indexed debt has roughly equalled the 'inflation interest' (not exactly because indexing is to the Retail Price Index, RPI, which differs from CPIH). From 2024/25 real debt interest rises somewhat as inflation falls, while nominal interest rates remain quite high; nevertheless the real interest rate remains subdued at around 2%.

Furthermore, the market value of government debt has fallen by nearly 40% since 2020, due to rising gilt yields — see chart below. This has lowered the debt/GDP ratio in current market value. Essentially, this arises because the DMO/Treasury managed to sell most of existing gilts at low interest rates prevailing during Covid; hence the market currently values these about 10% lower than face value.

Consequently, measured correctly debt/GDP will have fallen sharply in 2023/24 even though real GDP will barely change. In 2024/25 it falls further, with GDP set to grow 2% in real terms with recovery from the tight-money spell. This reveals clearly that the short run finances imply falling real debt/GDP, quite contrary to the picture painted by the official Treasury and OBR statements of a badly worsening debt/GDP ratio.



If we project the public finances over the long term under current high tax policies that imply zero growth, we find that the implied absence of revenue growth produces a rising debt ratio that undermines solvency. The chart below shows this outlook side by side with an assumed reversal of tax rises and its better growth outlook.

What all this reveals is the mistakes being made by this government in setting rules for solvency and even in measuring the evolving debt ratio correctly. The UK

Treasury badly needs to improve its expertise and understanding of these matters and in the process take charge of the OBR which is not doing any better, suffers from its particular policy biases, and which in any case it pays for. What all these figures show is that in resource terms debt is falling relative to GDP, far from spiralling out of control, but that with the zero growth resulting from the current high tax rates this will reverse and get steadily higher, which should be avoided. The way to avoid it is to spur growth with lower taxes, as well as other pro-growth policies; and to ignore any

short term rise in debt as ultimately reversible by rising tax revenues.

Money- £ billion	2022/23	2023/24	2024/25
G- government spending	1057.3	1117.1	1181.9
T- revenue	1020.0	1185.4	1256.5
Debt interest	114.7	114.2	114.2
ΔD- change in debt	152.0	45.9	38.8
Debt (incl. BOE)	2580	2626	2664
D/NOMGDP (%) - debt/GDP ratio	95.7	92.7	89.3
Real £ billion at 22/23 prices (Assumes CPIH inflation 9.1% 22/23; 6.4% 23/24; 3.2% 24/25)			
G	1057.3	1049.9	1145.3
T	1020.0	1114.1	1217.0
Real Debt interest	-105.7	-109.1	35.2
Δ Real D- change in real debt	-68.4	-173.0	-36.5
Real Debt	2580	2407	2370
Adjustment Mkt Value/Par*	0.93	0.93	0.93
Adjusted Real Debt	2399	2226	2189
Real Debt/Real GDP	84.7	87.6	75.8

*market value/Par value — source ONS: series RYXY/BKPM on gilt values (respectively market value and nominal, Par, value). BoE bank reserve debt (about 800) stays at Par.

THE UK ECONOMY

Vo Phuong Mai Le

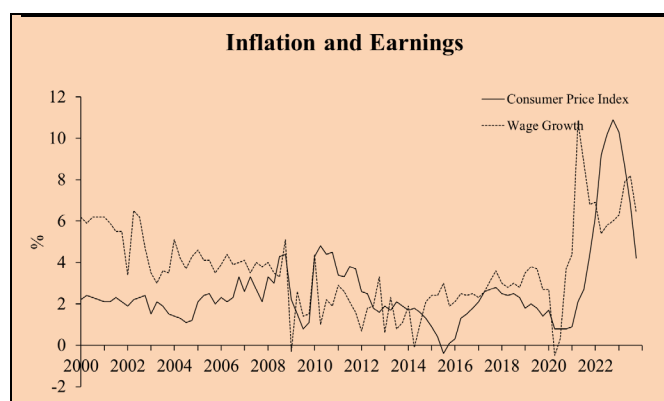
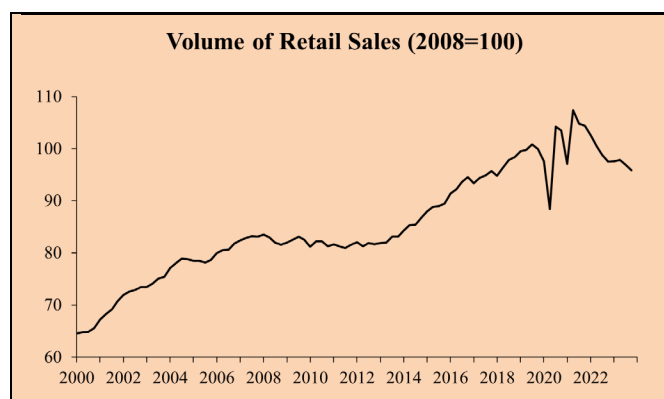
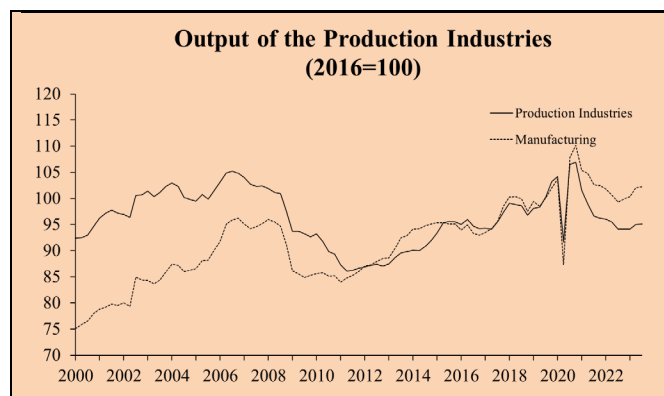
After an expansion in Q1 2003, economic growth has lost its momentum. Real GDP fell 0.1% in Q3, after no growth in Q2 and 0.3% in Q1. This contraction was driven mainly by a further fall in the services sector which fell by 0.2% in Q3, after falling by 0.1% in Q2; and by a deceleration in production sector output to 0.1% growth after 0.9% in Q2. This was partially offset by expansion in the construction sector by 0.4%, the same as Q2. On the expenditure side, the contraction was driven mainly by weak domestic demand. Gross fixed capital formation fell at a greater pace, by 1.6% in Q3, after falling 1.0% in Q2. Private consumption fell by -0.5%, after growing 0.5% in Q2, while government consumption decelerated to 0.8% from 2.6% growth in Q2. On the other hand, a positive contribution to growth came from net trade as exports fell by -0.6%, less than imports at -1.0%.

Recent data and surveys show signs of recovery in the private sector in Q4. In January, the Flash UK PMI Composite Output index was 52.5 (a 7-month high), after 52.1 in December. The service sector showed a robust growth as the Flash Services PMI Business Activity Index reached its highest level in 8 months in January, posting 53.8 after 53.4 in December. Production output growth recovered. Monthly production output rose 0.3% in November, following -1.3% in October. Within the production sector, although still contracting, manufacturing output fell at its slowest rate in 9 months. The Manufacturing PMI was at 47.3 in January, compared to 46.2 in December. Consumers became less pessimistic about the performance of the economy. Although it was still lower than the average of -10.78 (for the period 1981-2024), the Consumer Confidence Index made a gradual increase, reaching -19 in January from -22 in December, recovering from the lowest point of -49 in September 2022.

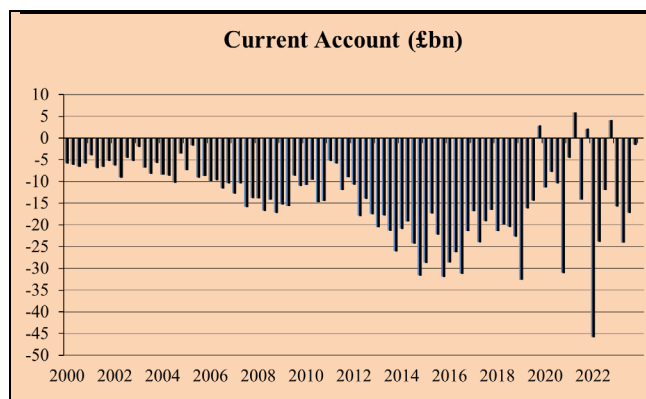
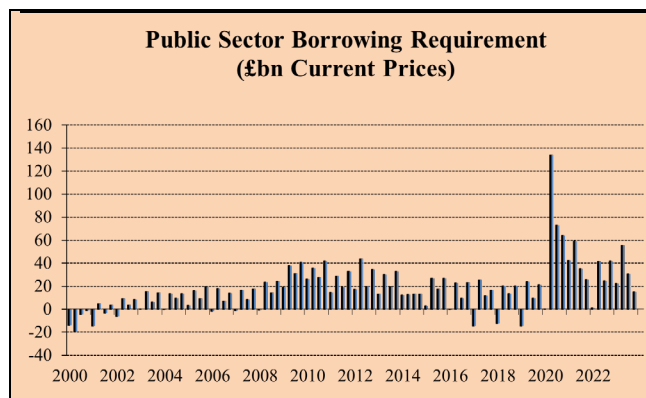
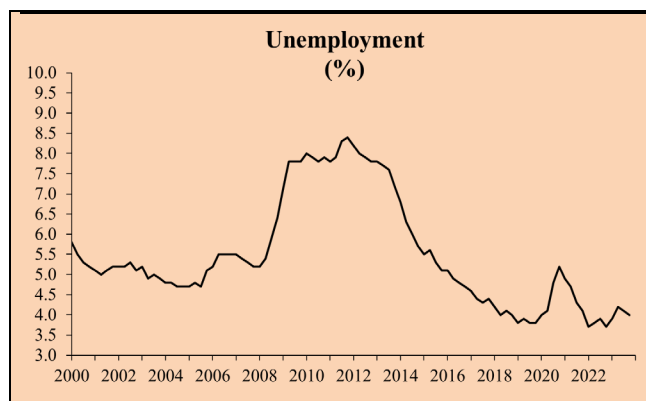
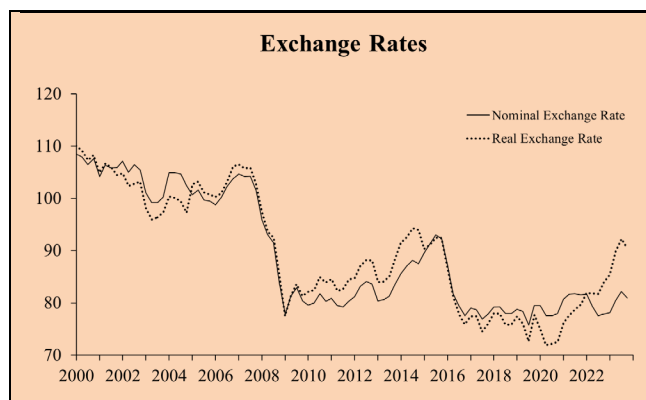
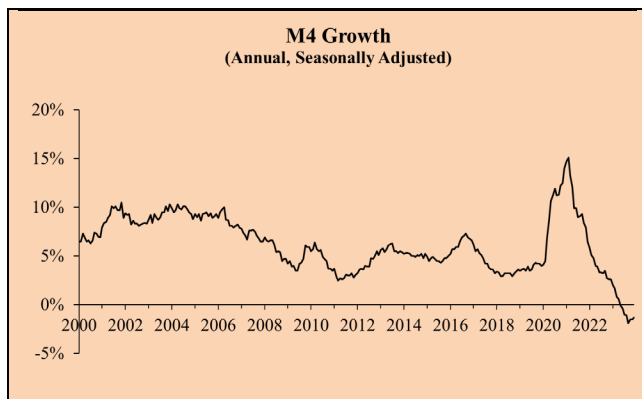
Labour market, costs and prices

Despite some signs of cooling down, labour market conditions remained relatively robust. According to the Office for National Statistics (ONS), the unemployment rate was at 4.2% in Q3, improving from 4.3% in Q2. The employment rate rose to 75.8% for September to November, up from 75.7% in Q3. The number of vacancies continued to decline. In the period of October to December, it dropped 5%, compared to -4.75% in the July-September period. Annual growth in regular pay (without bonuses) of 6.6% in September to November was down from 7.2% in the August to October period.

After a continuous decline in annual CPI inflation, it picked up again slightly in December (4.0%, compared to 3.9% in November). This acceleration was caused by higher inflation in alcoholic beverages and tobacco (12.9%, after 9.2% in November) and all services (6.4%, up from 6.3% in



November). Annual core CPI inflation (excluding energy, food and alcoholic beverages and tobacco) remained unchanged at 5.1% from November. CPI inflation is expected to fall further in 2024 but to remain higher than the official target of 2% and continue to fall towards this target in 2025 as food and energy prices continue to decline. Assessing the economic outlook and inflation, at the last meeting in December, the Bank of England decided to keep the bank interest rate at 5.25% and remains in a watch and wait position over the likely pace of loosening.



UK FORECAST DETAIL

Prices, Wages, Interest Rates and Exchange Rate Forecast (Seasonally Adjusted)

	Inflation % ¹ (CPI)	Short Dated (5 Year) Interest Rates	3 Month Int. Rates	Nominal Exchange Rate (2005=100) ²	Real Exchange Rate ³	Real 3 Month Int. Rates % ⁴	Inflation (RPIX)	Real Short Dated Rate of Interest ⁵
2020	0.9	0.1	0.2	78.2	72.9	-1.3	1.5	-1.4
2021	2.5	0.8	0.1	81.4	78.0	-6.4	4.1	-5.8
2022	9.1	2.5	2.0	79.1	82.4	-7.2	11.6	-6.7
2023	7.5	4.1	5.0	80.4	89.5	0.5	10.5	-0.4
2024	3.5	4.2	4.3	79.7	90.6	1.8	5.5	1.7
2025	2.0	3.0	3.0	79.4	90.6	1.0	2.8	1.0
2020:1	1.4	0.4	0.6	79.5	74.9	-0.2	2.6	-0.4
2020:2	0.8	0.0	0.1	77.6	71.9	-1.0	1.2	-1.1
2020:3	0.7	-0.1	0.1	77.6	72.2	-1.5	1.1	-1.7
2020:4	0.6	0.0	0.0	78.1	72.6	-2.5	1.1	-2.5
2021:1	0.9	0.6	0.1	80.7	76.2	-3.8	1.4	-3.3
2021:2	2.1	0.9	0.1	81.7	77.6	-5.5	3.4	-4.7
2021:3	2.7	0.7	0.1	81.8	78.7	-7.4	4.5	-6.8
2021:4	4.4	0.9	0.2	81.5	79.7	-8.9	6.9	-8.2
2022:1	6.2	1.4	0.8	81.7	81.9	-9.4	8.4	-8.8
2022:2	9.2	2.1	1.4	79.3	81.8	-8.6	11.5	-7.9
2022:3	10.2	2.8	2.3	77.6	81.7	-6.9	12.4	-6.4
2022:4	10.9	3.7	3.6	77.9	84.1	-3.9	13.9	-3.8
2023:1	10.3	3.5	4.2	78.1	85.4	-1.8	13.6	-2.5
2023:2	8.6	4.1	5.2	80.4	89.8	0.5	11.2	-0.7
2023:3	6.8	4.5	5.5	82.2	92.3	1.7	9.0	0.7
2023:4	4.2	4.4	5.3	81.0	90.5	1.8	8.2	0.9
2024:1	4.5	4.3	5.0	79.7	90.5	2.1	7.3	1.4
2024:2	3.5	4.2	4.0	79.4	90.5	1.5	5.4	1.7
2024:3	3.0	4.1	4.0	79.6	90.6	1.8	4.6	1.9
2024:4	3.0	4.0	4.0	80.0	90.6	2.0	4.6	2.0
2025:1	2.0	3.0	3.0	79.5	90.6	1.0	2.8	1.0
2025:2	2.0	3.0	3.0	79.1	90.6	1.0	2.8	1.0
2025:3	2.0	3.0	3.0	79.3	90.6	1.0	2.8	1.0
2025:4	2.0	3.0	3.0	79.7	90.6	1.0	2.8	1.0

¹ Consumer's Expenditure Deflator

² Sterling Effective Exchange Rate Bank of England

³ Ratio of UK to other OECD consumer prices adjusted for nominal exchange rate

⁴ Treasury Bill Rate less one year forecast of inflation

⁵ Short Dated 5 Year Interest Rate less average of predicted 5 year ahead inflation rate

Labour Market and Supply Factors (Seasonally Adjusted)

	Average Earnings (1990=100) ¹	Wage Growth ²	Survey Unemployment Percent	Millions	Real Wage Rate ³ (1990=100)
2020	279.1	1.6	4.5	1.3	149.7
2021	300.5	7.7	4.5	1.3	157.4
2022	318.6	6.0	3.7	1.1	152.5
2023	341.6	7.2	4.1	1.2	152.0
2024	355.8	4.2	3.0	0.8	153.1
2025	367.9	3.4	2.9	0.7	155.2
2020:1	279.7	2.7	4.0	1.1	150.0
2020:2	270.1	-0.5	4.1	1.2	145.9
2020:3	278.6	0.2	4.8	1.4	149.0
2020:4	288.1	3.7	5.2	1.6	154.1
2021:1	292.1	4.4	4.9	1.5	155.3
2021:2	299.3	10.8	4.7	1.4	158.6
2021:3	303.0	8.8	4.3	1.3	158.0
2021:4	307.7	6.8	4.1	1.2	157.8
2022:1	312.2	6.9	3.7	1.0	156.4
2022:2	315.5	5.4	3.8	1.1	152.6
2022:3	320.5	5.8	3.9	1.1	151.0
2022:4	326.3	6.0	3.7	1.0	150.1
2023:1	332.0	6.3	3.9	1.1	150.2
2023:2	340.5	7.9	4.2	1.3	151.6
2023:3	346.6	8.2	4.1	1.2	153.0
2023:4	347.2	6.4	4.0	1.2	153.3
2024:1	349.0	5.1	3.3	0.9	151.2
2024:2	355.1	4.3	3.0	0.8	152.8
2024:3	359.3	3.7	2.9	0.7	154.0
2024:4	359.8	3.6	2.9	0.7	154.3
2025:1	363.3	4.1	2.9	0.7	154.4
2025:2	367.1	3.4	2.9	0.7	154.9
2025:3	370.1	3.0	2.9	0.7	155.5
2025:4	371.2	3.2	2.9	0.7	156.1

¹ Whole Economy

² Average Earnings

³ Wage rate deflated by CPI

Estimates and Projections of the Gross Domestic Product¹ (£ Million 1990 Prices)

	Expenditure Index	£ Million '90 prices	Non-Durable Consumption ²	Private Sector Gross Investment Expenditure ³	Public Authority Expenditure ⁴	Net Exports ⁵	AFC
2020	150.6	721243.1	427576.4	250934.6	199232.3	-33095.4	123404.8
2021	163.8	784427.3	459674.3	271390.0	224535.7	-36903.3	134269.4
2022	170.9	818549.1	482283.2	270493.2	228365.7	-23824.9	138768.1
2023	171.8	822732.7	484026.0	270479.3	225317.6	-18636.8	138453.4
2024	173.5	831109.5	490083.0	264416.0	232155.7	-15891.4	139653.8
2025	176.8	846524.9	501723.3	266448.1	239198.5	-18462.9	142382.1
2020/19	-10.4		-10.1	-18.6	-4.8		4.1
2021/20	8.7		7.5	8.2	12.7		8.8
2022/21	4.3		4.9	-0.3	1.7		3.4
2023/22	0.6		0.4	0.0	-1.3		-0.2
2024/23	0.9		1.3	-2.2	3.0		0.9
2025/24	1.9		2.4	0.8	3.0		2.0
2020:1	164.1	196432.5	118032.8	72147.1	51656.8	-11632.2	33772.0
2020:2	130.8	156582.4	91565.8	47009.3	43743.5	429.6	26165.8
2020:3	152.8	182914.4	109964.7	61243.2	50846.1	-8204.0	30935.6
2020:4	154.8	185313.7	108013.0	70535.1	52985.9	-13688.8	32531.5
2021:1	153.4	183684.7	103125.9	68124.0	51781.2	-7820.5	31525.9
2021:2	164.6	197117.8	116086.4	57611.4	57578.0	-668.1	33489.9
2021:3	167.1	200116.7	119991.0	71945.6	57098.8	-14414.1	34504.6
2021:4	170.0	203508.1	120471.0	73708.9	58077.8	-14000.5	34749.1
2022:1	170.7	204426.3	120589.6	71205.4	56345.4	-9205.0	34509.1
2022:2	171.1	204813.7	120922.2	63977.8	57461.4	-2851.4	34696.3
2022:3	170.8	204449.9	120434.5	67950.1	56974.6	-6094.7	34814.6
2022:4	171.1	204859.2	120336.9	67360.0	57584.2	-5673.8	34748.1
2023:1	171.6	205455.5	120624.7	74958.6	55700.5	-11224.5	34603.8
2023:2	172.0	205908.0	121111.1	66062.6	56116.4	-2756.3	34625.8
2023:3	171.6	205452.3	121001.2	64805.4	56537.9	-2250.2	34642.0
2023:4	172.0	205917.0	121289.1	64652.7	56962.8	-2405.7	34581.9
2024:1	172.7	206813.2	121214.6	72589.9	57390.1	-9648.0	34733.4
2024:2	173.2	207306.4	122257.0	64506.6	57820.4	-2454.1	34823.5
2024:3	173.8	208022.3	123117.0	63437.5	58254.2	-1824.1	34962.3
2024:4	174.5	208967.6	123494.4	63881.9	58691.1	-1965.2	35134.6
2025:1	175.6	210179.7	124017.7	74853.5	59131.3	-12471.5	35351.3
2025:2	176.3	211103.5	124954.1	64240.4	59574.2	-2221.0	35444.2
2025:3	177.0	211938.9	125899.8	63519.6	60021.5	-1821.7	35680.3
2025:4	178.2	213302.9	126851.6	63834.5	60471.6	-1948.6	35906.2

¹ GDP at factor cost. Expenditure measure; seasonally adjusted

² Consumers expenditure less expenditure on durables and housing

³ Private gross domestic capital formation plus household expenditure on durables and clothing plus private sector stock building

⁴ General government current and capital expenditure including stock building

⁵ Exports of goods and services less imports of goods and services

Financial Forecast

	PSBR/GDP % ¹	GDP ¹ (£bn)	PSBR (£bn) Financial Year	Current Account (£ bn)
2020	15.5	2090.9	312.9	-60.3
2021	5.0	2467.1	121.5	-10.8
2022	4.7	2776.0	130.5	-77.3
2023	3.8	2963.7	112.2	-42.7
2024	1.4	3088.9	42.3	-14.7
2025	0.9	3220.4	29.9	1.5
2020:1	0.0	579.4	0.4	-11.3
2020:2	29.0	461.6	133.8	-7.7
2020:3	13.5	539.6	73.0	-10.3
2020:4	11.7	544.5	63.9	-31.0
2021:1	7.7	545.3	42.2	-4.5
2021:2	10.0	590.2	59.3	5.8
2021:3	5.8	604.1	35.2	-14.1
2021:4	4.1	626.4	25.8	2.0
2022:1	0.2	646.4	1.2	-45.7
2022:2	6.2	669.8	41.5	-23.8
2022:3	3.6	684.5	24.5	-11.9
2022:4	6.0	703.6	42.0	4.1
2023:1	3.1	718.1	22.5	-15.7
2023:2	7.6	733.0	55.7	-24.0
2023:3	4.2	736.1	30.6	-17.2
2023:4	2.0	738.3	14.9	-1.5
2024:1	1.5	756.3	11.0	-7.3
2024:2	1.4	764.1	10.9	-8.6
2024:3	1.4	768.8	11.1	0.1
2024:4	1.3	772.1	10.2	1.1

¹GDP at market prices (Financial Year)

THE WORLD ECONOMY

US

The economy continued to expand in Q4, although at a slower pace. Real GDP rose 0.83%, after 1.23% in Q3. The deceleration in growth was driven by slowdowns across all domestic demands -private consumption (0.7%, down from 0.8% in Q3), gross private investment (0.5%, down from 2.5% in Q3) and government expenditures and investment (0.8%, down from 0.95% in Q3). Net trade added 0.11 percentage points to Q4 growth (after a zero contribution in Q3), as growth in exports accelerated to 1.6%, from 0.9% in Q3, while imports demand decelerated to 0.5%, from 1% in Q3.

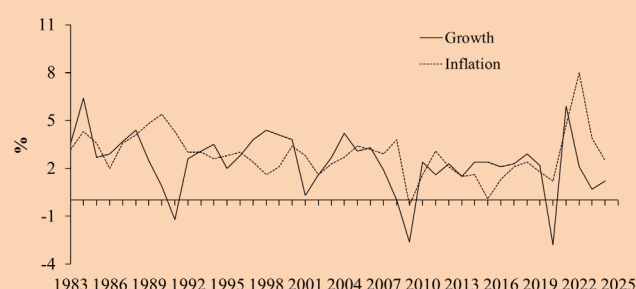
Labour market conditions remained robust. The unemployment rate was 3.7% in December, unchanged from November. Job gains remained strong as the total nonfarm payroll employment rose by a rapid 267,991 in December, slightly above the average monthly gain of 265,639 over the prior 12 months. Annual nominal wage growth increased to 4.1% in December, up from 4% in November.

The annual CPI inflation rate increased to 3.4% in December, up from 3.1% in November. This increase was driven by a smaller decrease in energy prices (-2%, compared to -5.4% in November). The food price inflation rate eased down to 2.7%, from 2.9% in July. Overall, annual core inflation (excluding food and energy) eased to 3.9%, below 4% in the previous month.

According to the latest surveys, the economy is expected to continue growing faster in Q1 2024. Easing inflation boosted consumer confidence (the index rose to 110.7 in December, up from 101 in November) and demand for output. The Flash US PMI Composite Output index of 52.3 in January (up from 50.9 in December) signalled the highest expansion in the private sector since June 2023. Output growth was led by the services sector, whose Business Activity index rose to 52.9, from 51.4 in December. On the other hand, manufacturing sector's production continued to decline, but at a more moderate pace. The Manufacturing Output PMI Index was 48.7, only slightly up on 47.9 in December.

Based on the assessment of economic conditions, the Federal Reserve kept the Fed Funds rate unchanged at the range of 5.25%-5.5% at the December meeting.

U.S.: Annual Growth Rates of Real GNP and Consumer Prices



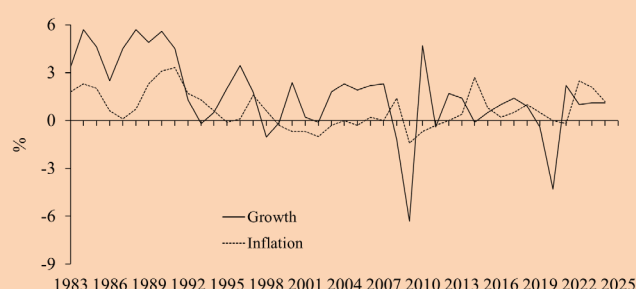
US

	2019	2020	2021	2022	2023	2024
Real GDP Growth (% p.a.)	2.2	-2.8	5.9	2.1	1.1	0.6
Inflation (% p.a.)	1.8	1.2	4.7	8.0	4.2	2.4
Real Short Int. Rate	0.3	-4.3	-7.9	0.1	2.5	1.5
Nominal Short Int. Rate	1.5	0.4	0.1	4.3	5.1	4.1
Real Long Int. Rate	0.7	-3.8	-6.4	-0.3	0.8	0.7
Nominal Long Int. Rate	1.9	0.9	1.6	3.9	3.4	3.3
Real Ex. Rate (2000=100) ¹	97.8	99.2	97.0	105.9	105.6	105.0
Nominal Ex. Rate ²	115.7	117.8	113.1	120.7	120.1	120.5

¹The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation of the real exchange rate.

² The series for the USA is a nominal broad U.S dollar index (2006=100)

Japan: Annual Growth Rates of Real GNP and Consumer Prices



Japan

	2019	2020	2021	2022	2023	2024
Real GDP Growth (% p.a.)	-0.4	-4.3	2.2	1.0	1.0	1.1
Inflation (% p.a.)	0.5	0.0	-0.2	2.5	2.6	1.4
Real Short Int. Rate	0.1	0.3	-2.4	-2.6	-1.3	-1.3
Nominal Short Int. Rate	0.1	0.1	0.1	0.0	0.1	0.1
Real Long Int. Rate	0.0	0.2	-2.4	-2.4	-0.8	-0.7
Nominal Long Int. Rate	0.0	0.0	0.1	0.2	0.6	0.7
Real Ex. Rate (2000=100) ¹	61.2	61.8	56.4	48.6	47.6	47.5
Nominal Ex. Rate	108.70	103.30	115.20	131.90	130.40	116.20

¹The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation of the real exchange rate.

Japan

The economy experienced a sharp downturn in Q3. Real GDP dropped 0.7%, after rising 0.9% in Q2. This decline reflected downturns across all expenditure categories. Private consumption fell 0.2%, after falling 0.6% in Q2. Investment decreased by 0.4%, after a 1.3% decline in Q2.

Net trade also contributed negatively to GDP growth, as exports rose by 0.4%, after 3.8% in Q2, less than imports which rose by 0.8%; this was after a positive contribution in Q2, when exports grew by 3.8% while imports fell by 3.3%.

The economic conditions are expected to be modestly better in Q4 and Q1 2024 than in Q3. An improvement in private consumption and domestic demand was expected as the consumer confidence index (37.2 in December, following 36.1 in November) posted the highest level since December 2021, showing that households are more optimistic about current conditions. The au Jibun Bank Flash Composite Output Index posted 51.1 for January, up from December's 50. This signalled renewed growth in the private sector in January after zero growth in December. While the service sector continued to grow and led the way to recovery with the biggest expansion in business activity since October 2023 (the Business Activity Index was 52.7 in January, up from 51.5 in December), manufacturing output kept declining, although at a slower pace (the output PMI was 47.4, compared to 46.8 in December).

Annual CPI inflation was 2.6% in December, down from 2.8% in November. It was the lowest rate since July 2022 and reflected mainly a deceleration in food inflation (6.7%, after 7.3% in November), a further fall in utilities inflation (-13.2%, following -11.4% in November). On the other hand, prices accelerated for transport (up 2.9%, after 2.8% in November), clothes (3.0%, after 2.8%), furniture and household utensils (6.5%, following 6.1% in November) and culture and recreation (7.8%, following 7.5% in November). Core CPI inflation was 2.3%, down from 2.5% in November. Inflation is expected to remain above the target of 2% in 2024 and move towards the target in 2005.

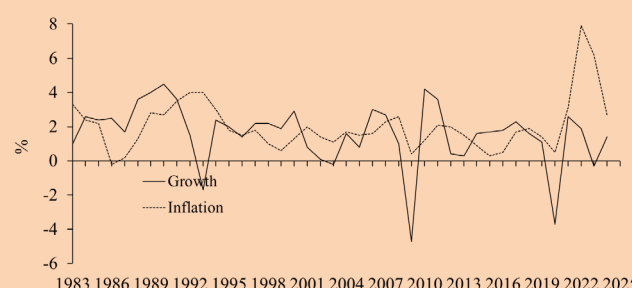
Assessing the economic outlook and inflation conditions; the Bank of Japan decided in January to maintain its accommodative monetary stance with the short-term interest rate at -0.1% and its 10-year bond yield at 0%.

Germany

The economy contracted by 0.1% in Q3, after a rise of 0.1% in Q2 and stagnation in Q1. A negative contribution to the quarterly growth came from contraction in final consumption expenditure (-0.1% in Q3, after 0% in Q2) and in gross capital formation (-1.1%, after a rise of 2.6% in Q2). On the other hand, net trade contributed positively to quarterly growth, as imports demand (-1.3%, after 0.1% in Q2) fell by more than exports (-0.8%, after -0.9%).

Available data and surveys indicate another contraction in Q4 and a difficult start to 2024. The private sector continued to contract, as business activity fell for a seventh consecutive month in January. The Composite PMI Output Index was at 47.1, after 47.4 in December. The pace of contraction was the quickest since October. This was a result of the steepest decline in services business activity in five months (the PMI stood at 47.6, after 49.3 in December) and a further decline

Germany: Annual Growth Rates of Real GNP and Consumer Prices

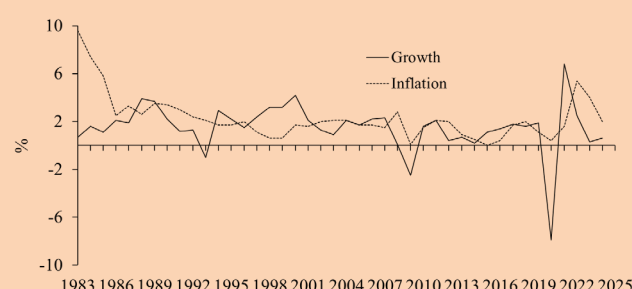


German

	2019	2020	2021	2022	2023	2024
Real GDP Growth (% p.a.)	1.1	-3.7	2.6	1.8	0.1	1.2
Inflation (% p.a.)	1.4	0.5	3.1	6.9	6.2	2.7
Real Short Int. Rate	-0.9	-3.6	-7.5	-4.1	1.0	0.8
Nominal Short Int. Rate	-0.4	-0.5	-0.6	2.1	3.7	3.5
Real Long Int. Rate	-3.1	-3.8	-4.8	-1.0	0.0	0.1
Nominal Long Int. Rate	-0.2	-0.6	-0.2	2.6	2.5	2.3
Real Ex. Rate (2000=100) ¹	96.1	97.1	97.9	95.4	96.2	96.5
Nominal Ex. Rate	0.89	0.82	0.88	0.94	0.91	0.90

¹The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation of the real exchange rate.

France: Annual Growth Rates of Real GNP and Consumer Prices



France

	2019	2020	2021	2022	2023	2024
Real GDP Growth (% p.a.)	1.9	-7.9	6.8	2.5	0.6	0.9
Inflation (% p.a.)	1.1	0.4	1.6	5.3	5.4	2.6
Real Short Int. Rate	-0.8	-2.1	-5.9	-3.3	-0.2	-0.1
Nominal Short Int. Rate	-0.4	-0.5	-0.6	2.1	2.4	2.5
Real Long Int. Rate	-0.3	-1.9	-5.1	-2.3	0.1	0.0
Nominal Long Int. Rate	0.1	-0.3	0.2	3.1	2.7	2.6
Real Ex. Rate (2000=100) ¹	96.6	97.4	96.7	92.2	91.1	91.6
Nominal Ex. Rate ²	0.89	0.82	0.88	0.94	0.91	0.90

¹The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation of the real exchange rate.

in manufacturing output (with its PMI at 46, after 43.8 in December).

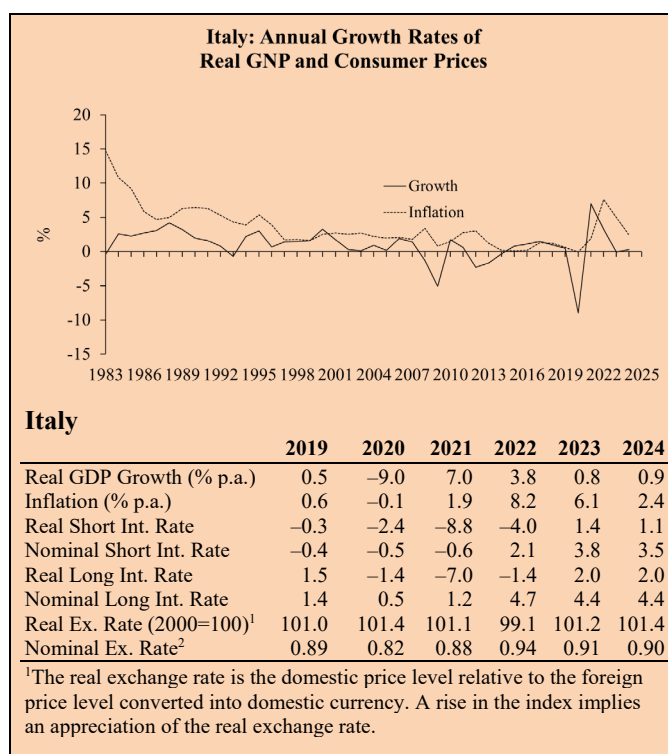
France

The economy continued to stagnate with real GDP growth of 0% in both Q4 and Q3 2023. Final domestic demand contributed negatively to Q4 growth (-0.1 percentage points after adding 0.4 percentage points in Q3). Household consumption fell 0.1%, after rising by 0.5% in Q3. Gross fixed capital formation decreased 0.7%, after rising 0.2% in Q3. Weak domestic demand was offset by a recovery in net trade, contributing 1.2 percentage points to Q4 growth (after subtracting 0.1 points). Imports demand fell sharply (by 3.1%, after falling 0.4% in Q3) and by more than the fall in exports (by 0.1%, after a fall of 0.6% in Q3).

According to recent surveys and data, the economy is expected to contract further. In January, private sector activity business shrank at the fastest rate since September 2023. The Composite PMI for Output was 44.2, down from 44.8 in December. The contraction deepened due to the faster fall in output in both services and manufacturing sectors. The Services PMI Business Activity Index fell to 45 from 45.7 in December and the Manufacturing PMI was 40.5, down from 40.7 in December. The Business Climate Index that measures industrial entrepreneurs' sentiment about the current business situation and expectations about conditions, dropped from 99.3 in December to 98.8 in January. This indicates that businesses are more pessimistic about their conditions.

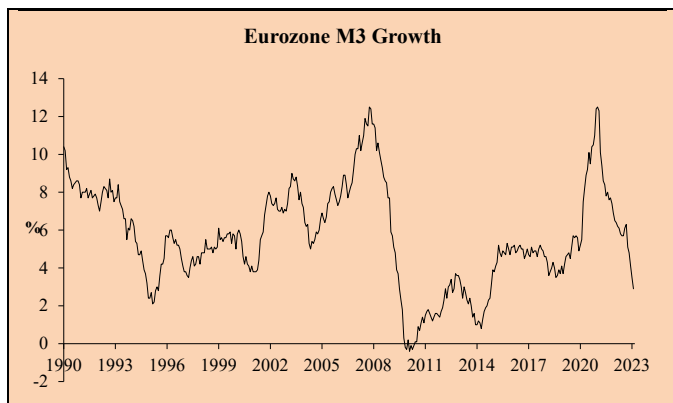
Italy

The economic recovery continued. Real GDP rose 0.2% in Q4, up from 0.1% in Q3. Although there is no available breakdown, according to the Italian National Institute of Statistics, the growth was driven by both manufacturing and services. The labour market improved with a higher employment rate (61.5% in Q3, up from 61.3% in Q2) and stable unemployment rate at 7.6% (unchanged from Q2).



Euro-zone monetary policy

The annual Harmonized Index of Consumer Price Inflation (HICP) rate increased 2.9% in December, up from 2.4 % in November. It was the first increase since April 2023 and driven mainly by a slower downturn in energy inflation (-6.7%, following -11.5% in November). On the other hand, the rate of inflation has moderated in both food, alcohol & tobacco (6.1%, compared to 6.9% in November) and non-energy industrial goods (2.5%, compared to 2.9% in November). Annual core HICP inflation (excluding food and energy) rose 3.4%% in December from 3.6% in November. Annual HICP inflation is expected to be on average 2.7% in 2024 and 2.1% in 2025, remaining above the official target, and 1.9% in 2026. At the January meeting, the European Central Bank decided to keep the three key interest rates unchanged. That is, the interest rate on the main refinancing operations, on the marginal lending facility, and the deposit facility will stay at 4.5%, 4.75% and 4% respectively. With eurozone growth weak, and the threat of recession, the ECB is expected to cut rates sooner rather than later this year.



WORLD FORECAST DETAIL

Growth Of Real GNP

	2020	2021	2022	2023	2024	2025
U.S.A.	-2.8	5.9	2.1	0.7	1.2	
U.K.	-10.4	8.7	4.3	0.6	0.9	1.9
Japan	-4.3	2.2	1.0	1.1	1.1	
Germany	-3.7	2.6	1.9	-0.3	1.4	
France	-7.9	6.8	2.5	0.3	0.6	
Italy	-9.1	6.6	3.3	-0.1	0.3	

Real Short-Term Interest Rates

	2020	2021	2022	2023	2024	2025
U.S.A.	-4.6	-7.1	-1.7	2.4	2.0	
U.K.	-1.3	-6.4	-7.2	0.5	1.8	1.0
Japan	0.3	-2.4	-2.1	-1.1	-1.4	
Germany	-3.6	-8.5	-5.9	0.4	0.5	
France	-2.2	-6.0	-3.7	1.1	0.8	
Italy	-2.4	-8.2	-4.7	0.7	0.7	

Real Long-Term Interest Rates

	2020	2021	2022	2023	2024	2025
U.S.A.	-3.3	-2.1	1.3	1.5	1.2	
U.K.	-1.4	-5.8	-6.7	-0.4	1.7	1.0
Japan	-1.3	-1.7	-1.5	-1.1	-1.3	
Germany	-5.0	-4.4	-0.9	0.1	0.0	
France	-3.3	-2.9	-0.6	0.9	0.7	
Italy	-3.3	-2.6	0.3	2.3	2.2	

Index Of Real Exchange Rate (2010=100)¹

	2020	2021	2022	2023	2024	2025
U.S.A.	118.7	116.1	128.3	128.0	128.5	
U.K.	99.6	106.6	112.6	122.3	123.8	123.8
Japan	77.8	71.0	59.9	59.2	59.3	
Germany	97.1	97.9	95.0	95.1	95.4	
France	94.7	94.0	89.6	89.5	89.0	
Italy	95.4	95.1	91.6	91.3	89.9	

¹ The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation in the real exchange rate.

Growth Of Consumer Prices

	2020	2021	2022	2023	2024	2025
U.S.A.	1.3	4.7	8.0	3.9	2.5	
U.K.	0.9	2.5	9.1	7.5	3.5	2.0
Japan	0.0	-0.2	2.5	2.1	1.2	
Germany	0.5	3.1	7.9	6.2	2.7	
France	0.4	1.7	5.4	4.0	2.0	
Italy	-0.1	1.9	7.6	5.0	2.4	

Nominal Short-Term Interest Rates

	2020	2021	2022	2023	2024	2025
U.S.A.	0.1	0.1	2.2	4.9	4.0	
U.K.	0.2	0.1	2.0	5.0	4.3	3.0
Japan	0.1	0.1	0.0	0.1	0.1	
Germany	-0.5	-0.6	0.3	3.1	2.8	
France	-0.5	-0.6	0.3	3.1	2.8	
Italy	-0.5	-0.6	0.3	3.1	2.8	

Nominal Long-Term Interest Rates

	2020	2021	2022	2023	2024	2025
U.S.A.	0.9	1.6	3.8	3.6	3.2	
U.K.	0.1	0.8	2.5	4.1	4.2	3.0
Japan	0.0	0.1	0.2	0.5	0.5	
Germany	-0.6	-0.2	2.1	2.3	2.1	
France	-0.3	0.2	1.8	2.9	2.7	
Italy	0.5	1.2	3.0	4.4	4.2	

Nominal Exchange Rate

(Number of Units of Local Currency To \$1)

	2020	2021	2022	2023	2024	2025
U.S.A. ¹	124.77	119.77	127.34	126.90	127.40	
U.K.	1.28	1.38	1.24	1.24	1.23	1.22
Japan	106.60	110.45	133.10	136.20	137.80	
Eurozone	0.87	0.85	0.95	0.98	0.99	

¹ The series for the USA is a nominal broad U.S dollar index (2006=100); the series for the UK is \$ per £

* Forecasts based on the Liverpool World Model

EMERGING MARKETS

Anupam Rastogi

India

India's economic prospects remain bright, with the government's statistics projecting a GDP growth rate of 7.3% for the current financial year (2023–24), building upon the 7.2% growth achieved in the previous year (2022–23). India's GDP is expected to sustain a robust 7% growth rate in the medium term (from FY25 onwards). Transformative drivers, including a thriving consumer base, an expanding middle class, a green transition, and a demographic dividend, underpin this positive outlook. Additionally, increased access to finance and enhanced physical and digital infrastructure on the supply side further contribute to India's advantageous position.

Structural reforms have played a pivotal role in fortifying this growth narrative. Initiatives like the Goods and Services Tax (GST) have harmonized the national market. At the same time, Aadhaar, Jan Dhan, and UPI have promoted financial inclusion, even among the most economically disadvantaged segments of the population. Substantial investments in infrastructure, encompassing roads, ports, highways, and technology, have fostered physical and digital connectivity across the nation. In light of these developments, India retains its title as the fastest-growing major economy, with a notable GDP growth rate of 7.3% in FY2023–24.

India's services sector exhibited robust growth in December 2023, buoyed by heightened demand, job creation, and increased business optimism. The HSBC India Services Purchasing Managers' Index, which reached 59.0, extends an impressive streak of 29 consecutive months of expansion. This expansion is attributed to favourable economic conditions and positive demand trends. While the manufacturing sector's index dipped to 54.9 in December, the HSBC India Composite PMI Output Index surged to a three-month high of 58.5, propelled by strong services activity.

The nation's lower fiscal and current account deficits offer favourable economic prospects, translating into controlled inflation, reduced domestic and foreign debt burdens, and enhanced stability for the domestic currency. Historically challenging factors such as twin deficits appear unlikely to pose significant risks in the coming months. India is expected to continue outperforming in growth in the next fiscal year, with the government playing a pivotal role in supporting investments. The baton is gradually shifting toward the private corporate sector.

Former RBI Governor Raghuram Rajan, who had earlier doubts about India's ability to achieve 5% GDP growth in

India: BSE Sensex



2023, has had to eat his words in light of the nation's robust economic performance.

While the central bank anticipates retail inflation to reach 5.4% for FY24, it does not seem eager to rush into lowering repo rates. The RBI remains committed to ensuring that the effects of previous rate hikes are fully transmitted. Consequently, we expect the RBI to maintain its current stance until the latter half of 2024. We anticipate the RBI will continue its stealth-tightening approach, with no rate cuts expected in the current fiscal year. Due to these factors, the ten-year G-sec is forecasted to trade in the range of 7.15% to 7.30%.

India's current account deficit (CAD) has posted 1% of the gross domestic product, marking a positive economic development. Factors such as inflation control, reduced debt, and stronger value for the domestic currency contribute to this positive outlook. For FY24, we maintain our CAD forecast of 1.5% of GDP and anticipate a further decline to 0.3% in FY25.

The influx of capital from foreign investors is poised to benefit the rupee, particularly in the face of a strong dollar. Our medium- to long-term outlook on rates remains constructive while we exercise caution in the short term. With an elevated forward PE for the Indian stock market (approximately 20 times the 10-year average), this premium reflects the quality of growth driven by an investment and manufacturing revival that promises greater sustainability. A gradual global economic slowdown reinforces India's favourable position. It positions India advantageously with higher economic growth compared to emerging markets and China, alongside lower commodity prices, safeguarding the margins of the Indian corporate sector.

The rupee's outlook remains positive, driven by robust FII inflows and stable crude oil prices. India's inclusion in the GBI-EM Global Diversified index by JP Morgan, a phased process spanning ten months, is poised to usher in substantial inflows, potentially reaching \$25–30 billion. This inclusion is expected to further bolster the rupee against the US dollar.

The equity markets in India concluded 2023 on a strong note, with most indices near their peak levels following a period of remarkable strength. On December 28, 2023, the Sensex attained fresh record highs at 72,484.34, culminating in an impressive year with gains of 18.74%.

	22-23	23-24	24-25	25-26	26-27
GDP (%p.a.)	7.2	7.3	7.0	7.0	7.0
WPI (%p.a.)	6.5	5.4	5.0	4.2	4.0
Current A/c(US\$ bill.)	-67.0	-60.0	-13.0	0.0	0.0
Rs./\$(nom.)	81.0	83.0	83.0	83.5	84.0

China

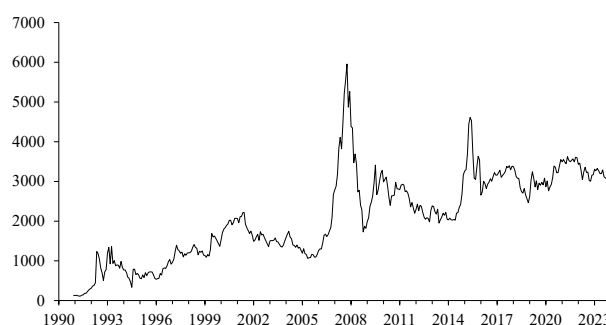
We anticipate that 2024 will be critical for China's economic growth trajectory. Despite initial post-Covid recovery, there continues to be a significant downward force due to a severe real estate market downturn. We project a GDP growth rate of 4.4% in 2024, reflecting both the fading base effect of post-pandemic resurgence and the persistent drag of the property market's decline. Additionally, while fiscal support remains in place, we anticipate a slight slowdown in infrastructure investment.

We expect to see CPI inflation fall modestly, reaching below 1% in 2024, alongside a USDCNY exchange rate of 7.2 by the end of the year. Several macro challenges loom on the horizon for China in 2024. Key focus areas include stabilizing the property market, addressing debt restructuring, effectively managing growth drivers, sustaining macro policy support, controlling the yuan's appreciation, and combatting inflationary pressures. Any of these factors, including consumers' continued preference for savings, have the potential to introduce significant surprises. Additionally, the external environment and developments in US-China relations may have unforeseen consequences, leading to unexpected fluctuations in the RMB exchange rate.

Chinese leader Xi Jinping has already cautioned the nation to brace for economic challenges in the coming year. He emphasized that economic vitality is critical to China's political priorities, especially in the context of the Communist Party's 75th anniversary in 2024. However, it is worth noting that Xi's approach differs from his predecessors, prioritizing national security over economic liberalization, tightening government control, and enhancing the central role of the Communist Party in Chinese society.

If these policies persist, China's growth trajectory may diverge from its ambition to ascend from the ranks of middle-income emerging markets and surpass the United States as the world's largest economy. Instead, China's focus may shift away from global economic dominance, with greater emphasis on national security and centralised control. For many Chinese citizens, the crucial factor lies in their ability to achieve success through hard work and

China: SSE Composite Index



determination rather than the specific ranking of the country on a global scale.

Recent indicators point to growing weaknesses in the Chinese economy, placing pressure on the government to implement bold measures to stimulate growth in the coming year. The official purchasing managers index for the manufacturing sector has consistently fallen below the 50 mark, indicating contraction. In contrast, the services sector remains subdued, reflecting consumer apprehension regarding job security and property market conditions.

Both consumer and producer prices in China have exhibited weakness, diverging from the global trend of rising inflation. The People's Bank of China has maintained its benchmark lending rates, reflecting a cautious approach to monetary policy.

While the Chinese yuan has made significant strides, becoming the world's fourth-most used payment currency in value terms, it still lags far behind the US dollar, which continues to dominate international payments.

Foreign investors have shown reduced interest in Chinese stocks, citing concerns over a fragile economic recovery and geopolitical tensions. Their net purchases of onshore stocks in 2023 are set to be the smallest on record.

One of China's most pressing challenges is its population implosion, a phenomenon without precedent. With birth rates plummeting — less than 10 million babies were born in 2022 compared to around 16 million in 2012 — the population, currently around 1.4 billion, is expected to decline to approximately half a billion by 2100. This decline is primarily attributed to the choices made by young women, who are fed up with government pressures and wary of the sacrifices associated with child rearing and are increasingly prioritizing their aspirations over traditional family expectations. This demographic crisis poses a significant challenge to the Communist Party's efforts to rejuvenate China's ageing population.

	22	23	24	25	26
GDP (%p.a.)	3.0	5.0	4.4	4.0	3.5
Inflation (%p.a.)	2.0	2.2	0.8	2.0	2.2
Trade Balance(US\$ bill.)	420.0	255.0	150.0	100.0	50.0
Rmb/\$(nom.)	6.8	7.3	7.2	7.4	7.6

South Korea

In the upcoming year, the forecast for the economy suggests a modest growth rate of 2% in 2024. It follows a period of sluggish expansion in 2023, which saw the economy grow by 1.4%, marking a three-year low. It's worth noting that our outlook is slightly more cautious compared to the official forecast figure of 2.2% for 2024.

The government's focus for the year ahead is to support people's livelihoods and manage various risk factors. In response, they have adjusted the country's 2024 GDP forecast downwards while raising their inflation projection. To stimulate consumption, the government is planning several initiatives. These include raising tax exemptions on credit card spending and continuing efforts to attract more foreign tourists. Measures to encourage tourism include exempting visa issuance fees for group tourists from China and other Asian countries.

For businesses, the government intends to introduce new temporary tax cuts on investments in research and development. Additionally, existing tax breaks on facility investments will be extended until 2024.

Regarding inflation, consumer prices are expected to rise by 3% in the current year, up from the previous forecast of 2.5%. It follows a year in which prices increased by 3.6%. The Bank of Korea anticipates that inflation will average 2.6% in 2024, up from its earlier estimate of 2.4%. The central bank signals that it will maintain its base rate at 3.50% before considering policy easing.

South Korea's exports have shown improvement, rising for a third consecutive month in December. This positive trend, particularly in semiconductor exports, raises hopes for an economic recovery driven by these crucial exports.

Consumer prices advanced by 3.2% from the previous year, slightly decelerating from the 3.3% rate in November.

The growth in South Korean exports, especially in December, paints a robust picture for the end of 2023 and offers optimism for economic growth in the coming year. Adjusted for working-day differences, the value of shipments increased by an impressive 14.5% compared to the previous year. Overall imports declined by 11.1%, resulting in a trade surplus of \$4.5 billion.

A key area of focus in 2024 will be the extent to which the demand for semiconductor chips contributes to economic growth in South Korea and neighbouring countries like Taiwan and Vietnam. However, there are still uncertainties surrounding the health of the economic recovery in China, which serves as South Korea's largest export destination.

Korea: Composite Index



Given the scale of imports from the world's second-largest economy, it's important to note that China remains South Korea's dominant trading partner. These dynamics will continue to shape South Korea's economic outlook in the year ahead.

	22	23	24	25	26
GDP (%p.a.)	2.6	1.0	2.0	2.5	2.4
Inflation (%p.a.)	5.1	3.6	3.0	2.5	2.5
Current A/c(US\$ bill.)	50.0	40.0	35.0	30.0	30.0
Won/\$(nom.)	1450	1340	1300	1300	1400

Taiwan

In 2023, Taiwan's GDP growth slowed to 1.4%, a notable decrease from the previous year's 2.6% growth and a significant drop from the robust 6.6% expansion recorded in 2021. This economic deceleration can be attributed primarily to soft global demand and a lacklustre performance in domestic capital investment.

Despite relatively low inflation rates compared to many Western countries, wage growth has struggled to keep pace with rising prices. The average inflation rate in the first three quarters of 2023 stood at 2.4%, surpassing the real total wage growth for the same period.

Taiwan's traditional growth model, centred around exporting intermediate goods to China for final assembly, is transforming. The share of exports to China and Hong Kong in Taiwan's total exports declined to 35% in 2023, down from 44% in 2020. Meanwhile, exports to the United States, Europe, and ASEAN countries increased by 7%. This shift highlights the need for Taiwan to embark on a new growth model for the next 30 years. The country has the potential to develop closer economic ties with Southeast Asian nations, the United States, and India, paving the way for the next phase of economic growth.

The Central Bank of Taiwan has maintained its key interest rates unchanged for three consecutive quarters, with the discount rate remaining at 1.875%, the highest level in eight years. This policy stance has been aimed at combating rising

inflation, with a 75 basis points increase in rates since March 2022.

Taiwan Ratings, a local partner of S&P Global Ratings, anticipates an uptick in exports in 2024, driven by a recovery in the tech sector, which is the backbone of the country's exports. Increased demand for electronics and the growth of electric vehicles, renewable energy, and artificial intelligence applications are expected to support the economy in the coming year.

However, Taiwan faces several significant challenges in 2024, including a potential global economic downturn, concerns about China's property market, high costs, and prolonged high-interest rates, which could increase the burden on weaker credit issuers.

The exchange rate of the U.S. dollar against the New Taiwan Dollar (NTD) is currently trading around NT\$31 and is not expected to exhibit significant volatility in the coming year.

Chinese President Xi Jinping has reiterated China's determination to reunify Taiwan with the mainland, emphasizing the importance of a shared sense of purpose among all Chinese on both sides of the Taiwan Strait. This stance marks a shift from Xi's previous year's message, where he referred to people on either side as "members of the same family." Despite China's aspirations, the proportion of people in Taiwan who identify primarily as Chinese has dwindled to below 3%. This shift has prompted even the party that once pursued peaceful political union with Beijing to distance itself from a "pro-Beijing" label.

Taiwan's recent presidential election resulted in the election of Lai Ching-te as president, who secured 40.1% of the vote. However, his party, the Democratic Progressive Party (DPP), did not maintain control of the legislature. Lai, often labelled a "separatist" by Beijing, has pledged to maintain peace in the region.

The markets have generally viewed these election results positively, as Lai has a friendly stance toward the United States. However, it's worth noting that Joe Biden, the President of the United States, emphasised that the U.S. does not support Taiwan's independence, likely to assuage China's concerns. All three major players involved — the United States, China, and Taiwan — seem to emphasise the importance of maintaining the status quo, even as political dynamics evolve.

A delegation of former high-ranking U.S. officials is scheduled to visit Taiwan, further indicating U.S. engagement with the island.

China also downplayed the election results and took measures to control social media discussions related to the election outcome. Some observers see these results as a

Taiwan: Weighted TAIEX Price Index



setback for Xi Jinping's strategy, which has focused on pressuring Taiwan economically and militarily.

	22	23	24	25	26
GDP (%p.a.)	2.6	1.4	1.8	2.0	2.3
Inflation (%p.a.)	2.9	2.2	1.6	1.4	1.2
Current A/c(US\$ bill.)	90.0	65.0	60.0	60.0	60.0
NT\$/\$(nom.)	32.0	31.0	32.0	31.5	31.0

Brazil

In the third quarter, Brazil's economy achieved a 0.1% growth rate but faced headwinds from high-interest rates and a slowdown in the crucial agricultural sector. The economy is expected to grow by 3% in 2023.

Brazil: Bovespa



Consumer prices in Brazil increased by 4.72% in mid-December compared to the previous year, closely aligning with the forecast of 4.8%. The central bank targets annual inflation at 3.25% for this year and 3% in 2024, with a permissible range of plus or minus 1.5 percentage points.

The Central Bank of Brazil implemented an anticipated half-percentage-point reduction in its benchmark lending rate. It signalled the possibility of additional cuts of the same magnitude in upcoming meetings. This action brought the key Selic rate to 11.75% in mid-December, marking the fourth consecutive rate cut and the lowest since March 2022.

In November, Brazil recorded a current account deficit that exceeded expectations, but the deficit as a proportion of GDP continued to shrink. The current account deficit for Latin America's largest economy totalled \$1.6 billion in

November. Over the past 12 months, the current account deficit declined to 1.56% of GDP, down from 1.59% in the previous month and a more substantial 2.59% in November 2022.

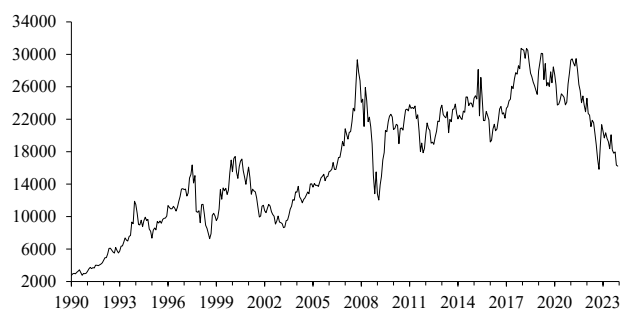
While the Brazilian real has performed relatively well this year, ranking second only to the Mexican peso among major currencies, some analysts believe its fair value is closer to 4.5 reais per dollar than the current five reais per dollar. The BRL's movements are influenced by factors such as crude

oil prices, which contribute to fluctuations in the foreign exchange market.

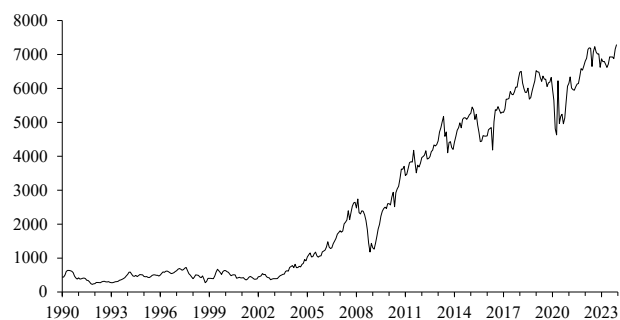
	22	23	24	25	26
GDP (%p.a.)	2.9	3.0	2.0	2.5	3.0
Inflation (%p.a.)	8.0	4.8	3.6	3.2	3.2
Current A/c(US\$ bill.)	-10.0	-12.0	-20.0	-10.0	-10.0
Real/\$(nom.)	5.2	4.7	4.8	4.8	4.8

Other Emerging Markets

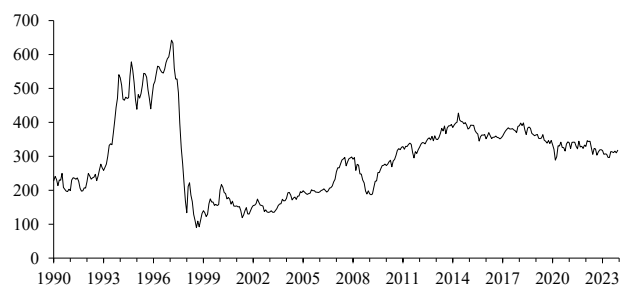
Hong Kong: FT-Actuaries



Indonesia: Jakarta Composite



**Malaysia: FT-Actuaries
(US\$ Index)**



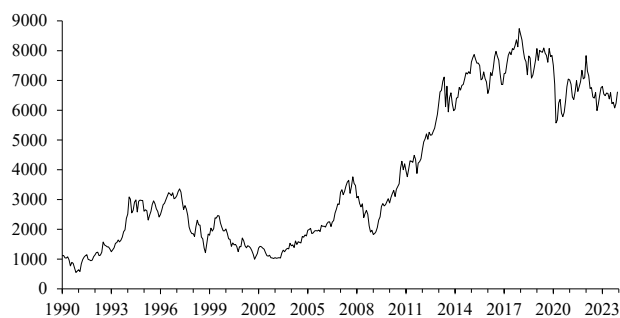
Thailand: Composite Index



Singapore: Straits Times Index



Philippines: Manila Composite

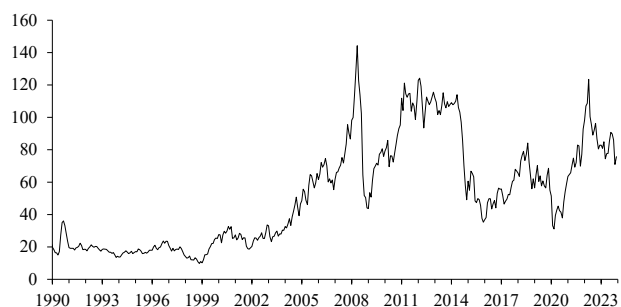


COMMODITY MARKETS

Commodity Price Index (Dollar)
(Economist, 2015 = 100)



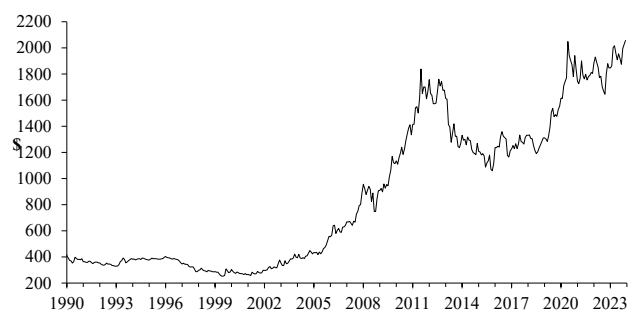
Oil Price: North Sea Brent (in Dollars)



Commodity Price Index (Sterling)
(Economist, 2015 = 100)



Gold Price (in Dollars)



Commodity Price Index (Euro)
(Economist, 2015 = 100)



THE ROLE OF FISCAL POLICY - A SURVEY OF RECENT EMPIRICAL FINDINGS

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Abstract

DSGE models based on New Keynesian principles, which have been extended to allow for banking, the zero lower bound on interest rates (ZLB), and varying price duration, can account well for recent macroeconomic behaviour across a variety of economies. These models and that active fiscal policy can contribute to macroeconomic stability and welfare by reducing the frequency of hitting the ZLB. Fiscal policy can also share the stabilisation role with monetary policy, whose effectiveness under the ZLB is much reduced.

1. Introduction: recent empirical evaluations of macro models and the implications for macro policy

Recent decades have seen a major financial crisis and a worldwide pandemic, together with largescale responses from fiscal and monetary policy. A variety of attempts have been made to model these events and policy responses empirically. In this chapter we review these modelling attempts and suggest some policy conclusions. We will argue that a new class of DSGE models in which there is price-setting but with endogenous duration can account for the shifts in macro behaviour from pre-crisis times up to the present day; these models also prescribe a key role for fiscal policy in stabilising the economy and preventing its slide into the zero lower bound.

Since the crisis, a number of economists have argued for a more central role for fiscal policy, given the enfeeblement of monetary policy with interest rates at the zero lower bound. Prominent advocates of stronger fiscal stimulus for economies battling low inflation and weak demand have included Romer, Stiglitz, and Solow in Blanchard et al. (2012); also Spilimbergo et al. (2008), Lane (2010), though with opposition from Alesina and Giavazzi (2013). This viewpoint has seemed highly persuasive on broad qualitative grounds. However, credible quantitative assessments of the role and effects of fiscal policy have been harder to find. This is what we attempt to do in this chapter, drawing on recent DSGE models that can claim to match data behaviour rather accurately.

2. Recent literature on the role of fiscal policy since the crisis

In a recent book based on an MIT conference, Blanchard et al. (2012), Romer, Blanchard and Stiglitz set out support for more aggressive fiscal policies during financial crisis. Romer summarises these views pithily as the realisation

among macroeconomists that the exclusive reliance on monetary policy for short run stabilisation was wrong, because it much underestimated the damage from the zero lower bound. Romer also attacks the contribution of DSGE modelling, though, as we will show, it can make a useful empirical contribution. Several other contributions at conferences and other meetings convened after the financial crisis cover similar ground and come to broadly similar policy conclusions. Spilimbergo et al. (2008) reviewed IMF thinking on fiscal policy in crisis periods, finding that in five crisis episodes fiscal policy had a positive part to play, with strong fiscal multipliers. Lane (2010) expresses similar views. Using New Keynesian DSGE models, many research studies. Christiano, Eichenbaum, Rebelo (2011), Woodford (2011), Erceg and Linde (2014) have found that stimulative fiscal policies have big effects on consumption and output when nominal interest rates are low. They show that the government spending multipliers can be much larger at the zero lower bound, and that an exogenous increase in government spending can be welfare improving because it increases expected inflation, which lowers the real interest rate. Coenen et al. (2012) subject seven structural DSGE models to fiscal stimulus shocks using seven different fiscal instruments. One of the consensus results across models is that the size of many multipliers is large, particularly for spending and targeted transfers to financially constrained households. Fiscal policy is found to be most effective if it has moderate persistence and if monetary policy is accommodative. Eggertsson (2010) considers different taxes and looks for the most desirable in the zero lower bound situation. Tax cuts imply that workers will want to work more, and then firms can produce more cheaply, resulting in downward pressure on prices. At the zero lower bound, downward price pressures create deflationary expectations and push the real interest rate higher, which has a negative effect on spending. He finds that the multiplier from a 1% cut in the labour tax at the zero lower bound switches from being positive to negative at -1.02, but a temporary sales tax reduction is expansionary because it makes today's consumption cheaper relative to the future and stimulates spending. He argues that expansionary fiscal policy at the zero lower bound should stimulate aggregate demand, rather than aggregate supply. Correia et al. (2013) show how distortionary taxes, an increasing path for consumption taxes, a decreasing path for labour taxes, together with a temporary investment tax credit or a temporary cut in capital income taxes, can replicate the effects of negative interest rates and completely eliminate the zero bound problem. The consensus is that supply-side fiscal policies are ineffective, while demand-side policies are expansionary and effective in stabilising the economy when the nominal interest rate is zero.

There are two points to notice about this literature. Firstly, the assessment of fiscal policy's effectiveness seems to be

dependent on what solution method is used to solve the New Keynesian models at the ZLB and the causes of the liquidity trap. Boneva et al. (2016) show that the nonlinear solution exhibits new types of ZLB equilibria that cannot occur using a loglinearised solution. Their New Keynesian model can exhibit the same properties as in the above studies for a relatively small set of parameters and shocks. In other regions of the parameter space, the nonlinear solution implies that demand-side fiscal multipliers at the ZLB are small and not that different from its values for fiscal policy away from the ZLB, while supply-side fiscal stimulus is expansionary at the ZLB. Mertens and Ravn (2014) argue that the output multiplier during the ZLB is small in a New Keynesian model if the ZLB period is caused by a non-fundamental confidence shock. Since in this case government spending shocks are deflationary and increase real interest rates, lowering consumption and investment, the output multiplier is lower than outside of the ZLB period. The second point to notice in this strand of literature is that it abstracts from debt sustainability questions to focus only on the stabilisation role of fiscal policy.

By contrast, Alesina and Giavazzi (2013) convened a conference on the crisis at the University of Chicago, the bulk of which favoured restraint on fiscal policy, emphasising the dangers of rising debt/GDP ratios. Government spending can cause debt crises. Evans et al. (2011) use a two-period overlapping generations model calibrated to the US economy and argue that there is a 35% chance that the US would reach its fiscal limit in about thirty years. Easterly (2001) argues that stationary fiscal gaps relative to GDP do not necessarily prevent debt crises, growth slowdowns can also cause them. Leeper and Walker (2012) find that if large deficits are not followed by large surpluses, then deficit spending financed by debt may cause inflation. Because of these consequences, indebted governments implemented fiscal consolidation to reduce government deficits and debt, while monetary policy was faced with the zero lower bound constraint. The concern was that given higher multipliers during the ZLB period, fiscal consolidation could suppress the low demand further and lead to an even deeper recession, which would increase the government debt/GDP ratio. Blanchard and Leigh (2013) find that for the European economies' recent austerity, the multipliers were especially high, therefore stronger planned fiscal consolidation was associated with lower growth than expected. Furthermore, Delong and Summers (2012) argue that austerity policies can be counterproductive even if they can reduce the burden of financing the national debt in the future, since the cyclical economic downturns can damage the productive potential of the economy. Warmedinger et al. (2015) however, argue that the above discussion is about short term impact, but there are medium term and long term effects from consolidation. They analyse the impact of fiscal consolidation on the debt/GDP ratio for a sample of individual euro area countries and the euro area aggregate to find that fiscal multipliers must be significantly above 1 to lead to a self-defeating scenario after 5 years and must be very large to lead to a self-defeating scenario after 10 years.

That means if the fiscal multiplier is within the range normally considered as plausible for a balanced-composition package, then fiscal consolidation would initially have an adverse effect on the debt ratio, which is reversed after a few years.

Ramey (2019) presents a comprehensive survey on what we have learned in fiscal research since the financial crisis. The paper highlights prominent theoretical analyses, empirical methods and newly constructed data sets. However, we recognise that the existing DSGE literature on fiscal policy lacks thorough empirical analysis of the potential contribution of fiscal policy to macro stability and thus we will draw on recent empirical work on several economies to make good on this lacuna. We assume debt sustainability holds due to the cyclical nature of fiscal action.

3. Macro models and their empirical evaluation

In the past three decades, since the rational expectations revolution and the understanding of how ubiquitous were the implications of Lucas' (1976) critique, economists have rebuilt macro-economic models in the DSGE mould, trying to ensure that they had good micro-foundations. These models assume simplified set-ups where consumers maximise stylised utility functions and firms maximise stylised profit functions. Most models assume representative agents; more recently they assume heterogeneous agents to deal with such issues as inequality and growth. Much effort has been devoted to making these set-ups as realistic as possible and calibrating the resulting models with parameters that have been estimated on micro datasets.

Sometimes it has seemed as if the economists creating these models have assumed this 'micro realism' was enough to create a good DSGE macro model; and that therefore we should treat their models as simulating the true behaviour of the economy. However, a moment's reflection reveals such assumptions to be self-deluding. Even the most realistic set-ups require bold simplifications simply to be tractable; they are after all models and not the 'real world'. Furthermore, these models are intended to capture aggregate behaviour and there is a great distance between aggregated behaviour and the micro behaviour of individuals; even heterogeneous agent models do not accurately span the variety of individual types and shock distributions. The reasons for this gap between aggregated behaviour and the micro behaviour of individuals are manifold. One is the fairly obvious one that aggregate actions are the weighted sum of individual actions yet we cannot be sure of the weights, which themselves may change over time and across different shocks. Effectively we choose one constant set of weights but we need to check its accuracy. Another less obvious but important reason is that there are a host of ancillary market institutions whose function is to improve the effectiveness of individual strategies by sharing information; these include investment funds, banks and a variety of other financial intermediaries, whose activities are not usually modelled separately but

whose contribution is found in the efficiency of those strategies.

Hence empirical work is needed to check whether these models do capture macroeconomic behaviour. It would be reassuring if well micro-founded models mimicked actual data behaviour. Then we would know that the simplification is not excessive and the aggregation problems have been conquered. More broadly DSGE macro-economic modelling remains highly controversial even among ‘mainstream’ macroeconomists on empirical grounds: for example Romer (2016) has argued that DSGE models are useless for basing advice to policymakers because they fail to capture key aspects of macro behaviour.

To settle such debates we need a tough empirical testing strategy, with strong power to discriminate between models that fit the data behaviour and those that do not. The merits of different testing methods have been reviewed in Le et al. (2016) and Meenagh et al. (2019, 2023), and we review the available approaches below. In this paper we review what we know about the empirical success of different DSGE models. We restrict ourselves to DSGE models because these are the only causal macro models we have that satisfy Lucas’ critique; we can regard them as ‘deep structure’ models where the causal processes are derived explicitly from people’s decisions and we can simulate how changes in government policies will affect the economy through these decisions. Other models may be causal in the sense that identified factors affect behaviour in a causal way, but only under the assumption that the policies and other exogenous processes in effect during the sample period continue in force. So they are causal in quite a restricted way that renders them unuseable for general analysis of how economies work in a full variety of potential contexts, and especially how they would react to changes in policy regimes.

We consider the results of empirical tests for DSGE models of the economy. Inevitably, given its size and influence, our main focus is on models of the US economy. However, we also review results for other large economies, viewed similarly as large and effectively closed. We also review models of various open economies, such as the UK and regions of the Eurozone. What we will see is a general tendency for fiscal policy to make an important stabilising contribution according to these models.

4. The nature of the empirical evidence

In reviewing the evidence we are faced with a variety of ways in which facts are compared with model predictions:

- **Bayesian:** here strong priors allow the researcher to estimate a model and assess its probability but this will depend crucially on the priors. But these are precisely what we want to test as we are unsure whether they are correct, given the controversy surrounding the importance of different policy approaches. With ‘flat’ priors which ascribe

the same probability to all priors, the Bayesian approach amounts to maximum likelihood.

- **maximum likelihood:** here the test power is quite weak in small samples, the usual situation for macro data, and the estimation bias high in small samples — Le et al. (2016). Meenagh et al. (2019, 2023). Hence evidence from FIML estimates and associated Likelihood Ratio statistics is not persuasive.
- **forecasting accuracy tests** have rather weak power because they are also Likelihood Ratio tests — but weakened further by being out of sample — Minford et al. (2015).
- **the comparison of various moments singly with their model-simulated equivalents** is not statistically valid because it neglects the covariance matrix of these moments which determines their joint distribution — Meenagh et al. (2023). Models generally imply substantial covariances between such moments because of the theoretical restrictions they impose.

Unfortunately the bulk of the empirical literature on DSGE models uses one or other of the above methods. We could go through them all and discuss each; this would be a worthwhile undertaking from which we could well learn much of interest. But the problem is that these methods do not tell us much about the accuracy or usefulness of the complete models of the economy that have been proposed to account for recent macro turmoil. What we would like to know is which models are consistent with the data and which are not. For this we need a method that has enough power to discriminate between the models that succeed and the models that should be discarded.

In what follows we have therefore restricted ourselves to tests under Indirect Inference where, as explained in Le et al. (2016) and Meenagh et al. (2019, 2023) cited above, the power of the test can be made extremely high, but for this reason the test needs to be used at a suitable level of power where it is efficiently traded off against tractability. This trade-off must be found by Monte Carlo experiment on each model. Too much power will mean the rejection of all good models; while weak power gives much too wide bounds on the accuracy of the model which is what we want to assess.

4.1 DSGE models of the closed economy

The most widely used DSGE model today is the New Keynesian model of the US constructed by Christiano, Eichenbaum and Evans (2005) and estimated by Bayesian methods by Smets and Wouters (2007). This model and the US data it is focused on makes a good starting point for our model evaluations. In this model the US is treated as a closed continental economy. In essence it is a standard Real Business Cycle model but with the addition of sticky wages and prices so that there is scope for monetary policy feedback to affect the real economy. Smets and Wouters found that their estimated model passed some forecasting accuracy tests when compared to unrestricted VAR models.

Many central banks are happy to accept the New Keynesian priors of this model since they believe that monetary policy is as powerful as the model implies. However, in parts of the profession the model is rejected. Thus Chari et al. (2009) wrote: ‘Some think New Keynesian models are ready to be used for quarter-to-quarter quantitative policy advice. We do not. Focusing on the state-of-the-art version of these models, we argue that some of its shocks and other features are not structural or consistent with microeconomic evidence. Since an accurate structural model is essential to reliably evaluate the effects of policies, we conclude that New Keynesian models are not yet useful for policy analysis.’

So some sort of test is needed for economists in general to decide whether nominal rigidity holds or not. As already noted the forecasting test has little power and so is not useful for this purpose.

Le et al. (2011) applied indirect inference testing to the Smets-Wouters model, first investigating their New Keynesian version and then also investigating a New Classical version with no rigidity. They rejected both on the full post-war sample used by Smets and Wouters, with Wald equivalent t-values of around 2.5, using a three-variable VAR1 (output, inflation and interest rates). They noted that the power of this test, though considerable, was deliberately lower than what they termed a ‘full Wald’ test where all 7 variables were used in a higher order VAR. With such a ‘full Wald’ the model t-value was very much higher; but they argued that the power of this test was too high, in the sense noted above that it would reject most tractable models. They concluded that this model of the US post-war economy, popular as it was in major policy circles, must be regarded as strongly rejected by the appropriate 3-variable test.

They then found that there were two highly significant break points in the sample, in the mid-1960s and the mid-1980s. They also argued that there are parts of the economy where prices and wages are flexible and it therefore should improve the match to the data if this is included in a ‘hybrid’ model that recognises the existence of sectors with differing price rigidity (Dixon and Kara, 2011, is similar, with disaggregation). Finally after estimation by indirect inference they found a version of this hybrid model that matched the data from the mid-1980s until 2004, known as ‘the great moderation’; no such version (or any version) could match the earlier two sub-samples. The later sample showed very low shares for the ‘flexible sectors’. However, when it was extended to include the period of financial crisis up to 2012, these shares rose dramatically and became dominant.

One could regard these findings as at least partial support for the critics of nominal rigidity. Micro-data (Zhou and Dixon, 2019) show that firms do set prices for periods of time normally but when shocks are large they change them more frequently; thus there is time-dependence but also shock dependence of pricing period lengths. In a variety of economies there is substantial evidence that price rigidity

varies with the extent of inflation. The high rigidity of the great moderation period seems to have reflected the lack of large shocks and the low inflation rate of that period; once the shocks of the financial crisis hit, with sharp effects on inflation, this ‘rigidity’ mostly disappears. Nevertheless there is normally some rigidity.

A DSGE model in which rigidity is shock-size-dependent is non-linear. We have the tools to solve such models. Since the financial crisis there has also been the arrival of the zero bound on interest rates and the use of Quantitative Easing (QE, aggressive purchase of bonds for money by the central bank) under the zero bound. Le et al. (2021) estimated such a model, complete with a banking sector and a collateral constraint that made narrow money creation effective by cheapening collateral. They found that this model finally could match the data behaviour over the whole post-war sample; in effect the shifts in regime due to the interaction of the ZLB with inflation and so with the extent of price rigidity manage to mimic the changing data behaviour closely. However, they found that this interaction of the ZLB and price rigidity created considerable inflation variability, as the ZLB weakened the stabilising power of monetary policy on prices and this extra inflation variance in turn reduced price rigidity, further feeding inflation variance. This process is illustrated in Figure 1, a simulation (no 15) of the model in which the ZLB is repeatedly hit (the shaded areas), with both inflation and interest rates gyrating sharply, and both output and the share of the relatively rigid-price sector (the NK weight) responding.

In this prediction of soaring inflation variance after the onset of the zero bound, this model has proved eerily correct - as the chart in Figure 2 of US inflation testifies. After going negative in 2010 and then settling at low rates initially in the 2010s, in 2023 inflation leapt upwards in a way reminiscent of the 1970s, in turn forcefully ending the ZLB with the sharp interest rate response currently playing out.

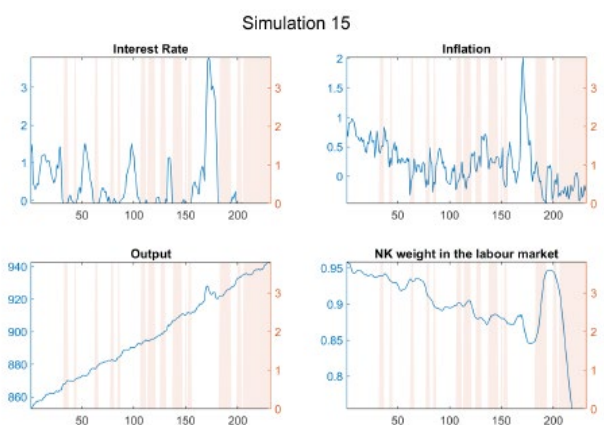


Figure 1: Bootstrap simulation (all shocks) of US model. Source: Le, Meenagh and Minford (2021).

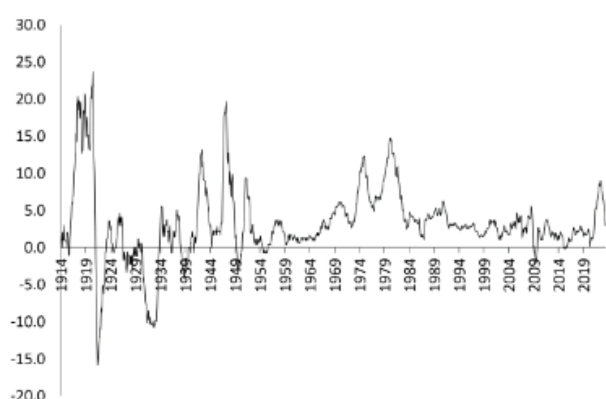


Figure 2: US inflation for all urban consumers - Source: St. Louis Fed

To cut into this inflation variance feedback loop, Le et al. (2021) found that there were benefits from both new monetary rules and from stronger fiscal feedback rules. Specifically, they found that substituting a Price Level (or Nominal GDP - NOMGDPT) target for an inflation target in the interest-rate-setting rule could greatly increase stability - because a levels target requires much more persistent interest rate changes which are anticipated by agents, thus giving much more ‘forward guidance’. They further found that fiscal policy has an important role to play in keeping the economy away from the ZLB; with a strongly stabilising fiscal policy that acts directly to prevent the ZLB occurring they found a big increase in both output and inflation stability. Their table of results is shown below as Table 1, contrasting variances and welfare under current rules (a Taylor Rule and no fiscal response) with those under a NOMGDPT target rule for money and a fiscal ‘backstop’ rule stopping the ZLB from taking hold. These latter rules keep the frequency of ‘crisis’ (a long, bad recession) down at one per century while reducing both output and inflation variance sharply, and maintaining a high degree of price rigidity.

Crisis and Welfare Comparison					
	Crisis/1000 years	var(m)	var(y) ^a	Welfare ^b	
4-6 years long					
Taylor Rule	8.10	0.1137	19.2436	0.1793	Av. NK weight
NOMGDPT (wZLB)	9.72	0.0176	16.0902	0.0490	price

^a Deviation from target trend

^b Weighted welfare = 0.9976*var(-) + 0.0024*var(y)

Table 1: Welfare results for US under different policy rules. Source: Le, Meenagh and Minford (2021)

4.2 Work on other economies

Work on the UK found that a similar model fitted UK data behaviour before and after the financial crisis, from 1986 to 2016 (Le et al., 2023). Like the US model, it implies that fiscal policy can contribute to stability by limiting zero bound episodes. Below in Table 2 we show how different fiscal policies contribute to the overall stability of the economy across a large sample of bootstrapped shocks (taken from the full sample period). It can be seen that the fiscal policy backstop, added to NOMGDPT monetary policies, helps to raise stability; we also see that a

straightforward fiscal feedback rule produces a similar result.

Variance of Simulations			
Variance	Baseline N-GDP targeting Non-crisis + crisis model	ZLB-suppressing fiscal shock Non-crisis model + suppressing fiscal shock	Strong fiscal feedback Non-crisis+crisis model + strong fiscal feedback in both models
Var(output)	0.0108	0.0057	0.0044
Var(inflation)	0.0371	0.0282	0.0261
Welfare loss	0.0425	0.0350	0.0284
Var(interest rate)	0.0186	0.0306	0.0227
Utility	-52.38	-51.03	-51.97

Table 2: Welfare results for UK under different policy rules. Source: Le et al (2023).

For the eurozone, in a model that divided the zone into two separate regions, North and South, Minford et al. (2022) found that it matched eurozone data well over the first two decades of the euro’s existence; they modelled the zero bound indirectly by assuming the central bank rule targets the commercial credit rate with its repertoire of instruments, including QE. As in the other models just reviewed fiscal policy can increase stability substantially. We show the key results in Table 3; the results of policy interest are for the Base case, Regime 5 where each region is free to use its fiscal policy to stabilise its own economy, and Regime 7 which additionally creates in place of the euro two regional euro currencies with independent regional central banks pursuing their own interest rate rules. The first panel of Table 3 reveals the sharp falls in key variances due to introducing Regime 5 - Regime 7 increases stability more but is not on the political agenda. The second panel of Table 3 also shows the equivalent implied rise (vs the baseline) in permanent household consumption due to this rise in stability. Ignoring Regime 7, we can see that allowing independent fiscal policy greatly raises stability. The Eurozone Stability and Growth Pact (SGP) currently prevents this policy, essentially to protect the North from the threat of a Southern bailout. However, the paper shows that the average debt/GDP ratio in the South rises little due to the policy, suggesting that this threat could be contained simply by a solvency-monitoring process replacing the SGP. Similar results are found for Japan. Growth in Japan has been notoriously weak, even though monetary policy has been stimulative for several decades. Fiscal policy has been intermittently stimulative between contractionary episodes where consumption taxes were raised; the simulation results show that a fiscal rule consistently exerting countercyclical pressure would have stabilised output more around a rising trend. Table 4 shows how, in a standard (‘No sunspot’) model a strong countercyclical fiscal policy greatly stabilises the economy.

5. Detailed aspects of fiscal rules

We have seen that fiscal policy can help stabilise the economy and steer it way from the zero bound, allowing monetary policy to pursue effective stabilisation too. We have also seen that this is true for a variety of economies other than the US, including several best modelled as small open economies like the UK or large ones like the eurozone.

Average variance of the output gap, inflation and the real interest rate									
	$Var(y - y^f)$			$Var(\pi)$			$Var(R - \pi)$		
	North	South	EU	North	South	EU	North	South	EU
Base Case	1.95	2.13	1.29	0.32	0.35	0.16	1.05	0.78	0.68
Regime 1	1.47	2.21	1.12	0.33	0.36	0.17	1.06	0.76	0.67
Regime 2	4.45	2.27	2.34	0.48	0.36	0.22	1.49	0.86	0.84
Regime 3	0.61	2.19	0.77	0.30	0.35	0.13	0.94	0.70	0.54
Regime 4	1.89	0.71	0.56	0.32	0.31	0.14	0.99	0.72	0.58
Regime 5	0.63	0.69	0.41	0.31	0.31	0.14	0.92	0.60	0.52
Regime 6	2.02	2.26	1.31	0.15	0.16	0.09	0.61	0.71	0.53
Regime 7	0.65	0.67	0.42	0.15	0.15	0.09	0.48	0.57	0.43

Average change in equivalent consumption			
	North	South	EU
Base Case	—	—	—
Regime 1	7.53%	9.33%	8.63%
Regime 2	-65.5%	-3.16%	-35.6%
Regime 3	26.3%	1.13%	14.2%
Regime 4	2.24%	40.6%	19.7%
Regime 5	21.4%	37.4%	28.7%
Regime 6	3.13%	6.16%	4.23%
Regime 7	32.2%	53.3%	39.2%

Table 3: Welfare results for eurozone under different policy rules. Source: Minford et al (2022).

Effects of Volatility of Sunspot Suppression in No-Sunspot Model				
No Sunspot model — $HP = y^*$	$var(Y)$	$var(\pi)$	$var(R)$	Welfare Cost
No Sunspot base line	2.6270	0.8532	0.1262	3.6064
Fiscal policy	0.1837	0.8160	0.107	1.1071

Table 4: Welfare results for Japan under different policy rules. Source: Le et al (2023).

This still leaves some unanswered questions about fiscal policy, raised by Romer and others in the literature reacting to the financial crisis, viz:

1) Does it matter which fiscal instrument is used? In the work above public spending was the instrument, feeding directly into goods demand. Would it make a difference to use tax-transfers or distortionary income or labour taxes? Both Romer and Solow argue that instruments differ greatly in their effects.

2) Would a standard fiscal feedback rule be more or less effective on stability than the fiscal backstop rule we investigated that eliminates the zero bound? The literature only looks at such standard rules, citing its effect on the zero bound as one advantage, whereas our backstop rule exploits that advantage exclusively.

3) Does ‘fiscal space’ matter, i.e. the extent to which the debt/GDP ratio exceeds some safe sustainable ratio like 50%? Romer argues (‘Lesson 3’) that it is an important factor in fiscal policy’s stabilising power, diminishing it as space shrinks.

The simulations cited above suggest answers to all these questions. These results for fiscal policy all assume that public spending is used as the fiscal instrument; lumpsum transfers would be ineffective due to Ricardian equivalence (present in all the models), while varying distortionary taxes over time creates unnecessary welfare losses from increased distortions³. Furthermore, an aggressive fiscal rule seems to do as well as an explicit fiscal backstop rule preventing the ZLB - Le et al. (2023) for the UK. Finally, the efficacy of

fiscal policy does not appear to vary with the level of debt, or ‘fiscal space’; our various countries had widely differing debt/GDP ratios, all the way to about 250% in Japan; but the effects on stability are similarly beneficial across them all.

6. Conclusions

In this review of the recent empirical evidence on macro modelling, we have found that DSGE models based on New Keynesian principles extended to allow for banking, the ZLB and varying price duration can account well for recent macro behaviour across a variety of economies, whether large and approximately closed like the US or small and open like the UK. Related models can also account for macro behaviour in Japan and the eurozone. These models all find that a contribution from active fiscal policy increases macro stability and welfare, essentially by reducing the frequency of hitting the ZLB, and sharing the stabilisation role with monetary policy whose effectiveness under the ZLB is much reduced.

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³ Using income tax as the instrument in the model of Le et al. (2021) results in higher welfare loss than when using public spending. The variance of output is reduced, but the variance of inflation is greatly increased.

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