Investment Institute Macroeconomics

Zoom on the Boom

- We explore the possibility that the US strong productivity gains stem from a surge in Intellectual Property investment since the middle of the last decade, which the Euro area has completely missed.
- The data needs to be taken with prudence, but it is possible that monetary policy transmission has been slower in the US than in the Euro area.

We explore the ongoing divergence between the US and the Euro area in terms of growth performance. We focus here on two non-mutually exclusive explanations: first, that there are fundamental factors behind the acceleration in productivity in the US which are absent in the Euro area. Second, that although the monetary policy stance has been similar, the transmission to the real economy has been slower in the US.

Distinguishing "structural" from "cyclical" productivity gains is difficult in real time Yet, we are tempted to link the current persistent improvement in US productivity to a steep acceleration in Intellectual Property Investment (essentially software and R&D) since the middle of the last decade. There is a rich academic literature on the positive effect at firm level of the adoption of IT techniques such as cloud computing. While the focus of the current tech debate is on the promise of AI, it may well be that an acceleration in the diffusion of pre-AI digital technologies – perhaps aided by the pandemic shock – has been triggering a "revolution by stealth". Interestingly, the Euro area has completely missed the surge in IP investment. While the EU is currently under pressure to emulate the US IRA and Chips Act and engage in old-fashioned interventionist industrial policy, speeding up the disbursement of the Next Generation package, especially the digitalisation leg, could prove more rewarding to boost productivity.

Besides, while data is not necessarily convergent across sources for the US, the financial national accounts suggest that the transmission of monetary policy to US businesses has been very limited so far, and slower than in the last episode of sustained monetary policy tightening 20 years ago. No such phenomenon can be observed in the Euro area countries for which up to date comparable data is available, such as France. Europe could thus be faced with a double whammy: the absence of a positive supply-side shock, and a swift transmission of the ECB's stance.

Two narratives

There are two main explanations behind the persistent resilience of the US economy. The first focuses on policy. US activity would remain supported, on the fiscal side, by the generous and swiftly disbursed Inflation Reduction Act (IRA) package while slower than usual transmission of monetary policy would keep corporates in a comfortable position to keep on hiring and paying bigger wages despite the rise in interest rates. The second one focuses on the ongoing strong and persistent productivity gains to suggest that there may be a positive supply-side shock at work right now, triggered by faster innovation. In this paradigm, wage growth would merely reflect strong productivity gains. Beyond the implications for the level of interest rates which we discussed last week, the lessons which could be drawn for Europe in its own so-far elusive quest for proper growth would be very different depending on which one of these two non-mutually exclusive narratives dominates.

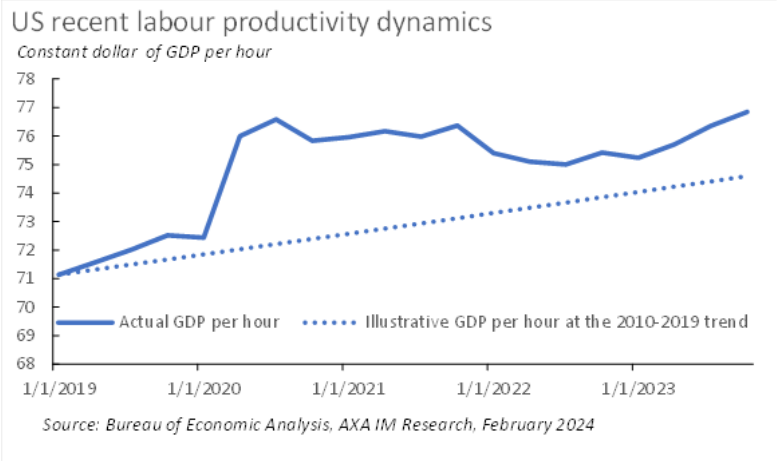
Zooming on the supply-side story

We have been living through a phase of general pessimism on the capacity of technological progress to lift collective welfare. The "techno doom" espoused by the often-persuasive Robert J Gordon in his book "*The Rise and Fall of American Growth",* published in 2016, had a strong effect on collective economic thinking. It is a sprawling work, and a lot of it is backward-looking since he endeavoured to show how unique the 1920-1970 half-century has been in terms of economic transformation. Still, **one of his key predictions was that computing technology has already yielded most of its transformative impact**, drawing on the fact that Total Factor Productivity has been slowing down since 2004. Accelerating digitalisation, therefore, would not necessarily lift aggregate productivity and hence potential growth. More recently, such pessimistic conclusions were further fuelled by a well-publicised paper published in Nature in January of last year which suggested that academic scientific research had hit diminishing returns. The absolute number of disruptive scientific papers has not dropped since the 1950s, but in the meantime total research production has boomed, so that the *share* of properly innovative papers has fallen. In other word, one dollar randomly spent on research in 2024 would not yield the same return on technological change as one dollar spent in 1950. When mixed with the push from the proponents of "de-growth" as a condition to avoid climate change, this makes for a quite depressing intellectual cocktail.

Yet, productivity has rebounded in the US lately. GDP per hour was 6% higher by the end of 2023 than just before Covid and it has re-accelerated over the last few quarters (+2.6%yoy in Q4 for private businesses). It is tricky to know in real time if such an acceleration is structural or merely cyclical. In general, labour productivity rises very fast only at the beginning of the upward phase of an economic cycle. Businesses choose to raise the intensity rather than the quantity of labour at the beginning of a rebound, either because of friction – difficulty to hire more people quickly – or because they hesitate at first to recognize a rebound in demand as the signal of a proper, lasting upswing. As the cycle matures, productivity slows down as the quantity of labour has adjusted to demand – or even overshot. A problem is that the pandemic has mightily disturbed this pattern. Yet, since the uptick has been persisting for so long, **we need to contemplate the possibility that "something structural is happening".**

In Exhibit 1, we look at GDP per hour in the US since Covid started. Unsurprisingly, productivity first "exploded", with a 10% rise in early 2020. Compositional effects were at play there, since many low-productivity industries (e.g., restaurants and hotels) no longer contributed to aggregate output at the peak of the pandemic. The ensuing decline in GDP per hour in 2022 was then perfectly logical as those labour-intensive sectors reopened. Yet, it is worth comparing the actual level of GDP per hour with where it would have been if it had continued to follow the mediocre pace observed between the end of the Great Financial Crisis in 2010 and 2019. **Even as the US reopened, there was no full re-convergence with this trend level, and a wider gap has emerged since then.** This in our view is a strong reason to explore further rather than dismissing it as the result of "Covid disturbance" or mere data randomness.

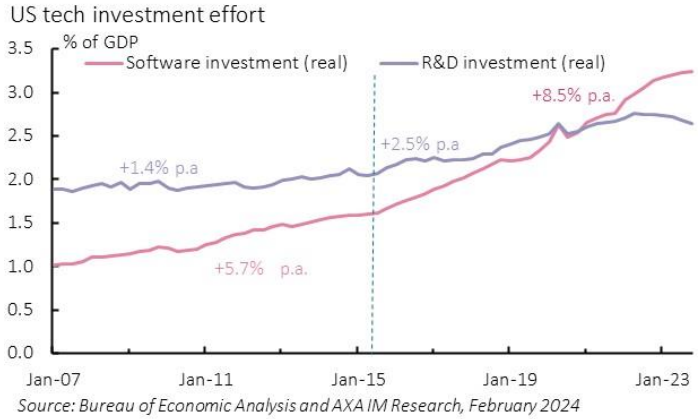
Exhibit 1 – An acceleration in labour productivity



Since this is a purely observational finding, **we need to find a plausible explanation for such a structural shift**. Artificial Intelligence (AI) is all the rage, but even if the diffusion of AI may be faster than previous "all-purpose technologies" since it can rely on an already existing network – the internet – instead of having to get it developed from scratch (as it happened for the generalisation of electricity more than a century ago), it is unlikely that we could already attribute the current productivity gains to this new wave. **What may however be happening – but we need to be very prudent here – is that Gordon's prediction is proving inaccurate, and that the acceleration of "pre-AI" digitalisation is now yielding higher returns, as a sort of "New Economy" redux.**

We discussed last week the US "New Economy" of the late 1990s in our assessment of potential policy mistakes by the Federal Reserve (Fed). While we do not think Alan Greenspan necessarily made the right decisions at the time, the reality of the productivity acceleration at the time is undeniable (although we are old enough to remember that the same Robert J Gordon was already very sceptical about it in those days, we will come back to this later). On average, between 1997 and 2004, GDP per hour rose by a whopping 2.8% per annum. This was linked at the time to digital technologies finally "breaking through" the economy at large. This did not last however – seemingly justifying Gordon's pessimism: GDP per hour grew by a pitiful 0.9% per annum between 2010 and 2019. Still, interestingly around the time of the publication of Gordon's "*The Rise and Fall of American Growth*", **the US started to enjoy an acceleration in "Intellectual Property products" investment (IP), i.e., essentially software and R&D spending. We find a "trend break" around 2016. It may well be that the current re-acceleration in productivity is the result of a faster diffusion of IT solutions and R&D efforts brought about by years of investment upgrade.**

Exhibit 2 – An acceleration in intellectual property investment



In Exhibit 2, we look at the share of IP in GDP, all measured in constant dollars. The surge is particularly steep for software. From 2007 to 2015, its overall share of GDP rose by 50% - which is already a more than decent performance – but it then doubled between 2016 and 2023, growing by an average of 8.5% per annum faster than GDP. The acceleration is less obvious in the case of R&D, but still visible (growing from an average of 1.4% p.a. faster than GDP between 2007 and 2015, to 2.5% faster afterwards).

There are kilometres of empirical research which suggest there is strong link between increased usage of Information Technologies and an elevation in productivity. We would for instance zoom on a fairly recent and very rigorous research paper by the OECD, suggesting that a 10% increase in adoption of cloud computing would lift Multi-Factor Productivity by 3.5% after 5 years for the average firm.

It could well be that, **while commentators were lamenting the descent into "secular stagnation", a revolution by stealth was at work in the economy, based not on much-hyped AI – although this may come - but rather on the lagged effect of older Information Technology (IT) solutions**. It's also possible that the pandemic provided the missing spark in generating measurable labour productivity gains from the mass of additional IP capital. Firms, faced with the challenges of "working from home" and then the difficulty to hire fast enough may have sped up their adoption of digital solutions, thus boosting productivity.

We need to be prudent with the "supply-side" story though. To fully back it we would need – among other things – to take a hard look at how US productivity gains have evolved across the various sectors of the economy, but industry level data at a high granularity level become available only with a long lag in the US. During the "New Economy 1.0" era of the late 1990s/early 2000s, one of the points Robert Gordon made in support of this scepticism was that, excluding cyclical effects, only slightly more than 10% of the productivity gains occurred outside the durable goods manufacturing sector. Actually, a lot of the gains materialised in the information technology-producing sector itself, with limited external diffusion, which warranted some of his misgivings about the transformational capacity of IT. **What is already available in terms of sectorial data for the recent period is however reassuring**. In the durable goods manufacturing sector, output per hour in Q4 2023 was still 0.4% below the pre-Covid level. We would like to be able to investigate further to check that the current productivity surge is truly broader based than 25 years ago, but the stagnation in durable goods is a good signal that this time, most of the gains come from services, by far the dominant sector of the US economy.

Note also that the existence of a fundamentals – rather than cyclically-driven productivity surge - is no guarantee per se of its durability. It might be that the pandemic and the subsequent hiring difficulties triggered a catch-up in the adoption of digital technologies which effect on productivity could be a one-off level gain before fading as labour market tension eases. Yet, in the meantime this would still point at a healthy US economy, which could deal more easily with wage pressure.

Lessons for Europe

Such focus on Intellectual Property investment may also provide a clue to understanding the current Transatlantic divergence, since the Euro area has been dealing with a stagnation in productivity when it was accelerating in the US. Indeed, as is plain to see in Exhibit 3**, until c.2012 there was no discernible difference between the US and the weighted average of the 4 biggest economies in the Euro area in terms of Intellectual property investment. Afterwards, Europe completely missed the acceleration of the second half of the 2010s which the US enjoyed.**

Determining – on the capital expenditure side – what can be the source of the growing productivity gap is crucial in terms of policy prescriptions. The Inflation Reduction Act and the Chips Act are commonly seen as the main initiatives the EU should strive to emulate domestically. This is triggering a revived enthusiasm for industrial policy, sometimes in a very old-fashioned manner – e.g., loud calls for a friendlier approach to state aid to foster the emergence or consolidation of "national champions in strategic sectors - together with a longing for the US "all carrots" approach to climate change mitigation in contrast with the European preference for a fair mix of "carrots and sticks". Yet, if the current acceleration in American productivity

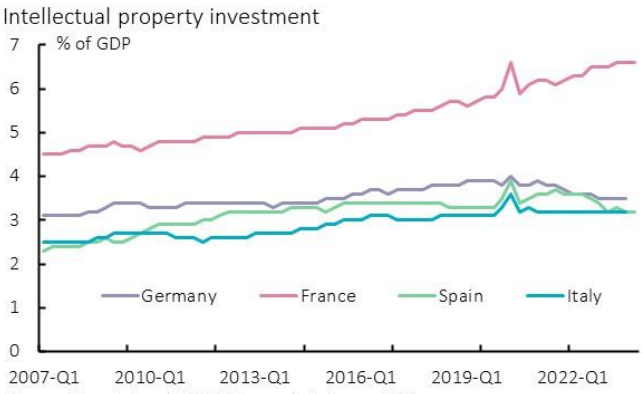
is the result of a surge in IP investment which started seven years ago, then **focusing on the already existent EU's Next Generation programme – and especially its digitalisation leg – is of the essence.**

It would however be wrong to expect a mechanical relationship between a stronger IP investment effort and an acceleration in productivity, as illustrated by the example of France. Indeed, among the biggest economies of the Euro area, France is the only country where the share of IP investment in GDP is similar to the level seen in the US, and where some acceleration has been ongoing over the last few years (see Exhibit 4). This jars with the fact that France is also the worst performer of the "European Big4 club" in terms of productivity recently (it is still 5% below its pre-Covid level there). Some of this is a – probably welcome – policy effect. Indeed, France chose to significantly raise the participation rate of the under-25s by developing an ambitious apprenticeship programme. Quite simply, injecting into the workforce people whose initial individual productivity is by construction poor should trigger – at least temporarily – a decline in aggregate productivity. Note as well that this reform came after decades of efforts aimed at reducing the relative cost of low-skilled workers – by reducing payroll taxes on salaries close to the minimum wage – which has also pushed into the workforce people with initially lower individual productivity.

Exhibit 3 – Europe is missing the IP acceleration

Source: Bureau of Economic Analysis, Eurostat and AXA IM Research, February 2024

Exhibit 4 – The French exception



Source: Eurostat and AXA IM Research, February 2024

Yet, beyond these policy-related factors**, labour market institutions and labour relations may also potentially dampen the impact of IP investment on productivity**. In a paper from 2012 on French data covering some 1,500 businesses, Gilbert Cette and his co-authors from Banque de France suggested – with convincing empirical evidence – that *"workforce or union opposition in interaction with regulatory constraints has a negative significant impact on total factor productivity (TFP)"*. This would suggest that a proper injection of innovative capital may be a necessary condition for labour productivity gains, but that it is not sufficient. The whole institutional environment also matters. It may be that the US extremely fluid labour market may help foster the quick diffusion of technological change to productivity levels.

Zooming on the demand-side story

Coming back to the US, we think that the "supply-side story" is plausible, but it may be only one aspect of the current resilience. We wrote in our introduction that the two narratives were not necessarily mutually exclusive. We want to be prudent on this topic as well, but we **think there may be a case for limited monetary policy transmission in the US, in contrast with the Euro area.**

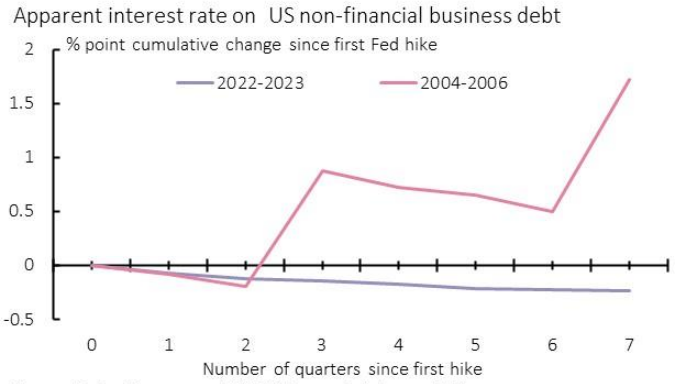
The Federal Reserve quite understandably has started to look hard at the policy transmission issue. In a research paper from December 2023, economists from the Fed checked how quickly the rate hikes were transmitted to the interest rates on bank loans and corporate debt securities. Their conclusion – based on data for publicly-traded non-financial corporations – is that the rise in the median firm's average interest rate on debt has been moderate (c. 100bps by Q1 2023), as should be expected given the inertia (only a fraction of existing debt was rolled over since the start of the Fed hikes) but was not particularly slow relative to previous episodes of monetary tightening**. Their conclusion was quite**

reassuring – from the central bank's point of view. Gradually, as more debt would come to be refinanced, the expected compression effect on corporate expenditure would be observed. It is only a matter of patience.

This conclusion jars however with recent findings by Deutsche Bank (DB)'s strategist George Saravelos in his "FX blog" who, using the US national accounts found a continuation of the *decline* in net interest expense as a percentage of the firms' income in the recent period despite the rise in interest rates. The DB economists have been among the first pushing the "soft landing" scenario for the US and limited monetary policy transmission has been one of their arguments.

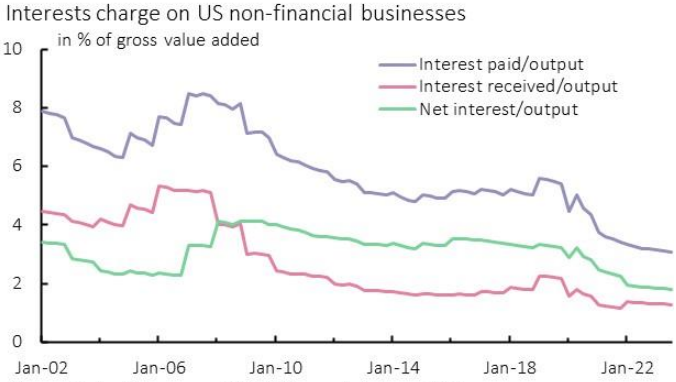
We started our own foray into the data by computing an "apparent interest rate" on existing debt for the non-financial corporate sector, by dividing "interest paid" in the quarterly national accounts by their total debt liabilities (loans and securities). This average interest rate has *fallen* since the beginning of the monetary tightening (see Exhibit 5), thus confirming the gist of DB's argument. When we compare this with the previous episodes of sustained and steep hikes by the Fed (2004-2006), while it took a few quarters to emerge, nearly two years after the first hike the firms' apparent interest rates had risen by 170bps. This would contradict the Fed's Research paper according to which there is nothing unusual in the current configuration. Unsurprisingly, this inertia in the average cost of debt translates into a still historically low ratio of net interest payments to output (see Exhibit 6). While higher interest rates applying on new debt issuance could in any case make businesses reluctant to engage in additional capex – investment has been one of the few weak spots in US GDP lately – it may well be that the "pain threshold" beyond which interest payments start squeezing profits enough to trigger a compression in firms' current expenditure, has not been reached.

Exhibit 5 – No rise in the apparent rate on debt



Source: Federal Reserve and AXA IM Research, February 2024

Exhibit 6 – Still historically low debt servicing burden



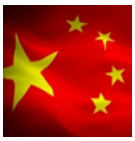
Source: Federal Reserve and AXA IM Research, February 2024

We must say that we are surprised by the message coming from the national accounts. Even if firms have been able to extend the maturity of their debt during the low interest rate period, nearly two years into the tightening we would expect to see net interest payments rise – in line with the findings from the Fed research. There are differences in scope and methodology between the two approaches. The Fed note focused on publicly traded companies, using rating agencies and Bloomberg as sources, where we look at the entirety of the non-financial corporate sector. Yet intuitively we would have expected to find a higher rise in interest payments, since we have a higher proportion of small businesses in our sample, with low negotiating capacity vis-à-vis their banks, than the Fed authors. Another difference lies in the fact we computed an *average* interest rate, while the Fed note looks at the *median* one. Odd distribution effects may operate. Finally, it could be that the very methodology of the national accounts could trigger an "inertia bias" on the most recent period. Indeed, tax statements – which ultimately are the "golden source" for the income side of national accounts are only available with a long lag. It is possible that the estimates used for the 2023 data overstate the inertia of interest payments.

We note however that in the national accounts in the European countries for which the data is available quickly on a quarterly, seasonally adjusted basis, there is no such decline in net interest payments. For instance, in the French non-financial corporate sector, net interest payments rose from -0.3% of output in early 2022 (they were receiving more in

interests than they were paying) to 2% of output in Q3 2023. A rise of 2% was also what had been observed during the previous sustained tightening by the European Central Bank (ECB) before the Great Financial Crisis. Again, **there may be methodological issues to sort out, but at face value, there is a more plausible case to make for unusually weak monetary policy transmission in the US than in the Euro area.**

We thus cannot exclude that the Euro area must deal with a "double whammy": the absence of a positive supply-side shock because of a failure to lift IP investment sufficiently, together with – from a more cyclical point of view – a faster policy transmission of the rate hikes to the real economy.

Country/Region	What we focused on last week	What we will focus on in next weeks
	• ISM non-mfg (Jan) rises to 53.4, highest since Sept. • Snr Loan Offices Survey, lending conditions worsen at slower pace suggesting past worst • US CPI revisions deliver no material change at the headline yoy level • DoJ report: President Biden has "poor memory" • S&P trades through 5000	• CPI inflation (Jan) annual rate expected to fall below 3% on large base effect • Retail sales (Jan) weaker report expected, scale to gauge whether start of more persistent easing • Empire & Philly Fed surveys (Feb) – improving mfg ? • PPI inflation (Jan) watch for impact of Red Sea attacks • Uni Mich cons sent (Feb, p) outlook for consumer
	• EMU retail sales (Dec) came at -1.1%mom after+0.3% in Nov. It is 0.8% below Dec 2022 level showing retail are struggling, in particular in Ge • Industrial production (Ge, Dec) fell by -1.6%mom (8th month in neg territory), -3.1% on a yoy basis • EMU Producer prices (Dec) continue to fall (-0.8%mom; -10.6%yoy)	• GDP 2nd estimate with detailed by major components and employment data (EMU, Q4) • Industrial production (EMU, Dec) • ZEW surveys (Ge, Feb) to identify a rebound (or not) in German economy • French and Spanish final HICP (Jan) with all items
	• Labour market updates showed unemp rate falling in month to November • BRC sales (Jan) implied some bounce back in sales • Services PMI (Jan, f) rev'd to 54.3, highest since May • RICS survey (Jan) improving house price outlook	• GDP (Q4, p) risk of fall, despite consensus for flat • Labour market (Dec) unemp expected to stay at 4.0%, earnings to slow further • CPI inflation (Jan) expected to rise modestly • Retail sales (Jan) solid rebound after Dec's large fall
	• Small but gradual hike is on its way after Shinichi Uchida, a slightly dovish nominee, stated "*even if the Bank were to terminate the NIRP, it is hard to imagine a path in which it would then keep raising the interest rate rapidly*" • Household spending (Dec) declined by 0.9%mom	• GDP first estimate (Q4) is expected to rebound by +0.3%qoq (AXA IM and consensus) after surprising weak Q3 (-0.7%). Watch out for 2nd estimate as revisions are usually important
	• CPI (Jan): -0.8%yoy (Dec: 0.5%) lowest since 2009. Core CPI (Jan) 0.4% (Dec: 0.6%) • PPI (Jan): -2.5%yoy (Dec: -2.7%) • FX reserves (Jan): 3.22tn (Dec: 3.24tn) • New yuan loan (Jan): 4.92tn, a record high (Dec: 1.17tn) • Total social financing (Jan): 6.5tn RMB (Dec: 1.94tn)	• (Data release pause due to Chinese New Year)
	• CB: as expected no change in Mexico (11.25%), India (6.5%), Poland (5.75%) and Thailand (2.5%), 25bp cut in Peru (6.25%), 50bp cut in Czech (6.25%) • Jan CPI (yoy): Colombia (8.4%), Chile (3.2%), Mexico (4.9%), Hungary (3.8%), Turkey (64.9%), Korea (2.8%), Thailand (-1.1%), Philippines (2.8%) • Q4 GDP: Indonesia 5%yoy	• CB: on hold expected in the Philippines (6.5%), Romania (7%) • CPI (Jan): India, Romania, Czech, Poland • Q4 GDP: Singapore (final), Malaysia (final), Romania, Hungary, Poland, Colombia • Indonesia 2024 presidential election starts

Upcoming events		
	US:	Tue: NFIB survey (Jan), CPI inflation (Jan); Thu: Empire State survey (Feb), Philly Fed index (Feb), Retail sales (Jan), jobless claims, Industrial production (Jan), Business inventories (Dec), NAHB housing index (Feb); Fri: PPI inflation (Jan), Building permits (Jan), Housing starts (Jan), Michigan consumer sentiment (Feb, p)
	Euro Area:	Tue: Ge ZEW survey: current situation & economic expectations (Feb), Fr ILO Unemp (Q4); Wed: Ez GDP (Q4, p), Ez Industrial production (Dec); Thu: Sp HICP (Jan, f); Fri: Fr HICP (Jan, f)
	UK:	Tue: ILO Unemp (Dec), Average earnings (Dec); Wed: CPI inflation (Jan), PPI inflation(Jan); Thu: By-elections in Wellingborough & Kingswood; Monthly GDP (Dec), services, industrial and construction output (Dec), GDP (Q4, p), Business investment (Q4, p), Private consumption (Q4, p), Trade balance (Dec), Trade in goods (Dec); Fri: Retail sales (Jan)
	Japan:	Wed: GDP (Q4, p)
	China:	Public holiday until Fri 16th Feb: Lunar new year

Our Research is available online: www.axa-im.com/investment-institute

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