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A selection of our research

Thought leadership and strategic analysis, with a focus on macroeconomics, technology, policy, and political issues, providing early insight into key developments, turning points, risk, and implications for markets and economies.

2019

Please note that in the interest of document length endnotes have, in certain instances, been omitted.

Economic Risks

- The global cyclical upswing continues to peter out
- The US turns its protectionist guns towards Europe
- Policy rates generally gravitate to zero or under
- QE is reactivated in many advanced economies
- Fiscal expansion too is broadly deployed
- A chaotic hard Brexit in the UK
- Governance issues come to the fore in several EMs

OECD: a soft second quarter and uninspiring outlook

- Manufacturing business sentiment remains generally subdued in the face of rising trade and technology tensions.
- GDP growth appears to have slumped in Q2, and leading indicators suggest a modest pick-up at best.
- Risks, meanwhile, remain skewed to the downside, especially should trade frictions deepen further.
- That said, financial conditions remain lax, and labour markets have tightened further, supporting wage growth.
- Oil prices have remained range-bound, despite increased tensions in the Gulf, and are well down on a year-ago levels.
- CPI inflation is subdued, and often sub-target, while inflation expectations seem prone to drifting lower.
- Some 25% of global bonds have negative yields, as the Fed and other central banks have adopted looser policy biases.
- Stock prices remain around their highs, cyclically-adjusted valuations are elevated, and other risk assets richly priced.
- Austerity fatigue and softer real activity have inspired a half-point-of-GDP easing of the overall OECD fiscal stance.

US: protectionism complicates the Fed's task

- Q2 GDP growth slowed to 2.1% saar, with soft exports and investment offset by robust private consumption.
- The US is enjoying its longest post-WWII expansion, but seemingly the high point of the business cycle has passed.
- The share of profits in national income, in decline since late 2014, has been revised substantially lower.
- The stimulus from President Trump's tax cuts is fading, and the impetus of fiscal policy is set to reverse course in 2020.
- The Trump Administration has threatened to impose a fresh 10% tariff on $300bn of Chinese goods from September 1st.
- The Fed has cut rates by 25bps, and signalled an early end to balance sheet reduction to help to sustain the upswing.
- The Fed's targeted core PCE inflation measure is running at 1.6% y-o-y, and 'breakevens' are well below pre-crisis levels.
- Fiscal largesse has swollen the budget deficit to some 6.5% of GDP, while the external deficit is around 2.5% of GDP.
- Pockets of excessive corporate leverage and lowered credit standards could be accelerants in a persistent slowdown.

Bottom line: a decelerating and more vulnerable economy, marked by low inflation; twin deficits; and protectionism.

Watch for: more rate cuts; more protection; the Fed's new anti-recession strategy; a rancorous election campaign.

Euro area: moribund manufacturing

- The latest business surveys and orders data suggest that euro-area growth is effectively grinding to a halt.
- So far, the weakness in activity is concentrated largely in manufacturing, with services and construction resilient.
- The q-o-q GDP growth rate halved to 0.2% in Q2, with further deceleration in prospect for Q3.
- A hard Brexit and further US protectionism targeted on Europe could push the economy into recession.
- Headline and core CPI inflation continue appreciably to undershoot the ECB's target, depressing price expectations.
- Mario Draghi's overtly dovish policy guidance is set to evolve into a policy rate cut and renewed QE in September.
- The political environment points to more fiscal slippage, but remains unconducive to significant structural reform.

Bottom line: a 'Japanified', trade-dependent, institutionally-compromised economy, plagued by 'lowflation'.

Watch for: recession; a series of policy rate cuts; co-ordinated fiscal expansion; trade war with the US; political unrest.

UK: careering towards the abyss

- The economy is teetering on the edge of recession, as the new cabinet threatens to embrace a 'hard Brexit'.
- European and other trade uncertainties continue to weigh heavily on business sentiment, and depress investment.
- Foreign direct investment into the UK has slumped since the 2016 referendum, with the rest of the EU the beneficiary.
- That said, joblessness is at a 45-year low of 3.8%, as firms meet demand by 'sweating' the existing capital stock.
- Productivity growth remains extremely low by historical standards, capping wage growth far below pre-crisis levels.
- 'No-deal' disruption would be severe. BOE ability to respond by easing would be conditional on the market reaction.
- The new PM has also promised an easing of fiscal policy: but again, the bond and currency vigilantes could thwart this.

Bottom line: a hard Brexit is now a highly real possibility, notwithstanding its potentially enormously damaging impact.

Watch for: a sterling crisis; constitutional mayhem; a general election; a second EU referendum; recession; Scottish tumult.

Emerging markets: signs of stability in China

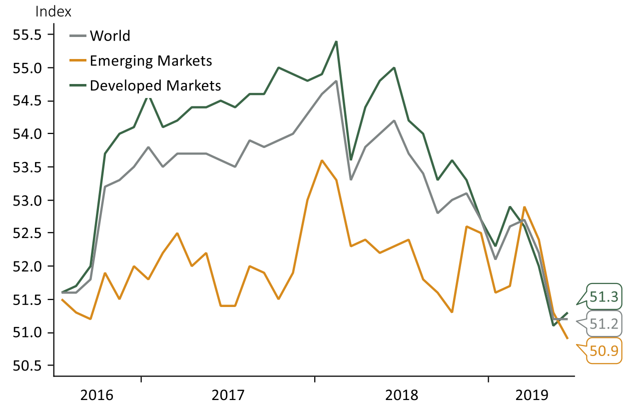
- China is beset by US tariffs and a structural slowdown, but policy stimulus is stabilising the cyclical position.
- Q2 GDP growth of 6.2% y-o-y was the lowest for more than two decades, but there are signs of a pick-up from June.
- Japan's growth and inflation momentum has faded as business confidence and trade volumes have slumped.
- Several Asian central banks have responded to softer growth and inflation by easing policy. Expect further moves.
- Turkey's central bank has been pressured by the President into overly aggressive rate cuts that threaten to backfire.
- Governance issues remain a threat not only in Turkey, but also in Brazil, Argentina, Mexico, and South Africa.

Bottom line: lower OECD policy rates are supportive: but trade-dependent, deficit-prone, low-credibility nations are at risk.

Watch for: more protection; yet lower policy rates; fiscal laxity; China picking up further; another Turkish lira crash.■

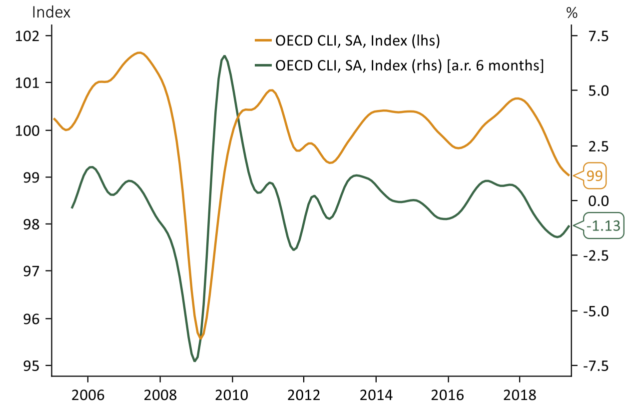
Charts of the month

Figure 1: Composite PMIs



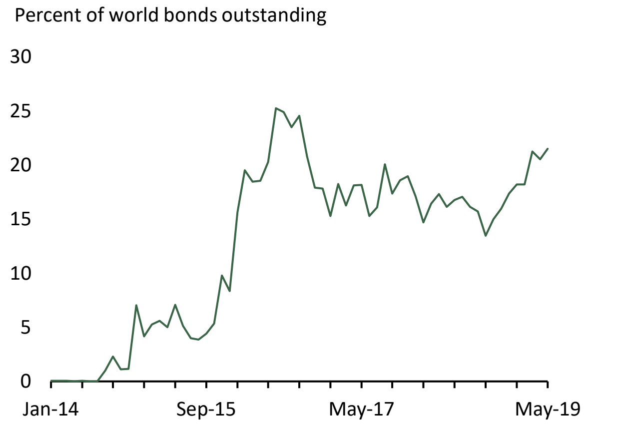
Source: Macrobond and Llewellyn Consulting

Figure 2: OECD leading indicator



Source: Macrobond and Llewellyn Consulting

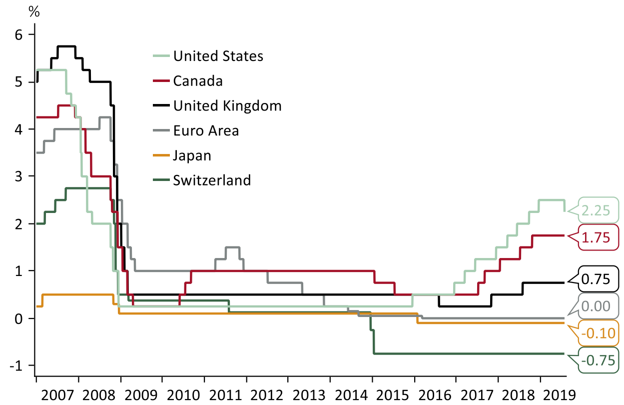
Figure 3: Proportion of bonds trading with negative interest rates



Source: Bloomberg, World Bank, and Llewellyn Consulting.

Note: Last observation is May 2019, which includes data through 23 May 2019.

Figure 4: Advanced economy policy rates



Source: Macrobond and Llewellyn Consulting

Recommended reading

Bernanke. B., Paulson. H., and Geithner. T., 2019. *Firefighting: the financial crisis and its lessons*. July. Penguin.

Blanchard. O., and Ubide. A., 2019. *Why critics of a more relaxed attitude on public debt are wrong.* 15 July. PIIE. Link

Crafts. N., and Mills. T., 2019. *Is the UK productivity slowdown unprecedented?* July. University of Warwick.

Jacks. D., and Novy. D., 2019. *Trade wars may 'bloc up' world trade.* 23 July. VOX CEPR. Link

Jorda. O. et al., 2019. *Why is inflation low globally?* 15 July. FRBSF Economic Letter 2019-19. Link

Kuroda. H., 2019. *Overcoming deflation: Japan's experiences and challenges ahead.* 22 July. BOJ. Link

NIESR, 2019. *Economic Review*. No. 249. August.

OECD, 2019. *Going for growth 2019*. July. Link

Shirai. S., 2019. *Modern money theory and its implementation and challenges: the case of Japan.* 18 July. VOX CEPR. Link

Stiglitz. J., 2019. *Thumbs down to Facebook's cryptocurrency.* 2 July. Project syndicate. Link

Wolf. M., 2019a. *Trump's boom will prove to be hot air.* 10 July. Financial Times.

Wolf. M., 2019b. *Renewing the rules of good behaviour*. 11 July. Financial Times.

Comment

MMT: new wine in old bottles or 'voodoo economics'?

- *Modern Monetary Theory (MMT) is attracting considerable attention, especially on the left.*
- *It purports to provide macro policymakers with additional degrees of freedom.*
- *At MMT's core are some common-sense truths, but in reality, it offers little that is new.*
- *Converts to MMT tend to gloss over the challenging practicalities of its application.*
- *It is probably best viewed as a policy agenda for periods of acute demand deficiency.*

The pursuit of modernism

MMT is gaining support, especially on the political left

Modern Monetary Theory (MMT) is a contemporary, increasingly fashionable, heterodox doctrine of economic thought. It is captivating many on the political left, who consider that traditional macroeconomic frameworks have been found wanting, especially in the aftermath of the 2008 Global Financial Crisis.

Much like early-1980s Laffer Curve 'supply-siders', MMT's disciples are often near-messianic in tone, while somewhat vague in exposition.[1] They are prone to presenting their ideas as a pathbreaking, revolutionary, approach to economic analysis and management, that can free policymakers from the shackles of fiscal and monetary orthodoxy.[2]

In an era characterised by income and wealth inequality, burgeoning populism, and political polarisation, MMT could exert a profound influence on the macroeconomic policy debate.

It purports to free policymakers from orthodox constraints …

Accordingly, in this piece we seek to present, in a technocratic, apolitical way, a guide to the analytic content of MMT, and the conditions under which it could, or could not, be usefully applied in policymaking.

Nuts and bolts

The essential elements of MMT can be summarised as follows:

- A government that creates its own money generally need not, and will not, default on debt denominated in its own currency.
- A government deficit is necessarily mirrored by an equivalent private sector surplus.
- Monetary policy is relatively ineffective in a slump: fiscal policy is more powerful.
- A government can buy goods and services without the need to collect taxes or issue debt.
- Through money creation, interest costs can be constrained. Indeed, a substantial and persistent budget deficit can be financed at low, if not near-zero, cost.
- Government spending and money creation need be limited only to the extent that employment becomes 'over-full' and encourages inflation.
- Inflation, should it arise, can readily be controlled by higher taxation and bond issuance to remove excess liquidity.

Thus, the core inference and contention of MMT is that the budget deficit and public sector indebtedness should be allowed to adjust to the level necessary to secure full employment.

… allowing them to pursue more radical policies

In turn it is suggested that this goal should be achieved through a government-sponsored blanket jobs guarantee, which would act as an automatic stabiliser. When private sector jobs were plentiful, government spending on the guarantee would be lower, and vice versa.

Alternatively, full employment could be achieved by large-scale spending on infrastructure, climate change, and the environment, such as via a 'Green New Deal' – all financed, if necessary, by the central bank.

Nothing new under the sun

In reality, it embodies little that is new …

The truth about MMT is more complicated and less trailblazing than its supporters suggest. Closer inspection reveals a methodology that has its roots firmly in the past, and in particular in early 20th century chartalism,[3] and initial Keynesian thinking. Indeed, it looks very much like the 'Functional Finance (FF)' gospel preached by Abba Lerner in the late 1930s and 1940s.

Lerner was a Russian-born British economist who worked alongside both Hayek at the London School of Economics and Keynes at Cambridge, before emigrating to the US, and teaching at a number of top universities. Always something of a maverick, albeit a brilliant one, Lerner's

… and smacks of A. P. Lerner's 'Functional Finance' doctrine

macroeconomic philosophy can be distilled down into the notion that, so strong is the economic, social, and moral case for achieving high employment and relative price stability, policymakers should not be unduly fussy about how they go about it. Policies should be judged on their ability to achieve these goals, rather than on notions of 'soundness' or compliance with the dogmas of traditional economics. What matters is maintaining an adequate flow of total expenditure; and if that means that the boundaries between monetary and fiscal policy become increasingly blurred, then so be it.[4]

Keynes recognised MMT's shortcomings in the 1940s

Lerner considered that, if the direct financing of budget deficits by the central bank was the only option left to boost aggregate demand and keep output in line with potential, then it should be actively and robustly employed. Interestingly Keynes, while certainly prepared to be radical, was cautious about Functional Finance. By the early 1940s Keynes was a senior Treasury official, and intimately involved in the practicalities of financing the war and planning for peace. Operating very much in the real world, he believed that policy should be measured, steady, consistent, and credible.

Hence, while Keynes acknowledged Lerner's brilliance, and expressed sympathy for the logic of his framework of thought, he saw FF more as a pedagogic device than as a basis of a rigorous policy programme. He considered that Lerner lacked practical judgement and intuition, and paid insufficient heed to what he described as the public's 'allergy to extremes'.

Perhaps most importantly, Keynes feared FF's potentially damaging effects on debt sustainability and private sector confidence, and the risk it presented for inflation.[5]

Common sense meets the real world

MMT does contain some fundamental economic truths …

Whatever its intellectual heritage, MMT, like FF, is at a basic level, little more than an expression of a macroeconomic judgement and a political reality. High unemployment and excessive inflation are ills best avoided, and which almost all politicians want to minimise. Hence, government policy should prioritise their prevention. In the process, policymakers may need, *in extremis*, to be inventive in how they combine monetary and fiscal policy to achieve these goals.

At the same time, it is also clear that over recent years government investment has been neglected in many economies; inequality is now a burning social and political issue that urgently needs to be addressed; and, even though historically-high public debt is often portrayed as a serious constraint, that the constraints on fiscal expansion are much reduced when interest rates are close to zero.

Thus there is a lot at stake, and hence, the policy inferences of MMT need to be considered seriously. At the very least, they do not compare unfavourably with calls for fiscal and monetary rectitude that are grounded either in narrow accounting logic or myopic adherence to the quantity theory of money. Judgements on the appropriateness of a policymaking framework cannot usefully be made without regard to the state of the business cycle, or the strength of private-sector animal spirits.

The devil is in the detail

As always, however, the devil is in the detail. And the cheer-leaders for MMT are inclined to skate over many of the technical and political complexities of their prescriptions. For example:

1. MMT, like FF (and in common with much US-led analysis) is based implicitly on a closed-economy model. It makes no allowance for the possibility of monetary expansion causing the exchange rate to fall rapidly.
2. MMT overlooks the potential for monetary expansion and an extended period of low interest rates to create the conditions for domestic financial instability, excess, and perhaps disaster.
3. MMT's disciples pay little attention to the structural component of unemployment, which is unlikely to prove responsive to stimulus of demand and, more likely, raise inflation. In the real world, full employment is a dynamic phenomenon, and the inflation process is continual: transition to a state of inflation at full employment is not the obvious and discrete process that MMT portrays.

… but its disciples gloss over many practical issues

4. They say little about the effects on wealth distribution of a reliance on monetary finance.
5. They ignore the fact that interest is regularly paid on the new money that is created in the form of reserves held by the commercial banks at central banks. Hence, even entirely money-financed deficits cause public sectors to incur debt.

6. They ignore the vexed issue of moral hazard. The disruption of the connection between government decisions on the size of its budget deficit and the willingness of the private sector to fund that deficit at interest rates that it deems reasonable destroys at a stroke one of the most important disciplines the market imposes on politicians. And with that discipline swept away, the door is open to irresponsible fiscal policies, and a plethora of crack-pot schemes.
7. Finally, it is inescapable that debt accumulation cannot go on indefinitely; and public sector debt ratios are already historically high. In the limit, total liabilities cannot exceed total wealth and, as the debt burden escalates, inducing people to hold it will require ever-higher returns. Much depends on whether the average interest rate payable on debt is higher or lower than the economy's sustainable growth rate. If it is lower then the level of government debt is of less consequence. But if it is persistently higher, then debt will snowball.

   Hence, at some point a government would be obliged to run a large enough primary budget surplus to stabilise debt growth. And this could involve dramatic tax increases or public expenditure cuts, which are politically unpalatable, if not impossible, to deliver.

Special case rather than general theory

MMT's policy prescriptions are best suited to depressions

As ever, Keynes was a fount of wisdom. In our judgement the overwhelming conclusion to be reached is that of Keynes: resort to the policy prescriptions of MMT is appropriate only in exceptional situations, where economies are far from full employment, deflationary pressures are in evidence, and interest rates are at the zero bound.

In short, MMT is a policy polemic for chronic demand deficiency. And even then, robust checks and balances would need to be put in place before an MMT-inspired remedy could be safely implemented. For example:

a. MMT prescriptions would best be applied within the context of an explicit inflation, price level, or nominal GDP target framework, and all the transparency that goes with it.
b. The ultimate decision to go down this route should be put in the hands of an independent central bank's policymaking committee, rather than a government.
c. Resort to direct monetary financing would need to be ring-fenced by law, and confined to a specific amount over a specific period – say 3% of GDP over 3 years. It should be finite, albeit extendable if necessary.
d. Rather than financing tax cuts or subsidies, which can exert an immediate impact on a government's popularity, it would be better to concentrate on funding a specified range and number of capital projects, such as public infrastructure, which would add to the economy's productive potential and could subsequently be at least partially sold back to the private sector.

But even then they should be heavily circumscribed

e. Macroprudential policy should be primed to address financial market over-exuberance.
f. Income and wealth inequalities should be monitored, and if necessary counterbalanced by supplementary, alternative, policy action.
g. As a show of good faith, it might also make sense to combine the stimulus with the announcement of a programme of structural reforms that would be applied over a number of years, and which would help to render the subsequent expansion more durable.

Watch fors

- Growing espousal of MMT by the leadership of left-of-centre political parties.
- Broadening support for the tenets of MMT during the next recession.
- Growing backing for blanket job guarantees to address income and wealth inequality.
- Revision of central bank mandates to facilitate monetary finance.
- Application of MMT policy prescriptions without the needed checks and balances.■

[1] Vice-President George H.W. Bush famously referred to President Ronald Reagan's attraction to Lafferism as 'Voodoo Economics'.

[2] The most vocal proselytisers of MMT include Warren Mosler, L. Randall Wray, Stephanie Kelton, Bill Mitchell, and Pavlina Tcherneva.

[3] Chartalism is a phrase ascribed to Georg Knapp, a German economist who published The State Theory of Money in 1905. He argued that money originated with states' attempts to direct economic activity rather than as a spontaneous solution to the problems with barter or as a means with which to tokenize debt, and that fiat currency has value in exchange because of sovereign power to levy taxes on economic activity payable in the currency they issue.

[4] Lerner. A.P. (1943). *Functional Finance and the Federal Debt.* Social research, 38-51. Also, Jones. R. and Llewellyn.J., 2014. *Towards 'Functional Finance'.* Llewellyn Consulting Comment. 13 November. Available on request.

[5] For a full description of the sometimes-heated debate between Keynes and Lerner in the 1940s, see Aspromourgos. T., 2014. *Keynes, Lerner, and the Question of Public Debt.* History of Political Economy 46:3. *link*

Global Letter A world of three regions

The world's big regions are edging towards autarchy. The smaller countries will be the main losers.

Anyone born after the 1940s might well consider the natural economic order to be unfettered international trade; ever-declining tariffs; progressively freer movement of capital; near-unrestricted repatriation of profits; binding resolution of trade disputes in international courts.

But such is not the normal scheme of things. The past seventy years were the exception, not the rule: and now, in a form of economic entropy, the world is reverting, for the moment at least, to its former chaotic, disorderly, often confrontational, configuration.

There is no telling how far all this will go: but it is worth conjecturing how matters might be were present escalating protectionism to culminate in a world segregated into three or four principal trading regions – the US, the EU, China, and perhaps India.

The view from the core

The path to regional autarchy would lead increasingly to aggregate demand in each region being diverted from imports to domestically-produced output – US airlines switching to Boeing, the Europeans to Airbus, the Chinese to Comac[1] – that sort of thing. This would entail some loss of consumer welfare through reduction in choice, and doubtless there also would be increases in production costs and hence prices, and thereby some reductions in living standards.

However, the absolute level of demand and output might be a different story: in each of the three or four regions this might change comparatively little, lost export sales being offset by increased demand for domestically-produced output.

How far this process of increasing autarchy could go before it started to hurt real incomes significantly is debatable, but probably it could go quite a long way. After all, US exports did not reach even 5% of US GDP until 1960, and were almost always below the 10% mark until as late as the 1990s. Yet the US economy functioned satisfactorily at this modest degree of openness.

Perhaps the greatest costs would be those of adjustment, as resources switched from servicing foreign demand to meeting domestic demand – the more so if the structural change were rapid.

Even with all that, however, it is not obvious that costs would necessarily rise hugely: many producers in these ultra-large regional markets would continue to enjoy the gains from specialisation and economies of scale – not only in production, but also in marketing and R&D.

Peripheral perspectives

Other economies however – which is to say potentially much of the rest of the world – would stand to suffer, and considerably.

In contrast to the three or four huge regional markets, those of all other countries are quite small, offering little opportunity for economies of scale in production. South Korea's domestic market for autos, for example, is only one-fifth the size of its total auto production.[2] Unless such countries could maintain access to at least one of the major markets, output would be scaled back, costs of production and prices would rise considerably, and real incomes would suffer commensurately.

These economic influences would have important political ramifications. Beholden to the large regional economies for access to their markets, the smaller countries would be vulnerable to pressure from the large regional powers. At a minimum they would become economic rule-takers. They would also likely find the large regional powers inclined to wield their considerable economic power to political ends. Suasion, as exerted for example by China over its African commodity suppliers, the US over Mexico and Iran, could become more commonplace. What a moment for the UK to elect to leave one of the world's three largest markets, to which it has unfettered access!

Paying the price

At present, there may be little concern over such possibilities. But matters may change, and possibly quickly. One sign would be downward pressure on the currencies of the more peripheral economies via-à-vis the major currencies. Another would be discounted valuations of companies operating outside the big regions, particularly when heavily dependent on exports.■

[1] The Commercial Aircraft Corporation of China, which already produces a competitor, the C919, for the Boeing 737 and the Airbus A320, and is planning a wide-body aircraft, the C929.

[2] Global auto sales by Hyundai, Kia, GM Korea, Renault Samsung and Ssangyong totalled 8,231,418 vehicles in 2018, while domestic car sales reached 1,545,604 units. See Xinhua, 2019. *S. Korean carmakers' global auto sales rise in 3 years in 2018,* 2 January. Available at http://www.xinhuanet.com/english/2019-01/02/c_137714856.htm [Accessed 27 may 2019]

Focus

Monetary pyschosis

- *Many continue to call for the early 'normalisation' of monetary policy and interest rates.*
- *Much attention is directed at the burgeoning costs of central bank unorthodoxy.*
- *But such demands often ignore the bigger picture.*
- *The benefits of unconventional monetary policy continue to outweigh its negative aspects.*
- *Seeking to normalise policy irrespective of the macro environment would likely backfire.*
- *Central banks have been unmoved: monetary unorthodoxy and low rates are here to stay.*

Siren song

The recovery remains bumpy and inflation uncomfortably low

Now some nine years old, the recovery from the Great Recession is increasingly mature. That said, it has throughout proved hesitant and uneven, and been subject to a number of significant set-backs. What is more, there has been a persistent tendency for inflation in the major economies to remain uncomfortably low, often conspicuously undershooting formal targets (Figure 1).

Despite these deficiencies and disappointments, however, almost from the outset of the upswing, there have been vociferous calls from some quarters for the unconventional monetary policy strategies applied during the depths of the crisis to be abandoned, and 'interest rate normality' rapidly to be re-established.[1] In particular, central banks have been encouraged to move policy rates upwards from around (or below) the zero-interest rate bound (Figure 2), moderate their dovish forward guidance, and unwind non-standard initiatives such as large-scale asset purchase programmes (LSAPs) and the inflated balance sheets they have encouraged (Figure 3).

Counting the costs

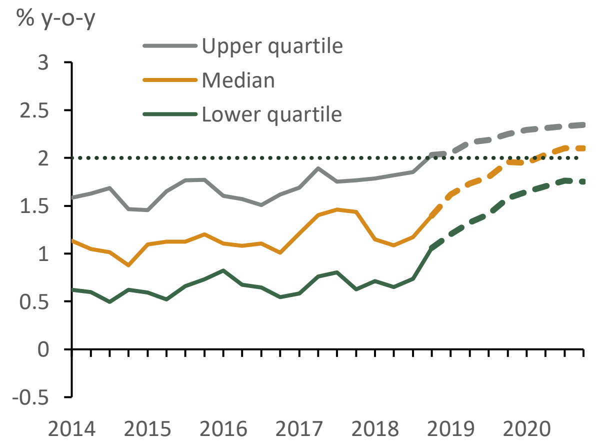
The rationale underpinning these pleas for a rapid return to the *status quo ante* varies. But the most commonly touted, if often overlapping, justifications can be summarised as follows:

1. Super-low policy rates, and in particular negative policy rates, hurt bank interest margins and profitability, especially where there is high dependency on customer deposits. This discourages lending and dilutes the stimulative effect of monetary policy, while also leaving bank balance sheets vulnerable to future shocks.

But calls for rapid policy normalisation remain persistent …

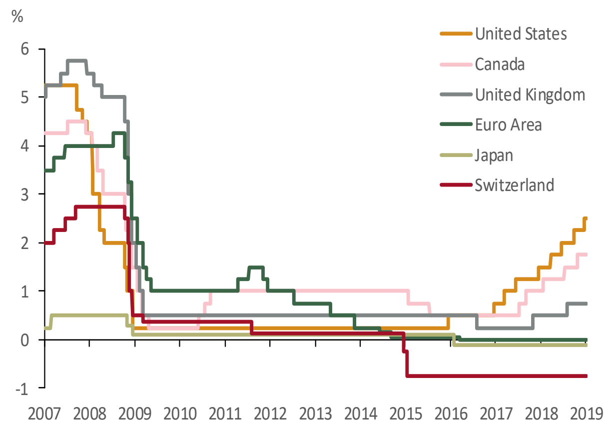
2. Unconventional monetary policy discourages saving, delays necessary balance sheet adjustment and reforms (across both the private and public sectors), keeps low-productivity, 'zombie', firms in business, sustains moribund technologies, and leads to poor investment decisions and the misallocation of resources.
3. Unconventional monetary policy suppresses financial volatility for extended periods, until it suddenly rebounds, thereby creating 'false' and destructive markets. It encourages risk-taking, and boosts asset price inflation, financial excesses, and imbalances that inevitably unwind in malign fashion. These effects spill over from the advanced economies via yield-seeking capital flows, greatly complicating policymaking in the emerging world.

Figure 1: Major economy core CPI inflation (with forecasts)



Source: Macrobond and Llewellyn Consulting

Figure 2: Major economy policy rates



Source: Macrobond, and Llewellyn Consulting

4. By stoking asset price inflation, unconventional policies have favoured the asset-rich at the expense of the asset-poor, adding to already disturbing levels of inequality (including across generations), and fuelling the rise of populism.

… and diverse in nature

5. There has long been a tendency for central banks to operate asymmetrically, easing rapidly and substantially in downturns, while tightening modestly and slowly during recoveries. Hence, monetary policy has been too loose on average, encouraging a persistent, but ultimately unsustainable, upward trend in private sector indebtedness.
6. Super-low interest rates across the term structure make it harder for pension and insurance companies to meet their liabilities. This can encourage households to save more for retirement, which weighs on consumption, while the need for sponsoring companies to replenish any pension underfunding depresses employment and investment.
7. An extended period of super-low interest rates can embed future expectations of low growth and inflation.
8. Policymakers will need significant conventional policy leeway to be able to fight the next downturn, not least because the effects of unconventional monetary initiatives are uncertain and subject to diminishing returns. As the upswing gets longer in the tooth, so the urgency to re-establish this policy latitude increases.[2]
9. Large-scale asset purchase programmes expose central banks to capital losses in the event that interest rates suddenly jump. At best this will reduce seigniorage revenues for the government. At worst, it could encourage central bank insolvency.
10. Over time, if the power of the domestic channels of unconventional policy diminishes, policymakers must *de facto* become more reliant on exchange rate depreciation to deliver macro stabilisation. In the limit this is a zero-sum game. In the interim, competitive devaluation is likely only to encourage other, more explicit, forms of protectionism, if not turn nation against nation.

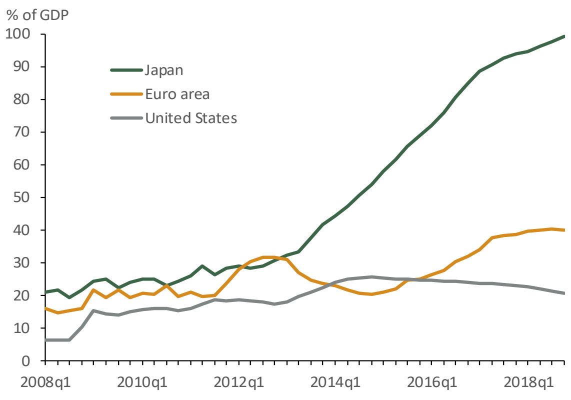
Pleas of mitigation

These demands are generally grounded in fact …

There are elements of truth in all of these justifications for moving policy rates away from the zero bound, and rapidly abandoning monetary unorthodoxy. However, they tend to be narrowly framed, and typically fail to come to terms with the broader picture.

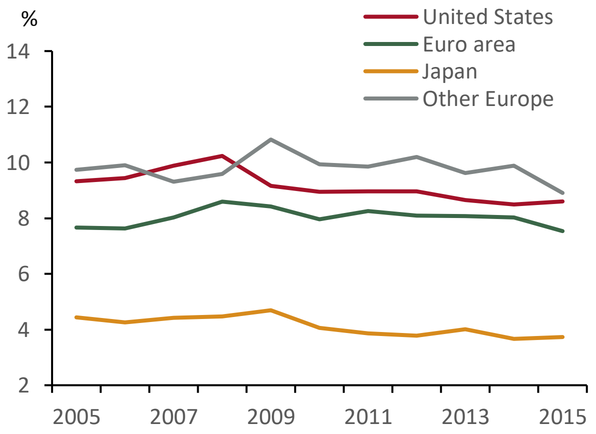
Commercial bank profitability, and especially small-bank profitability, has indeed been constrained by low and sub-zero policy rates, and has become a bone of contention with some senior bank executives. However, such effects have been limited, not least because central banks can implement negative rates so as to mitigate the impact on profits. In Japan, for example, the central bank exempts a significant portion of bank reserves from its fees, which are applied only at the margin. Low post-crisis bank profitability often has its roots in other more enduring governance and structural considerations.

Figure 3: G3 central bank balance sheets



Source: Macrobond and Llewellyn Consulting

Figure 4: Firm exit rates



Source: Macrobond, and Llewellyn Consulting

Note: Number of enterprise deaths in year t over number of active enterprises in year t.

Savers' returns on deposits have been reduced although, whatever the initial level of interest rates, this is always a key mechanism through which monetary stimulus operates. The view that creditors should be favoured at the expense of debtors, and real activity, is merely the expression of one sectional interest against a far broader one.

… but are myopic and fail to grasp the broader view

Some heavily-indebted and inefficient firms have been kept in business by low interest rates, and the *Schumpeterian* process of creative destruction thereby weakened. That said, evidence that firm exit rates, or the overall 'rate of churn' in corporate sectors has slowed down is sketchy (Figure 4).

Asset prices have been inflated, albeit having previously been acutely depressed in the wake of the Global Financial Crisis. That said, stock prices now look elevated relative to nominal GDP and cyclically-adjusted earnings (Figure 5), and there is also evidence of pockets of irrational exuberance in risk markets, not to mention slacker prudential and fiduciary standards. But again, support for asset prices is central to all episodes of monetary stimulus, unconventional or not.

LSAPs work by depressing term (Figure 6) and credit premia (if applied to private sector assets), and therefore can act temporarily to constrain market volatility (Figure 7). Hence, there is a sense within the investment community that in the current environment the highest returns will accrue to the best central bank watchers, rather than those expert in individual securities or sectors.

The costs of unorthodoxy are often exaggerated …

In the case of term premia, however, it is often overlooked that LSAPs merely amount to the substitution of shorter-term obligations (bank reserves) for longer-term government obligations in private hands. This is equivalent to a finance-ministry-mandated change in the maturity structure of public debt. There is no such thing as a 'neutral' policy with respect to term premia.

The wealthy have benefitted from the asset price inflation of recent years (as they always do in periods of monetary largesse). However, a thorough assessment of the distributional consequences of low interest rates' and unconventional monetary policy's impact on inequality needs to look beyond short-term returns on stocks and bonds. In particular, it is necessary to reflect on the broader effects on house prices, the principal asset of the middle classes; debt service costs, which impact all borrowers; lower government borrowing costs, which free up fiscal space for redistributive policies; and how jobs, wages, and incomes would have fared in the absence of such policy departures.

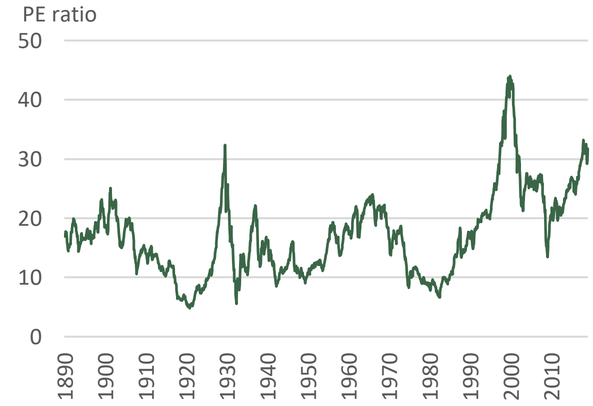
Any effect on income inequality is mitigated by the fact that easy monetary policy lowers the rate of return on assets, so that income from capital rises by less than the rise in asset values. And finally, whatever effects monetary policy exerts on inequality are likely to be short-lived relative to more secular forces such as technology and globalisation.

Moreover, to promote greater equality over broader macro stabilisation would be an odd set of priorities. After all, to preside over significant unemployment is to encourage a particularly malign form of unfairness.

… and the benefits ignored or under-played

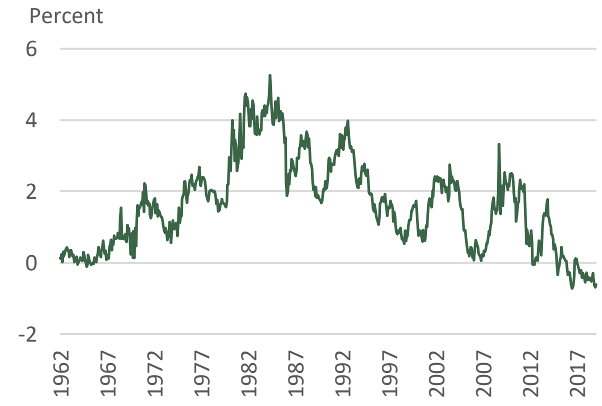
Since the crisis, some people have had to change their savings behaviour in the hope of amassing their desired pension, although there is little evidence to date that this has become of major macroeconomic significance. Equally, companies, and especially those with large unfunded liabilities, could struggle to meet their pension obligations at current rates of interest, and are

Figure 5: Cyclically-adjusted PE ratio



Source: https://dqydj.com/shiller-pe-cape-ratio-calculator/

Figure 6: US 10-year Treasury term premium



Source: NY Fed and Llewellyn Consulting having to make adjustments elsewhere in their business activities. However, their problems often also reflect past, insufficiently cautious, pension strategies.

In the sense that expectations are often adaptive, the prevailing environment of relatively slow growth, historically low inflation, and low interest rates across the term structure may have damaged animal spirits and the willingness to invest. And central bankers seem likely to have to address the next recession with little orthodox ammunition. It is unlikely that any of the major central banks will have the requisite policy rate latitude available.

Central banks employing LSAPs do run the risk of capital losses. However, LSAPs can also be highly profitable for both the central bank and the government: the average yields on the longer-term assets they buy are typically higher than those on their short-term liabilities, and declining yields generate capital gains on existing bond holdings. So far, all central banks resorting to LSAPs have remitted considerable sums to their respective finance ministries. And in any case, unlike commercial banks, central banks can operate perfectly well with negative capital.[3] They become insolvent only when they are 'policy bankrupt' – when inflation has run out of control.

On the final point, there is already a perception amongst policy makers that exchange rate effects are the most potent element of negative policy rate strategies. Moreover, especially at a time when protectionism and nationalism are on the rise, there must be a danger that unconventional monetary policy descends into beggar-my-neighbour tit-for-tat.

The bigger picture

Overall, monetary unorthodoxy has been stabilising

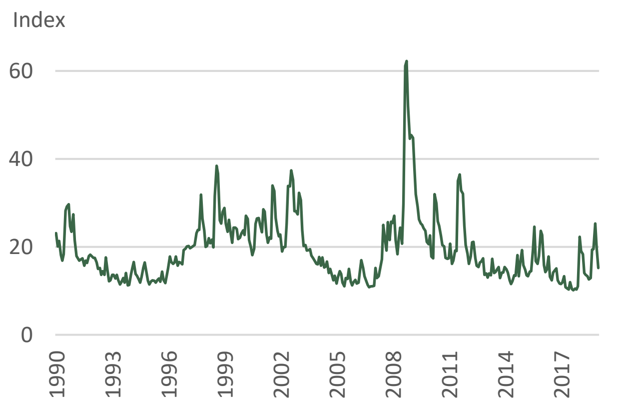
Overall, it cannot be denied that zero or negative policy rates and other unconventional monetary policy initiatives come with costs, and those costs may have increased. But such departures are hardly unjust, or against the natural order of things, as is sometimes claimed by their detractors. What is more, there are always trade-offs between the achievement of short-term macro stability and the desire for the optimum long-term allocation of resources with monetary policy, whatever the interest rate environment in which a central bank operates. When interest rates change, some gain, but some lose. But the key when growth and inflation are weak is that the positive effects on spending power and the incentive to spend dominate, the economy is thereby encouraged to move back towards equilibrium as a result, and in the process social and political stability are sustained.

The balance of evidence suggests that today's near-zero policy rates and other unorthodoxies are broadly continuing to encourage this progression towards equilibrium by changing the inter-temporal inducements faced by economic actors. Moreover, returning an economy to full capacity is to eradicate the biggest economic distortion of all. As Nobel Laureate James Tobin succinctly put it: "It takes a heap of Harberger Triangles to fill an Okun Gap", where an Okun Gap represents the economic costs of underemployment of productive factors, and a Harberger Triangle represents the economic costs of distorted employment of productive factors.[4]

The pluses have outweighed the minuses

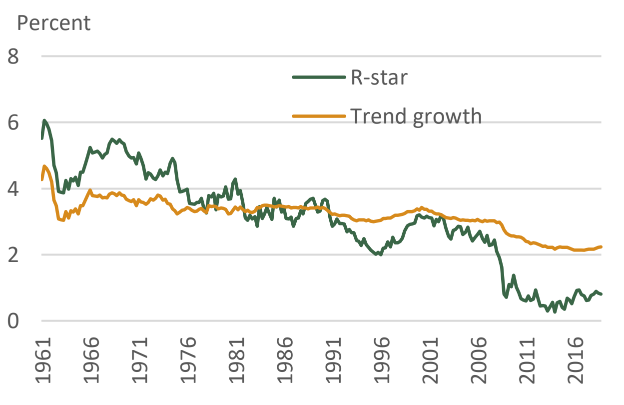
Even policies that generate substantial distortions in the use of resources, are unlikely to do remotely as much damage as a severe economic slump, which doesn't just misallocate resources, it destroys them. Indeed, employing near zero policy rates, LSAPs, etc., to bring about full employment and relative price stability can be thought of as trying to undo the economic

Figure 7: VIX volatility index



Source: Macrobond and Llewellyn Consulting

Figure 8: Estimated US real neutral rate – R-star



Source: New York Fed and Llewellyn Consulting distortions arising from price and wage stickiness, monopolistic competition, credit market frictions, and so on, that prevent an economy from self-correcting in the aftermath of a negative shock. In this over-riding respect, the recent spate of unconventional monetary policy initiatives, like all periods of monetary stimulus, is 'un-distorting'.

Painful counterfactual

It is also worth considering what might happen in the event that, although growth remains sluggish, and inflation low, a central bank decided rapidly to raise policy rates and eschew LSAPs, etc. in order to reduce allocative distortions and rebuild policy space for the next recession.

Precipitous policy normalisation would probably back-fire …

To a significant extent, interest rates are so low today because the real neutral interest rate – so called R^*– that would balance planned investment and desired saving at full employment has fallen secularly since the 1980s. Estimates suggest that the real neutral rate is now close to zero, perhaps in the region of 0.5% (Figure 8).[5] Near-zero central bank policy rates have in large measure merely been reflecting this fact. Policymakers have managed to push real policy rates below the real neutral rate, but not dramatically so – typically only by a percentage point or two.

… both in terms of its short-term effects …

The risk in raising policy rates and backing away from other unorthodoxies is that central banks push real rates above neutral and, in so doing, depress the economy and reduce inflation, if not encourage deflation. This would only increase the real burden of debt, and threaten a wave of bankruptcies. Raising policy rates and unwinding LSAPs would therefore prove self-defeating. Pressure would soon build for a reversal.

… and its longer-term influence

Beyond being destabilizing for the economy and prices in the short-term, such events could have other more enduring damaging implications. It could, for example, reduce inflation expectations, especially if policy of 'low for long' forward guidance had been in place. If the central bank is seen to be 'time-inconsistent' and going against the grain of its own strategy, then the risk is that its credibility is undermined, rendering a return to equilibrium more challenging. The danger then would be that pressure would build for the removal of a central bank's independence, and the return of monetary policy decisions to the more mercurial hands of politicians.

Learning to live with the unorthodox

The unorthodox is likely to become increasingly the norm …

As has been the case for the past decade, now is not the time for precipitous monetary policy normalisation. Patience is warranted. Global growth has slowed again, and it is welcome that a number of the major central banks have latterly adopted a rather less hawkish stance. Unconventional policy may have its unpleasant side-effects, and these have burgeoned, but seeking to re-establish interest rate normality by fiat, irrespective of a hostile macroeconomic environment would be self-defeating, leaving economies in a yet-worse condition. The unavoidable fact is that, warts and all, monetary unorthodoxy is likely to be with us for some time.

That said, more can and should be done to mitigate the side-effects of monetary unorthodoxy through macroprudential policies, such as capital and liquidity buffers, mortgage and other loan underwriting standards, bank asset growth, and haircut requirements on asset backed securities, together with initiatives in areas such as poverty, redistribution, and incentives in general.

Policymakers are also likely to consider ways to boost the effectiveness of unconventional monetary strategies for example by coupling them with average inflation targeting over the cycle, temporary or permanent price trajectory targeting, or raising the inflation target. The Fed, for one, is already doing this.[6] Others are likely to follow suit.

… although fiscal policy should take on a greater burden

Finally, policymakers may well have to consider more active use of fiscal policy to manage demand, in particular by improving and expanding the automatic stabilisers, targeting tax cuts on the income and wealth constrained, or by developing more investment projects that can be rapidly scaled up. Given near zero interest rates, and appropriate co-ordination across countries, fiscal initiatives stand to be a powerful additional string to the policymakers bow. And, ceteris paribus, they would also help to raise real neutral rates.

Watch fors

- Central banks continuing to reject calls for early and rapid policy normalisation.
- Interest rates remaining historically low for the foreseeable future.
- Changes in inflation-targeting regimes designed to boost the efficacy of monetary policy.
- Greater reliance on fiscal activism in the next downturn.
- The dilution of central bank independence, if not its removal. ■

[1] Most of these calls have come from outside the central banking community, although by no means all. Economists at the BIS, for example, have been perhaps some of the most vocal in calling for an early exit from monetary unorthodoxy. Some critics actively quote the Fisher Equation: $i \approx r + \pi$, which in its simplest form posits that the nominal rate of interest is equivalent to the real rate of interest plus the expected rate of inflation. If it is assumed that the real interest rate is essentially constant over time, then raising the nominal interest rate will be reflected one-for-one by the expected rate of inflation. It is true that there is a wealth of evidence that nominal interest rates rise with expected inflation, and vice versa. But this is a behavioural equation, the rearrangement of which is not valid.

[2] In the US, for example, nominal policy rate cuts of some five percentage points are typically required to address a recession, although on occasion there has been a need for a greater adjustment of policy.

[3] See Jones. R., 2019. *Pushing the envelope.* Llewellyn Consulting Focus. 22 January. Certainly, temporary fluctuations in the health of central bank balance sheets are of limited relevance. Central banks go bankrupt only when their comprehensive or long-term net worth is negative. That is to say when inflation has run out of control, and confidence in the currency has evaporated. Over recent periods, the central banks of Chile, the Czech Republic, Israel, and Mexico have all suffered periods of financial weakness, yet have performed respectably in terms of macroeconomic outcomes. Inflationary catastrophe has been avoided.

[4] Tobin. J., 1977**.** *How dead is Keynes?* Economic Inquiry 15 (4): 459-468.

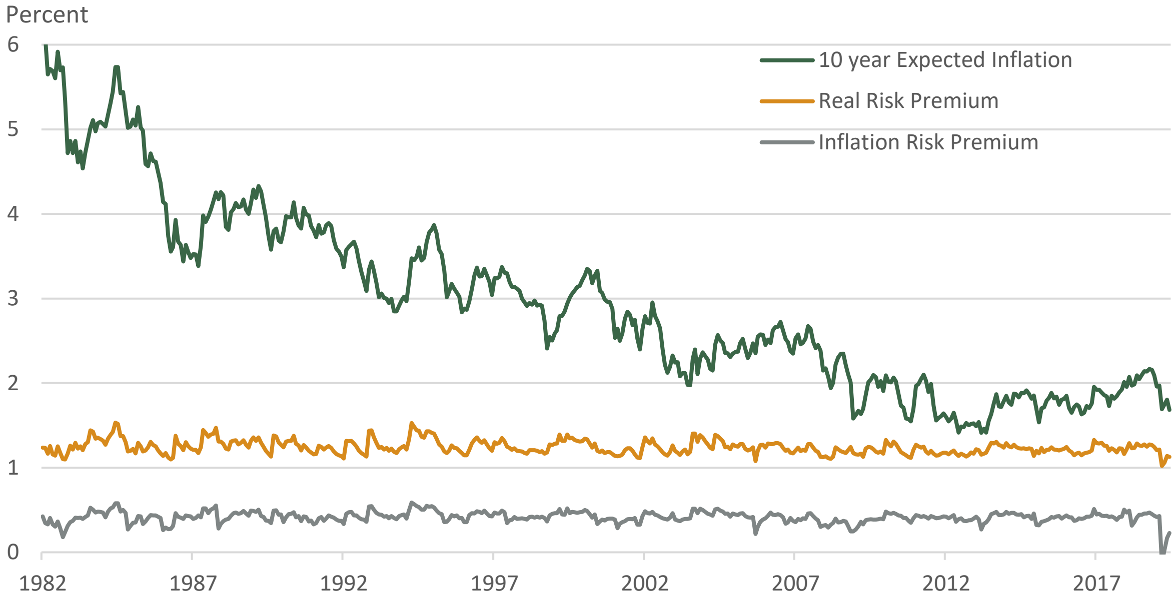
[5] The fall in global the neutral interest rate therefore reflects factors that have decreased investment demand and increased the supply of savings. These include falling growth in the labour force; slower productivity growth; the rise of 'superstar firms' and corporate savings; income inequality; the emerging market savings glut in the run up to the Global Financial Crisis. Some have also asserted that the downtrend in the neutral rate reflects an increase in the demand for safe assets compared with risk assets. Others, meanwhile, have suggested that a secular fall in the relative price of durable goods could have played a part, at least until the mid-2000s.

[6] Clarida. R., 2019. *US Economic outlook and monetary policy.* 22. February. Federal Reserve Board. link

Inflation expectations have declined

… encouraging looser monetary policy in the major economies

US ten-year expected inflation and risk premia



Source: Federal Reserve Bank of Cleveland

- A number of the major central banks have latterly adopted a more dovish tone in their forward guidance.
  - Some central banks, including the RBNZ and RBA have already eased.
  - It is now widely expected that the Fed and the ECB will also loosen policy over the next few weeks.
  - Others may follow.
- A primary reason for the change in rhetoric is that consumer price inflation, and in particular measures of underlying consumer price inflation, have tended consistently to run below expectations and mandated targets.
- Perhaps more importantly, however, has been a decline in estimated long-term inflation expectations.
- In the US, the Cleveland Fed regularly publishes a comprehensive measure of ten-year US inflation expectations calculated using Treasury yields, inflation swaps, inflation data, and survey data. It shows that:
  - Inflation expectations have trended down consistently since the Volcker era;
  - They have struggled to match the Fed's 2% inflation target since the last crisis; and moreover,
  - Latterly there has been a significant dip, led in particular by a hitherto unparalleled drop in the inflation risk premium, or the degree of uncertainty about future inflation.
- The worry for policymakers in such circumstances is that low inflation becomes a self-fulfilling prophesy.
- There is also a concern that the leeway available to cut real interest rates in the event of a downturn is constrained. ■

Postcard Greece – a long-awaited revival

- *Greece is finally recovering from a decade of deep trauma. Will it take wing, or relapse?*

On the mend

The annual trip to my wife's Greek homeland for our summer holiday finally yielded some pleasant surprises. After experiencing what was for a developed economy a decade of unprecedented pain and fiscal adjustment, there is finally a sense that things have turned for the better.

Of course, the tourist industry, has been spared the worst of the country's depression, and observing Greece from that perspective can be somewhat misleading. Nor is this to underestimate the enduring humanitarian and broader economic and social legacies of a peak to trough decline in real GDP of around 25%. Nevertheless, the balance of anecdotal evidence encountered during a fortnight traversing the country suggests that, just as the hard economic data have started to improve, business and consumer confidence are on the up; people are more secure in their jobs; employment opportunities are on the rise; companies can see a future and are starting to invest in it; and the government at last has the financial resources to begin repairing long-neglected public infrastructure, and consolidating a hollowed out system of social security.

New leadership

There was also a sense that the new centre-right government led by Kyriakos Mitsotakis was better equipped to steer the country through the process of recovery than was the recently-removed socialist administration of Alexis Tsipras. The people I talked to were crying out for tax relief, and less onerous regulation. And although some retained a distrust of both the New Democracy Party, and a prime minister who is the scion of a political dynasty partially responsible for Greece's economic travails, there was a feeling that a change was necessary and overdue.

Tsipras and his admirable Finance Minister, Euclid Tsakalotos, had guided Greece through three onerous bail-outs, regularly putting the country before their party's ideology and popularity. But they were tarnished beyond redemption by their association with the unrelenting austerity of this period. Their often-understated achievements in negotiations with the rest of the EU counted for little with the people. Moreover, and perhaps most importantly, their underlying ideological preconceptions were viewed as inconsistent with the reduced red tape and greater economic freedom that many hankered after. The political pendulum had swung, well and truly.

Mitsotakis is in many ways the antithesis of his predecessor. Tsipras came to power at the depth of the country's crisis as a young Marxist firebrand, channelling the anger of the masses, with a natural inclination to make maximum use of the power of the state. The new prime minister is urbane, foreign-educated (Harvard and Stanford), fluent in English, French, and German, a former business consultant and venture capitalist, and a firm believer in markets and a lean state sector.

A common refrain is that Mitsotakis' liberal economic philosophy, multiculturalism, and predilection for structural reform are better suited to bringing much needed foreign direct investment into the country, and will encourage the EU to cut Greece some much-needed slack on its onerous fiscal targets. Having met the new prime minister twice, when he was leader of the opposition, I find him a thoughtful, persuasive, and outward-looking, keen to modernise and reform the state, and move Greece rapidly beyond its recent travails.

Hoping for the best

Greece retains a highly educated workforce and an impressive spirit of entrepreneurship, and after such an extended period of cost-cutting and painful adjustment, what remains of the industrial base is lean and competitive, and there is considerable pent up consumer and investment demand. If the animal spirits of its business sector take wing, the speed of recovery could confound expectations.

That said, there are two important caveats: the prime minister must ensure that New Democracy avoids falling back into its bad habits of deceit, cronyism, and clientelism. And the international environment must be sympathetic. Neither is guaranteed. Mitsotakis has yet fully to reform his party. New Democracy is still populated by many wedded to the old, corrupt, ways of politicking. Meanwhile, the world is increasingly protectionist and inward-looking, the EU is flirting with a new downturn, and Greece's nearest neighbour, and one of its largest trading partners, Turkey, is in the throes of its own political and economic crisis.■

Technologies series

Eat, be eaten, or die

Firms that do not handle technological change constructively will be toast

We are embarking on a major new research exercise, because ….

We at Llewellyn Consulting are embarking on a major new addition to our research offering. Building on our earlier, 22-page, *Technology Blue Book*,[1] we shall be looking in detail at a whole range of new technologies and their likely effects, both at the micro and at the macro level.[2]

Some of the new technologies are so-called 'enabling' technologies: those that, by their nature stand to find widespread application in a diverse range of activities – not least because they combine with other technologies. Key amongst these are artificial intelligence (better called 'machine learning'); blockchain ('distributed ledger'); and cloud, grid, and quantum computing.

… a raft of new technologies are set to change the world

In addition, there is a raft of new technologies that, while perhaps somewhat less broad and super-pervasive, nevertheless stand to have huge effects. Of these:

- Some are only in the early stage of scientific investigation and development, and so may take 20 years or more to find application; but
- A significant number – we shall focus on 30-odd of them – are closer (i.e. 10-20 years to application) and hence within a company's typical planning horizon). And in addition,
- Some – we shall focus on 16 or so of them – are practically ready for application.

The pressure is on

Firms will be affected well within current planning horizons

Decision-makers need not only to become fully familiar with the new technologies themselves, but also to see how associated policy and regulation is likely to evolve. Furthermore, they also need to consider the behaviour of competitors, particularly those at the technology 'frontier'.

'Frontier' firms[3] have grown to dominate the new 'intangible' economy – Google, Apple, Microsoft, Amazon, Facebook and others have amassed huge cash balances, and are moving into ever more industries, partnering with incumbents, start-ups or going it alone. A wide performance gap has opened up between these companies and the rest (Figure 1). Concentration is increasing.

Only those which take good decisions are likely to prosper

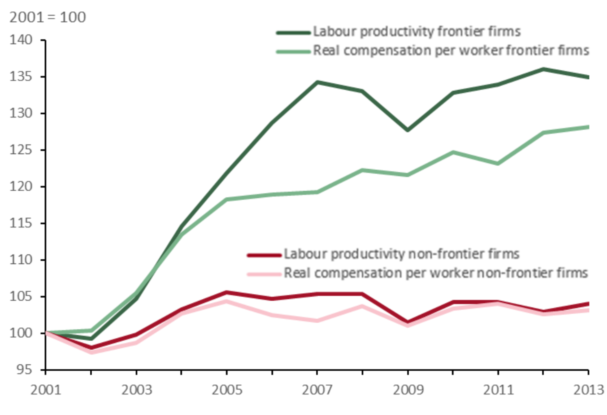
This combination of technology and strong international competition is putting firms under intense pressure. The turnover of large companies in the major indices is becoming increasingly rapid: top companies' lifespans in the S&P 500, for example, have shrunk from a 61-year tenure in 1958, to 25 years in 1980, and just 18 years in 2011.[4]

At the whole-economy level too, the rate of 'churn' is high. In the US, Germany, and the UK, for example, around 10% of all firms exit the market every year (Figure 2), while a similar number of new ones enter.

Next steps

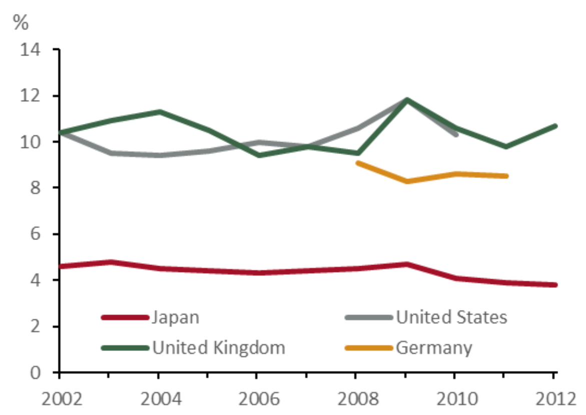
In this new series we are going to devote considerable attention to these challenges and opportunities. This includes drawing on a list of over 100 new technologies considered by scientists at Imperial College, MIT, and elsewhere to be of particular potential importance.■

Figure 1: Labour productivity and real compensation by type of firm



Source: OECD Economic Outlook 2017 and Llewellyn Consulting

Figure 2: Firm exit rates, annual



Source: OECD Economic Survey Japan 2017

[1] The one-page summary of the 22-page *Technology Blue Book* is appended.

[2] We have in the past evaluated the comparative capability of various economies to benefit from the new technologies, and have displayed this in a heat-map, appended. For the full article in which it appeared, see Sepping, S., and Dharamsena, B., (2017). Science, technology, and innovation: a closer look. Llewellyn Consulting, September. Some of the results are surprising, in that some traditionally high-income OECD countries are revealed as not particularly well placed to benefit from the new technologies, while at the same time a number of non-OECD countries seem to be preparing themselves comparatively well. We shall update this heatmap in due course as part of this overall work on technology.

[3] Frontier firms are defined for these purposes as the 5% of firms with the highest labour productivity by year and sector. Industries included are manufacturing and business services, excluding the financial sector, for firms with at least 20 employees.

[4] Innosight, 2012. Creative Destruction Whips through Corporate America.

Appendix

Theme: Technology – *One-page summary*

Proposition

Ubiquitous, bigger, and faster than the Industrial Revolution, the ICT revolution is entering a new, disruptive, phase. This will have profound consequences. One will be to widen disparities, both within and across firms and countries.

Reasoning

Technological progress, the fundamental driver of long-term economic performance,[1] intensified with the Information and Communications Technology (ICT) revolution[2] – digitisation, the internet, big data, and Artificial Intelligence (AI). Now it is entering a new 'smart machine' phase, not least by combining new and existing technologies.[3]

AI, an enabling cross-function set of technologies, is on the cusp of a breakthrough, driven by increasingly cheap, powerful, parallel computation;[4] big data;[5] and ever-improving 'learning' algorithms.[6] The power of new machine-learning technologies is shown by the growing list of complex games in which smart machines have surpassed the world's best human players.[7] 'Smart' products and processes are set to proliferate.[8]

Expected economic outcomes

The revolution is transforming fundamentally what and where economies produce,[9] – both in industry[10] and in services,[11] with the distinction between the two becoming increasingly blurred. ICT-intensive sectors (including financial[12] and professional services) are currently at the forefront of the change.

Aggregate effects, on productivity and (dis)inflation are potentially significant,[13] and probably mismeasured.[14] However large improvements are not yet being seen, for a mixture of reasons, including costs of adjustment,[15] weak investment,[16] and slow adoption at the firm level.[17]

Even high IT investment would however probably not point to the ever-accelerating productivity (the so-called 'singularity') that some technologists envisage: economies do not run on processing information alone. Key to the potential impact is the degree of substitutability between information and other economic inputs. [18]

Labour market effects similarly stand to be substantial, but not necessarily overwhelming. Perhaps only around one-tenth of jobs are fully 'automatable': it is generally tasks within jobs that are automatable, and not all activities are equally at risk.[19] Wage differentials do however seem likely to have a continuing tendency to widen,[20] at least pre-tax.

Performance gaps between companies will widen. It will be the ability to harness technological progress and, in particular, access to a range of digital skills,[21] rather than the pace of technical progress itself, that will be the main differentiator of company performance and worker pay. [22]

At the whole-economy level it is increasingly important that countries benefit from the productivity-enhancing effects of the new technologies.[23] Economies that fare best will be those with high tangible and intangible investment,[24] and the best innovation settings (science, readiness, and adoption in particular).[25] They will also have the best macroeconomic structural-policy settings, which determine how the economy as a whole adjusts to structural change.[26]

Expected market outcomes

Market power seems likely to continue to concentrate in large, highly-profitable, cash-rich global companies. Those that own, and master the analysis of, big data may show spectacular gains. Intangible value will likely continue to rise relative to tangible value. Valuing companies will become yet more challenging. The major indexes will likely exhibit increasing company 'churn'. The distinction between active and passive investing may blur increasingly.

Unless or until aggregate investment picks up substantially, equilibrium interest rates are likely to stay historically very low in the major (G7) economies.[27] However, modest increases in official rates are in prospect on the assumption that the business cycle continues to mature.

Watch for

- Divergence in performance between 'frontier firms' and workers with the 'right' skills vis-à-vis the rest.
- Differences across countries in policies that directly facilitate innovation, adoption, and structural adjustment.
- Smaller OECD economies (and regions and cities within countries) outperforming the advanced (G7) economies.
- Inequality increasing, provoking a growing backlash and perhaps reaching a tipping point.■

(A multi-page supporting document, that presents the argumentation, evidence, and references is available to clients).