

World View & Risks¹

Principal drivers²

Monetary policy. Central banks worldwide have been tightening policy firmly, but appear now to be slowing their pace of rate hikes in order to assess the impact: they want to check inflation but avoid too great an effect on activity.

Fiscal policy. Until recently the G20 economies collectively would, by end 2023, have reversed most of their 2020 expansion.³ But the US and EU energy packages are substantial – though they will not influence spending immediately.

Commodity prices. Energy and food prices are now off their highs, and are now relieving upstream inflation pressures.

World trade. Volume growth is likely to have slowed from 7–10% in 2021, to 2–4% in 2022. 2023 prospects are weak.⁴

The pandemic. Most countries have adapted to ‘living with’ Covid-19, but it has not gone away. China’s exit from lockdown seems set to weaken demand and activity for several months at least.

'De-globalisation' or 'fragmentation'. Governments and companies continue to reassess reliance on China and Russia, both as a source of imports and as export markets. China similarly is reassessing its engagement with the West.⁵

Climate change. The world is on a path to 3°C.⁶ but a private-sector-led transition towards cost-competitive renewables looks increasingly feasible.⁷ Hydrocarbon peak-use seems close. Nature-related risks are now mainstream.⁸

Technological change. IR4⁹ still in its infancy,¹⁰ is driving major changes in what is demanded, and how and where it is produced. But countries differ markedly in their ability to capitalise on all this.

Structural reform¹¹ could stimulate growth,¹² by improving ability to adapt constructively to technological change, evolving supply chains, global warming, and the virus.¹³ However only some countries are positioned to benefit.¹⁴

Demographic change is now having major effects as the baby-boom generation retires. The direct effects on labour supply are clear; the indirect economic effects less so.¹⁵ But one evident pressure is on social expenditure.¹⁶

Prospects and risks

GDP growth.¹⁷ Post-Ukraine commodity price increases have been estimated as likely, in and of themselves, to reduce world GDP growth by around 1 ppt; Europe by twice that.¹⁸ Tighter monetary and fiscal policies are adding to that.

Base case:

- **US** GDP slows markedly this year, and the economy possibly enters recession.
- **Europe** enters recession for several quarters.
- **The UK** goes into even deeper recession.
- **China's** domestic demand remains sluggish, while its exports to OECD economies are hampered both by their slowdown and by the desire of Western governments and businesses to ‘friendshore’ their supply chains.

Risks. Simultaneity of policy tightening across major economies leads to unintendedly deep recession. **Watch for:**

- Central banks ‘over-doing’ monetary tightening; and unforeseen consequences of quantitative tightening.
- Fiscal stimulus if the slowdown looks like getting out of hand.
- Investment not picking up in the way needed to support demand, climate change, and the new technologies.
- Insufficient being done in many economies to reform structural policies.¹⁹

Inflation. There are early signs of headline inflation peaking in major economies. But many labour markets remain tight, especially in the US, Canada, and the UK, bringing the risk of knock-on wage inflation.

Base case. Commodity prices fall further in 2023; wage increases moderate; base effects cause headline inflation to ease, despite the somewhat sticky core inflation.

Risks. Wages continue to rise, keeping service price inflation in particular higher than central banks are comfortable with. This could materialise almost anywhere – in the US,²⁰ Europe, the UK, Latin America. **Watch for:**

- Nominal wages accelerating, especially in the US²¹ and UK; and inflation expectations²² becoming ‘un-anchored’.

Official interest rates. Real rates continue to be deeply negative, as nominal rate rises fail to keep up with inflation. Signs of inflation peaking and a possibly slower pace of policy tightening have eased the stress in the financial markets.²³

Base case. Central banks in the larger economies raise rates sufficiently to check inflation, but in the process end up collectively with world output weaker than each had envisaged.

Risks. Policy proves unequal to the challenge: fails to control inflation, yet causes G7 recession. **Watch for:**

- A rising inflation risk premium. Monitor statistical measures of ‘underlying’ inflation produced by the Cleveland and Dallas Feds in the US, and similar measures in other economies.²⁴

Bond yields. Concerns about inflation may ease, but those over the costs of defence and climate change will likely rise.

Base case. Bond yields, while remaining historically low in nominal terms, edge up a little further. But real yields stay low, given the weakness of GDP and hence of investment in much of the OECD world and beyond.

Risks. Rising inflation expectations push nominal yields markedly higher, rekindling debt-dynamics issues. And the effects of quantitative tightening, with which central banks have little experience,²⁵ are unknowable in advance.²⁶

US Dollar. With so much turbulence in the world, the US dollar is subject to a complicated range of influences.

Base case. Dollar strength has paused for now, but is likely to continue, impelled by long-term investment inflows; rising US interest rates that attract short-term capital; and the ‘safe haven’ effect, at least until the Ukraine war ends.

Risks. Dollar strength and cumulating US current account imbalances, especially vis-à-vis Asia and Europe, prove unsustainable,²⁷ and give rise to disorderly reversal.²⁸ This could even be provoked by a Plaza-type policy response.²⁹

DM Equities. While they may still seem somewhat highly valued, investors have to hold something ‘real’.

Base case. DM equities continue to edge lower, with growth stocks especially vulnerable.

Risks. A quantitative evaluation,³⁰ e.g. Shiller’s Excess Cyclically Adjusted P/E ratio for S&P 500 at 2.1%, does not put risk as very high.³¹ But a behavioural assessment³² puts them at stage 5 of a 9-stage process to crisis.³³ **Watch for:**

- Increased regulation of ‘big tech’ companies, and pressure for wage rises in 2022 and beyond.

EMs. Given US interest rates and the strong dollar, crises in some EMs are a distinct possibility.³⁴ Commodity-producers stand to fare best; and prospects are constructive for some Asian economies,³⁵ most obviously Taiwan and South Korea.

Base case. A widening of performance, depending on whether countries are net commodity importers or exporters.

Risks. Problems stemming from poor governance, not least an inability to adjust structures of supply in a world that is moving to being nearly all-electric by 2050; and a rising dollar. **Watch for:**

- Governance problems, particularly in Turkey, South Africa, Colombia, Argentina, Brazil, and Egypt.
- Problems arising in non-bank financial intermediaries resulting in stress on corporates,³⁶ particularly in Latin America, the Middle East, and Africa, that have borrowed heavily in foreign currency on world capital markets. Interest payments have surged, notably in Brazil, Turkey, Mexico, and Indonesia this year.

EM Equities. At a PE of around 11.1, compared with 19.2 for the S&P 500,³⁷ some stand to remain well bid.

Base case. Primary producers’ equity values hold up; others suffer from rising interest rates and weak world GDP.

Risks. Higher bond yields and a rising dollar hammer EM entities exposed to foreign-currency indebtedness.

Commodity prices.³⁸ The Ukraine war shock is of the same order of magnitude as the oil shock of 1973/74 – around 2% of the GDP of OECD countries collectively. Adverse weather conditions stand to exacerbate the global food situation.

Base case. Energy, food, and many other prices moderate but remain high until well after the Ukraine war ends.³⁹ Russian fossil fuel supply would seem unlikely to be welcomed back even after resolution of the conflict.

Risks. Further sharp increases in energy prices and a wide range of commodities, including food.

Other risks

Geopolitical crisis. The Ukraine war goes nuclear, in some way, or goes beyond Ukraine; North Korea escalates its activities further; China gets even more assertive with Taiwan.⁴⁰ [More geopolitical risk information is available from our associates at *Gatehouse Advisory Partners*.⁴¹]

Public sector debt spiralling higher, though a plausible prospect only if, or where, the rate of interest on government debt exceeds the growth in nominal GDP by a margin, for a long period, and with little prospect of turnaround.

Central bank interest payments. As policy rates rise, central banks are starting to pay out considerable amounts of interest on commercial banks’ QE-created deposits.⁴² Seen by some as unwarranted, this may cause political tension.

Financial crisis. Shadow banks could be a candidate: the recent BIS report emphasises the risks surrounding non-bank financial intermediaries.⁴³ ■

(Multi-page supporting argumentation, evidence, and references follow below).

World View & Risks

Supporting argumentation, evidence, and references

¹ **World View & Risks** represents the analytic underpinning of our view of the world. (And that view in turn informs our *Key Developments & Chart of the Week*, which presents the five or so key data that have come out over the past week, and interprets their significance.)

World View & Risks presents, in just two summary pages, our judgement, generally in qualitative terms, about the likely evolution, over the coming 1 to 2 years, of:

- 1.1. The current principal drivers of the world economy and financial markets.
- 1.2. Key economic and market outcomes.
- 1.3. The greatest inherent risks to those outcomes.
- 1.4. The most important developments to *Watch for*, in order to see if developments are, or are not, evolving broadly as expected. Sometimes we also specify particular variables to monitor.

Supporting these two summary pages, and available to subscribers only, is a **multi-page supporting document** that presents:

- The argumentation, reasoning, and evidence for all our forecasts and risks; and
- References to particularly relevant literature and sources.

We generally take as our reference forecasts those of the OECD and the IMF. Individual countries are mentioned in the summary pages only to the extent that they are likely to have global, or at least major regional, significance.

However, while we present a (generally qualitatively-expressed) baseline forecast for each of the key variables that we consider, more useful, in our judgement, is a careful assessment of likely major risks

Given that policy announcements, data developments, and many other factors will support or challenge our *World View & Risks*, we assess these first in *Key Developments & Chart of the week*. If the outlook or risks change materially, we will produce a special edition of *World View & Risks*: otherwise we adhere to a quarterly schedule.

Issues that warrant particular consideration are examined in detail in *our Analysis, Focus, and Global Letter* pieces.

The core of World View & Risks is necessarily macroeconomics, as conventionally recognised. But increasingly, particularly since the 2008 Global Financial Crisis, a widening range of policies have been playing a larger part.

The importance of structural policies is a case in point; likewise, the influence of the new Fourth Industrial Revolution technologies; and increasingly climate change, an existential issue, which is now starting to be taken seriously by governments in all three major emitting regions – Europe, China, and the US. Most recently, aspects of defence and security policy too have been acquiring heightened relevance. A full understanding of the power and thrust of these various driving forces and their interactions is essential to understanding the evolution of major economic and financial variables – even in the comparatively near term of just a year or two ahead.

Forecast error. It is important that likely margins of error be recognised. Forecasters make their biggest errors when an economy is hit by a shock that is both large (say 2% of GDP or more) and novel. Following the 1973/74 global oil price shock, for example, forecasters over-predicted countries' year-ahead GDP by fully 4 percentage points on average; yet following the similar-sized, but no longer novel, and hence better understood, 1978/79 oil price shock the mean error was only 0.9 of a percentage point.

For more, see Llewellyn, J., Potter, S., and Samuelson, L, 1985. *Economic forecasting and policy – the international dimension*. Chapter 6, p. 101. Routledge and Kegan Paul. And also, [How Accurate Are the IMF's Short-Term Forecasts? Another Examination of the World Economic Outlook in: Staff Studies for the World Economic Outlook, 1997](#)

Most recently the COVID-19 lockdown shock was unquestionably large, and indubitably novel, having originated outside the economic system, and provoking an unusual response: neither on the occasion of the 1957 influenza pandemic, which killed an estimated 1 million people worldwide, nor after the 1968 pandemic (which killed an estimated 1 to 4 million) did policymakers lock down their economies, nor (in Hong Kong, Singapore, Taiwan, or Canada), during the 2004 SARS outbreak.

The Ukraine commodity price shock is less novel – events that were somewhat similar occurred in the Korean War in the early 1950s, and with the two oil shocks in the 1970s. But they did not hit specific regions anything like as fundamentally as the oil and gas shock is currently hitting Europe in particular.

Risks and uncertainties. In expressing degrees of risk and uncertainty we recognise the Knighian distinction between ‘risk’ and ‘uncertainty’: we use the term ‘risk’ when we judge it possible to attach, even if only tentatively, a probability to a given outcome; and the term ‘uncertainty’ when the level of understanding is too low to permit even a tentative assessment of probability.

Risks have *two important dimensions*: a probability of occurrence; and a cost should the risk eventuate. Probabilities may be informed by history, whether qualitative or quantitative; and by reasoning. Inevitably, however, they contain an important subjective element.

- ² **‘Drivers’.** In complex politico/economic systems, ‘everything depends on everything else’: almost all developments, from the stance of fiscal and monetary policies to the behaviour of consumption and investment, from the evolution of inflation to the path of interest rates, depend on what is, and often also what has been, happening elsewhere in the system. There are few, if any, truly exogenous forces.

However, at any given moment, just a limited number of factors are likely to be responsible for much of the impetus behind outcomes. Hence, in *World View & Risks*, ‘Drivers’ are taken to be those powerful forces that at present seem most likely to play the predominant role in shaping year-ahead outcomes. The importance of individual drivers can change, and often does. Indeed, such can be a defining characteristic of an economic ‘epoch’. Hence, from time to time, as our colleague Han de Jong has observed:

“When you are in the business of forecasting the economy, a thoughtful narrative is more important than models. It is crucial to identify what forces drive the economy at a particular point in time. Models do not know that.”

Sometimes it is feasible to assess, in advance, the probability of a hitherto important driver becoming less so or, conversely, of a ‘new’ variable becoming a driver. Such possibilities may on occasion be one component of ‘risk’. On other occasions, however, the importance of a potential driver may not be understood, or it may be impossible to attach any meaningful probability to it; in which case the situation can only be dubbed an ‘uncertainty’.

- ³ **A government’s fiscal balance** is a function of the level of economic activity and the level of government net expenditure. Hence *changes* in an economy’s government fiscal balance are a function of (so-called cyclical) *changes* in the level of economic activity and of (so-called ‘discretionary’) *changes* in government net expenditure – whether as a result of discretionary changes in tax rates or discretionary changes in expenditure.

The size of the actual (or projected) discretionary *change* in a government’s net expenditure – often dubbed the change in its fiscal stance – can therefore be calculated by subtracting the *change* in the (actual or projected) cyclically-adjusted fiscal balance from the *change* in the (actual or projected) fiscal balance (sometimes described as ‘separating the effect of the budget on the economy from that of economy on the budget’).

The accuracy of such calculations is fundamentally dependent on the underlying estimate of productive potential; and that has been particularly uncertain of late, given the hard-to-calibrate consequences of the 2008 global financial crisis and, more recently, the COVID-19 pandemic. Estimates therefore have to be treated with caution, and should not be over-interpreted. That said, it is better, in our judgement, to take due account of such fiscal estates than to ignore the effects of fiscal policy altogether. As a rule of thumb, we regard a fiscal swing of ½ ppt as too big to ignore, and of 1 ppt as likely to have a material impact on the GDP outcome.

Both the OECD and the IMF publish actual and projected fiscal balances on a standardised basis; and they also calculate cyclically adjusted values. The most recently available are those of the IMF in October 2022, and it is those that have been used in the table below of the size of discretionary fiscal policy changes in the two recent episodes – the 2008 Global Financial Crisis and the current coronavirus pandemic.

Discretionary changes in fiscal stance

	2007	2008	2009	2010	2011	2018	2019	2020	2021	2022	2023	£ 2021-23	Δ since 2020
Canada	-0.1	-1.4	-2.2	-1.5	0.8	0.4	-0.3	-9.5	5.3	2.0	1.2	8.5	-1.0
France	-0.8	-0.1	-1.8	-0.1	1.1	0.2	-1.3	-2.7	0.6	0.6	-0.3	0.9	-1.8
Germany	0.9	-0.4	0.3	-2.7	2.2	0.7	-0.2	-4.3	-0.1	0.0	1.2	1.1	-3.1
Italy	1.7	-0.8	0.0	-0.1	0.2	0.0	0.6	-5.1	1.0	-0.6	2.1	2.4	-2.7
Japan	0.3	-0.4	-2.7	-1.3	0.0	0.9	-0.1	-5.6	1.9	-1.0	4.2	5.0	-0.6
UK	-0.5	-1.9	-1.6	1.2	1.4	0.0	-0.3	-8.1	3.6	2.8	2.6	9.0	0.9
US	-0.9	-1.9	-1.8	-1.6	1.5	-1.0	-0.6	-5.2	1.3	5.5	-1.3	5.5	0.3
G7	-0.3	-1.2	-1.6	-1.3	1.2	-0.3	-0.5	-5.4	1.5	3.2	0.1	4.8	-0.5
G20	-0.2	-1.0	-1.7	-0.7	1.1	-0.2	-0.8	-4.3	1.9	1.1	0.5	3.4	-0.8
Euro Area	0.1	-1.2	-1.2	-0.4	1.2	0.2	-0.4	-3.7	0.5	0.3	0.7	1.5	-2.1

Note: A negative value indicates a move towards deficit i.e. fiscal expansion. The table has been compiled on the basis of information available up to October 5, 2022. Source: *IMF October 2022 via Macrobond, and Llewellyn Consulting | Independent Economics*

- ⁴ The October 2022 IMF World Economic Outlook forecasts weakening world GDP growth into 2023 – and for growth in world trade volumes to falter to approximately 2.5% in 2023. See: [World Economic Outlook, October 2022: Countering the Cost-of-Living Crisis \(imf.org\)](#)
- The WTO’s latest forecasts suggest even weaker growth (1%) in world merchandise trade volumes in 2023: “... the outlook for international trade is rather grim as the global economy reached an important crossroad around midyear... the prospects for trade remain relatively weak, mirroring the expected deceleration of economic growth discussed in the previous chapter and suggesting a return to the subdued long-term trend prior to Covid-19.” See [Trade and Development Report 2022 \(unctad.org\)](#) p. 57
- ⁵ This reassessment comes after after: the loss of enthusiasm for further trade liberalization since Seattle/Doha and former US President Trump’s trade war; the war in Ukraine; the western response to it (sanctions); growing wariness in both political and business circles about ‘excessive’ desire for ‘on-shoring’ of manufacturing; and a perceived need to protect ‘sovereign’ supply chains. All are driving a retreat from globalisation. The effects on productivity, efficiency, and inflation may not be particularly large if they can take place at a pace determined largely by companies: however, the consequences are likely to be more negative if the pace is dictated directly by political events or decree.
- ⁶ The COP27 produced pledges, but little action at the global level. Meanwhile, global GHG emissions data – see for example monitoring by the [Climate Action Tracker](#) – suggest that on current policies the world is on a trajectory that, if unchecked, would lead to 2.7°C warming by 2100. What is encouraging, however, is that renewables are now cost competitive with hydrocarbons in many parts of the world, raising the prospect of the private sector becoming a driving force in investment.
- Against that background, the US \$370 bn ‘Inflation Reduction Act’ is a constructive development, as is the pressure that it puts on other regions to come up with competitive equivalents.
- ⁷ The requisite investment is affordable. To the extent that large-scale in a ‘green ready’ capital stock starts soon, most of the requisite new capital that needs to be in place by 2050 can come from normal replacement investment – though some front-loading will be needed. The present state of scientific, technological, and engineering knowledge is sufficient to make a credible start. For more, see Llewellyn, J. and Sepping, S., 2021. *Investment requirements for a 2°C world*. Llewellyn Consulting, 6 October. Available on request.
- ⁸ For a 2-page summary of the issue; disclosure; and data gathering see: Silja Sepping and John Llewellyn, 2021. *Nature: going beyond climate change*. Llewellyn Consulting – Independent Economics, 23 March. Available on request.
- ⁹ **Four principal technological epochs are commonly identified**, each associated with breakthrough technologies, and new products, processes, and industries:
- **First (Industrial) Revolution** (1750 to 1830). Introduced steam, water, and mechanical production equipment; which brought steam engines, cotton spinning, and railroads.
 - **Second (Industrial) Revolution** (1860 to 1900). Introduced electricity, the internal combustion engine, and running water with indoor plumbing; which brought the telephone, electric lighting, the automobile, indoor flushing toilets, the division of labour, and mass production.
 - **Third (ICT) Revolution** (late 1960s to present). Introduced computerisation, and digitalisation; which brought the internet, and smart products and processes.
 - **Fourth (ICT) Revolution** (2016 onwards). Also known as **IR4.0**: the marriage of physical assets and advanced digital technologies – the internet of things (IoT), artificial intelligence (AI), robots, drones, autonomous vehicles,

3D printing, cloud computing, nanotechnology, and more – that communicate, analyse, and act upon information, enabling organisations, consumers, and society to be more flexible and responsive and make more intelligent, data-driven decisions.

The first two Industrial Revolutions changed fundamentally the way in which, and where, the majority of people live and work. Economy-wide impacts were however not immediate: the ‘golden age’ of US productivity growth for example was from 1913 to 1972, well after the second Industrial Revolution (1860 to 1900).

The late Professor Christopher Freeman, of the University of Sussex, argued in the 1990s that society was in only the early stages of that revolution, which would eventually prove bigger than the (first) Industrial Revolution, for two principal reasons:

- The ICT Revolution permeates all sectors of the economy – both industry and services – and is therefore particularly transformative; and
- It is impelled by global competition, and is thereby proceeding much more rapidly.

It seems that this prophesy will prove even more pertinent in the coming decades, as IR 4.0 increasingly takes over the running. Freeman also said that, even if all technological invention and laboratory development were to cease forthwith, technical progress in firms and economies could continue at something like its present pace for at least the following twenty years, just by bringing known technologies into the workplace.

¹⁰ Since 2018 we have been analysing and writing about **technologies that will shape the coming decade** and beyond, and which, because markets anticipate, are affecting asset prices today. We analyse what each technology is; how it works; principal applications; and implications and issues. We also analyse how specific activities and sectors stand to be affected.

We have also undertaken analyses at the macro level to see how well-placed different countries are, both to absorb the new technologies themselves and to adjust constructively to the structural change that the new technologies impel – each stands to affect specific activities, industries and, whether alone or in combination, entire economies.

To date we have written on over 40 separate technologies; 19 sectors/issues; and 3 pieces on countries’ comparative ability to adjust structurally:

Figure: Topics covered in the Llewellyn Consulting *Technologies series*

1	Blue Book on technology	25	Climate change – mind the gap
2	Eat, be eaten, or die	26	Robotic care companions
3	99 Disruptive technologies	27	Social credit scores
4	Smart Dust	28	VR and AR
5	Innovation – institutions, competition, and globalisation	29	Blockchain
6	Human organ printing	30	Brain-Computer Interfaces
7	Science, technology, and innovation	31	Electronic skin
8	Machine learning (AI)	32	Immunotherapies
9	More than a game	33	Satellite Mega-Constellations
10	Powered Exoskeletons	34	Satellite methane detection
11	Cultured meat	35	DNA data storage
12	Quantum computing	36	Gene editing
13	Long live the Technology Revolution	37	Cancer vaccines
14	Revolution #4: Artificial intelligence and economic policy	38	Next-generation nuclear
15	Revolution #4: Initial policy winners and losers	39	Life Extension
16	Vertical farming	40	Hydrogen
17	Smart machines	41	3D printing
18	Precision agriculture	42	Photocatalysts
19	Deep ocean windfarms	43	Semiconductor Chips
20	Cloud computing	44	Batteries
21	Precision medicine	45	Carbon Capture, Utilisation, and Storage (CCUS)
22	Overcoming Moore's law	46	Direct Air Carbon Capture (DAC)
23	Internet of Things	47	Plastics
24	Wearables	48	Planetary monitoring
		49	Large Language Models (LLMs)

¹¹ **Structural reform** can be defined as:

“Policies that encourage, or at least do not inhibit, the flow of resources from declining and less productive activities to growing and more productive activities”.

By enabling economies to adjust more smoothly, ‘good’ (or improving) structural (supply-side) policy settings serve not only to render them more efficient and thereby boost potential output, they may also equip them to adjust better to shocks. An already-extensive and still-growing body of research demonstrates constructive linkages between broad structural policy – both reforms and settings – and economic performance.

- **GDP per capita.** Across nearly 30 advanced economies there is a high correlation between per capita GDP and, for example, our summary measure of the quality of countries’ structural policy settings. A regression analysis of the relationship between GDP per capita (in 2019 \$US) and our normalised, summary, country-by-country, structural-policy scores showed just three countries standing out as unusual – Switzerland and Luxembourg (whose financial-service-based economies deliver way above average GDP/capita, and Ireland, which is mismeasured by the relocation of sales proceeds or assets by multinationals to their Irish subsidiaries.

(To take due account of this, Ireland’s Central Statistics Office publishes a Gross National Income (GNI) series, which adjusts for some of the effects of income transfers with the rest of the world and a modified GNI, which corresponds to the GNI adjusted for, among other things, depreciation on R&D service imports. For more, see [The impact of multinationals’ transfers on Irish GDP | Banque de France \(banque-france.fr\)](#).

Of course, causality may – and likely does – run both ways. But that does not obviate the striking fact that countries with high levels of GDP per capita tend, for whatever reason, to have better structural policies.

- **GDP growth and investment growth.** Moreover, the relationship extends to growth rates: the IMF for example has found a positive relationship between structural policy and economic performance – including with GDP growth and investment growth – and over a range of time horizons. See: [Structural Reforms and Macroeconomic Performance: Initial Considerations for the Fund; IMF Policy Paper, October 13, 2015](#)
- **Reduced ‘permanent output losses’.** Moreover, the OECD has found evidence that good structural policies and settings can also improve performance in the event of economic and financial crises:

“More flexible product markets are associated with smaller crisis-related losses in potential output, which may be because this allows for an easier reallocation of resources across firms and sectors in the aftermath of an adverse shock.”

These effects are not only statistically significant, but also quantitatively important: a difference in the OECD’s product-market regulation (PMR) indicator of one standard deviation is typically associated with a difference in output losses of 2½ percentage points. See Patrice Ollivaud and David Turner, [the-effect-of-the-global-financial-crisis-on-oecd-potential-output-oecd-journal-economic-studies-2014.pdf](#)

We ourselves have worked extensively in this area to draw together numerous measures of the quality of structural adjustment policies and policy settings across advanced and emerging economies. The results are summarised in the ‘heatmap’ below.

Among the ‘top’ group, the Nordic countries continue to score well – Denmark tops the rankings, closely followed by Finland and Sweden. While some of the ‘top’ countries have swapped places since our earlier work in this area, the ‘bottom’ group, which includes Mexico, Turkey, and Greece, is unchanged. This is perhaps not surprising, not least given the markedly lower income levels in these countries.

The UK’s position as the second best is perhaps somewhat surprising. It is driven primarily by that country’s strong showing in the product market regulation category; it fares notably less well in respect of ‘human capital’, for example. Japan is the one G7 economy that tends to rank reliably in the top 10, and its performance is fairly consistent across the three categories, with a particularly strong standing in ‘human capital’.

The position of the US continues to be an unremarkable ‘just above average’, and it lags behind Germany, Japan, and Canada. It is let down by its product market policies, and its particularly weak active labour market policies. However, it ranks rather well on ‘human capital’.

Figure: Structural policies heatmap

	Unit	Denmark	United Kingdom	Finland	Sweden	Australia	Netherlands	Norway	Germany	New Zealand	Japan	Ireland	Canada	Switzerland	United States	Korea	Slovenia	Estonia	Poland	Austria	Czech Republic	Hungary	Spain	Israel	Lithuania	Latvia	Belgium	Slovak Republic	Portugal	France	Chile	Italy	Luxembourg	Mexico	Greece	Turkey
Product market regulation																																				
Resolving insolvency	Index, 0-100	85	80	91	80	79	84	85	90	69	90	79	81	63	90	83	84	60	77	77	80	55	79	73	47	60	84	65	80	75	60	77	45	70	53	38
Distortions induced by state involvement	Index, 0-6	1.4	0.8	1.7	1.5	1.4	1.1	1.4	1.4	1.7	2.0	1.5	1.8	2.0	1.9	1.7	1.6	1.5	1.7	1.7	1.3	1.6	1.2	1.5	1.8	1.8	1.7	1.5	1.6	1.8	1.5	1.6	2.0	1.7	2.0	2.2
Barriers to domestic and foreign entry	Index, 0-6	0.6	0.7	1.0	0.8	0.9	1.1	0.9	0.8	0.8	0.9	1.2	1.7	1.1	1.5	1.7	1.0	1.1	1.2	1.2	1.3	1.1	0.8	1.3	0.6	0.7	1.7	1.5	1.1	1.3	1.3	1.1	1.4	1.5	1.1	2.4
Labour market flexibility																																				
Strictness of employment protection	Index, 0-6	1.6	0.9	1.8	1.6	1.3	2.4	2.5	2.0	1.3	1.2	0.9	0.4	1.3	0.2	2.3	1.8	2.4	2.0	1.8	2.3	1.4	2.3	1.6	1.4	0.9	2.1	2.4	2.5	2.8	2.8	2.8	2.9	2.1	2.4	3.6
Average tax wedge	% of labour costs	35	31	42	43	28	37	36	49	19	33	33	31	22	30	23	43	37	36	48	44	45	39	23	38	42	52	42	41	47	7	48	38	20	41	40
Public expenditure on ALMP	% of GDP	1.4	0.3	0.9	1.1	0.2	0.6	0.4	0.7	0.2	0.2	0.4	0.2	0.6	0.1	0.4	0.2	0.5	0.4	0.8	0.3	0.6	0.7	0.2	0.3	0.2	0.9	0.2	0.3	0.8	0.1	0.4	0.7	0.8	0.2	0.1
Human capital																																				
% of adults with at least upper secondary and/or tertiary education	%	82	68	90	84	83	80	83	87	81	100	80	92	89	91	89	89	90	93	86	94	85	61	87	93	88	79	91	52	80	67	62	75	40	74	42
PISA test scores (reading, maths, and science)	Average score	501	504	516	502	499	502	497	500	503	520	505	517	498	495	520	504	525	513	491	495	479	482	465	480	487	500	469	492	494	438	477	477	416	453	463
% of employed adults participating in non-normal education and training	%	51	55	56	63	65	72	65	56	76	49	59	64	72	68	59	55	48	31	67	53	66	47	57	33	54	51	57	54	58	55	52	53	42	19	28
AVERAGE RANK - ALL		11.3	11.8	12.1	12.6	12.7	13.2	13.7	13.7	13.8	13.8	14.0	14.1	14.4	15.1	15.2	15.7	17.1	17.2	17.6	17.7	18.2	18.2	18.6	19.0	19.9	20.9	21.3	21.4	22.4	23.8	23.8	26.1	26.4	28.2	32.7

Source: Llewellyn Consulting, compiled from the OECD and World Bank

Notes: The heatmap has been sorted by the overall average rank.

For more, see Sepping, S., and Llewellyn, J., 2021. *The three 'R's: Recovery, reallocation, and resilience*. 1 September, Llewellyn Consulting.

¹² **The political economy of structural reform** is challenging. While structural reform, if well-constructed and executed, brings many winners, it inevitably also brings losers; and whereas those who benefit are typically spread comparatively thinly across society, those who lose are often more highly concentrated, and correspondingly more vociferous. A number of factors can contribute to the achievement of success:

- **Broad support of the people.** Successful policy reform requires that there be at least tacit acceptance of it by a majority of the people; and in some cases it needs to be driven by the public will.
- **Concrete and feasible.** The reform agenda has to be easily understandable to the public. Widely accepted definitions and metrics that enable key stakeholders to monitor progress can be extremely constructive.
- **Wide political constituency.** In addition to support from the populace, successful reform requires broad-based political support, preferably cross-party, and from the top of government down. Disunity breeds incoherence; and compromises to appease disparate stakeholders usually complicate reform.
- **Good reform, good politics.** While there have been important exceptions, many governments that successfully implemented reforms for which they had prior electoral mandates went on to win re-election.
- **Policies inter-relate.** It is often counterproductive to consider individual elements of policy separately, in isolation from one another. Generally, all major areas of policy are best considered and implemented together.
- **Strong leadership.** Successful implementation of policy reform requires leadership by a well-trained, respected, committed, and cohesive team, which includes technocrats and 'technopols'.
- **Anchor institutions.** Due account has to be taken of a country's history: the issue of 'how to get from here to there' is real. The ability, credibility, cohesion, and firmness of purpose of those impelling reform has to be supported throughout the country's legislative, operational, and informational institutions – from local authorities, leading businesses, and business associations to trade unions, universities, and investors.
- **Agents of change at all levels.** It helps considerably if there are agents of change – 'points of light' – throughout society, ranging from business people to journalists to NGOs. These people provide vocal, local, and credible support, which aids the communications process.
- **Early winners.** Initial successes can boost expectations and generate momentum for continuing reform. That said, 'low-hanging-fruit' strategies can also pose problems of their own: actions that start with certain sectors, and are seen as a harbinger of deeper reforms, may lead opponents to adopt an intransigent position to stall the process, even over relatively minor measures.
- **Maintaining momentum.** Gradualism seldom succeeds. And while there can often in theory be an optimal sequence for a range of reforms, in the real world this is often impractical.
- **Assessing and demonstrating progress.** Maintaining policy momentum is aided considerably if the public see progress being made. Making this visible, qualitatively and quantitatively, may require institutional change – including perhaps creation of independent bodies with power of oversight.

- **Equity and fairness.** It is appropriate, and often politically essential in the long term, to compensate losers, while at the same time not eliminating the gains from change. Economists and business leaders who urge ‘reform’ often pay insufficient attention to the need for fairness and equity as between winners and losers – which is one reason for the increasing political opposition to ‘structural reform’.
- **Positive structural adjustment.** It is in the interests of all that compensation for those disadvantaged by structural change should be constructive, equipping them to work in new jobs, often using new skills. These policies can be expensive; and take time to come to fruition, but the payoff is considerable. For more, see Alain de Serres, John Llewellyn, and Preston Llewellyn, [OECD iLibrary | The Political Economy of Climate Change Mitigation Policies: How to Build a Constituency to Address Global Warming?](https://oecd-ilibrary.org/publications/9789264072000) (oecd-ilibrary.org)

¹³ **The virus and consequent recession accelerated a number of trends** that were under way before the pandemic hit – in particular towards more pervasive digitisation, and away from globalisation (in the pursuit of greater ‘self-sufficiency’, either in general or of so-called ‘strategic’ products).

The consequences of such effects on business/employer and household/employee preferences may have been to retard, although perhaps not reverse, some other long-standing trends, including the drift of populations towards large conurbations (and within these, the concentration of high-paying services jobs in central business districts or ‘downtowns’) and rapid growth in international leisure and business travel. They may also have continuing implications for the popularity and viability of mass transit, high-rise housing, and high-rise offices.

¹⁴ Some countries – e.g. the US – are particularly advanced in the **invention and development of new technologies**. But it does not follow that such countries are necessarily also the best placed to benefit from them. The ability to make use of new technologies depends on a raft of factors; and the quantitative evidence on how countries compare with one another in respect of various of these considerations is presented in the heat map below.

Figure: Innovation heatmap

Standardised data	CHE	NLD	BEL	DNK	SWE	CAN	FIN	UK	NOR	AUS	DEU	AUT	IRL	NZL	US	KOR	JPN	ISR	LUX	FRA	SVK	LTU	PRT	CZE	EST	ESP	GRC	SIK	ITA	LAT	TUR	POL	HUN		
Science																																			
R&D expenditure in public sector	1.0	0.9	-0.2	2.2	1.4	0.4	1.2	-0.9	0.8	0.5	1.1	0.9	-2.1	0.5	-0.2	0.8	-0.1	-0.7	-0.5	0.1	-1.0	0.2	-0.3	0.8	0.3	-0.8	-0.5	0.7	-0.9	-1.3	-1.1	-1.0	-2.1		
R&D expenditure in business sector	0.9	-0.2	0.5	0.6	1.1	0.5	0.7	-0.2	-0.3	-0.2	0.7	1.0	-0.3	-0.9	0.7	1.9	1.7	2.6	-0.8	0.2	0.4	-1.2	-0.9	-0.3	-0.8	-0.8	-1.2	-1.2	-0.7	-1.4	-1.0	-1.0	-0.4		
Private co-funding of public R&D expenditures	1.8	1.6	1.1	-0.9	-0.2	0.2	0.1	-0.4	0.0	0.2	3.0	-0.1	-1.4	0.0	-0.9	0.6	-0.9	0.3	-1.3	-0.3	0.2	1.8	-1.3	-0.5	-0.3	-0.4	-0.1	-0.3	-1.2	0.3	0.8	-1.0	-0.6		
Public-private co-publications	3.7	0.9	0.6	2.4	1.3	-0.3	0.7	0.2	0.0	-0.3	0.2	0.5	-0.3	0.0	0.4	0.1	0.0	-0.4	-0.7	-0.1	0.1	-0.9	-0.8	-0.7	-0.9	-0.7	-0.7	-0.7	-0.6	-0.9	-0.9	-0.9	-0.4		
PCT patents, applications	1.9	0.9	-0.1	0.9	-1.9	-0.3	1.7	-0.2	0.2	-0.4	1.0	0.5	-0.3	-0.4	0.5	1.1	2.1	1.2	0.0	0.0	-0.5	-1.0	-1.0	-0.9	-1.0	-0.8	-1.1	-1.1	-0.6	-1.0	-1.1	-1.1	-0.9		
Scientific publications among top 10% most cited	1.7	1.4	0.9	1.1	0.6	0.7	0.3	1.5	0.4	0.8	0.5	0.6	0.7	0.0	1.3	-1.0	-1.1	0.0	0.6	0.4	-0.4	-1.8	-0.2	-0.9	-0.6	0.0	-0.3	-1.3	0.1	-1.8	-1.6	-1.5	-1.1		
Readiness																																			
ICT infrastructure	1.2	0.8	0.5	1.0	1.0	0.2	0.4	1.2	0.7	0.1	0.8	0.2	0.4	0.8	0.3	0.0	0.2	-0.4	1.4	0.7	-0.5	-0.2	-0.3	-0.2	-0.7	0.3	-0.5	-2.1	-0.5	-0.4	-3.1	-1.5	-1.8		
New doctorate graduates	1.9	0.5	-0.1	1.7	1.3	-0.5	1.2	1.4	0.2	0.6	1.2	0.0	0.8	0.0	-0.4	-0.3	-0.8	-0.5	-1.1	-0.2	2.0	-0.9	0.0	-0.3	-1.0	0.0	-0.9	0.4	-0.4	-1.2	-1.8	-1.5	-1.1		
Tertiary education	0.6	0.2	0.0	0.1	0.3	1.7	-0.3	0.6	0.5	0.5	-1.4	-0.5	0.9	-0.4	0.3	2.7	1.7	0.3	0.7	0.1	-0.3	1.2	-1.1	-1.3	-0.3	-0.2	-0.3	-1.2	-1.9	-0.4	-1.6	0.0	-1.2		
Quality of education	1.8	1.2	1.3	0.8	0.5	0.9	1.3	0.7	0.9	0.8	0.5	0.0	0.6	0.9	0.7	-0.6	-0.3	0.1	-0.3	0.2	-0.1	-0.3	-0.4	-0.7	0.4	-0.8	-1.8	-1.6	-0.8	-0.7	-2.1	-1.1	-1.9		
Digital skills	1.8	1.0	0.0	1.0	0.8	0.6	1.0	0.5	1.4	0.6	0.5	0.3	-1.1	1.2	0.4	0.0	-0.4	-0.7	1.9	-0.2	-0.6	-0.6	-0.8	-0.2	0.3	-0.4	-1.1	-0.5	-1.2	-0.7	-2.6	-1.4	-0.8		
Adoption																																			
Technological adoption	1.3	1.0	0.6	0.4	1.1	0.3	0.7	1.0	1.2	-0.2	0.6	0.0	1.1	0.3	1.0	-0.4	0.4	1.0	1.0	0.1	-1.2	0.0	0.2	-0.2	-0.2	-0.6	-2.1	-0.3	-1.6	-1.3	-1.4	-1.4	-2.0		
SMEs with product or process innovations	1.3	0.8	1.3	0.1	0.6	1.7	0.9	-0.1	0.7	1.9	0.7	0.6	1.1	0.0	-1.0	-0.3	-0.8	-1.0	0.3	0.2	-0.4	0.0	0.8	-0.2	-1.4	-1.3	0.1	-1.4	-0.1	-1.8	-0.2	-1.7	-1.6		
SMEs with marketing or organisational innovations	2.0	-0.4	0.7	0.2	-0.1	1.5	0.0	0.7	0.5	1.0	1.0	0.7	1.3	0.0	0.0	-0.5	-0.2	0.6	1.4	0.4	-0.3	-1.0	0.1	-0.9	-1.8	-0.9	0.3	-1.2	-0.2	-1.5	0.3	-2.1	-1.8		
Innovative SMEs collaborating with others	-0.6	0.9	2.8	0.2	0.2	0.0	0.8	2.1	1.2	0.2	-0.4	1.4	0.3	0.0	0.0	1.7	0.8	0.1	-0.5	0.2	0.2	0.5	-0.8	-0.4	-0.2	-0.9	0.4	-0.7	-0.9	-1.6	-1.0	-1.5	-1.0		
Ease of starting a business	-0.7	0.6	0.7	0.6	0.7	1.6	0.4	0.7	0.7	1.2	-1.3	-1.8	1.0	2.0	-0.1	1.0	-1.3	0.2	-0.7	0.4	0.0	0.3	0.3	-1.1	0.8	-1.1	-0.2	-0.7	-0.5	0.6	-1.1	-1.7	-1.0		
Overall																																			
Total score (higher = better)	4.2	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.4	3.3	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	2.9	2.8	2.6	2.6	2.5	2.4	2.3	2.2	2.2	2.1	1.9	1.8	1.7	
Standardised total score	1.8	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.6	0.4	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	-0.2	-0.4	-0.6	-0.7	-0.8	-1.0	-1.1	-1.2	-1.2	-1.3	-1.7	-1.8	-1.9

Source: Llewellyn Consulting

Notes: Standardised variables are colour coded. Dark green shows countries with the best structural policy/setting; dark red those with the worst.

The five economies that are ranked highest are all small: Switzerland, the Netherlands, Belgium, Denmark, and Sweden. The highest-placed big economy is Canada, which ranks 6th, followed by Finland, the UK, and Norway. The lowest ranking countries are Italy, Latvia, Turkey, Poland, and Hungary.

Interestingly, most of the G7 economies do not rank particularly highly: Germany 11th, the US 15th, Japan 17th, France 20th. The middling ranking of the US often evokes surprise, given high-tech images of NASA, Silicon Valley, and its internationally highly ranked universities. But the US rank reflects the fact that, notwithstanding all this excellence at the top, the average level in the US – and not least average levels of educational attainment – are not particularly high in international comparison.

For details of how the heatmap was constructed, see Sepping, S., and Dharmasena, B., 2017. *Science, technology, and innovation: a closer look*. Llewellyn Consulting. 12 September.

¹⁵ Although the age of retirement in many countries is likely to be raised, *de facto* or *de jure*, **labour force growth** nevertheless seems set to slow in many economies. And **household formation and consumption** also seem likely to weaken.

¹⁶ **A range of issues**, including standards of care for the aged (and who pays for it); access to affordable housing (particularly in those countries where house prices have escalated rapidly over past decades and are continuing to do so); and ‘job security’/ the ‘gig economy’ may also command greater attention.

¹⁷ We analyse **the evolution of GDP** as the working-through of economic disturbances, within the prevailing institutional and behavioural framework. Thus we are not comfortable with the concept of the ‘business cycle’, largely because, whatever else they may be, fluctuations in economic and business activity are scarcely ‘cycles’, at least in the sense used in the physical sciences. Typically, economic episodes differ greatly in length from one another: while the average length of the 12 post-WWII US peak-to-peak episodes was 75 months, individually they ranged from 32 to 128 months (as measured by the National Bureau of Economic Research. See: [US Business Cycle Expansions and Contractions | NBER](#))

One of the reasons that the notion of **‘economic’ or ‘business’ cycles** held sway for so long was that, in the pre-computer era, the best (indeed generally the only) way to analyse interactive systems – such as that involving the accelerator and the multiplier – was to assume that they took mathematical forms that had already been found to be analytically tractable. With the advent of computers and numerical solution, that practice is no longer necessary: but the word, and thereby the implicit underlying intellectual framework, lingers on.

Today, while less elegant, solving computationally the many relationships taken to represent the real world of complex, multiple relationships is likely to result in a potentially more accurate depiction of reality. That said, as our colleague Philip Turner points out, there is a risk that a model may produce a result that is hard to explain, and that the main driver of that result is a hidden technical specification that may be wrong.

Taking all these arguments into account, we side with the judgement expressed by the authors of a comprehensive 2017 IMF study of the dynamic behaviour of more than 150 economies over 40-odd years, that:

“Output does not cycle around a long-term upward trend. Instead, shocks result in a complete shift in the trend line itself. In short, the ‘business cycle’ is not a cycle.”

The authors also take a pot-shot at the interpretation that is placed on trends:

“... the traditional paradigm of the business cycle should be replaced with a new paradigm of output dynamics that incorporates hysteresis along the lines shown in the evidence...”

See [Booms, Crises, and Recoveries: A New Paradigm of the Business Cycle and its Policy Implications \(imf.org\)](#) p. 6

¹⁸ The 1973/74 and 1978/79 oil price shocks each raised the OECD’s aggregate price level by an initial 2%-odd. The OECD has estimated a similar figure for the Ukraine war. For more see [link](#).

¹⁹ For more, see the endnote attached to the *Structural change* paragraph of the *Principal drivers* section.

²⁰ Monitor particularly the FOMC’s preferred measure of consumer price inflation, **the core PCE deflator**. Until 2000 the FOMC focused on CPI inflation but, after extensive analysis, changed to PCE inflation, for three main reasons: First, the expenditure weights in the PCE can change as people substitute away from some goods and services toward others; second, the PCE includes more comprehensive coverage of goods and services; and third, historical PCE data can be revised (more than for seasonal factors only). See <https://www.stlouisfed.org/publications/regional-economist/july-2013/cpi-vs-pce-inflation--choosing-a-standard-measure> - endnotes Moreover, the CPI was judged to give undue weight to imputed rent on owner-occupied housing.

The CPI gives a 32.57% weight to ‘shelter’ (see [Table 6. Consumer Price Index for All Urban Consumers \(CPI-U\): U.S. city average, by expenditure category, 1-month analysis table - 2021 M10 Results \(bls.gov\)](#) within which “owner’s equivalent rent of primary residence” is 22.41% and tenants’ rent is 7.61%. There are some other components of ‘shelter’ as well, such as student accommodation and insurance. By contrast housing is about 16% of the PCE Deflator. For a detailed discussion of the measurement of house prices by three economists on the CEA staff, see [Housing Prices and Inflation | The White House](#). For yet more, see Board of Governors of the Federal Reserve System, 2000. [FullReport.pdf \(federalreserve.gov\)](#)

²¹ In the US, monitor particularly the **US Bureau of Labour Statistics Employment Cost Index** and the **Atlanta Fed Wage Growth Tracker**. Also worth watching in the present context is the **Philly Fed manufacturing and services indexes**, which provide useful additional information to that in the customary ‘upstream’ PPI measures. The ‘prices paid’ measure captures the evolution of producers’ costs: the ‘prices received’ measure indicates how readily producers can pass these costs on.

In Europe, monitor surveys of longer-run household inflation expectations, given the weight that central banks currently place on them.

²² **Periods of rapid structural adjustment can produce big changes in just a small number of components**, and this can give a misleading picture of how fast prices in general are changing. It can therefore be appropriate, particularly at present, also to monitor ‘core’ indices and ‘trimmed mean’ indexes.

‘Exclusion’ measures (so-called ‘core’ inflation) simply ignore some (often volatile) components such as energy and seasonal food.

- The ‘core’ version of the Consumer Price Index (CPI) for the US is produced by The Bureau of Labor Statistics; See U.S. Bureau of Labor Statistics. "[Consumer Price Index Frequently Asked Questions](#)."
- The ‘core’ version of the Implicit Price Deflator for Personal Consumption Expenditures (PCE) is produced by the US Bureau of Economic Analysis (BEA) Bureau of Economic Analysis. "[Prices & Inflation](#)." (The PCE deflator is the preferred measure of inflation Board of Governors of the Federal Reserve System. See "[Federal Open Market Committee Announces Approval of Updates to its Statement on Longer-Run Goals and Monetary Policy Strategy](#)."

‘Statistical’ measures, such as the trimmed mean, exclude components at the top and bottom of the distribution of price changes.

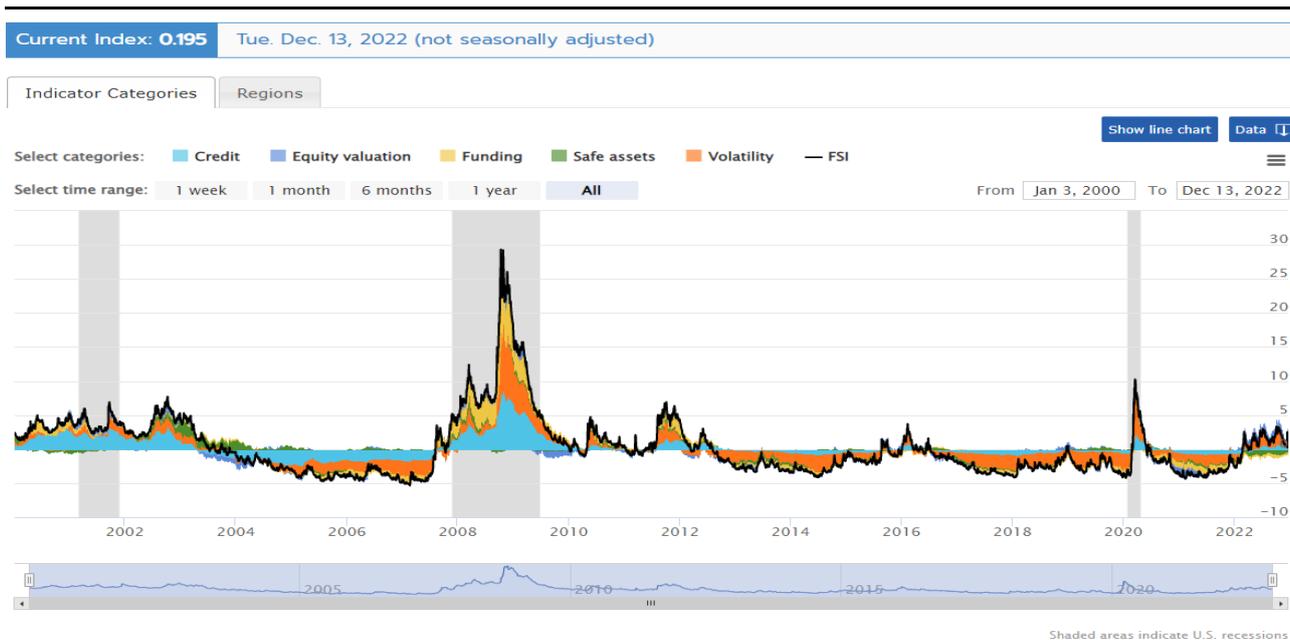
- **The Cleveland Fed** calculates a ‘16 percent Trimmed-Mean CPI’, and also a median CPI. See [Median CPI: Background and Resources \(clevelandfed.org\)](#)
- **The Dallas Fed** procedure for calculating its trimmed mean PCE Deflator involves “... *dropping 19.4% from the lower tail of the distribution of monthly price changes and 25.4% from the upper tail*” so as to produce a trimmed mean inflation rate that “... *hewed closely to the trend in overall PCE inflation*.” See [Trimmed Mean PCE Inflation Rate - Dallasfed.org](#)

Other central banks too calculate trimmed means – with various different degrees of trimming:

- **The Bank of Japan** has been using a symmetric trimming of 10% at the top and the bottom of the distribution: see Bank of Japan [Measures of Underlying Inflation \(boj.or.jp\)](#)
- **The Bank of Canada** has been using a symmetric trimming of 20% at the top and bottom of the distribution: see [Inflation Indicators - Bank of Canada](#)
- **The European Central Bank (ECB)** does not systematically publish trimmed-mean inflation numbers, but has been recently using a symmetric 7.5% trimming: see [Comparing recent inflation developments in the United States and the euro area \(europa.eu\)](#) .
- **The Reserve Bank of Australia** publishes a seasonally adjusted weighted median, a 30 percent trimmed mean, and a CPI excluding volatile items (fruit, vegetables and petrol). See [Measures of Consumer Price Inflation | RBA](#)

The Reserve Bank of New Zealand tends to focus on three principal inflation measures – an ‘exponentially smoothed’ (ES) measure, a ‘trimmed mean’ measure, and a ‘factor model’ measure. See Rachel Holden, 2006. [Reserve Bank Bulletin Volume 69, No. 4, December - Measuring core inflation \(rbnz.govt.nz\)](#).

²³ The US Treasury’s [OFR Financial Stress Index](#) has fallen sharply. The index is a daily market-based snapshot of stress in global financial markets. It is constructed from 33 financial market variables, such as yield spreads, valuation measures, and interest rates. The OFR FSI is positive when stress levels are above average, and negative when stress levels are below average. The OFR FSI incorporates five categories of indicators: credit, equity valuation, funding, safe assets and volatility. The FSI shows stress contributions by three regions: United States, other advanced economies, and emerging markets.



²⁴ **Measures of inflation expectations can be: model-based, or survey-based** – for a general discussion of methods, see Federal Reserve Bank of Cleveland [Measures of Expected Inflation: Center for Inflation Research \(clevelandfed.org\)](https://www.clevelandfed.org/research/expected-inflation)

- **The Fed index of inflation expectations**, which is survey based, is constructed “using 21 inflation expectation indicators ...” Expectations are “... derived from households, firms, professional forecasters, and financial market participants. [They] include both ‘short horizon’ inflation expectations, which are typically forecasts for the year ahead, and ‘long horizon’ inflation expectations, which are typically forecasts made for some period over the subsequent 5 to 10 years. ... some indicators ... are denominated in terms of a specific inflation measure—like the consumer price index (CPI) or the personal consumption expenditures (PCE) price index — while others are described only in general terms such as “the change in prices.” See [The Fed - Index of Common Inflation Expectations \(federalreserve.gov\)](https://www.federalreserve.gov/press/prcler01.htm)
- **The University of Michigan** surveys a sample of US households about the change in prices they expect during the coming year, and the average change in prices they expect over the coming 5 to 10 years. See [Surveys of Consumers \(umich.edu\)](https://www.umich.edu/consumers)
- **The Federal Reserve Bank of Philadelphia** surveys a panel of professional forecasters for their expectations of inflation as measured by a number of price indexes that include the CPI, the core CPI, the PCE index, and the core PCE index. For more, see information about the expected inflation series and the survey which can be found at [Survey of Professional Forecasters \(philadelphiafed.org\)](https://www.philadelphiafed.org/research-and-data/professional-forecasts) [Accessed 10 June 2021]
- **The Cleveland Fed**, in a model-based procedure, calculates the US inflation premium using Treasury yields, inflation data, inflation swaps, and survey-based measures of inflation expectations. See [Survey of Professional Forecasters \(philadelphiafed.org\)](https://www.clevelandfed.org/research/expected-inflation)
- **The Minneapolis Fed** produces estimates of market-based probabilities of significantly higher (or lower) inflation derived from options pricing.

²⁵ Except in a half-hearted way, for a short period, by the Fed in 2016-18.

²⁶ Another risk is that increased uncertainty about inflation (especially as relative prices change a lot) could increase the inflation risk premium in bond prices. And a further possibility, is that the ending of the ‘demographic dividend’ – a diminishing pool of surplus labour leading to a reduction in the saving rate – may cause the natural rate of interest to rise, even if potential growth remains low.

For more on this point, advanced by Goodhart and Pradhan, see the review of their book by Philip Turner, 2020. *Book notes: the great demographic reversal, by Charles Goodhart and Manoj Pradhan*. Central banking. See [Book notes: The great demographic reversal, by Charles Goodhart and Manoj Pradhan - Central Banking](#)

²⁷ **When it comes to looking ahead**, there are many different possible futures, and a major part of forecasting and investing successfully involves determining which of these various futures is most likely to eventuate. In turn, an important part of this assessment involves deciding whether, or the extent to which, various possible outcomes are ‘sustainable’.

One measure of sustainability that we frequently invoke is the ‘Rule of Four’. Originally proposed by Norges Bank then Deputy Governor Jan Qvigstad, it provides a simple-to-calculate, easily understood portent of ‘danger’ in the OECD economies. The ‘Rule of Four’ focusses on a country’s inflation rate, and its current account and budget deficits expressed as a percentage of GDP. A value of 4 or above for any of these variables is generally a warning signal, while a value of more than 4 for two or more of these variables almost certainly spells serious trouble.

Its predictive power is interestingly strong. For example, had the ‘Rule of Four’ been applied in the Western economies in the years before 2008 (and it had first been propounded many years before), it would have warned of impending trouble. It is always tempting for policymakers to think that ‘this time is different’ – but that is seldom so.

For more, see [The ‘Rule of Four’ by Jan F. Qvigstad, John Llewellyn, Nikka Husom Vonen, Bimal Dharmasena :: SSRN.](#)

²⁸ **The longer that a strong dollar persists, the larger the US current account is likely to get.** At the same time, the longer that sluggish output in Europe persists, the larger stands to be its underlying (i.e. non-energy related) current account surplus; and especially those of Northern Europe, as well as parts of Asia. Particularly if the US authorities become concerned at the cumulating size of US obligations to foreigners, and see policies abroad as contributing to the US deficit, the greater will be the likelihood of a dollar reversal.

²⁹ **The 1985 Plaza Agreement**, between France, West Germany, Japan, the United Kingdom, and the United States sought depreciation of the US dollar relative to the Japanese yen and German Deutsche Mark by intervening in currency markets. And it worked, in the sense that the US dollar depreciated significantly from the time of the agreement.

But the dollar depreciation got out of hand, and gave rise in 1987 to the **Louvre Accord** between Canada, Italy, France, West Germany, Japan, the United Kingdom, and the United States to stabilise international currency markets and halt the continued decline of dollar. To achieve this, it was necessary to bring about significant changes in policy, differentiated by country.

Germany, the real object of this agreement because of its very large (3.4% of GDP) current account deficit, agreed to cut taxes for individuals and corporations, and keep official interest rates low. The United States agreed to reduce its fiscal 1988 deficit to 2.3% of GDP from an estimated 3.9% in 1987, reduce government spending by 1% in 1988 and keep interest rates low. France agreed to reduce its budget deficits by 1% of GDP and cut taxes by the same amount for corporations and individuals. Japan agreed to reduce its trade surplus and cut interest rates. The UK agreed to reduce public expenditures and reduce taxes.

³⁰ **One quantitative way to consider whether, or the extent to which, assets may be overvalued** is to examine the extent to which current valuations lie towards – or perhaps outside – the confidence limits of a well-specified equation that ‘explains’, in a statistical sense, past movements in terms of their main drivers.

The Shiller calculation is a basic example. In practice, however, it often proves difficult to say with any useful degree of probability that assets are overvalued. Before the 2008 Global Financial Crisis, for example, in the years leading up to the 2008 the economics team at Lehman Brothers estimated a number of house price equations, and the experience with them was that, while they suggested that valuations were ‘stretched’, they did not enable that assertion to be made definitively according to the customary tests of statistical significance.

³¹ Data as of November 2022: see Professor Shiller’s homepage at: [Online Data - Robert Shiller \(yale.edu\)](#) and especially his ‘Excess CAPE Yield’, which measures the excess of the CAPE yield over the long term real rate on the 10-year Treasury.

A further consideration that pushes upwards on equity valuations, as our colleague Philip Turner emphasises, is that there has been a huge (and deflationary) rise in US corporate saving as defined in the national accounts (that is, not counting financial acquisitions as investment). Investors buy companies to get their hands on this cash, and then leverage profits by loading up on debt.

³² **A fundamentally different, behaviour-based, approach** that we also employ, at least as that Minsky typology, we judge that at present stock markets, along with various other ‘real’ assets, had risen to around stage 5 or perhaps 6 of the full 9-stage process to crisis, have fallen back significantly.

³³ **Anatomy of a crisis: The Minsky/Kindleberger typology**

1. **Events start with a ‘displacement’** – some exogenous shock outside the macroeconomic system e.g. a war, a bumper crop or failure, the widespread adoption of a new invention with pervasive effects, some political event or surprising success, or a precipitous lowering of interest rates.

2. **Expansion of bank credit** enlarges the total money supply and feeds the boom. This may involve the formation of new banks, the development of new credit instruments, and the expansion of personal credit outside of banks.
3. **Demand pressure and prices increase**, giving rise to new profit opportunities and attracting still further firms and investors. Positive feedback develops, as new investment leads to increases in income that stimulate further investment and further income increases.
4. **'Euphoria' sets in.** Speculation for price increases is added to investment for production and sale, often resulting in 'overtrading' (pure speculation for a price rise); an overestimate of prospective returns; or excessive gearing.
5. **Bubbles or manias develop.** The number of firms and households engaging in these practices grows large, bringing in segments of the population that are normally aloof from such ventures. The object of speculation may involve primary products, particularly imported; domestic and foreign securities of various kinds; contracts to buy or sell securities of various kinds; land; houses; office buildings; shopping centres; condominiums; foreign exchange. A larger and larger group of people seeks to become rich without a real understanding of the processes involved.
6. **Overtrading spreads from one country to another**, whether through arbitrage for internationally traded commodities and assets; capital flows; money follows; foreign exchange; or purely psychological transmission effects.
7. **Interest rates, velocity of circulation, and prices all continue to mount.** A few insiders take their profits and sell out. At the top of the market there is hesitation, as new recruits to speculation are balanced by insiders who withdraw. Prices begin to level off.
8. **Financial distress.** Awareness starts to grow in a considerable part of the spending community that a rush for liquidity – to get out of assets and into money – may develop, leading some speculative borrowers unable to pay off their loans. As distress persists, speculators come to realise that the market cannot grow higher. It is time to withdraw, the race out of real or long-term financial assets and into money turns into a stampede.
9. **Crisis.** The trigger may be the failure of a bank or firm stretched too tight, the revelation of a swindle or 'defalcation', or a fall in the price of the primary object of speculation. Prices decline. Bankruptcies increase. Liquidation is sometimes orderly, but may degenerate into panic. Banks cease lending on the collateral assets whose prices are falling.
10. **The panic feeds on itself until one of three things happens:**
 - a. Prices fall so low that people are tempted back into less liquid assets
 - b. Trade is cut off by setting limits on declines. Shutting down exchanges, or otherwise closing trading.
 - c. A lender of last resort succeeds in convincing the market that money will be made available in sufficient volume to meet the demand for cash.

(Condensed from Kindleberger, C. P., *Manias, Panics, and Crashes*, 4th edition, pp. 13-18 (2000, John Wiley & Sons)

³⁴ Common problems include significant current account deficits, large dollar-denominated private sector indebtedness, particularly amongst large Latin American corporates, which have been borrowing heavily in hard currencies on the world capital markets. For more, see Philip Turner and John Llewellyn, 2021. *The growing Latin American debt risk*. Llewellyn Consulting – Independent Economics, March. Available on request; and Philip Turner and John Llewellyn, 2021. *Seeds of the next financial crisis – EM dollar borrowing*. Llewellyn Consulting – Independent Economics

A heatmap below summarises the key macroeconomic vulnerability metrics.

EM economies at risk

	Current Account % GDP	Fiscal Balance % GDP	Reserve assets % ARA (IMF)	External debt % Reserves	CPI YOY % change	FX YTD perf % against USD	10Y yield %
Brazil	-2.1	-4.41	147	160	10.1	8.35	11.7
Chile	-8.0	-7.52	104	466	14.1	-8.60	6.77
Colombia	-5.8	-6.83	133	298	10.8	-9.34	12.9
Mexico	-0.8	-3.80	134	228	8.7	2.38	9.54
Peru	-5.0	-2.59	275	101	9.32	0.69	5.63
Czech Republic	-3.3	-6.13	300	118	17.2	-11.31	5.02
Hungary	-7.6	-6.77	121	690	15.6	-22.84	9.56
Poland	-3.4	-2.52	138	238	16.2	-16.51	6.92
Turkey	-8.2	-3.51	64.9	625	80.2	-28.51	12
Egypt	-5.3	-7.31	56.5	422	13.1	-20.01	18.7
Israel	3.3	-4.24	288	75.9	4.6	-11.21	3.29
Pakistan	-3.5	-6.08	43	664	27.3	-21.66	13.2
Kazakhstan	6.5	-4.10	190	1513	6.97	-7.89	9.83
South Africa	0.2	-6.41	73	321	8.05	-9.59	10.3
China	1.6	-5.99	64.5	20.6	2.00	-10.71	2.78
Hong Kong	5.9	0.37	68.7	378	1.87	-0.68	3.46
India	-2.4	-10.35	175	99.9	7.04	-8.47	7.41
Indonesia	0.9	-4.62	136	296	4.69	-6.25	7.39
Malaysia	0.9	-5.46	114	223	2.2	-10.36	4.35
Philippines	-6.6	-6.46	199	107	6.09	-12.67	7.1
Singapore	19.3	0.10	67.8	425	7.05	-5.44	3.32
South Korea	1.7	-0.64	94.8	137	5.71	-16.16	4.1
Sri Lanka	-3.4	-12.55	12.1	1072	66.7	-44.77	27.2
Thailand	-6.2	-7.85	242	91.3	7.86	-11.38	2.95

MACROBOND

Source: Macrobond Note: Data as of 10 October 2022.

³⁵ The IMF has found that, **on average across countries, after recoveries have begun** (i.e., the first year of positive growth following a recession), **growth has typically been 0.8 percentage points lower** than the average in all expansion years if the recession was associated with a banking crisis, and 0.5 percentage points lower than in all expansion years if the recession was not associated with a banking crisis. Growth was 0.6 percentage points and 0.3 percentage points lower during the first four years of recovery for banking crisis- and non-banking crisis-related recoveries, respectively. See *Booms, Crises, and Recoveries: A New Paradigm of the Business Cycle and its Policy Implications* (imf.org) p. 5.

³⁶ We have long placed considerable store by Nomura's *Damocles*, its early warning noise-to-signal-based indicator of EM exchange rate crises. In back tests, *Damocles* correctly signalled, up to 12 months in advance, 64% of the past 61 exchange rate crises in its sample since 1996.

A Damocles score above 100 "... should be interpreted as a warning signal that the country is vulnerable to a currency crisis in the next 12 months." Currently *Damocles* signals four countries – Egypt (175), Romania (115), Turkey (108), and Sri Lanka (104) – as vulnerable. At the other end of the spectrum, 13 of the 32 EM countries in the sample have *Damocles* scores of below 20, signaling very low risk of a currency crash. This highlights the current high degree of heterogeneity in EM economic fundamentals.

That said, despite several countries having low scores, the sum of the scores for the 32 countries have increased since February 2021 – rising in 11 countries and falling in only five – indicating a rise in overall EM exchange rate risk.

³⁷ At the time of writing (13 December 2022) the PE of the S&P 500 was 19.2. Source: *P/E & Yields* (wsj.com) while that of the stocks in the MSCI Emerging Markets index was 12.47. Source: *MSCI World Index*

³⁸ It can be both appropriate and helpful to consider commodities in two broad groups: those **'below the ground'** and those **'above the ground'**. This empirically useful typology was advanced by David Jacks, who observed:

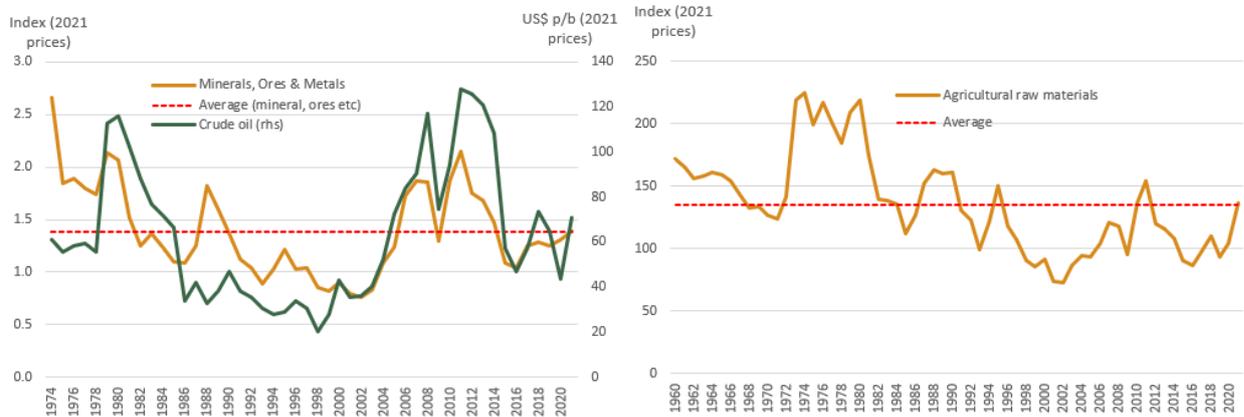
"... a potentially large, but somewhat underappreciated, distinction between 'commodities to be grown' which have evidenced secular declines in real prices versus 'commodities in the ground' which have evidenced secular increases in real prices."

Jacks observed, importantly, that from 1900 until the early 1970s the aggregate price indexes for the two groups of commodities moved fairly similarly: but ever since the 1973/74 oil shock the two sets of commodities have behaved quite differently. See David Jacks, 2013. *From Boom to Bust: A Typology of Real Commodity Prices in the Long Run* (nber.org)

Commodities to be grown', which include animal products, grains, and other soft commodities, have been markedly much less variable than their 'below the ground' counterparts; and, at least in part because of government policies

encouraging ‘excess supply’ and discouraging trade, they have overall trended downwards – see Figure below. This basic evolution is also exhibited by the majority of the individual commodity price series that make up the aggregate.

Figure: Real commodity price indexes: ‘below the ground’ (1974-2021) and ‘above the ground’ (1960-2021)



Clearly, the war in Ukraine has discombobulated commodity markets substantially. But as and when that war ends and normalcy in commodity supply returns, it is ikey that this basic dichotomy and tendency will reassert itself.

- ³⁹ Batteries require lithium, nickel, manganese and cobalt; charging stations require copper; solar panels use copper, silicon, silver and zinc; while wind turbines require iron ore, copper, and aluminium.
- ⁴⁰ **China may even seek to ‘test’ the resolve of the Biden Administration**, perhaps in an echo of Premier Khrushchev’s ‘testing’ of President Kennedy with the installation of nuclear missiles in Cuba in 1962. Indeed, China has already done so, although to date the US has not reacted directly to this ‘provocation’, at least, not publicly. But it has indicated its intention to strengthen its joint defence arrangement with Australia through the AUKUS nuclear submarine agreement, and most recently has strengthened the presence in Australia of the US air force.
- ⁴¹ Contact us at enquiries@independent-economics.com or Gatehouse Partners at <http://gatehouseadvisorypartners.com/> for more information.
- ⁴² See [Allen, W., Chadha, J., & Turner, P. \(2021\). Commentary: Quantitative Tightening: Protecting Monetary Policy from Fiscal Encroachment. National Institute Economic Review, 257, 1-8.](#) and also Gerald Holtham John Llewellyn 2021. *Monetary policy and the value of the public debt*. 23 April. Available on request; and also
- ⁴³ See: [Annual Economic Report 2022 \(bis.org\)](#), especially Chapter 1.

[Cut-off point for information: 19 December 2022]

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