Achilles

SUPPLY CHAIN RISK INDEX

2023 Q1 REPORT

Supply chain resilience has improved but emerging headwinds are dogging business confidence.

www.achilles.com

Key findings

The Achilles Supply Chain Resilience Index (ASCRI) for Q1 2023 reveals a nuanced outlook for both supply chain resilience and the global economy. While improvements have been observed in supply chain resilience over the past two quarters, the overall outlook remains modest, with many consumers and businesses still facing considerable challenges.

Economic growth forecasts have shown a slight upward revision for the near term, primarily driven by improved trade facilitated by more resilient supply chains. However, expectations for post-2024 growth have been tempered, suggesting a prolonged period of slower economic expansion. Persistent high inflation, geopolitical conflicts, and weakened consumer spending continue to pose risks to supply chains and economic recovery.

Headline score improves to 60.9

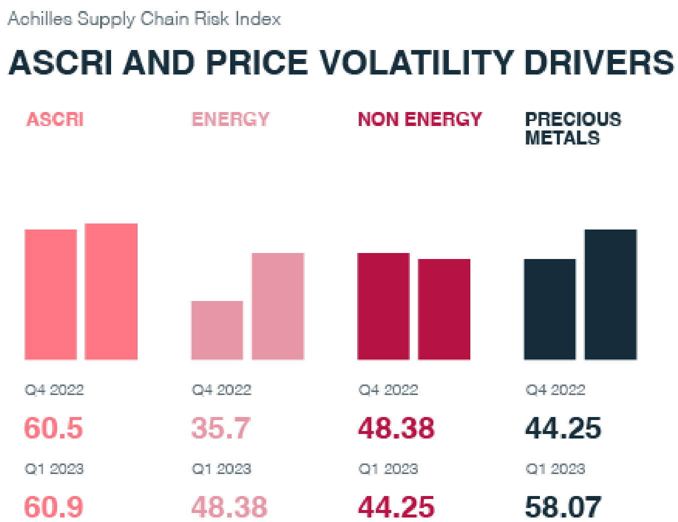
The final Q1 headline score is 60.9, "Moderate", a minor improvement over the 60.5 seen in Q4 2022. The index has a scale of 0-100 with 100 representing maximum resilience. The Q4 2022 actual figure of 60.5 was a significant upward revision over the previously published flash figure of 52.9. The flash reading for Q2 2023 stands at a somewhat weaker 58.9 but again this is subject to revision.

In general terms, supply chain resilience has improved since early 2022 when commodity prices showed more volatility, COVID-19 disruptions lingered, and country risks were more pronounced. However, these factors have not dissipated fully and other risks have escalated. Energy prices may have retreated in recent weeks, but price pressures remain intense across the board. Supply bottlenecks and disruptions continue due to factors including the Ukraine and Sudan conflicts, as well as natural disasters. As we will explore later in this report, there are further emerging headwinds that are dogging business confidence.

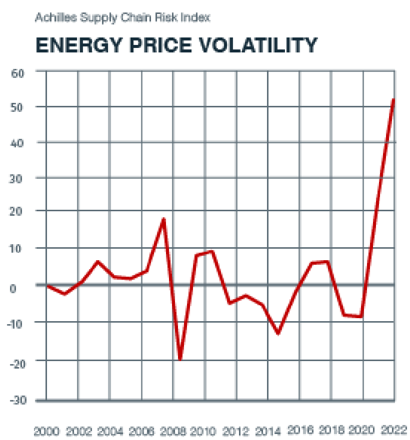
Price volatility drivers

The chart below shows that all the price volatility indices that form part of ASCRI are lower than the overall index and therefore dragging it down.

Prices remain stubbornly high for producers, with non-energy categories taking the lead in Q1.

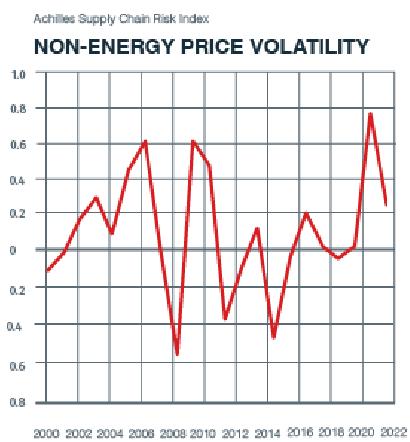


The chart below shows that in historical terms, energy price volatility has been extremely high over the past two years.



Energy price volatility was less of a problem in Q1, but it is still only at 48.4. Non-energy volatility meanwhile worsened significantly in Q1, to 44.3 from 64.4.

	Q4-2022	Q1-2023	Change
ASCRI overall	60.5	60.9	0.4
Energy	35.7	48.4	12.7
Non-Energy	64.4	44.3	-20.1
Precious Metals	55.5	58.1	2.6



Moving materials and goods is easier than it was, but with less being spent by customers there is less to move.

The range is much lower for non-energy prices, perhaps counter-intuitively given all the discussion of cost-of-living pressures in the UK and elsewhere.

Stronger supply chain resilience, weaker economics

Despite the mixed picture on prices, ASCRI has shown better resilience overall in the global supply chain over the past two quarters. Logistics problems have been easing and the trade landscape has become more predictable. However, at the same time, companies are struggling with weaker spending by their customers, so while it may be easier to move materials and goods than it has been for several years, less needs to be moved.

Shipping reliability up, but rates sink

Shipping data highlights the situation. Resilience, demonstrated through schedule reliability, has improved sharply in recent months. DHL reports that schedule reliability cycled around 35% from the start of 2021 through to mid-2022, but then rose quickly to reach 60% in Q1 2023. Through 2023 it could reach the pre-Covid norms of 70-80%.

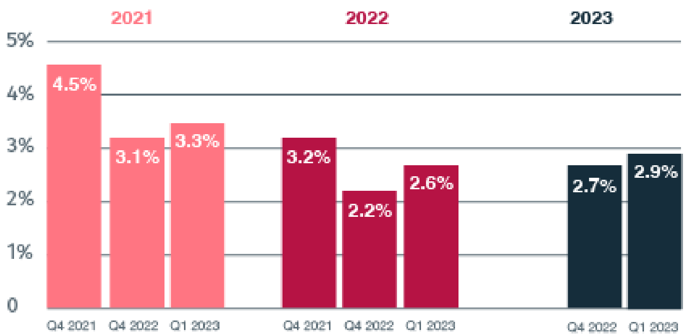
Reliability is up as lingering logistics challenges have evaporated and demand for shipping has fallen. Shipping rates, a good proxy for capacity utilisation, are dropping sharply. For containers, the Shanghai-US containerised freight index is down 80% in Q1 2023, compared to Q1 2022, while the Baltic Dry Index is down over 55% year-on-year in May – though was two-thirds lower again in March 2023.

Better near-term economic growth

Although not all negative, the poor economic picture is further borne out in GDP growth figures.

Achilles Supply Chain Risk Index

CHANGES IN FORECASTS OF GLOBAL REAL GDP GROWTH (%)



Central banks and government policies are proving unable to contain what are multi-decade inflation highs.

Positives can be seen in forecasts that have been revised up slightly over the last quarter. Global GDP growth forecasts for 2023 were 2.2% at the end 2022, and are now 2.6%. This is based, in part, on improving trade, helped by the more resilient supply chains and reduced logistical challenges.

The downside of the latest forecasts is that post-2024, growth expectations have been tempered. Instead of a weaker 2023 being the springboard for economic recovery in subsequent years, the view now is of slower economic expansion for an extended period.

The drivers of the economic situation are well known and much unchanged from 2022. Chief among the woes is the persistent high inflation. One key factor is the on-going Russian invasion of Ukraine.

Central banks and government policies are proving unable to contain what are multi-decade highs in many countries. Indeed, despite strong evidence of falling consumer disposable income and reduced company spending, the Federal Reserve, the ECB and other central banks have felt the need to continue raising rates. This further depresses economic recovery.

Fuel prices have eased off sharply. This is especially true for European natural gas since January. A ray of sunshine - fewer heating days in summer will further help. Some inventories

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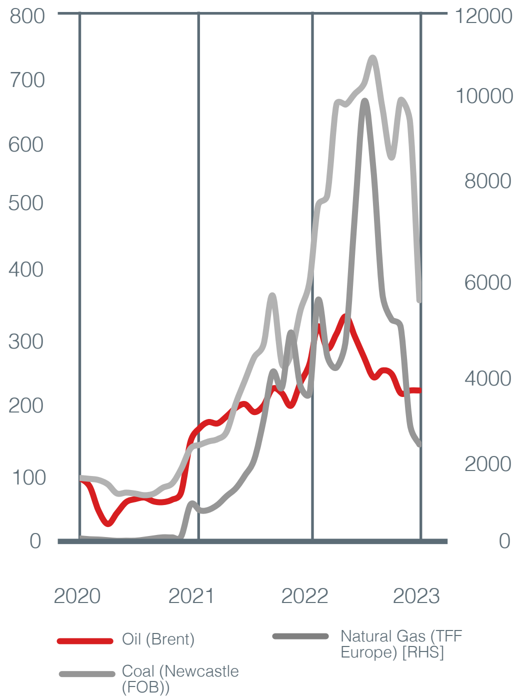
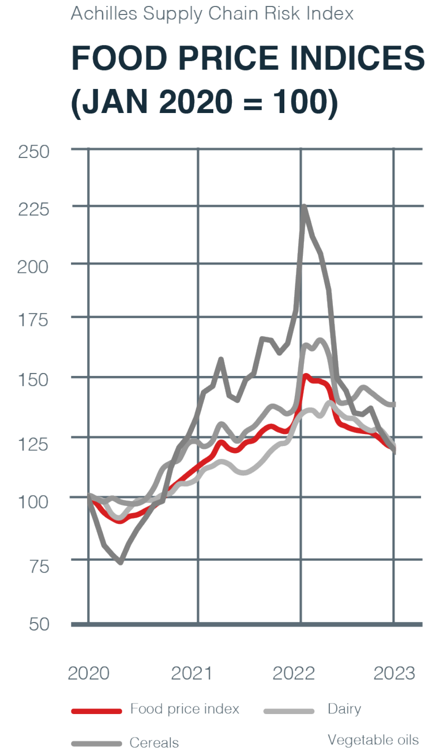
ENERGY BENCHMARK PRICES (JAN 2020 = 100)



Source: OECD

There are clear indicators that lower- and middle-income consumers are spending less, while those with higher incomes tend to be less affected.

are already high and further rebuilding of stocks is likely. Food price inflation has also eased.



The short-term extension to the Ukrainian food exports will continue to see prices ease. However, consumers are still seeing the prices of some food stuffs at twice what they were in 2021, so reducing the amount they spend.

With wages globally not keeping up with inflation (Japanese wage growth in 2022 was 0.8% but headline inflation was 4.4% in January 2023), consumers are targeting their spending more carefully - cutting back where possible, but also trading down, with clear indicators that lower- and middle-income consumers are spending less, while those with higher incomes tend to be less affected.

For supply chains, this compounds economic risks. Compare, for example, budget-focused retailer, Ikea's announcement of $2.2bn+ investment plan in the United States in April 2023; this was in the same month as, mid-tier retailer, Bed Bath & Beyond filed for bankruptcy protection.

This 'hollowing out' of the middle market requires agility in reflecting changing demand. Inventories and long supply lines will be a revenue destroying problem, if market demand shifts quicker than Procurement can adapt.

Sentiment improving despite rising risks

Looking further ahead, there is a mixed view. Consumer confidence surveys and purchasing managers' indices (PMIs) indicates improved sentiment, albeit from recent lows. At the same time, worsening credit conditions presents the menace of rising financial risks. In combination, forecasts are for a mild lift in economic growth, but with high risks much to the downside.

Both Manufacturing and Services PMI readings are showing an improving situation. After signally output contracting through much of the 2H 2022, the JPMorgan Global Composite Output Index has expanded for each of the last three months to hit 54.2 (>50 signalling growth). European economic sentiment reached 97.2 in April. While still below the long-run average of 100, this is a marked improvement on the 92.9 of October 2022.

The flip side to these rays of positivity is that credit conditions have soured noticeably over the last quarter. The American Bankers Association's Headline Credit Index for Q2 2023 fell 6.7 points to 5.8 – the lowest level since the onset of the pandemic and indicative of weaker expectations for credit market conditions over the next 6 months among banks' economists. Consequently, lenders may be more rigorous in their checks before extending credit, at a time when consumers are more likely to need loans. This is in addition to the upset to banking caused by the failure of three US banks and UBS in Europe.

Summary

In summary, after increased supply chain risk and economic weakness at the end of 2022, 2023 will see some improvement in both.

Though positive, any better outlook is likely to be tepid, with many consumers and businesses alike struggling to see much in the way of improvement.

About Achilles

For more than 30 years, Achilles has protected organisations' business interests and reputations by providing unrivalled levels of supply chain transparency, carbon reduction and management. We are the ESG and carbon management partner of choice for the world's leading global brands.

At Achilles, we specialise in supporting customers that require truly robust environmental, social and governance reporting to fully comply with ESG regulations, meet investor requirements and achieve their own ambitious sustainability goals. We work with market-leading financial, industrial, commercial and governmental organisations that require the serious, detailed analysis and expert insight necessary to deliver exceptional levels of reporting confidence.

CONTACT US

Learn more about Achilles at **www.achilles.com.** Alternatively contact us for free, no obligation ESG supply chain risk or carbon reduction consultation.

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SUPPLY CHAIN RISK INDEX

APPENDIX

Methodology

The Achilles Supply Chain Risk Index (ASCRI) draws on a unique methodology that combines Achilles' proprietary data on supplier performance with country risk factors and price volatility. The output is the most comprehensive index of supply chain resilience available.

The Achilles Supply Chain Risk Index (ASCRI) is presented on a scale of 1-100. The minimum score of 1 would show extremely low resilience (high supply chain risk), while 100 equates to maximum resilience (minimal supply chain risk). It is produced by our in-house data science team and has been built on the basis of extensive analysis and benchmarking against other providers.

Even a reading of 100 in the index would not mean zero risk.Some "resting" risks are simply a part of doing business. Resting risks include the likelihood of a supplier having an accident in the workplace, or the probability that a supplier remains compliant with legislation. These factors will never be eliminated but can be improved over time by raising supplier standards and monitoring the strengths and weaknesses of your supply base.

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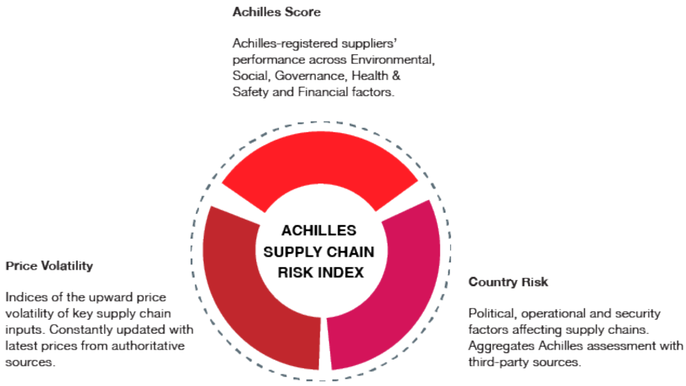

Different data sources are refreshed at different times which means we offer flash estimates of the latest quarter, followed by actual data in following quarters.

Achilles scores look at the underlying risk in a country's supply base centered around legislative compliance, such as health and safety or carbon reporting, and reputational factors, such as modern slavery. Paired with global and regional risk factors, the index casts a wide net of risk elements, providing a comprehensive look at how the base of risk is shifting, globally, over time. Other risk factors are unpredictable by nature, and can cause large, unexpected disruptions quickly.

Risk factors

The score ranges are described in the table below:

Score	Description
81-100	Resilience is very high, and risk is significantly lower than average
61-80	Resilience is high and risk is relatively low
51-60	Resilience is average and risk is moderate
41-50	Resilience is lower than average and risk is high
1-40	Resilience is quite low, and risk is very high

Environmental Factors

- Achilles sustainability score: eligible suppliers in the Achilles network of communities are assessed based on their performance in sustainability metrics including the existence of environmental policies, processes, convictions, management systems, sanctions and notices relating to environmental issues and community engagement. Anonymised scores are then rolled up into a country score, weighted by size.
- Achilles financial score: eligible suppliers in the Achilles network of communities are assessed based on their performance in financial metrics including turnover growth, return on assets, liquidity ratio and profit margins. Anonymised scores are then rolled up into a country score, weighted by turnover.
- Global weather impacts: the ASCRI includes global measures of weather phenomenon impact.

Labour Conditions

- Achilles human rights score: eligible suppliers in the Achilles network of communities are assessed based on their performance in working condition metrics including convictions and policies relating to topics such as modern slavery, equal rights, labour standards and collective bargaining. Anonymised scores are then rolled up into a country score, weighted by turnover.
- Country-specific working conditions scores: the ASCRI supplements these scores with data from international organisations, including flagship indicators such as the number of labour inspectors per employee by country, injury and fatality data, and scores regarding collaborative working. Legal and Governance:
- Achilles governance score: eligible suppliers in the Achilles network of communities are assessed based on their performance in governance metrics including documentation, insurance, bribery and corruption convictions, quality control and

corporate management. Anonymised scores are then rolled up into a country score, weighted by turnover.

- Country-specific scores: each country is measured on the burden of government regulation, corporate governance, openness to trade, and the maturity of the country's property rights framework to determine a country score for legal maturity.

Safety and Security

- Achilles health and safety score: eligible suppliers in the Achilles network of communities are assessed based on their performance in health and safety metrics including accidents, fatalities, near misses, health and safety convictions and improvement notices, policies, documentation, management systems and other processes. Anonymised scores are then rolled up into a country score, weighted by turnover.
- Country-specific security scores: each country is scored based on incidences of corruption and the relative geopolitical risk of the country.

Supply Chain Resilience

Supply chain disruption is measured in the ASCRI through a combination of factors that reflect the reliability of delivery, including:

- Worldwide shipping data
- Social media sentiment indices
- Disruption indicators