Supply Chain Monitor

Q1- 2023

Pressure on supply chains has eased. Is it good news?

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Content

What is the supply chain monitor?
This is the first edition of our quarterly supply chain monitor. Central to this is the supply chain heatmap, which we first published at the end of 2022 in our report *Rebuilding Supply Chains*. This heatmap shows, along the lines of various indicators (about freight, production, demand, prices and uncertainty), where the pressure on Dutch supply chains has increased or decreased in recent months since the start of the Covid-19 crisis. While 'Rebuilding Supply Chains' measured indicators up to September 2022, this monitor captures developments through the first quarter of 2023.

What long-term developments are visible in the heatmap?
The heatmap makes clear that:

- There is a link between global disruptions (the pandemic, the Russian invasion of Ukraine) and pressure on supply chains. In the first quarter of 2020, we see some indicators (especially those related to uncertainty) turning red. In the first quarter of 2022, we see pressures increasing, for example, due to sharply rising fuel prices.
- There are structural causes that continue to put pressure on supply chains, including shortages of raw materials and labour.
- Indicators can turn from red to green, which means that the pressure on supply chains might be easing. However, from a broader economic perspective, this is not necessarily good news. Reduced consumer confidence, for example, reduces demand and thus pressure on the supply chains but can have negative business consequences for companies, such as being stuck with expensive inventories.

How are supply chain management strategies affected?
Supply chain management traditionally focuses on efficiency. This makes sense: efficient supply chains mean effective production and distribution and significantly lower costs. However, the benefits of efficiency fade into the background when global disruptions occur. Then 'efficient' turns out to coincide with 'vulnerable'. That is why we see resilience (and thereby flexibility) gaining importance in supply chain management and why companies are seeking a different balance.

PwC Supply Chain Heatmap: Q1 - 2023

Category	Indicators	2020-Q1	2020-Q2	2020-Q3	2020-Q4	2021-Q1	2021-Q2	2021-Q3	2021-Q4	2022-Q1	2022-Q2	2022-Q3	2022-Q4	2023-Q1
Global supply chains	Global supply chain pressure index (NY Fed)													
	World trade monitor (CPB)													
	Total global containerized freight volume per quarter (Kiel)													
Uncertainty	World uncertainty index (WUI)													
	World trade uncertainty index (WTU)													
Shipping	Average monthly proportion of goods per quarter that are on waiting container ships (Kiel)													
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Shanghai and Zhejiang, China (Kiel)													
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Hongkong and Guangdong, China (ports of HK, Yantian, Shenzhen and Guangzhou) (Kiel)													
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Georgia and South Carolina, USA (ports of Savannah and Charleston) (Kiel)													
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Southern California, USA (ports of Los Angeles, Long Beach and San Diego) (Kiel)													
	Average daily percentage per quarter of global container ship cargo capacity in congestions around North Sea, Europe (North Sea ports of the Netherlands, Belgium, Germany and the UK) (Kiel)													
	Average total daily capacity per quarter of container ships in the Red Sea and the Suez Canal, Middle-East (Kiel)													
	Baltic dry index - cost of shipping raw bulk materials (Eikon)													
	Port of Rotterdam throughput (IHS Markit)													
Air freight	Total air freight volume from NL (Eurostat)													
Road freight	Total road freight transport volume, NL (OECD)													
Rail freight	Total rail freight transport volume, NL (OECD)													
Inventories	Stock of finished products, NL (CBS)													
Production	Manufacturing purchasing managers' index, NL (NEVI)													
	Percentage of manufacturing firms experiencing shortage of materials, NL (EC)													
	Percentage of manufacturing firms experiencing labour shortage, NL (EC)													
	Observed production trend in recent months in manufacturing, NL (EC)													
	Assessment of current production capacity in manufacturing, NL (EC)													
	Current level of capacity utilization in manufacturing, NL (EC)													
	Construction confidence, NL (EC)													
	Retail confidence, NL (EC)													
	Services confidence, NL (EC)													
	Warehousing confidence indicator, NL (EC)													
Demand	Economic sentiment indicator, NL (EC)													
	Consumer confidence, NL (EC)													
	Consumer confidence, good time for major purchases, NL (EC)													
	Percent change in consumption of goods by households, NL (CBS)													
	Percent change in consumption of durable goods by households, NL (CBS)													
	Percent change in consumption of services by households, NL (CBS)													
	New orders in recent months in manufacturing, NL (EC)													
	Assessment of order book levels in manufacturing, NL (EC)													
	Duration of production assured by current order-book levels in months, NL (EC)													
Costs	World materials price index (IHS Markit)													
	Fuel prices, HWWI (CPB)													
	Primary commodities excluding fuels, HWWI (CPB)													
	Monthly labour costs per quarter, NL (Eikon)													

Sources: Freightos, Port of Rotterdam, Thomson-Reuters, NY Fed, Kiel Institute, European Commission, CBS, CPB, OECD, IHS Markit, WUI, ECB, PwC Analysis.
The heatmap shows Z-scores, computed by subtracting the mean from the observation at time t and dividing the difference by the standard deviation. The mean and the standard deviation are computed for as large historical samples as possible. Observations marked with "-" are not yet available. The colour grading goes from -3 (green), 0 (mean, yellow) to 3 (red) standard deviations.
*Approximate standartization.

Pressure on supply chains eased in the first quarter of 2023

The PwC Netherlands supply chain monitor showed some relief for supply chains in the last quarter of 2022. This easing continued in the first three months of 2023, partly due to the lifting of supply chain bottlenecks, companies embedding countermeasures and slowing demand.

In Q1-2023, we see these trends developing:

- The pressures overall have eased and are approaching historically normal levels, since December 2021, when the global supply chains were most constrained, based on the NY Fed Global Supply Chain Pressure Index.
- The volume of world trade in goods reached 10% above its pre-pandemic level in mid-2022, and trade in services also surpassed pre-pandemic levels last year. Trade growth, however, is forecast to slow in 2023, mainly due to slower global economic growth.
- There are fewer backlogs and lower uncertainty, which bottomed in Q1-2021 according to the World Uncertainty Index.
- However, uncertainty has been slowly trending up again because of geopolitical tensions and a more challenging macroeconomic and financial environment. This also highlights that obtaining reliable forecasts in such times is challenging, as previous periods are not considered good representations of future trends anymore.
- Shipping costs, prices and delivery times have dropped. Supplier delivery times are at their best since July 2019, and shipping rates are at their lowest level since September 2020.
- At the same time, producer confidence has been trending down, albeit the recent Eurozone PMI index data showed a slight uptick, boosted by, amongst other things, lower energy costs and fading supply chain constraints.
- Many firms are still experiencing labour and material shortages: 29.2% of firms experienced material shortages and 35.6% experienced labour shortages in the latest European Commission's Business and Consumer Survey for the Netherlands.

The point of view of our experts

> As demand is beginning to cool, we are seeing a classic case of the ‘bullwhip effect’.

Since the pressure on supply chains is easing, at least for now, this is a good time for companies to take a breath and re-evaluate their supply chains. But they should keep focusing on the long term. In a fast-changing and unpredictable world, incorporating more flexibility and resilience remains crucial.

Indicators turning ‘green’ do not necessarily mean ‘good news’
The emerging shades of green on the heatmap are indicative of an easing in supply chain pressures. However, part of the calmness is due to the removal of bottlenecks that supply chains were facing in 2022. Anticipating a continuously increased demand in the post-Covid boom, many firms built excess inventories, as can be seen from the stock assessments of finished products.

As demand is beginning to cool, we are seeing a classic case of the ‘bullwhip effect’: excess inventories that force suppliers and retailers to start reducing inventories and utilising less capacity. While the heatmap appears partly green in such a scenario, it is also indicative of a slowing economy and overcapacity in supply chains.

We see such an effect in the semiconductor industry – a stock deficit changing into a stock surplus in a short period of time. After facing significant disruptions through 2021, we are now noticing indications that a large semiconductor shortage has turned into a surplus. While this glut may be short-lived, in the past few months semiconductor prices have dropped significantly, and exports are slowing for countries such as South Korea.

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A slowdown will give companies much-needed breathing room to re-evaluate their supply chains.

Some indicators will likely stay red
Some indicators reflect structural issues and are likely to stay stressed for a long period. Manufacturing firms still experience shortages of labour and material. These pressures are not temporary. Because of shifts in work-life balance preferences, migration flows and the ageing of the population, labour shortages are expected to persist. Critical material shortages have been exacerbated because of the Covid-19 pandemic and the war in Ukraine. But in the absence of substitutes for many critical materials, this is not a temporary stressor either.

The inclination to lose sight of the long term
In *Rebuilding Supply Chains*, we describe that in the trade-off between efficiency and resilience in supply chains, the balance seems to be shifting towards more resilience. The greater urgency for resilience and flexibility in supply chains is driven by the major disruptions of recent years and a geopolitically uncertain world.

However, falling demand and the emergence of overcapacity can lead companies to choose efficiency and cut costs in the short term. Yet, this should not lead to neglecting the long-term consequences of current decisions. For example, contracting with one low-cost supplier may lead to lower costs in the short term, but create a new dependency in the long term (see also page 9).

Use the slowdown for taking a breath and make better investment decisions for the future
On the one hand, we see that companies, driven by global uncertainty as well as experiences from the recent past, are able to make faster decisions. Uncertainty is increasingly becoming a ‘given’ that forces them to be flexible. Nevertheless, a slowdown will give companies much-needed breathing room to re-evaluate (in the context of their risk management and risk appetite) how their supply chains are configured for future disruptions, regulatory requirements and market opportunities, and invest in the right strategic projects.

Looking ahead using economic and geopolitical scenarios

The year ahead is expected to be dominated by uncertainty, making accurate supply chain predictions and corresponding strategies difficult. In such volatile situations, scenario planning offers a good alternative, a 'thinking' starter, which allows companies to prepare for the risks that cannot be predicted accurately. We consider two main uncertainties – macroeconomic outlook and geopolitics – that are expected to impact supply chains in the next two years.

Further economic slowdown or recovery?
Macroeconomic volatility is expected to continue for the rest of the year and into 2024. As of April 2023, though inflation is beginning to peak, there is considerable speculation on interest rates, the extent and impact of the banking crisis, and the likelihood of recession in major economies. Increased geopolitical tensions would also contribute to the risk of a slowdown. This volatility is expected to make demand and inventory planning particularly difficult in the next two years.

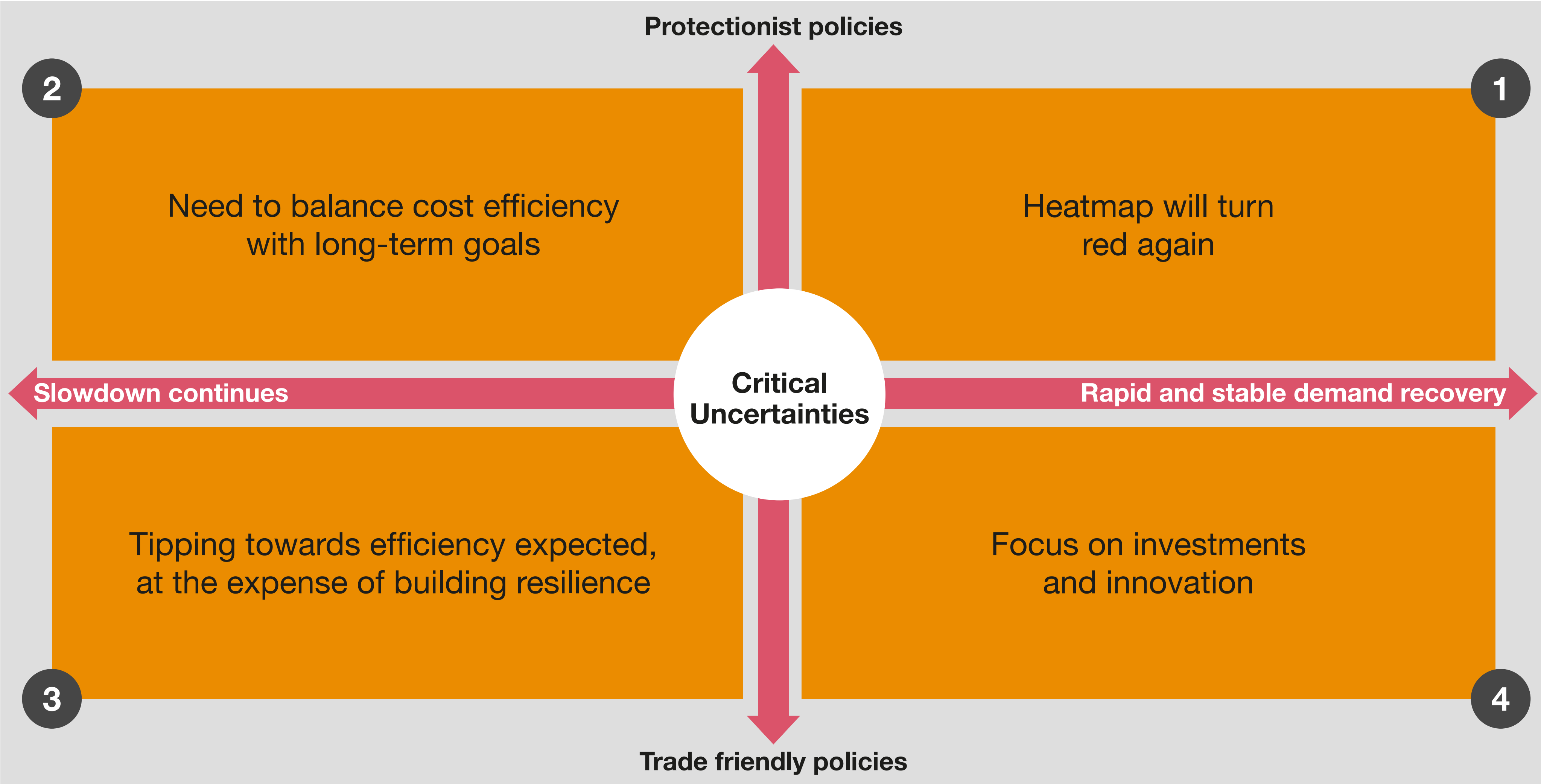
Protectionist policies or free trade?
The second key uncertainty is the rise of protectionist policies. A suite of policies is under consideration around the world that have elements of protectionism, from the American Inflation Reduction Act and the CHIPS and Science Act to the European Green Deal Industrial Plan.

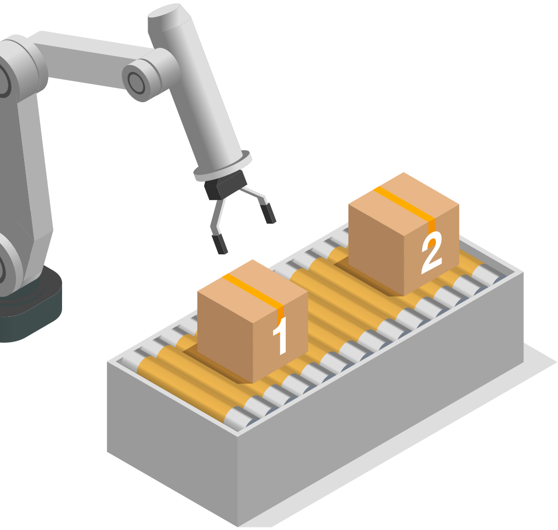
These will have a significant impact on regional competitiveness, manufacturing location, capacity and trade, and therefore would impact supply chains directly.

According to the DHL Global Connectedness Index 2022, there are already signs of decoupling between the United States and China across most types of international flows. Though this decoupling has not yet led to a broader fragmentation of international activity between rival blocs, it is not beyond the realm of possibility. Geopolitical tensions are also likely to make material scarcity worse, especially for sectors with heavy dependence on critical and rare materials. A recent study by The Hague Centre for Strategic Studies has also pointed out that the Netherlands could be economically disrupted if geopolitical competition leads to export bans on critical raw materials and disruptions in the production and supply of semiconductors[1].

1 The Hague Centre of Strategic Studies, 2023, Competition between great powers and social stability in the Netherlands

Planning for probable scenarios





Scenario 1: Rapid demand recovery, but protectionism grows: The heatmap will turn red again

As supply chain bottlenecks have started clearing, we are also seeing an easing in inflation. Interest rate hikes are expected to slow in the coming months, which leads to the possibility of a demand recovery that is faster than initially anticipated.
While that is great for the economy and companies' performance, it poses risks to supply chains that have been battered in the last three years.

In the last three years, companies have started to work on making their supply chains resilient to severe shocks. This includes building their ability to respond to stressors quickly, but most companies are not there yet. If a rapid demand recovery were to happen, especially when combined with the stresses of regional protectionism, there is a high likelihood that supply chains would be disrupted again. Take, for instance, a scenario discussed by the Hague Center for Strategic Studies[2], of an embargo on critical raw materials imposed by China on the EU. Combined with rapid demand growth, this scenario would have severe consequences not just for supply chain pressure but also for the overall energy transition and the performance of vital sectors such as medical devices, defence, and mobility.

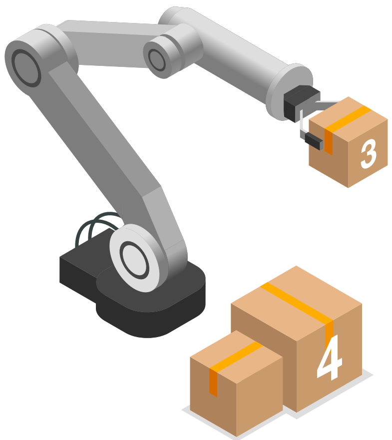
Scenario 2: The slowdown drags out longer, along with a rise in protectionism: Need to balance cost efficiency with long-term goals

The probability of a continued slowdown has been inching upward as interest rate hikes continued in the first quarter of 2023. This scenario can cause companies to shift priorities from building long-term resilience in supply chains to building cost efficiencies to tide them over uncertain times. This is part of a normal economic cycle. However, when combined with protectionism, it causes unique challenges. Many companies would pursue cost efficiencies by renegotiating and looking at longer-term contracts, all of which are made difficult if there are protectionist policies at play. Companies will need to be mindful of being locked into longer-term, sub-optimal contracts or cutting initiatives that are designed to build visibility and long-term resilience in their supply chains.

2 Ibid.

In the longer term, this scenario can lead to better local and regional supply chain capacity with lower dependencies, allowing local companies to innovate and develop competitive products.

However, these changes are achieved over the long term and provide little consolation when the economy is turbulent and gaining immediate cost efficiency is a matter of survival.



Scenario 3: The slowdown continues, but trade policies are open: Tipping towards efficiency is expected at the expense of building resilience
In the scenario that demand stays muted for a longer period, we expect companies to revert to building efficiencies. This is a highly probable scenario for the next two years. As demand stays weak, stimulating supply chains to be cost-efficient and sourcing from low-cost environments are likely to be considered and implemented. While that is a good approach considering the economic environment, thinking strategically with a long-term focus is still recommended.

Though the supply chains might not be constrained by regional policies, they still run the risk of being disrupted by various stress events if the focus is purely on efficiency and not on investing in building visibility and resilience in the supply chains.

Scenario 4: Rapid demand recovery accompanied by open trade policies: Focus on investments and innovation
Open trade policies, alongside a rapid demand recovery, would signal an environment with growth and higher investments from companies. While higher economic growth could drive prices higher, companies are expected to have more sourcing alternatives. We would expect a trend towards globalisation to get the volumes in the most efficient way. A high-growth environment is also likely to stimulate innovation. Companies are more likely to invest in finding alternatives and building visibility and long-term resilience in their supply chains.

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