DISTRIBUTION STRATEGY GROUP

2023 Supply Chain Outlook:

How to Prepare for What Lies Ahead

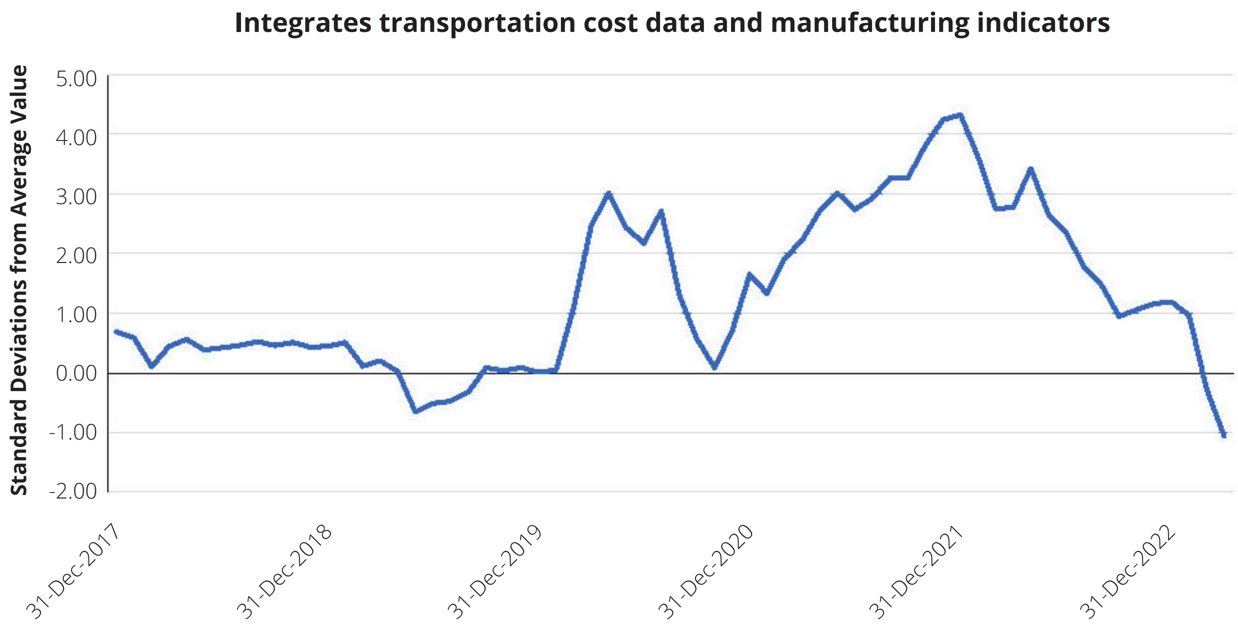
By G. 'Ravi' Ravishankar

Preparedness and building resilience is the successful distributor's strategy.

This report covers some of the pressures shaping the supply chain into late 2023 and how Vietnam is emerging as a leading contender in the China+1 race.

Global Supply Chain Pressure Index

The Global Supply Chain Pressure Index provides valuable operational insights around sourcing and market risks. It tracks the state of global supply chains using data from the transportation and manufacturing sectors. Interestingly, the numbers have dropped below what you would expect for March 2023, at the time this data was pulled. Much of this fluctuation is due to pandemic-related issues around the globe. The decline in 2022 reflects the overall improvement in the supply chains.

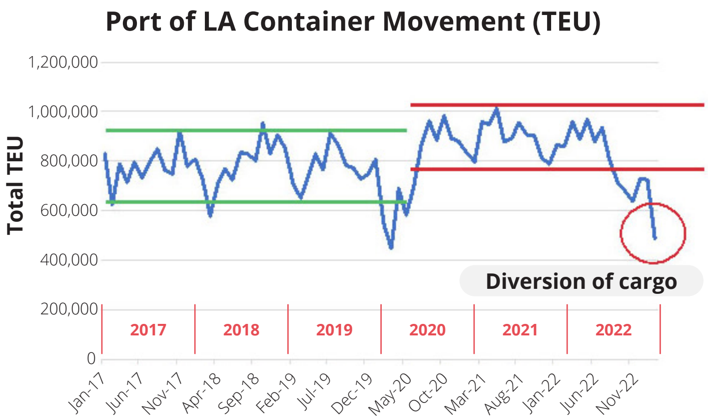


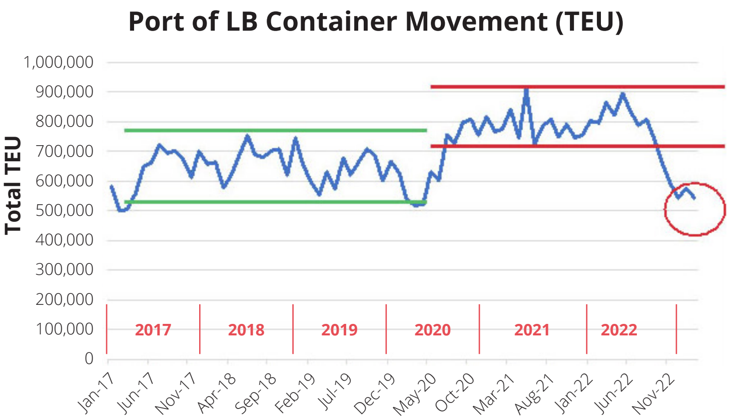
Source: Federal Reserve Bank of NY

Around 40% of all containerized products and parts in the U.S. flow through the ports of Los Angeles and Long Beach. In 2022, I forecast shipping delays would continue, but that container movement would return to relatively normal levels in 12 to 18 months.

That did occur, but unexpectedly, container movement dropped below average accepted thresholds because of the tension surrounding labor contracts in these two critical ports of entry. These expired in July 2022. A particularly contentious topic is the push for higher automation, which would drive higher efficiency but may have an impact on labor at these ports.

Container Movement Returned to Normal

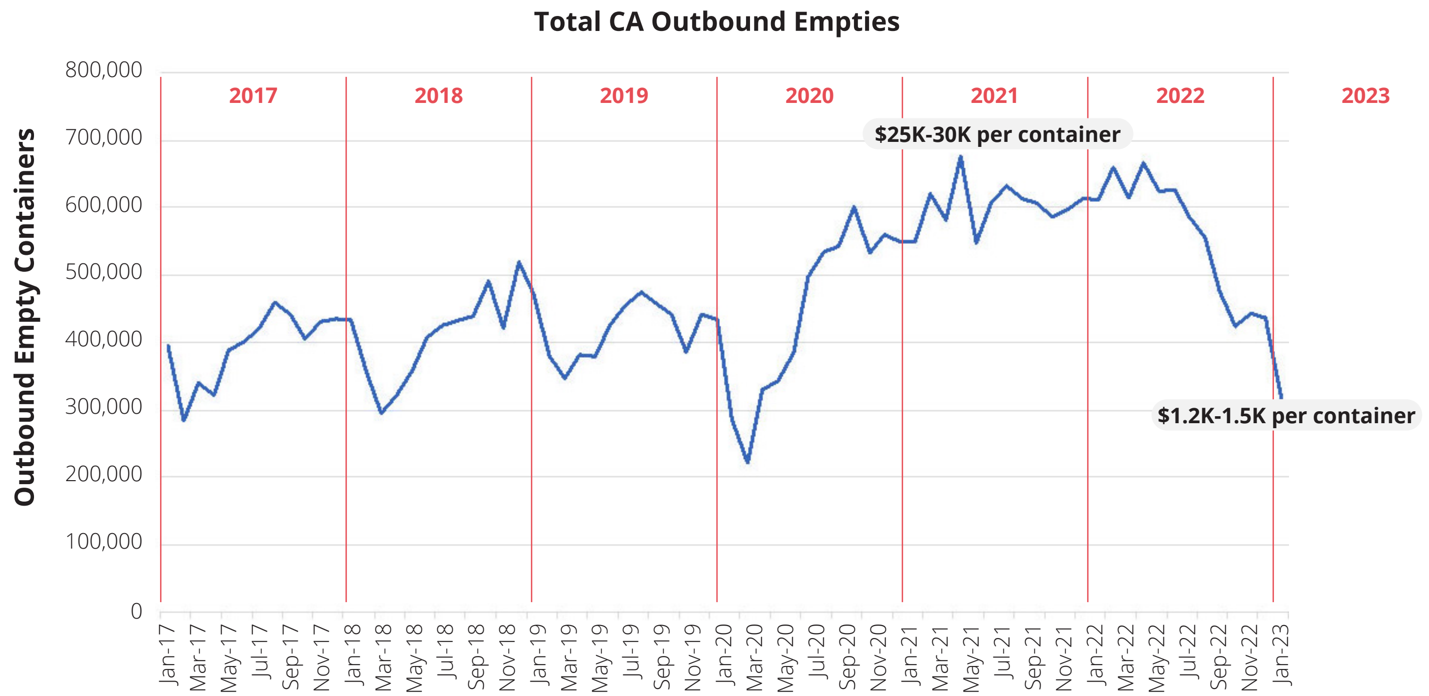




...and dropped below normal because... storm clouds are gathering.

At the same time, container freight rates are leveling off as the pressure on the overall supply chain drops. The rapid drop in container rates has raised the specter of throttling of supply, largely from China, to prop up the container rates.

Container Demand is Dropping Along with Rates



Source: Port of Los Angeles and Port of Long Beach

Some of the biggest disruptors affecting the global supply chain this year will include:

- Warehousing facility shortages
- Shortages of chassis
- Shortages of semiconductors

Warehouse Shortages

Warehouse space will remain tight through 2023. A combination of the bullwhip effect, which we discussed last year along with a potential economic slowdown, means warehouses are now running out of room.

At the same time, global warehouse rents grew by 30% or more last year as the available industrial space in the U.S. hit all-time lows. The price for warehouse space in California and Florida grew by more than 40% in 2022. Many of our nation's aging warehouse facilities have hit the 20-year service mark (or higher).

Many companies seek automation and robots to stretch their labor pools further in warehouses. However, regulatory barriers significantly affect new warehouse builds even as companies are attempting to respond by building more warehouses.

Ultimately, we can expect a shift in the warehousing space as companies bring back resources from Mexico in nearshoring initiatives. Expect space availability to tighten and rents to continue to rise. Government regulation will also continue to affect the California warehousing industry. Look for logistics companies to move to less regulated states like Texas.

The warehouse issue is not just limited to the U.S.; it will also be a challenge in Europe, where energy issues and inflation will continue hurting the warehouse industry.

Chassis Shortage

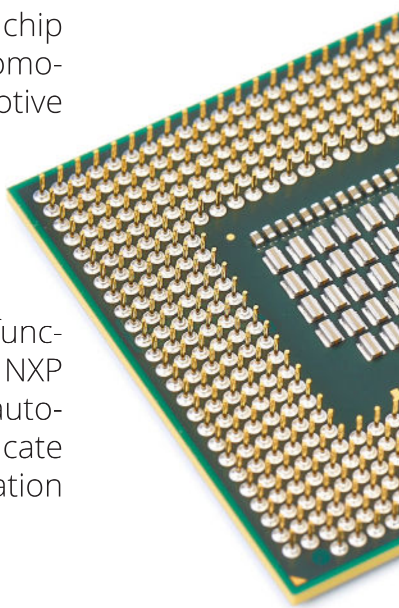
The chassis shortage isn't going away. The crisis stemmed from:

- Electronic Logging Device (ELD) mandates for "roadability" and the Federal Motor Carrier Safety Administration (FMCSA) rules on "fitness for use." These regulations require stricter maintenance and inspection standards for chassis, leading to increased repairs and longer downtime.
- Steel import tariffs have raised the costs of manufacturing new chassis and made it financially challenging for companies to invest in expanding their chassis fleets.
- Intermodal Equipment Providers (IEPs) limit the availability of chassis in the market. These IEPs often prioritize their own operations and customers, making it difficult for other logistics providers to access an adequate chassis supply.
- Rental chassis are held for longer periods by end-users, reducing the overall pool of available chassis for others. Moreover, chassis that have been taken out of service are not returning to the market at the expected rate, further exacerbating the shortage.

Shortage of Semiconductors

Then there is the ongoing shortage of semiconductors. Work from home and lockdowns drove the demand for electronic products across the board. However, shutdowns affected automobile production, driving down demand for automobile chips. This caused a shift in resource allocation in chip foundries such as Taiwan Semiconductor (TSMC) and Global Foundries. Post-COVID, the chip shortage has severely hampered the sharp resurgence of automobile demand. Two of the most significant areas in the automotive industry experiencing shortages are:

- Microcontroller units (MCUs)
- Power semiconductors



One car can have 50 to 100 controller units to facilitate vehicle functions. The major suppliers of automotive chips are Infineon, NXP and Renesas. A significant number of companies that provide automotive industry semiconductors rely on chip foundries to fabricate integrated circuits (ICs) or chips, in addition to their own fabrication plants.

But the automotive industry is only 3% of TSMC's overall business, so increasing production to fulfill automobile orders isn't a priority.

The global investment in semiconductor factories is strong, but the reality is that these sophisticated plants take two to five years to build. Ironically, of course, these plants also need chips. The semiconductor shortage may ease in 2024 or 2025.

Inventories vs. Sales

These challenges leave us asking: What about recession? What indicators suggest the markets are softening? Is there something we can do to prepare or even change the market?

To answer these questions, look at the inventory-to-sales ratio for non-durable and durable goods published by the Federal Reserve Bank of St. Louis.

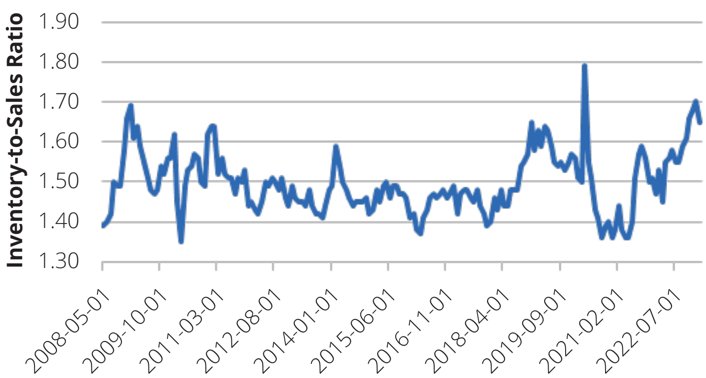
Inventory-to-Sales Ratio

Source: St Louis Fed

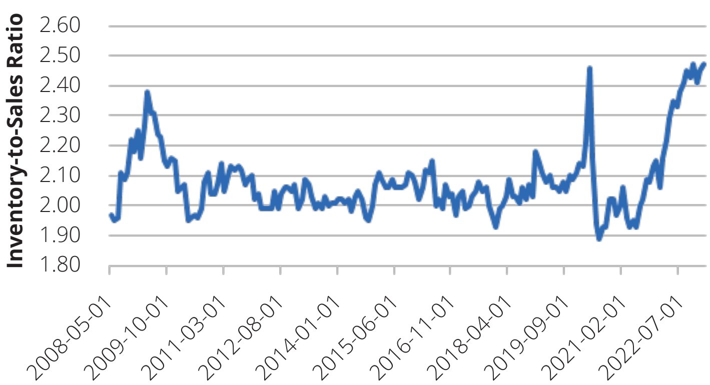
When we compare the inventory-to-sales ratio for overall non-durable vs. durable goods, we see distinct differences. A rapid rise in the ratio is usually indicative of oversupply or recessionary conditions (decreasing demand). In the case of durable goods, the rising ratio is similar to what was observed in the 2008 recession. It is important to note that in 2008 it took about three years for the ratio to drop back to normal levels. While that doesn't predict recession per se, it is a red flag. Anytime inventory climbs, it should call for a look at sales numbers. Are they reflective of what we expect to see?

If you look at durable goods like lumber and construction, hardware, plumbing, heating supplies and machinery, equipment and supplies, you see similar spikes in the warehouse volumes of products on hand. Inventory is increasing, and there is talk that we may see a drop in construction costs as a result.

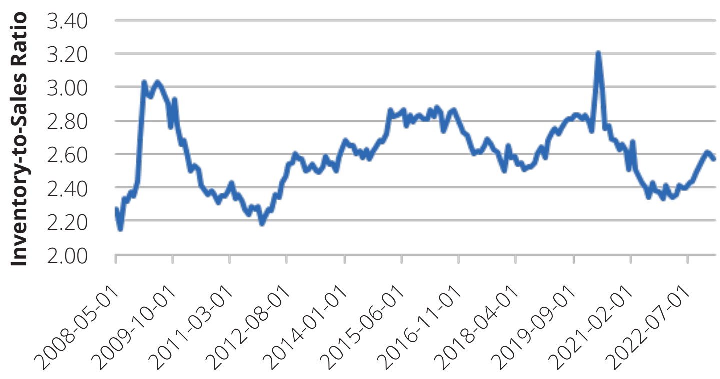
Lumber and Construction Materials

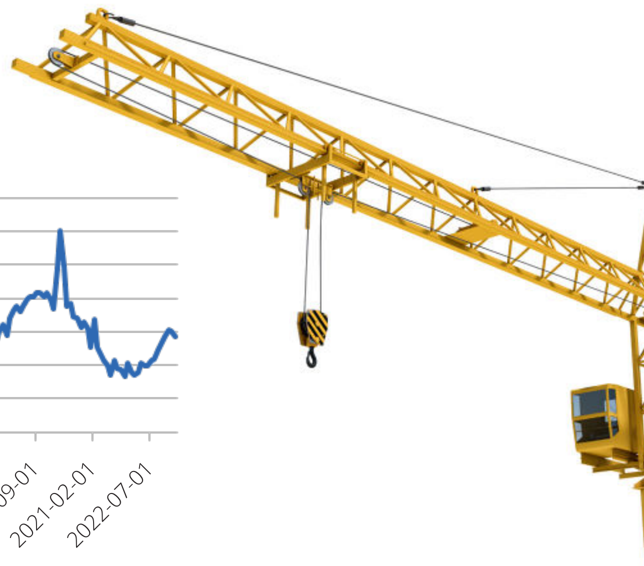


Hardware, Plumbing, Heating Supplies



Machinery, Equipment and Supplies





Some of the rise in inventory could be as a result of the bullwhip effect. Nevertheless, distributors must walk a fine line between keeping a full warehouse to mitigate supply chain risks versus having a full warehouse when rent is high and sales drop off and they're left holding more safety stock than they need.

One best practice to counteract the inventory spikes is going through orders to understand if what's projected will really materialize.

Moving into Vietnam

From COVID lockdowns to geopolitical uncertainty between the U.S. and China, manufacturers want to remain risk-adverse while maintaining an Asia footprint. This approach opens the doors to emerging markets like Taiwan, India, Malaysia, Thailand, the Philippines and Vietnam. These countries would love to be the go-to resource for American businesses because of the economic stimulus the relationship would bring.

Vietnam is one of the top contenders for the China-alternative spot in many supply chains. Vietnam's economy rebounded after COVID by 8% and projections look positive. They've been able to manage their inflation numbers, which are half of what we've experienced in the U.S. during the same period. Today Vietnam's GDP is 6.5% and growing.

In Vietnam, there are two primary industrial and manufacturing zones:

- The Southern Economic Zone including Ho Chi Minh City (formerly Saigon) comprises eight provinces.
- The Northern Economic Zone including Hanoi comprises seven provinces.

The Southern Economic Zone accounts for [at least 40% of Vietnam's gross domestic product] (GDP) and 42% of foreign direct investment pours into this region. Traditionally, the Southern Economic Zone focused on garment and shoe manufacturing. Recently investors have been expanding operations in manufacturing, construction and ancillary industries.

The Northern Economic Zone contributes 32% of the country's GDP with assembly, automotive, electronics and heavier manufacturing. Foreign investors are also pouring money into this region.

U.S. trade volumes from the past five years have gone up by 174% in Vietnam, higher than India (76%), Taiwan (117%) and South Korea (62%). Even during COVID, Vietnam's trade growth remained steady at about 20%.

Foreign direct investment in Vietnam as a percentage of GDP is expected to remain high next year. The volume of cash and the number of countries investing in Vietnam is growing. Companies like Samsung and Apple are joining the ranks of Nike and H&M and investing heavily in Vietnam. This is serving as a multiplier effect on the GDP. It helps that labor costs are 50% cheaper than in China, and the Vietnamese government has established numerous trade agreements; they are offering dramatic incentives for manufacturing in Vietnam.

One of the enormous advantages of China is that they've created the infrastructure to support manufacturing. It's robust; you can go to the country with just an idea, and the entire supply chain infrastructure exists to bring a product quickly to market. Not so in Vietnam. The garment industry has a solid supply chain infrastructure, but the rest needs building. Vietnam also has a highly educated labor force, but the population is much smaller than China's. Outside investors also face regulatory challenges. Companies seeking to do business in Vietnam need a local guide to navigate these challenges.

What's Next: Distributor Best Practices to Prepare for 2024

CNBC recently polled logistics managers who say they don't expect the supply chain to normalize until 2024. That prediction is right on track with the easing of some of the current constraints we're under, such as the semiconductor shortage. CNBC quotes Karen Kenney of the Coalition of New England Companies for Trade (CONECT), saying, "Hard data is the backbone of effective supply chain management."

We've covered some of the hard economic data and our current challenges, which likely won't improve anytime soon. Distribution companies must continue to walk the tightrope between too little and too much inventory on hand.

It's a little too early to tell if the warehouse constraints in California coupled with the labor issues around the port will result in a permanent shift of shipping to other ports and consequently a rise in demand for warehouses there. What is clear is that numerous U.S.-based companies are making strategic reshoring and near-shoring investments in Mexico and other Latin American countries.

Proactive preparation for market downturns should include supply chain contingency planning. Proactivity is our only insurance against the unexpected. Finally, investing in technology to provide visibility into the supply chain, in particular inventories and production, remains a wise decision to ensure resilience in these challenging times.

About the Author

G. 'Ravi' Ravishankar is a faculty member at the Strategy, Entrepreneurship and Operations Division at the Leeds School of Business. He is a veteran of supply chain, lean transformation, implementing product innovation strategies and technology transfer from national laboratories.

His career has spanned a wide range of operating roles from president, CFO to engineering manager and director of innovation. He has worked in four continents on lean manufacturing, supply chain, logistics, product development, factory start-up, and business strategy. His industry experience includes semiconductors, machinery, medical devices, food and beverage, chemicals, consulting and not-for-profit organizations.

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