

Research Briefing | US

Supply-chain headwinds pummel the economy

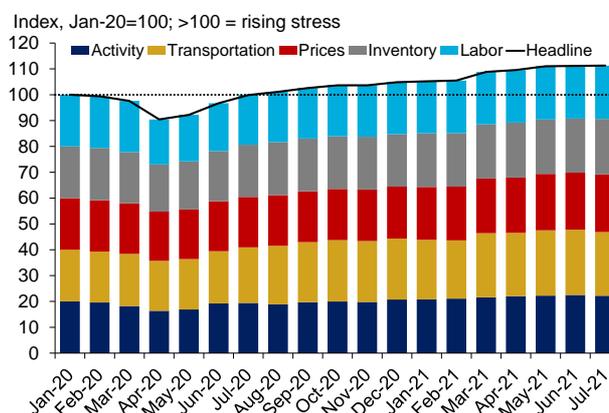
Economist

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- Our new supply-chain stress indicator reveals the US economy faces escalating supply-side challenges. Transportation logjams are the greatest point of stress, but limited spare domestic production capacity, low inventories, sharply higher input costs (most acute for raw materials), and labor challenges are making it increasingly hard for supply to keep up with demand.
- Ocean freight is a chokepoint, with inbound cargo shipments at record levels and shipping costs up 400+% since the Covid outbreak. The trucking industry – which moves 75% of total freight across the country – is struggling to transport record amounts of goods, forced to leave shipments at seaports for up to two weeks before starting the trip to their destination (up from 3-4 days pre-Covid).
- Manufacturing capacity utilization was 76.7% in August, higher than the 2015-19 average and less than 3ppts from the highest reading of the past two decades. Slack is minimal in durables and nondurables production, with Covid shining a light on the fact that US production capacity hasn't risen since 2000.
- Production costs are sharply higher, most notably for raw materials used in durables and nondurables manufacturing, up 35-55% y/y – the result of significant shortages and strong demand. The economy today faces the greatest imbalance between raw materials and finished goods in two decades.
- Inventory restocking normally coincides with business cycle upturns, but Covid has decidedly broken that relationship. Nearly 75% of manufacturing subsector inventories are leaner relative to sales currently than before Covid.
- Rising unfilled job vacancies, strengthening wage growth, and more overtime hours signal rising labor-related pressures. But our tracker finds that labor stress is relatively lower than other supply-side challenges.

Figure 1: Our new tracker indicates supply-chain pressures steadily increased through mid-summer

US: Supply chain stress tracker



Source: Oxford Economics/Haver Analytics

Our new US supply-chain stress tracker reveals a relentless slew of supply-side challenges.

The indicator signals continuously rising pressures across the lens of activity, transportation, prices, inventory, and labor through July.

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Supply-chains are struggling

Manufacturing supply-chains are facing historic levels of stress. The [ISM Manufacturing](#) index's supplier deliveries component – a widely followed measure of supply-chain pressure – points to the sharpest deterioration in vendor performance since the 1970s (**Figure 2**). [ISM Services](#) also points to rising stress in the services sector. Firms frequently cite difficulties with transportation, production capacity, high input costs, and hiring as reasons for worsening performance.

Our new US supply-chain stress tracker confirms these findings (**Figure 1**). It aggregates measures of activity, transportation, inventory, prices, and labor into a single, easily interpreted measure and finds that supply-side challenges have steadily worsened since the recovery began in May 2020.

Logistics pressures are the most severe

Strain is harshest on the transportation front. Total ocean-borne cargo volumes received at US ports stood near historic highs in July and were up 20% from pre-Covid levels (**Figure 11**). Longshore worker shortages and berthing space constraints have caused a monumental backlog of ships waiting to dock at US ports (**Figure 3**). Last week, a near-record 53 ships waited to unload at Los Angeles and Long Beach, the two largest US ports which together receive 35% of US goods imports. As a result, shipping costs have surged; the benchmark Harper Petersen shipping rate index is up more than 400% since Covid's onset.

And delays extend beyond seaports. The trucking industry (which moves about 75% of US freight across the country) transported near-record volumes of shipments in July that stood 15% above pre-Covid levels. Aside from Covid-related challenges, a chronic [driver shortage](#) has also prevented a stronger response in truck freight-carrying capacity. After arriving by cargo ship, a shipment now has to wait nearly two weeks before it starts its journey to its destination, up from 3-4 days before Covid.

Air cargo load factors also stand well above their long-term average and early-2020 levels. Meanwhile, total railcar freight volumes are holding fairly steady, though they're weighed down by a structural decline in coal shipments (25% of railcar freight loads) as the economy shifts toward environmentally friendly energy sources.

Figure 2: Vendor performance hasn't deteriorated this quickly since the 1970s

US: ISM Manufacturing - Supplier deliveries index

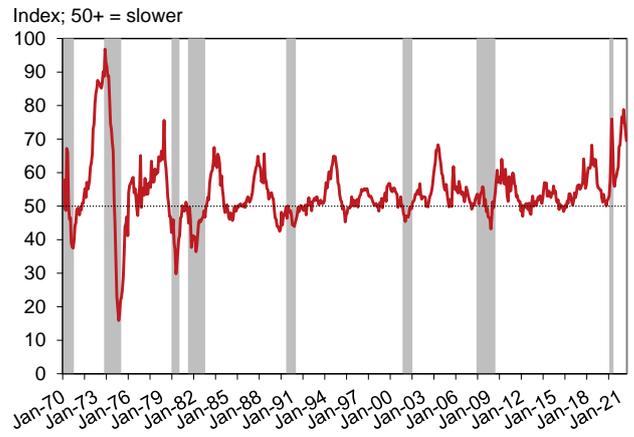
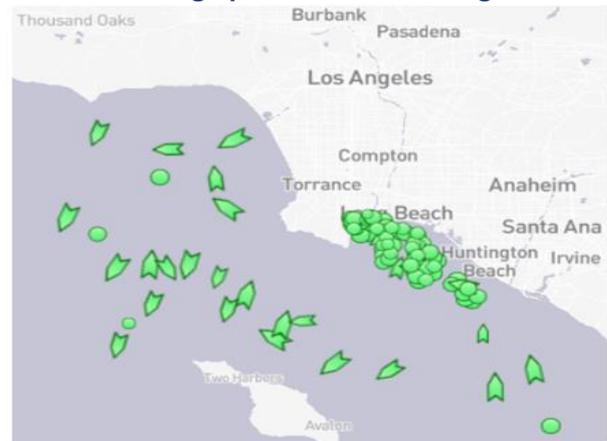


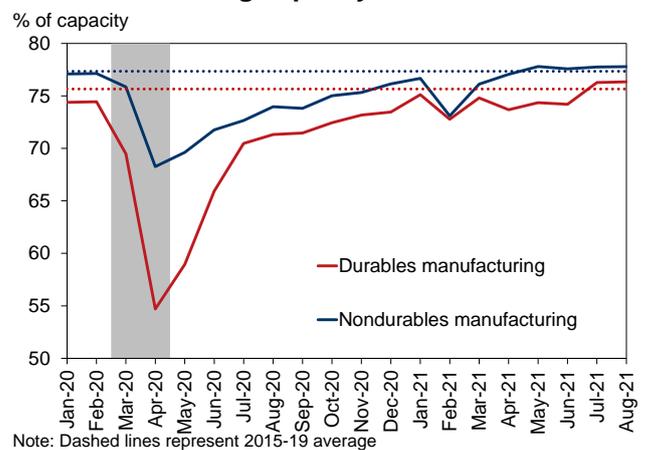
Figure 3: Monumental backlog of cargo ships wait for docking space in LA and Long Beach



Note: As of Sept 21, 2021
Source: MarineTraffic

Figure 4: Manufacturing capacity utilization is reaching a boil

US: Manufacturing capacity utilization



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Domestic production capacity is strained

Minimal spare domestic production capacity also poses a challenge. Manufacturing capacity utilization stood at 76.7% in August, higher than its 2015-19 average and less than 3ppts from the highest reading of the last two decades (79.4% in January 2006). Nondurables and durables utilization rates are above their pre-Covid levels and recent historical averages (**Figure 4**). Apparel, leather, machinery, computers, and electrical equipment are the subsectors with the least slack.

Besides strong demand pushing utilization rates higher, domestic production is also squeezed by chronically [weak US business investment](#) that has left US manufacturing without the capacity to respond to surging demand.

Domestic production capacity hasn't increased in more than two decades (**Figure 5**) because more competitive overseas production alternatives lured US manufacturing to rely on foreign sourcing. The amount of finished goods imported for domestic consumption has doubled in the past three decades. Foreign goods comprise 15% of domestic manufacturing gross output, and certain manufacturing subsectors have a far greater dependence (**Figure 12**). This reliance is now causing stress, with logistics channels backed up and trading partners struggling with their own Covid crises.

High prices are a drag

Input costs are also posing a strong headwind, most notably from raw materials. High prices are the result of shortages and strong demand that have spurred the greatest imbalance between raw materials and finished goods in two decades (**Figure 6**) and are also holding back activity (**Figure 13**). Prices for a range of commodities such as copper, nickel, wheat, corn, and soybeans stand 30-60% above pre-Covid levels. As a result, inflation rates for materials used in durables and nondurables manufacturing production are up 35-55% y/y (**Figure 7**).

Inventories can't keep up

The confluence of these headwinds is stalling the inventory rebuild. Business cycle upturns normally coincide with inventory restocking, but the Covid crisis has decidedly [broken that relationship](#). While production is growing robustly, inventories haven't gained traction, constricting activity down the production chain and leaving many businesses with excessively low inventories (**Figure 14**).

Figure 5: Domestic production capacity has been stagnant for two decades

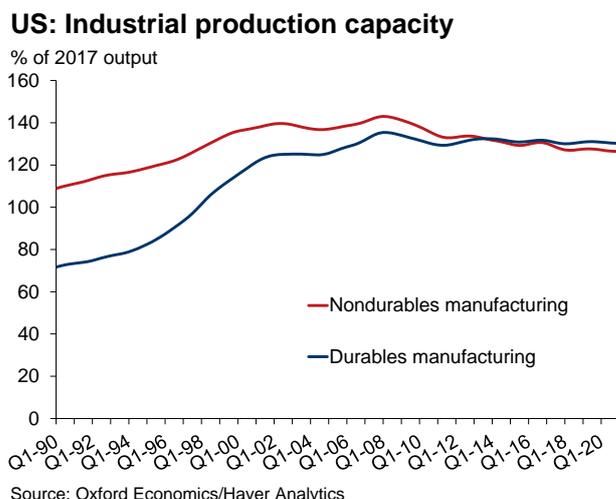
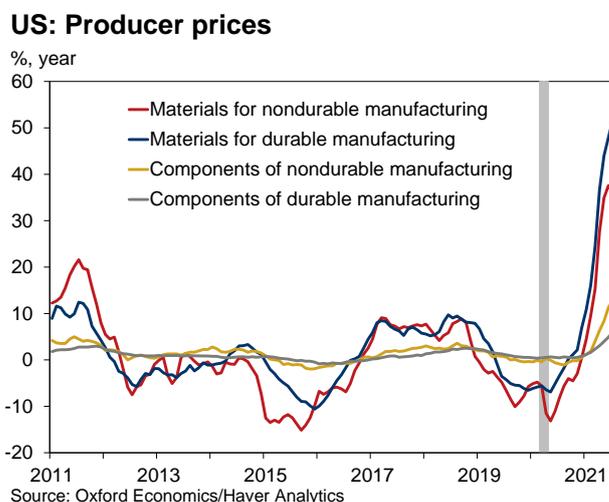


Figure 6: Raw materials shortages constrain manufacturing's ability to keep up with demand



Figure 7: Raw materials prices are rising at an astounding rate



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The manufacturing inventories-to-sales ratio – a proxy for the balance between supply and demand – has been [under steady pressure](#) since summer 2020. And the inventories of nearly 75% of manufacturing subsectors are running leaner than pre-Covid levels (**Figure 8**). Leather, machinery, computers and electronics, electrical equipment and textile manufacturing are grappling with the leanest inventories.

Firms can't fill job vacancies

Purchasing managers' surveys have pointed to persistent labor challenges, including "absenteeism" and "difficulties in filling open positions" since the recovery began. Our tracker confirms that labor-related stress has risen steadily since mid-2020. The manufacturing job openings rate stood at 6.7% in July, more than double the pre-Covid rate.

Manufacturing wage inflation has perked up noticeably, hitting a multi-decade high of 5% y/y in August. Beneath the surface, subsector recoveries are advancing at disparate paces (**Figure 9**). Relative to pre-Covid levels, overtime hours worked are highest in the textiles, computers and electronics, and printing manufacturing subsectors.

But while labor challenges are increasing, our tracker indicates these pressures are less severe than the other supply-side discussed above, a finding in line with our view on [European supply-chain pressures](#).

When will supply-chain stress ease?

With our tracker showing stress still rising, supply-chain headwinds look unlikely to ease in the near term. But we see a light at the end of the tunnel – current challenges will not be indefinite. As vaccination rates rise in the US and overseas and demand slowly returns to pre-pandemic patterns, transportation logjams will clear, input costs will normalize, and production and hiring challenges will recede. In other words, easing supply-side constraints, [rising capital investment](#), and demand normalizing to pre-pandemic patterns will allow firms to clear the significant backlog of orders that have built up in the past 18 months (**Figures 10 and 15**).

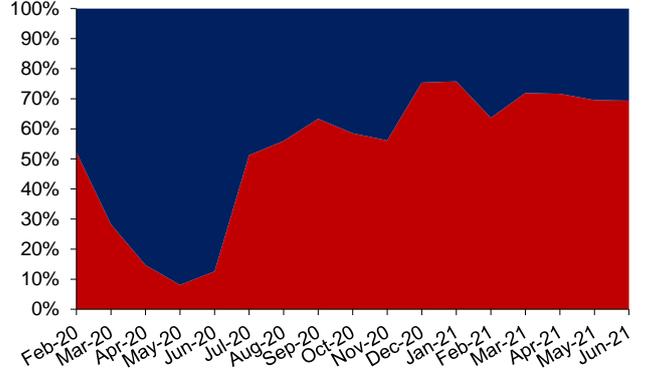
Our latest [macro](#) and [industry](#) baseline projections assume supply-chain headwinds will weigh on activity until at least H2 2022. However, disruptions in certain sectors – such as the semiconductor chip shortage's impact on automobile production – could last into 2023. Similarly, our global client base is concerned supply-chain headwinds could last [beyond mid-2022](#).

Figure 8: Manufacturing inventories are leaner relative to sales across most subsectors

US: Manufacturing inventory-to-sales (IS) ratios

% of manufacturing with IS ratio below respective pre-Covid level

■ IS ratio below pre-Covid level ■ IS ratio above pre-Covid level

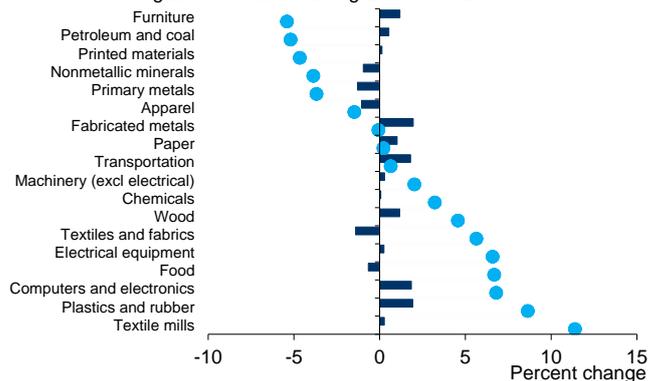


Note: Subsectors weighted by share of manufacturing in industrial activity
Source: Oxford Economics/Haver Analytics

Figure 9: Speed of labor market recoveries varies by manufacturing subsector

US: Index of aggregate weekly payrolls

■ Aug-21 vs. Jul-21 ● Aug-21 vs. Feb-20

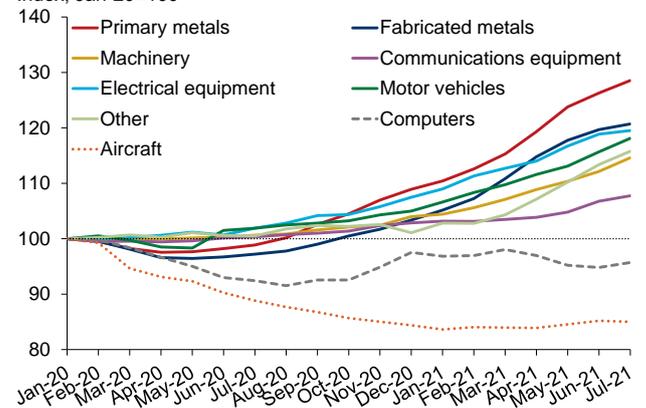


Note: Indices are the product of average hourly earnings, average weekly hours, and employment
Source: Oxford Economics/Haver Analytics

Figure 10: There is a considerable backlog of orders for a variety of goods

US: Unfilled orders

Index; Jan-20=100



Source: Oxford Economics/Haver Analytics

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Figure 11: Seaports across the country are grappling with historic cargo volumes

US: Total shipping containers handled at seaports, by region

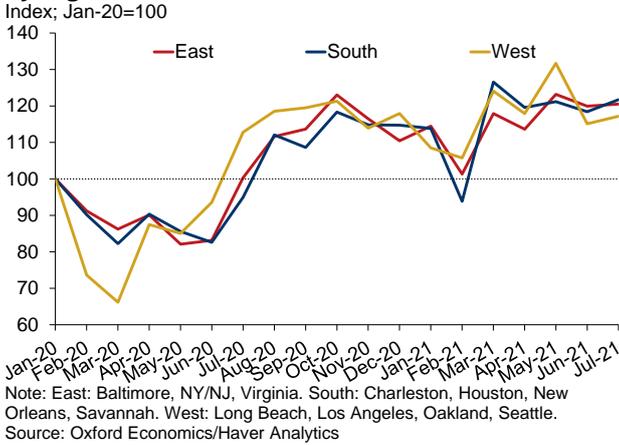


Figure 12: Foreign goods account for a sizable share of domestic manufacturing sales

US: Foreign value added relative to gross output of domestic manufacturing (%)

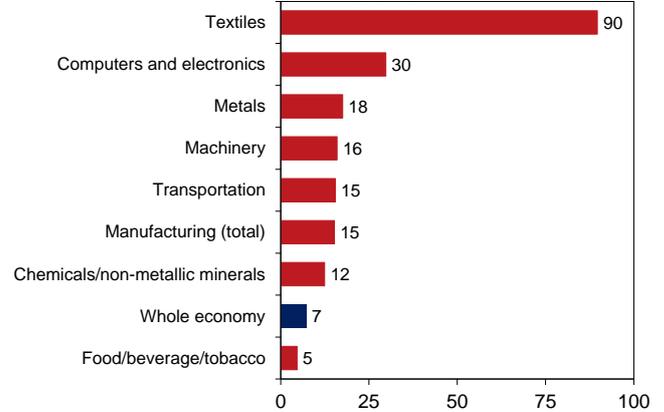


Figure 13: Raw materials shortages are a hurdle to stronger activity

US: Industrial sector capacity utilization

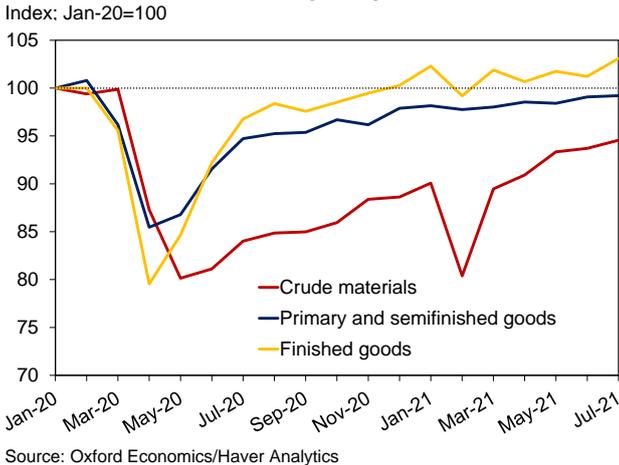


Figure 14: Customers are increasingly pessimistic about their inventory stance

US: ISM Manufacturing

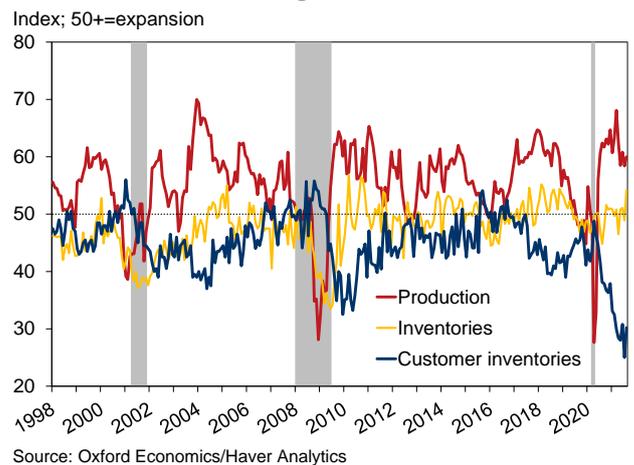
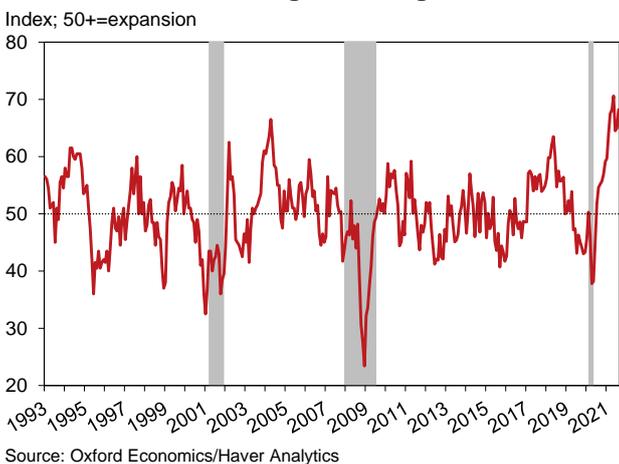


Figure 15: Manufacturing backlogs are rising at a record rate

US: ISM Manufacturing - backlog of orders index



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Technical appendix

We aggregate a host of supply-side data and divide it into five main categories: activity, transportation, prices, inventory, and labor. We then calculate indices for these data (indexed to start in January 2020), and take the average reading from each category to sum to our headline measure.

<i>Category</i>	<i>Components</i>	<i>Source</i>
Activity	Manufacturing capacity utilization	Federal Reserve
	Manufacturing shipments - durable goods	Census Bureau
	Chemical Activity Barometer	American Chemistry Council
	Machine tool orders	Association for Manufacturing Technology
Transportation	Cass freight index: shipment volumes	Cass Information Systems
	Harper Peterson shipping rate index	Harper Peterson
	Total containers arriving at US Seaports	Various port administrators
Prices	PPI: Transportation and warehousing	BLS
	PPI: Commodities	BLS
	PPI: Final demand	BLS
Inventory	ISM Manufacturing: Inventories index (index calculated based on m/m changes)	ISM
	Manufacturing inventory-to-sales ratio	Census Bureau
	ISM Manufacturing: Customer deliveries index (index calculated based on m/m changes)	ISM
Labor	Manufacturing overtime hours	BLS
	JOLTS: Manufacturing job openings rate	BLS
	Average hourly earnings of manufacturing workers	BLS