Transcript
FedTalk: COVID-19 and Supply Chains: A Year of Evolving Disruption
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*Presentation*

**Moderator:** Julianne Dunn, economic analyst, Research Department, Federal Reserve Bank of Cleveland

**Panelists:** Jeff Burd, owner, Tall Timber Group; Louis Vitantonio Jr., president, Greater Cleveland Automobile Dealers' Association

**Opening remarks:** Guhan Venkatu, group vice president, Research Department, Federal Reserve Bank of Cleveland

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**Guhan Venkatu**: Welcome, everybody. It gives me great pleasure to welcome you to the latest installment of our FedTalk series. For those that don't know, FedTalk is the Cleveland Fed's public speaker series, which we launched in 2019 and where we share some of our research and ask you to join us to talk about that work.

Past events have covered subjects such as the opioid epidemic, the racial wealth gap, and the way in which the pandemic has affected regional migration patterns. All of our events can be found on the Cleveland Fed's website or on our YouTube channel, should you be interested in taking a look at past events.

On to today's program. Let me start with a few housekeeping-related items. In case the WebEx event drops, please use the dial-in info provided in this event invitation to rejoin the call. Your microphone will be muted upon entering the WebEx event and will remain muted throughout the session.

To ask a question on WebEx, click anywhere on your screen to display the menu bubbles at the bottom of your screen. Click on the chat bubble—the third bubble from the right—to open up the white panel on the right-hand side of your screen. Type your question into the open chat field, hit Enter, and your question will populate the chat box and, importantly, be visible by everybody tuning into today's event. Questions will be forwarded on to the moderator.

We are excited to have you here for today's FedTalk. In a moment, I'll turn the podium over to my colleague, Julianne Dunn, who will be both presenting and moderating the discussion today. But before that, let me begin by introducing her.

Julianne Dunn is an economic analyst in the Research Department at the Federal Reserve Bank of Cleveland. As a member of the Regional Analysis Group, she combines economic data with insights for business leaders like the two analysts you're also about to hear from today.

She also regularly contributes to the Bank's publications, including the *Beige Book* and our *District Data Brief* series. Her primary interests include development economics, international economics, and labor economics. Julianne joined the Bank as a research analyst in 2017, and prior to that, worked on economic forecasts as an economist at marketresearch.com. She holds a BA in international studies from the Ohio State University and an MA in economics and international relations from the Maxwell School of Citizenship and Public Affairs at Syracuse University.

I am delighted to turn the podium over to her to get things started. Julianne, take it away.

**Julianne Dunn**: All right, thank you, Guhan, and thanks to everyone for tuning in. Give me one quick second to share my screen, get that set up. Before I begin my opening remarks, I'll call attention to the usual disclaimer that everything I share here today reflects my own views and not those of my employer or of the Federal Reserve System as a whole.

Here's a brief outline of what I'll be presenting today. The title of this talk alluded to a year of evolving disruptions, but, unfortunately, today I can extend that really to a year and a half as ongoing disruption. So we'll first take a short look back at what's happened over the course of the pandemic. Next, I'll turn to some of the more specific issues that we continue to face in the economy today. I hope these will tee us up for our panel discussion that's coming next.

Speaking of our panelists, as Guhan mentioned, they're each among a broad network of business contacts with whom I and my team regularly speak. While I'll show a fair amount of data and charts today, I'll also try to pepper in some of the more qualitative pieces that are instrumental in helping us decode that data.

I think I can safely say that each of us has been impacted by shortages during the pandemic, notably of paper products and cleaning supplies. A tremendous amount of uncertainty about the coronavirus led many households to stock up on household staples. While this pandemic buying has largely subsided, the shelves at the grocery store may continue to seem a little bare at times. With many employees still working remotely and people generally spending more time at home, supply chains were unable to shift entirely to produce some of those goods, for example, multi-ply toilet paper in place of the single-ply variety more commonly used in public restrooms. And demand for cleaning products remains stronger than normal.

Although long lines at grocery stores were among the first impacts to US consumers, many of our business contacts felt the impact sooner because of the factory shutdowns in Wuhan, China, in the early part of last year. Faced with shortages, some businesses started buying up key components because of the uncertainty of what the future might have held just as households did. In February 2020, we hoped these supply chain disruptions would be the worst of it. As the coronavirus reached American and European shores of course, the challenges spread and worsened. Factories shut down amid stay-at-home orders, and businesses rushed to find personal protective equipment for their essential employees.

Today, despite a relatively broad reopening and economic recovery, supply chains remain severely disrupted as hangover effects from the initial shutdowns linger. International and domestic shipping lanes are congested, prices for some materials have skyrocketed, and one-off events such as severe weather in the Gulf Coast region, the blockage of the Suez Canal, and the shutdown of the Colonial Pipeline have only piled on.

Over the course of the pandemic, the Federal Reserve Bank of Cleveland and the US Census Bureau have been surveying businesses about the impacts to their supply chains. The bars shown here in red are from our internal surveys, while those in blue represent data for the state of Ohio, which constitutes a large portion of the Fourth Federal Reserve District, from the Census Bureau's Small Business Pulse Survey. Avoiding the specific challenges of each of these surveys, I also want to illustrate here that after an initial peak in the early part of 2020—of May 2020—the portion of firms responding that they faced supply chain disruptions or delays from their suppliers has been largely stable at roughly a third.

However, these figures for the nation as a whole from the Census Bureau survey illustrate that the impact varies by industry, with firms in retail trades, manufacturing, and construction more likely to report disruption. As may be expected, many firms and professional service-providing industries such as finance and insurance experienced little to no impact.

In addition to the variation across sectors, the nature of the disruption varied across firms and time. As I mentioned earlier, the initial arrival of the coronavirus led to shutdowns in many industries. These shutdowns had a ripple effect. For example, when the automakers announced that they would stop production for a spell, they canceled orders from their parts suppliers. Faced with no demand from their customers, these suppliers also shut down. Eventually, this chain of events led to a shuttering of a fair amount of raw material production as well.

The reopening in the summer of 2020 was also staggered and a bit chaotic. Some firms had trouble recalling laid-off workers. Others said that idle equipment takes a long time to bring back online. Uncertainty about how quickly and how strongly demand would come back made it even harder to set production schedules. Even after most facilities were back up and running, idiosyncratic part shortages and shipping delays continued to drag on the economy.

In our own data collection, nearly half of the 150 contacts that responded to more than one of our surveys about supply chain impacts gave different answers at different times. For example, one manufacturer reported some initial disruption at the beginning of the pandemic, but the issues were largely resolved in the summer and fall before reemerging in the spring of this year. Other contacts have described the phenomenon as a game of Whac-A-Mole, where as soon as one part shortage is resolved, another part is out of stock or another challenge has arisen.

Faced with disruption, businesses have taken a closer look at supply chain management. In early February of this year, a quarter of our contacts reported that they've made changes to the way that they manage their supply chains. Although many of these changes were considered to be minor and temporary, they fell into three large buckets. First, we've heard a number of comments about ordering early and closely managing inventory. In some ways, this is a reversal of the famous just-in-time delivery model, where firms hold very little inventory of component parts, sometimes only enough to sustain production for a day or two.

Prior to the crisis, firms were accustomed to very short delivery windows, much like households who have gotten hooked on two-day delivery with Amazon Prime. Now these times have stretched significantly, and many firms are ordering inputs needed to fill orders they haven't even received yet, preferring to hold extra inventory rather than risk losing future sales because components are not available.

Additionally, because many products are in high demand, some suppliers have chosen to allocate goods, filling larger, more profitable orders than those from existing customers before smaller one-off purchases. This has pushed some firms to buy in bulk. Of course, to hold extra inventory, you need to have a place to put it. One manufacturer recently told us that "If you don't have a large warehouse right now, you're out of luck." Our contacts in commercial construction say this contributes to strong demand for new industrial space.

Secondly, other firms are working to diversify their supplier bases. Although taking a more holistic approach to supply chain management was a trend before the pandemic, the past year has revealed weaknesses for many firms. Companies that had a relationship with a single supplier for a specific component for years, suddenly found themselves unable to produce their product because that supplier had a COVID-19 outbreak and was forced to shut down, for example. Many contacts have noted that they now source from multiple suppliers, something that they've never done before the crisis.

Lastly, our business contacts have stressed that the disruptions to supply chains are taking up an extraordinary amount of executive time. Some contacts, like the one quoted on the slide here, are on the phone with their suppliers every day to find out what will be delivered in time for tomorrow's production schedule. Others have put the onus on suppliers to keep more of their frequently purchased items in stock, sometimes guaranteeing purchase orders for supplies before they need them.

I'll turn now to some of the more specific challenges that firms are facing with regard to supply chains. The first of these relates to worker shortages and trouble in logistics networks. This chart shows US employment as a percentage of its February 2020 level. As of April, there were [a] little more than eight million fewer people working in the United States than were employed in February 2020. This deficit persists despite the fact that job openings, as published by the Bureau of Labor Statistics, were at a record high in March.

This disconnect has policymakers and economists like myself scratching our head, of course. Several hypotheses have been put forward. Workers are unwilling to return to work for fear of contracting COVID-19, because they lack childcare, or because they are taking advantage of generous unemployment insurance benefits. Our contacts frequently suggest that this latter fact makes it especially difficult to hire lower-wage workers, but at this time it is difficult to determine definitively the primary driver of low labor force participation.

The level of employment masks numerous disruptions from worker quarantines. Last summer it was widely publicized that this phenomenon was contributing to meat shortages because of large outbreaks at packing plants. But we've heard it from a variety of industries. In a survey in February of this year, more than a quarter of our contacts said that they'd experienced COVID-19-related staffing outages during the last two months. One manufacturer told us at that time that as many as 10 percent of his employees were absent on any given day.

Perhaps the most disruptive piece of this puzzle to supply chains is that the pandemic has also exacerbated the shortage of truck drivers. The American Trucking Association states that the trucking industry hauled nearly three-quarters of all freight in the United States in 2019. So this is an integral part of domestic supply chains. While most states, if not all, designated transportation an essential service, there was a drop in employment presumably because drivers who would, for example, typically ferry goods between factories had few orders when those factories were closed during the spring and early summer. As you can see here from the blue line, unlike total employment, this subsector has been very slow to add back workers.

Some news reports suggest that the sharp rise in e-commerce has driven up demand for local delivery drivers and that firms such as Amazon may be poaching would-be long-haul drivers. Indeed, employment in the local trucking sector rebounded sharply and surpassed prepandemic levels as of December, but this web sector represents a relatively small portion of employment.

In March, the most recent month for which we have this detailed employment data, there were only 2,000 more local delivery drivers than in February 2020. And that would suggest that there are still more than 20,000 workers in the trucking sector that have not returned to work.

The driver shortage has made it more difficult to move things around the US at a time when a lot more stuff needs to be moved. As I alluded to on the last slide, the pandemic caused a large shift in consumer spending from services and travel to goods. And fiscal stimulus programs gave consumers the means to purchase everything from exercise equipment to electronics. Many of those goods are made in Asia and are typically transported via ship to ports in Southern California and then loaded onto trucks to the rest of the nation. The blue line here shows the sharp increase in inbound loaded shipping containers coming to the ports of Los Angeles and Long Beach. However, while imports have surged, there hasn't been a corresponding increase in exports. Once a truck has moved goods from the West Coast inland, there are substantially fewer goods that need to move back to Los Angeles. Freight companies are reluctant to send an empty truck to pick up more goods, which has contributed to substantial congestion at those ports.

According to one report, at times there have been as many as 40 ships anchored off the coast of Los Angeles, when there usually would be no more than a handful. It can take as many as 8,000 trucks to unload a ship. The shortage of trucks and drivers has driven up prices and encouraged firms to take drastically more expensive measures, such as moving goods with air freight or sending ships through the Panama Canal to ports closer to their final destination. Indeed, the number of inbound containers has increased significantly at the ports of New York; New Jersey; Savannah, Georgia; and Houston, Texas. One analyst noted recently that imports tend to peak in June and July, suggesting that these constraints are likely to get worse before they get better.

The story of mismatched demand and supply extends well beyond our borders. When the pandemic struck, many analysts erroneously predicted that international trade would pull back substantially. Shipping container manufacturers cut back production only to see incredibly strong demand. As shipping companies prioritized routes between China and North America, empty containers were left at ports in Africa and South America. Piling onto the troubles unloading containers at US ports, these factories in Asia now have no way to ship the goods they've produced. According to several sources, the price to ship a container from Shanghai to the United States has more than doubled from its normal level.

The weeklong blockage of the Suez Canal in late March created further stress, as a total of 350 ships were waiting on either end of the canal before the *Ever Given* was freed. At the time analysts predicted it could take at least two months for shipping lanes to recover.

*Lloyd's List*, a London-based shipping newspaper, estimated that the blockage held up $400 million worth of trade each hour, which suggested the six-day shutdown cost nearly $60 billion when all was said and done.

We'll now take a quick look at a few commodities which have been notably impacted. I'll turn first to lumber. Stay-at-home orders, the prevalence of remote work and learning, and exceptionally low interest rates combined to drive up demand for single-family housing. This chart shows data on home sales according to Redfin, again indexed [to] before the pandemic. As you can see, sales soared in the latter part of 2020. However, while demand remains exceptionally strong, supply chain constraints have hindered sales in more recent months.

While builders complain of shortages of everything from windows and cabinets to screws and foam insulation, the greatest constraint is lumber. Sawmills have been unable to keep up with the unprecedented demand, particularly as capacity had been cut over the last decade in the wake of the Great Recession and subsequent weak demand for housing.

With incredibly strong demand and limited supply, the price of lumber has increased substantially. Shown here in blue, the futures contract price for delivery next month has quadrupled from its prepandemic level as of a few days ago. While it's come down somewhat in the subsequent days, it remains exceptionally high. With tremendous uncertainty regarding the future prices, many builders have taken exceptional measures. Some contacts have told us that they're building spec homes but not putting them on the market until they are mostly complete [and] when they have a more firm idea of how much they cost to build. Others have said that demand for homes is so strong and their backlog so full that they've stopped pursuing additional sales, funneling effort instead to on-time, on-budget completion of existing projects.

Steel, another key input for construction and manufacturing, has also seen exceptionally strong price growth. As shown in the red line here, steel futures have more than doubled since before the pandemic. While the increases for other commodities are not as eye-catching, they're also significant, but let's take a closer look at steel.

Nationwide steel production climbed steadily from its initial low in early May 2020, but it remained almost 6 percent lower than prepandemic levels despite strong demand. Well, it has increased some over the course of the year to date and has done so very slowly.

Capacity utilization in the iron and steel sector, shown here on the left panel, surpassed the February 2020 level in April, though it remains below the prepandemic peak. However, actual capacity, shown on the right as a percentage of production in 2012, continues to trend downward. Over the past decade, many traditional steelmaking blast furnaces have been shuttered because of the competition from smaller, more efficient mini mills and imported steel. The tariffs on imported steel imposed during the Trump administration stemmed this decline somewhat in the last few years. However, several producers did not restart all of the capacity that was shuttered at the onset of the pandemic because the longer-term outlook for demand is still unclear.

Firms in the sector are also benefiting handsomely from the high-price environment, further disincentivizing them to add additional capacity to meet current demands. The longer-term trend of consolidation in steelmaking contributes to these flows. As one example, Cleveland-Cliff's recent acquisitions of AK Steel and ArcelorMittal USA make it one of the largest steel producers in the US. During their fourth-quarter earnings call, the CEO emphasized that in the current environment the firm will prioritize value over volume and said, "I will not restart capacity on a whim just to add tonnage to the spot market." Thus, steel shortages and high prices are likely to remain for some time, pinching construction and manufacturing firms alike.

Also plaguing the manufacturing sector is an ongoing shortage of semiconductors. As with steel and lumber, demand has far outstripped supply, causing particular difficulty for the auto sector, an important industry here in the Fourth Federal Reserve District. When the pandemic hit, the auto industry expected that sales would take a hit as well. Manufacturers shuttered factories such that production, shown here in red, was nearly zero in April of last year. With factories shut down, automakers canceled orders for parts, including semiconductors. However, while sales declined, they beat expectations and did not fall nearly as much as production, as you can see here in orange. Thus, the number of vehicles on dealer lots, shown here in blue, quickly shrank and has continued to fall.

Semiconductors or microchips have become an increasingly important component in vehicles, running everything from dashboard displays and complex driver-assistance features to windshield wipers and tire-pressure monitors. Some estimates suggest that a modern car can contain thousands of chips, and, in some cases, just one missing three-cent chip is holding up production of an entire vehicle. Despite their importance to all things tech, there are surprisingly few manufacturers that make microchips. By one report, Taiwan Semiconductor Manufacturing Company or TSMC has a market share of over 50 percent in the semiconductor fabrication industry. It is one of the few manufacturers that sells to the auto industry. But sales to car makers only generated 3 percent of the firm's sales in 2020.

When demand from the automakers dropped off at the onset of the pandemic, microchip manufacturers turned their attention to other customers who were seeing very strong demand from households and businesses. Of course, I'm speaking of the makers of computers, cell phones, video game consoles, and other electronic devices. Demand for these products remain strong. According to the Semiconductor Industry Association, sales of semiconductors in the first three months of 2021 were nearly 18 percent higher than a year ago.

In the auto sector, Ford and General Motors have seen the largest impacts to production so far in 2021. The blue, red, and orange bars in this chart show year-to-date production forecasts from the beginning of December, April, and May, respectively, while the green bars denote the actual production numbers, which we received just last week. As you can see, Ford and General Motors saw sharp downward revisions to the forecast even as recently as the beginning of this month.

Toyota and Stellantis, the newly formed company resulting from the merger of Fiat-Chrysler and France-based Peugeot, have been a bit more resilient. Toyota was among the first to identify the impending chip shortage and allegedly stocked up and altered production schedules accordingly. The impact for the auto sector has garnered attention from governments around the world, and in recent reports the chipmakers have promised to prioritize their automaking customers. Ford's most recent forecast suggests that production will have largely recovered by the end of the summer with strong production later in the year. However, chipmakers will take longer to expand capacity, and some say the shortage may persist into 2022. This will likely mean that other electronics and appliance manufacturers will continue to feel the pinch.

To sum up, the pandemic has impacted supply chains in a variety of ways. The fallout continues to plague the economy's ability to fully recover. Worker and container shortages have disrupted logistics networks, and mismatched demand and supply have increased materials' prices. Furthermore, strong demand for electronics led to a shortage of semiconductors that has significantly impacted the auto sector.

I will stop there and stop sharing my screen so that I can invite my panelists to join me in taking some of your questions. So I'm delighted to be joined by Jeff Burd of Tall Timber Group in Pittsburgh, and Louis Vitantonio Jr. of the Greater Cleveland Auto Dealers' Association.

I'd like to start by allowing you both to introduce yourselves and tell us a little bit about your organizations and the industries you have insight into. So Jeff, I'll start with you.

**Jeff Burd:** Sorry about that.

**Julianne Dunn:** We got you now Jeff.

**Jeff Burd:** I'm Jeff Burd. I'm the owner of the Tall Timber Group in Pittsburgh. That's an umbrella of a number of businesses that I operate, but my main source of income is I am what would be called a content provider today. For the first third of my career, I worked for McGraw-

Hill and its construction information group, principally the FW Dodge division, before starting a competitor here. And then after selling that business in 2005, I began publishing a few magazines and information sources.

In addition to being a devourer of information on the economy, we do very granular research here in the metropolitan Pittsburg area, checking on municipal-level building permit activity, as well as having ongoing conversations with literally all of the contractors and architects and developers, as well as institutional owners here, to identify projects that are being built.

**Julianne Dunn:** Great. Thanks Jeff. I'll turn it over to you Lou.

**Louis Vitantonio Jr.:** Hey. Thank you, Julianne. Very good presentation. Appreciate the opportunity to be a panelist. I represent or I am the president of the Greater Cleveland Auto Dealers' Association, which has over 280 franchised dealership locations in 23 counties in northern Ohio. So that when I say franchise, that means that they're selling new and used vehicles, any type of the brands anywhere from an Audi to a Chevrolet, anything in between.

We have a good feel for Greater Cleveland, and we go all the way down to the Mansfield area out in the Youngstown area and then we move into Toledo as well with our membership. And a very good feel for what the dealers are experiencing and how they're trying to retail and modify based on some of the things that you pointed out in your presentation.

Our organization has been around for over a hundred years. We offer a number of different benefits as a trade organization for our members, and then obviously, we own and operate the Greater Cleveland Auto Show; that is the largest show in Ohio that runs usually in February and March. But again, we are on the retail side and on the front lines of retailing automobiles, but also servicing and also in the body shop industry as well.

*Q&A*

**Julianne Dunn:** Great. Thank you. And thanks again to both of you for being here.

I'm going to dive in with a few questions that I have for you guys, and then we'll turn to taking some questions from the audience as well.

So Jeff, I want to start with you. I talked a bit about strong housing demand and the impact on lumber prices. And I mentioned that some analysts have attributed the demand in supplying this match in the housing market, as well as some of the declines in sawmill production, to underbuilding in the year since the Great Recession. Is that your take, or do you see other factors contributing to demand right now for housing?

**Jeff Burd:** I think that's an accurate assessment in terms of underbuilding being one of a number of factors. I don't think it's probably possible to overstate how big an impact the supply constraints have been, unusual supply constraints. This was in some ways a perfect storm, where you had tariffs that made Canadian lumber less competitive; you had some situations in terms of Canadian regulations on the British Columbian timbering industry that limited supply; you had a very unusual weather event a decade ago that brought down a lot of standing timber that resulted eventually in the timber no longer being usable, which was in the spring of 2020. Of course, you had a number of large [COVID-19] outbreaks in sawmills. And in the southern United States, what we saw was, just between the COVID outbreaks and a number of other factors, that industry sector has not picked up the slack where it long term will have to. The southern lumber timbering industry is going to have to expand.

We've seen some changes in that. We've also seen that the reduction of the tariff has given some mild improvements from Canada. But the real issue is that you saw an incredible increase, [a] 20 percent increase plus in residential spending last year. I think in our industry, the surprise, much like you were talking about with the container industry, was that when people began to stay at home and work from home, that it gave them an opportunity to take a good look. And even though there was some pretty significant economic uncertainty, people decided it'd be a good time to spend on adding to their house or remodeling, building decks, building swimming pools, so much so that it just created a very unexpected spike in demand.

The change in housing starts has been more gradual and, candidly, I mean the real decline was between 2007 and 2019, that it took until the end of 2019 for building in the United States to recover to the point of, I think it was January 2007 was the peak, before the decline of 1,500 units. Contrast that to say 2000 or in 1990, when we had sort of that collapse in the housing market with foreclosures following the savings and loan crisis, and a couple of actual overseas and global financial crises that took about four years with that overhang of supply to get back to the previous high, as opposed to 12 years in this most recent one.

So I think it was more the combination of factors. If you want to point to the financial crisis as a contributor, it's more of the fact that first by regulation and then mainly by intent of the lenders, lot subdivision and lot development really dropped off. It was taboo for a number of years there. Lenders just didn't want to play with it. Of course, with the overhang of supply, that made perfect sense.

In your footprint here, southeastern Ohio, southwestern Pennsylvania, we've had this other phenomenon in the last 10 years, which is the natural gas industry arriving here. What comes with that is a great land grab, and what comes with that, of course, is a significant increase in the price of land. And ironically, or not surprisingly, a lot of that takes place in the undeveloped areas, [of] which there are plenty in both southeastern Ohio and southwestern Pennsylvania.

So as sort of a final nail in the coffin, as difficult as it was to get a loan to develop a subdivision, prices often doubled for the cost of land. So again, it was sort of a perfect storm of things that just stopped construction of new homes, and as it is now, rebuilt, that ran right into a crazy remodeling spree that ran headlong into an almost stoppage in supply.

**Julianne Dunn:** Great. Thank you. There's a lot of good info there. So Lou, I have a somewhat similar question for you. We've been hearing a lot about the supply-side constraints in the auto market. But what about demand? Do you think the current levels of high demand are likely to persist? Or what are the factors behind that?

**Louis Vitantonio Jr.:** Well, I mean, you have two things that ... same thing with the other presenters that are coming as the perfect storm. If people were in lockdown and they weren't shopping, so we have something called pent-up demand that applies to any industry, where people have put off either buying a new car or leasing a new vehicle. Some differences are in Ohio. We continued to be open throughout the pandemic for sales and service of automobiles. So a lot of different places sold their inventories into states that were able to sell, and consumers came from neighboring states to buy. So we had those issues there.

We also had production shutdowns, either having COVID outbreaks at the manufacturing plants, or what we're talking about today is the chip shortage. But it's not just chips. It's rubber, plastic, the seat foams, the seat backs. And back to chips. Chips can be anything from fuel-management systems to the remotes that people have for their vehicle and everything in between.

Also, if you go back even further to '08, '09 when we had some bankruptcies, your capacity went down because a lot of manufacturers tightened up how many vehicles they could produce, shed a few of the manufacturing plants, and kept everything in line with demand. So back to your original question. Demand has continued to grow, but the supply isn't there. And that's obviously translating into a number of other factors. For example, higher used-car prices.

Another industry, another spinoff of what has happened in the auto industry is when we had the downturn, or not the downturn, but when we had the pandemic coming out, in order for some of the rental car companies to stay afloat, they had sold off a lot of their inventory as well, to either stay out of bankruptcy or to lessen the blow of bankruptcy. And now that leisure vacationing and things like that are coming back, those industries, the rental car companies are coming back, and there's no new car fleets to be purchased because of production. So now they're entering into the used-car, nearly new, current-model-year or previous-model-year-used market, again driving used-car prices up.

So the demand is there from the consumer side. There's demand from the fleet side. There isn't enough production, and there's not enough availability, which is also driving prices for not only new vehicles but also used vehicles as well.

**Julianne Dunn:** Yeah, that's so interesting. I think a lot about the car market being driven by consumers. So it's [an] interesting comment about the fleet sales piece. I actually anecdotally was just trying to book a rental car recently, and it turns out that rates for rental cars have gone way up as well.

So do you see any role in terms of on the consumer side, what role do you think that the fiscal stimulus played, and do you think that that's going to, as that winds down, will you see a drop off in consumer demand?

**Louis Vitantonio Jr.:** I think it was certainly a factor for those individuals who were currently paying either a loan or a lease. That certainly did help with moving forward of the demand. But the substantial reduction in supply is still putting pressure on the availability, and the individuals' demand is still going to be there. Again, if you go to a dealership lot currently and you're looking for a particular model, at one point there was maybe 15 or 20 of them, different colors. Now you're down to either two or three, and you may have to wait for something to come in, and the vehicles that are in transit, meaning that they haven't, either they've been built and [are] being delivered or even sold. I think the demand will continue. The problem with the supply is going to continue.

One thing that we didn't talk about, like you did a little bit about vehicles that are sitting in lots that are not completed. There's nothing wrong with them. They just, they're missing component parts, the chips or something that operates fuel management or any of those processes. Those vehicles are substantially built. They're just not completed. You indicated in some of your slides that Ford is taking the biggest brunt, General Motors is second, Stellantis is third. They have vehicles that are sitting in lots that are not totally completed and will be, we've been told, in the third quarter, most likely will be shipping with current inventories, or excuse me, production that's being made or created now. So it'll be a duel where cars that have been sitting that are completed and cars that are coming off the line will be distributed.

But then we go back to the original thing I think you said with the truck drivers. Getting those vehicles to the dealerships throughout the country is going to be a heavy task. And again, that drives prices the same as the residential building industry; it's doing everything in the auto industry as well.

**Julianne Dunn:** Yeah. So just staying on that point I guess, about these really low inventories at dealer lots. One of the things that my team in thinking of, the Federal Reserve as a monetary policymaking entity, one of our concerns is always about the impacts of these issues on the longer-term health of the US economy. Right now, you're seeing these auto dealers, many of which are relatively small businesses with super low inventory. Should we be worried about the revenue impacts to those firms, or do you think we're going to see dealer closures because of these challenges?

**Louis Vitantonio Jr.:** Well, the other side of it is we're being forced to find vehicles to fill up our lots that are not necessarily new. And that's going to be a challenge for June and July in the short term in order to continue the sales operations. Another thing that is coming up is that on the server side, the other departments in the parts departments are going to be relied upon to carry the dealerships forward for the next few months, even an additional quarter, because if you can't buy a new one and you can't buy a used one or the prices are higher, then you're going to need to service it and take care of it and maintain it. So those departments are getting busier.

Also, the fact that people delayed maintenance and delayed some of the repairs throughout the pandemic, those are coming to light now. When it gets hot, everybody talks about the weather today, that's when air conditioning starts to fail, not only in homes but in cars. And so those repairs are going to be made.

I don't anticipate a lot of shutdowns, but it will be a very, very tight operation as far as the ability that you can't sell something you don't have, which translates into others' advertising. You can't advertise something you don't have. So that's another industry that's going to be hurt from this.

And also for the banking industry, which you guys track very well, floor plan, those are ... vehicles are put on the dealership lots, they're paid for by a bank and you pay interest on that vehicle. The banks are looking at there's no inventory, so there's no floor plan interest to be paid. So that will have an effect on some of the banks that are largely in that market. Again, a lot of things that are spreading out not only in our industry but from just side two it's just a sprawl of different things that are being affected.

**Julianne Dunn:** Yeah. Many things to keep track of, that's for sure. So turning back to you, Jeff. We talked a little bit about the housing side of things a bit earlier. Can you talk about what you're hearing, on the nonresidential side in terms of demand and any unique constraints that they may be facing?

**Jeff Burd:** Sure. The second point, I don't know that any of them are unique. The supply chain right now is quite erratic both in terms of pricing and availability. Demand is returning. I think the difference between the residential and nonresidential side is the timeline; the lead time for nonresidential construction is significantly longer even on renovations. What ends up happening is in markets like this where there are less supply chain concerns than inflation concerns, and inflation can just be job-by-job. Many of these projects that the viability of them economically is dependent upon rent or upon a perceived internal cost to occupy, that then needs to make sense that it's over [the] top of the cost to build it.

We've seen even just in a local market, in the Pennsylvania market within, gosh, we're talking 90 days really here of any kind of recovery, a significant number of major projects that have gone on hold, maybe bouncing back to either take a relook at it from a pricing standpoint in the fall, in many cases being redesigned or having scopes reduced. I think pretty much all of the things that we're seeing in terms of disruptions, supply chain disruptions, are not [the] result of any long-term change in trend.

I was a little interested to hear what you were saying about steel because most of the folks that we talk to in the steel industry are looking at this as the time the sun is shining and they need to make hay. They are turning capacity back on. They expect capacity to come back up. Most of them expect to be selling steel for $450 a ton again come the fall and winter, and that's because it would be the first business cycle in which manufacturers didn't take advantage of the highest pricing to increase capacity. That's not usually ... the man running Cleveland has got an extraordinary discipline if that's going to be their approach to the market.

We're seeing price increases just ... I think the more disturbing factors for nonresidential and the impact that it will have on demand is that price increases are almost weekly. They're not by any means predictable. You may see a 10 percent increase for May, and in the week of Memorial Day be told that there'll be a 30 percent increase on June 7. Bids will be delivered that are good for today and tomorrow. Construction news just doesn't move that fast. So the long lead time has a tendency to really exaggerate those problems.

That's also been a problem with the supply chain. Many of the items that are chosen for a project come with long lead times. It's not unusual for custom window systems in an architectural window wall to take 16 to 18 weeks in terms of engineering and fabrication and delivery to the site. It's not been unusual for people to find out well after a project has moved along that no, that's now going to be 28 weeks, and to Lou's point, that's before we find a truck driver. So it's having much more of a disruptive effect on project schedules than I think people expected.

And what tends to be overlooked in our industry unless you're right inside it is…it really is the schedule and the ability to perform to that as you estimated. It makes the difference between profit and loss. I think most people that are concerned about a firm's viability are looking at that and looking at that for the later part of this year into next year…is people are forced to fulfill commitments that may be at prices and at [a] cost that they didn't anticipate. That's never a positive thing.

But much as Lou was talking about in terms of the auto industry, there's not a lot of rhyme or reason to it. Steel is in short supply. Things that are made of steel are in short supply. But also insulation, sealants, drywall, plumbing fixtures, it's kind of all over the market. And some of it is exactly what again Lou was talking about with the unbuilt cars, is that waste-treatment equipment for example, these are $250 to $5 million pieces of equipment that because of supply-chain-management strategies a few years ago became very dependent upon $12 pumps made in Indonesia or China. So they've got a million-dollar piece of equipment sitting, waiting for a $12 OEM component to be shipped here that isn't coming. You can't sell it if it's not moving.

I think one of the things that...because I, unfortunately, get to advise a lot of people in this industry...is this is the year that will turn out pretty much as we expected. This was going to be a disruptive, crazy year. Demand was going to get well ahead of supply. Prices were going to go up. But there's not much from a fundamental standpoint to tell us that, OK, this is the beginning of a virtuous cycle upward of inflation. It's just going to be a year that you're going to have to manage crises on a pretty regular basis until we get some certainty back in the supply chain, which seems like it's going to return in the fourth quarter of the early part of '22.

**Julianne Dunn:** Okay. Yeah, that's actually a great segue. One of the questions that we got from participants as they were registering was about what are the impacts of this on long-term inflation? It's a big topic, but I do think it's worth addressing. I can talk a little bit about that from my perspective, but I would also love to hear from you guys on this issue as well.

On the Fed side, we've heard numerous times now from Chair Powell and other members of the Federal Open Market Committee (FOMC), as well as just in the FOMC statement, that they really see the current inflationary pressures as transitory. They've made that very clear. But of course, then the question is what does transitory mean and why should we think of these as transitory?

So the way I see it, there are a couple of reasons we might think of current readings as transitory. The first is a boring math reason. As a reminder for the audience, the FOMC targets year-over-year inflation in the personal consumption expenditures index, and they want that to average 2 percent in the longer term.

So if we're looking at year-over-year figures, we have to remember that the economy was very out of whack a year ago. And we saw a relatively flat inflation through April and May of last year. So even if inflation has just returned to its prepandemic trend, which I'm not saying necessarily is the case, we'd still see year-over-year readings that are a little bit higher than we might expect. And just for reference, economists like to call this the base effect.

But of course, the second reason that inflationary pressure might be transitory is because it's stemming from all of the things we've been talking about today. I think as Jeff just alluded, I think there's at least a hope that this is not the new normal and an expectation that eventually some of these disruptions will start to abate and prices will normalize again. But of course, that doesn't answer the million-dollar question of when that normalization will happen.

So to me it really depends on what the underlying cause of the disruption is. And I think we've identified several combining factors at this point. From our side, more and more we're hearing that these disruptions might be related to labor shortages in many cases. So if that's the case, then it gets to that question I alluded to earlier about low labor force participation. If that's about childcare, maybe we'll see some relief when kids go back to in-person learning. If it's about the fear of the virus, widespread vaccination might help. If it's on generous unemployment benefits, a lot of states have already started to phase those out. So those kinds of factors might point to a resolution in three to six months.

But, of course, then there's also the capacity concerns that we've been talking about. And that's going to take a lot more time to get those investments in place, particularly as it's hard to build a plan if you don't have the supplies to do so.

So I think, thinking from those perspectives, that really could be well into next year. So, Jeff, you just shared a little bit. I'm going to jump back to you. Do you have any other thoughts on the inflation question and are you willing to predict the timeframe for when this might all be over?

**Jeff Burd:** December 22 about now.

**Julianne Dunn:** All right.

**Jeff Burd:** That's the best information we have at this point. Now, I think the bigger concern we have is the stuff that is clear through the fog and get to the forest. The long-term demographics are very, very concerning for our industry and several others that are basic industries where the kind of work gets done mostly by people without college degrees, the kinds of careers that have been discouraged by a generation or really two generations' worth of parents. We have a very large segment of the workforce, perhaps as many 40 percent of the workers, able to retire between now and 2025.

Inflation on materials is running up and down. I'm a capitalist at heart, and my career tells me that persistent inflation, even inflation that's driven by government activity, tends to at some point inspire somebody to respond. So we'll get capacity back, or demand will be diminished. To Lou's point, when people can't buy cars at prices they want, at some point they do just throw their hands up and go put the new transmission in the old car. The same things happen with buildings; the same thing happens with manufacturing capacity in terms of kinds of materials.

Construction is one of those things that's variable. Steel prices stay like this because the attitude becomes "let's make as much money as possible rather than building capacity." Buildings will start to be made out of concrete. You can pour concrete to a structure that's over 100 stories, you can build concrete block buildings. And this is what's happened in the past. So I think the longer-term impact is going to be from the impact of productivity. Half of the cost of a building is the labor. And if you're used to being able to get x amount of productivity out of a crew and you get x minus 10 percent or 15 percent because you have fewer workers or less-skilled workers, the cost of the project goes up that much more. I think that's the more concerning.

It's hard to imagine given where we were before we came into this and the artificial loss in demand that I'll be shocked if we're still dealing with this kind of disruption, candidly, unless the government steps in and decides to put its finger down on the scale someplace past the fourth quarter of this year.

**Julianne Dunn:** Okay. That doesn't sound too bad. Lou, what about you? You have any thoughts on these topics?

**Louis Vitantonio Jr.:** Yeah, I think first and foremost, affordability is a huge problem or a huge concern for us because the price of the vehicles has continued to rise over time, and the alternative is to lease because you're really, you're basing your rental, I guess, a long-term rental is what really a lease is, on a payment. So people being able to afford high-priced vehicles, and pickup trucks are expensive, I mean. And they continue to rise.

So our largest concern is the affordability proposal. Is … are people going to be able to continue to pay the amounts that are…being the cost of the vehicle to the consumer ultimately, and those things can ... regardless of what has happened in the past 12 or 18 months, the vehicles continue to get more expensive, second to a home, the largest purchase someone makes in general.

So at the end of the day, if those vehicles are up at a high price and they're not moving off the lots, then we get into what we've had in the past, which is incentive spending. And that means that we're incentivizing vehicles that are not moving off the lots. Incentive spending is 16 percent down over the past 12 months, which is a huge amount of money. There's no need to put incentives on vehicles because there's no vehicles on the lot. But eventually, when they get higher priced, then there's incentives that are backing those up to lower the price back down, which then lowers the used-car market back down because you're selling a new car lower than what the manufacturer suggested retail price is.

So again, the market will drive what happens to the price of the vehicles, the content of the vehicles, and what is being offered because whether they purchase them or not, that's really what it comes down to. And at the end, I think we will see, over time, used-car prices will get back to a normal rate, and new car supply is there, and the demand will regulate itself. And it will work out, but it will take some time. And it's all driven by what the consumers desire and what they're willing to pay, with any industry, but the auto industry is pretty easy to pinpoint.

**Julianne Dunn:** All right. And I think you maybe said this earlier or maybe I missed it, but when do you think we'll be back to a normal level of supply in terms of getting all of those lots? There are all of those vehicles that are just waiting to ship plus the new production. When do you see that being resolved?

**Louis Vitantonio Jr.:** At this point, hard to say because something else trips up. In any supply chain, it's one part can stop anything, right? But I believe at this point we're going to get through the third quarter. Most likely by the end of the year, you'll see some availability, but probably into '22 where you're seeing that same level of inventory.

A normal dealership that carries 400 cars is now down to less than 100. To get back to that 400 availability, it's going to be some time because you're still selling at the same time, and vehicle demand is going to continue because you can't get them. So it's going to take into '22 before you see a good level of inventory being built up to either prepandemic…or you have strikes, you have sicknesses, you have shutdowns, and all these things…and you've got the capacity from over '08, '09 that has been restricted, too. So, you can only build so many.

I don't see capacity being expanded, only in certain scenarios if it's a desirable vehicle and it continues to have a high level of demand. One perfect example is General Motors are going to start building Silverados again in Canada, where they had not been building Silverados and the Sierras, the pickup trucks. So they're going to bring another plant back on that; they haven't been running since, I think, '10. So again, or maybe a little bit later than... But they will do it. But man, it has to make a good business case.

**Julianne Dunn:** Right. All right. Well, I am actually going to stay with you because we have a question from the chat. So I'm just going to read it here: "Typically, auto dealerships try to have the profits from their parts and service operations cover all of their monthly fixed costs. Are there issues with getting parts and with reduced demand since they've reduced the number of vehicles on the road and miles being driven, and are dealerships struggling with having enough service and parts employees?"

**Louis Vitantonio Jr.:** OK, so the first part is, is there a limitation on parts? Yes. I mean, they're just not sitting on shelves. You're having to find if a dealer particularly has a certain transmission, you're going to have to call another dealer that may have it in stock and actually bring it in to repair. And that goes for any, from a five-cent chip to a large piece that needs to be swapped out on a vehicle. Tires have been limited in production. So yes, it is hard to get parts.

The second part of that person's question was about filling the needs for repair technicians. We've had a struggle for … and I've been with this organization for 25 years…we've had a technician shortage and struggle for all 25 years. I've heard the same thing. We are going just like Jeff had said, we're trying to hit the high schools to bring people into the two-year degree programs and get them into the dealerships to try and work on vehicles. It's not all about grease monkey. It's not all about just getting dirty. It's more computer modules, things that are being shifted a lot, analysis, laptops, computerization. It's a different industry now than it was many years ago with carburetors and all those different things.

Yes, we're always going to struggle with that, the staffing of the dealerships. Hence, with the raising of hourly rates, or in the dealerships they work on a flat rate system, which is a little bit different than hourly, and you have a certain time that you'll get paid for a certain repair under warranty. It's a different form of payment. We're struggling, as well as every industry that's out there. So we're going to start seeing some need for higher pay to continue to attract those people into the dealership, service fixed operations, which is service and parts.

**Julianne Dunn:** Right, yeah. No, of course, but yeah, when you start moving up wages, then everything starts moving up together, too. So just another potential source for some more inflation. So Jeff, I'm going to turn back to you. I've got a question from the chat and that is ... This person says, "What about the requirements to build green buildings? How will that affect construction, and will the technology and materials be available to do that in the next five or 10 years?"

**Jeff Burd:** I think green buildings…as the requirements are relatively limited compared to the entire universe of construction. Actually, it's more incentive-driven at this point than it is requirements. In terms of being able to provide a safer environment, which is how I think going to bring in higher ... become a higher priority, but certainly an environmentally friendly environment, these are ... if you're a developer and owner of those buildings, you currently have a stronger incentive to do that than if you're just being told you have to for this in this particular legislation or in this particular district.

The reality is green building—if you want to refer to it that way—building more sustainably designed buildings is really more a function of how you put it together, the systems, the equipment. It's much less technology driven. That's not to say there won't be tremendous leaps forward in technology, but it's really more about the systems and how the buildings are put together.

I think that drive or the increase of that sector of the market of the built environment, if you will, has been driving a lot of innovation in building envelope materials and window design, certainly in HVAC and electrical. The idea of an LED fixture, which was a very expensive thing 15, 20 years ago, was an add-on, that was a premium kind of decision; today, that's pretty standard operating procedure if you're building a new building. I'd be surprised if it's not completely put together with LED fixtures. Again, that's just, that's a product change. There really didn't have to be any great technology in terms of the construction or even the design of it.

That's going to be less of a factor in terms of cost than some of these other things we're talking about, particularly as the demand for that moves from preferential to sort of standard operating procedure. I think you'll see supply for that come along. I mean the good news is that the demand for those sort of upgraded products, energy-efficient products, for example, is low enough that it's probably been less disruptive than the demand for your standard product.

**Julianne Dunn:** Sure. All right. So, one more question from the chat then. I guess this is for all of us: "So as the economy reopens and consumers shift some spending back to services again, do either of you see any evidence in the kind of real-time data of your respective industry sectors that goods spending is slowing?"

**Louis Vitantonio Jr.:** Repeat that again. Did you say, "goods spending?"

**Jeff Burd:** Goods, yes.

**Louis Vitantonio Jr.:** Oh, goods.

**Julianne Dunn**: Yes, spending on goods versus services as people start to go out and travel and do those things again.

**Jeff Burd:** Not so far. Within our industry that's going to show up more in terms of the brick and mortar for where those things are distributed. You alluded to it. The demand for distribution has continued to expand as online commerce has expanded, and we're now kind of tripping to that next level of last mile delivery. So there's still been an increase in that. Retail outlets, retail stores have been on a downward trend, but there's been some increase in that.

The other side of the coin is definitely there. We're seeing a tremendous uptick in restaurants, a tremendous uptick in recreational kind of construction, the facility, those sorts of things. Even in Pittsburgh, we're building a hotel today...which Pittsburgh is not a big hotel town. That's definitely old news. There hasn't been any evidence yet that there's been some sort of shift of the dollars going out of pockets.

**Louis Vitantonio Jr.:** Well, I might add…I consider…You had mentioned it too about finding a rental. People are actually going to take the vehicle. I mean, if you can't ... If you're going to fly somewhere and then try to rent a car, it is probably a considerable drive, and people have said, "OK, I could probably get a cheap flight. But I get there, and I have to rent a vehicle. If it's going to be that much, I might as well just take my own." So I think we're to see…not a bump or a major change, but by people shifting to services or going back into vacations or things like that, the use of the vehicle is still going to be there. So I don't see a major effect right now on that particular question.

**Julianne Dunn:** Yeah. Yeah, and then that's consistent. I'll just add that's kind of some of the indicators that we track as well. Retail sales are still chugging along. So it doesn't seem like people have a lot of money to spend. And it does go back to some of the fiscal stimulus questions. Our bankers tell us a lot of that money got saved. So while people now, they're not necessarily shifting their spending, they're just doing both because they have those savings built up.

So last question that I have from the chat, I think: "With the chip shortage"—I guess I'll direct this to you Lou— "have you heard anything about any government assistance for the businesses affected?"

**Louis Vitantonio Jr.:** Well, I mean, again, this doesn't matter the industry, and Jeff and everybody that's affected, in order to get additional capacity or to build chips, you're going to have to find other places to build them. I know there's some federal government assistance that has been discussed and announced…introduced that could create, I believe, between 7 and 10 manufacturers inside the US that would create the chips versus buying them overseas. And the government would back those creations of the manufacturing plant. So there's money being designated to do that.

Again, it's going to take some time. It is a major issue. General Motors has taken out a fuel-management system that instead of running on a V8 and then switching to a four-cylinder, they decided that they may take that out because it wasn't going to save that much fuel for the short term and [they] could put it in later. There's all kinds of alternatives out there to try and find a way to get the most popular vehicles out into the market, but it's going to take some time. To get that up and running, and manufacturing chips, it's not an instant, it's not a month or two. It's going to have to rely upon the manufacturers that do it now.

And your presentation was very poignant…that when the demand was down for chips for automotive, well, they were going to go to industries that are going to buy them, electronics, cell phones, some of the things that they're utilized in. And when you're talking about a nickel piece, they're going to find either somebody going to pay more for it or they're going to find a place that they can sell that extra inventory. That's kind of something else that hurt us. This is when we were shut down and we didn't need them. Then we didn't prepare for it when we were ramped up.

**Julianne Dunn:** OK. All right. Another question coming in here: "Why do you see inflation as transitory if the supply chain issues that are pushing up costs, container ships incentivizing workers with higher pay, chip shortages will require large long-term investment?" So I'm actually going to push that back since you were just alluding to that, Lou. Do you have any thoughts on whether that's going to create sustained inflation?

**Louis Vitantonio Jr.:** Well, I mean we're running into the same problems as every industry. We have retirements. We have limited ability to find the right people. I think we'll see in our industry specifically prices on the rise. We are going to see it until such time as the consumer says, "I can't continue to pay it," and then they will have to find some type of alternative, either a lower-priced vehicle or discontinued vehicles or ways to do it. We've had leasing for a number of years. That's kind of solved a little bit of the issue because what are you doing? You're only renting the vehicle for three years and you're driving it, things like that.

But I can see us having some issues with that affordability, and in essence, inflation on either the service side, but also on the sales side. Over time it's just becoming more and more ... We're outpacing the incomes on some of the higher-end models. So that's going to force people to look at alternatives, which either are a less expensive vehicle, a used vehicle, or ride shares. Some of those haven't really worked as well, not ride shares but where you're sharing the ownership of the vehicle. It just hasn't panned out. Maybe it's a little too early for that yet.

And then fuel costs. We haven't talked about that at all. I mean, our fuel costs have gone up considerably. It wasn't a concern about 12, 18 months ago when we were under $2 in certain scenarios. Now we're peaking at $3. So now that'll trigger either the electric vehicle market, which is coming strong shortly, and less on combustible engines. So it's another issue. We could have a whole conversation about that, too.

**Julianne Dunn:** Yeah, definitely. Jeff, are you still with us? I think I'm having some connection issues, but I don't see your …

**Jeff Burd:** Yes, I'm good.

**Julianne Dunn:** ... video anymore. Oh, OK. Yeah, do you have any thoughts on the longer-term inflation and some of these bigger investments that'll be more expensive?

**Jeff Burd:** Yeah, I think the…again, I have seen through six business cycles that ultimately that the market levels these things out. The inflation that was rampant in the '70s when I came of age and started working, it was kind of a perfect storm of things, including an imperfect solution. That's why my caveat of unless the government puts its finger on the scale, to Lou's point, to deal with what could be a 12-month transitory problem with chips by investing billions that would take three years to get really the product into the market, the market will make up for that. I was alarmed to hear that there was 50 percent market share by any manufacturer. I just wasn't aware of that given the ubiquitousness of electronics, personal electronics. To me that sounds like a recipe for competition.

The wage situation is something that I think, to your questioner's point, it could become less transitory, but we won't know that until some of these somewhat false incentives, childcare, which I think is going to take the full vaccination to really give us clarity on, most of that maybe will come back in the fall if kids come back in school. I do think that's a significant, if not the majority, of the workforce reduction. The data suggests that as much as 80 percent of the workforce reduction has been with women. Perhaps that's a coincidence, but my experience tells me that that's because women just end up with the childcare role. If when these disincentives, whether it's the extended unemployment, whether it's the lack of childcare, when they're removed, if we're still seeing a significant drain or the inability of the service worker to get hired, then those wages will get pushed up.

I also saw an interesting graphic this morning that essentially the base wage for a restaurant worker is the same as it was in 1994 today. You could argue that that's an industry that's overdue for a labor increase when ... There's a lot of fingers laid on the scales in the mid-1980s in Lou's industry, when the United States auto industry pretty much lost its foothold on the market. Those fingers helped for a while, but what they essentially, ultimately did was disincentivize the US car-making industry from modernizing and becoming competitive. Once they did, then we got a much more robust auto industry.

But what also gets overlooked is that when I graduated high school, what we saw on the roads were a bunch of boats, a bunch of 18-foot cars that got nine miles to the gallon, and by the time we were beginning to recover in the Reagan years, the cars in the roads were filled with Plymouth Horizons and Ford Escorts and a lot of really crappy cars that got 20 miles to the gallon and were at least a Band-Aid competitive approach.

The consumer ends up adjusting. But the fact that I think this is transitory is because we weren't in an inflation cycle in February of 2020. And some of those fundamentals, the incredible excess capacity in making steel, the incredible excess capacity for mining that exists globally, the incredible excess capacity for fossil fuels because of the shale extraction technologies that were being employed in the United States, none of that stuff has changed. We've just not used the capacity because it's expensive to do. If demand comes back, I think the supply will come back with it.

But if we are finally entering into a place where workers in the kind of trades that traditionally have not seen steady increases in pay decide enough's enough and they're not going back to those places and they're going to demand higher wages, then we'll get higher wages, and that, as you alluded to, that's usually the gateway drug to regular high inflation.

But one last historical look. There are very few of us that were alive and working during the mid-'90s or late '80s other than the hiccups that would look at those as bad economic periods, particularly that transition from the first and second Clinton administrations when the dot.com boom was going and the American industry had revitalized. And inflation then was 3.5 percent to 5 percent. We didn't have a heart attack over that. And interest rates for mortgages were running around 7 percent, and it didn't impede growth. It's that imbalance that tends to be the problem. And that's where we are right now. Again, I just haven't seen anything that suggests that this is a more than temporary imbalance.

**Julianne Dunn:** Yeah, that was ... Yeah, very well said. You grabbed a couple of the points that I was going to make. But yeah, on your last one ...

**Jeff Burd:** Sorry.

**Julianne Dunn:** No, that's totally fine. You said it probably better than I could. Yeah, one of the things that I found was interesting, obviously, I'm a millennial, so I wasn't working during those periods either. And we've heard from a few contacts here and again, as inflation is starting to pick up, they're having to do a tremendous amount of training of employees that work in the pricing models and those types of things to understand that inflation is OK and this is how we deal with it and this is how we think about the future path for prices for our products in an inflationary environment, because there are so many of us that just never worked during one before.

But yeah, the other thing that I'll just echo on your point about wages. We are obviously seeing a ton of wage pressure right now, particularly with labor shortages. But one thing to keep in mind is there was already sort of a push for that in ’18 and ’19. We’re talking about, yeah, some people are moving now above $15, but you still got a lot of firms that are just now moving to that $15-an-hour wage rate, which was we thought that’s going to be the long-term goal. And, of course, there’s some pressure to do that on the minimum wage side as well. But some of those effects were already going on.

So I would just reiterate that just because we’re seeing wage pressure right now, doesn’t necessarily mean that this is some huge about-face and we’re going to enter into a new period, although some of these other things may persist.

All right. I think we are coming up on time. I’m going to have this be the last question. There’s been a couple of questions around the idea of reshoring in response to COVID and shortening supply chains. Would either of you like to comment on that if you’ve seen or heard that in your networks?

**Jeff Burd:** I’ll step into that because it’s been something that our civic leaders in western Pennsylvania with our manufacturing past have latched onto very tightly, but they’re finding out very quickly that the cost of reshoring is very high and is highly unlikely. The people who are in charge of finding new businesses to come into the area are finding there’s very little interest. Now that could be because they’re hot and heavy to be in places like Texas or Florida where there’s a better tax environment or something like that.

But the conversations are more along the lines of reshoring that kind of part of the supply chain is very, very difficult. It may very well be that what you’ll see is an increase in the amount of buying from the existing supply chain … domestic supply chain, which may allow for expansion of those that make it here. But the redundant wholesale reshoring of a supply chain that took decades to move offshore, which was not an easy thing to do in the first place, is tough to see. I’d be interested to hear what Lou has to say about this because that industry is all about that.

**Louis Vitantonio Jr.:** Yeah. I mean again, it’s the same story. I mean, trying to find the ability for successful reshoring of the parts, suppliers, and finding places to put them and build those locations. It is very hard to do after we’ve done what we’ve done for the past 10 or 15 years of moving them offshore. You have an example in our region that we’re covered in between Pittsburgh and Cleveland … you have Lordstown Motors is a building that was producing Chevy Cruzes for years and they’re starting to try and create some electric vehicles. And you have LG Chem and General Motors that have partnered on a battery plant that’s out there. They see that there’s going to be demand for those batteries for vehicles. That’s the one plant. They’re going to build another one in either Tennessee or Texas. I can’t remember where it’s at, but between LG and General Motors.

And again, it takes a long time and a long lead time to get those things up and running. So I don’t see it in the short term. But there’s got to be another look at some of this just-in-time stuff that it really has affected and crimped everything that we’ve done in the supply chain issues, because if just one part is missing, you're going to shut down a whole line. And to restart those lines in the automotive sector is so difficult to do.

So back to the original comment I think you had in your presentation. If you have a warehouse and you can store, you're in really good shape assuming you had the foresight to buy in advance. That may be a little bit of shifting going back to that where the industrial commercial warehousing is going to become even more important now going forward if you're in the manufacturing space.

**Jeff Burd:** If you think of it from a risk management standpoint, building an extra 100,000 square feet of warehouse at a major manufacturing plant so that you can bring in-house, I mean it's essentially vertical integration but without making it. You're just the vertical, the integration part is purchasing and putting it, keeping it onsite.

**Julianne Dunn:** Yeah.

**Louis Vitantonio Jr.:** Good.

**Julianne Dunn:** Great. Well, we've got a few minutes left. I just want to be mindful of everyone's time. Was there anything that the two of you wanted to share that we haven't touched on yet?

**Louis Vitantonio Jr.:** At this point it's been a rocky road no matter what industry, what employment, what dealerships either from a dealership standpoint to manufacturing, but we always find ways. Right? And our industry that I represent are some of the best guys and young ladies that figure out a way to make money within a franchise system. We rely upon the manufacturers to build great cars and to deliver them to us. We're the best at retailing them. We'll find a way through it. We have in the past. Everybody questions how our system is set up, where we have a manufacturer in a franchise system. But I think it's the best setup for us in the long run and for the consumers too, because now what happens, our dealers compete against each other. And when there's competition, it makes everybody get better. That's not only for the manufacturing of vehicles but it's the retailing of vehicles.

So, I think at the end of the day it's a good setup for us and we'll continue it. And as the EVs become the next thing that we're going to talk about, our industry's ready to sell them. And if the consumer wants them, we're there to service and sell them. That's what we're looking forward to.

**Jeff Burd:** And Julianne, I think if I was to close it in any way, it would be to put a little perspective on this. If I suggested on the 15th or 20th of March last year that we'd be having a conversation in the second week and third week of May about the excess of demand in the economy come some 15 months out, you probably would have laughed at me. You certainly wouldn't have invited me back because of my expertise. This is a completely unprecedented situation. Where we stand right now in the economy is so much better than we thought. But again, what we're talking about here are just, are demand-driven problems that are showing up in the supply chain.

For folks that worry about the supply of money, I would say go look at the St. Louis Fed website and look under the velocity of money categories. We're not seeing a big increase in the velocity of money. People are not spending like the Russians are in New Jersey to use a phrase in my youth. That money supply is not what's driving it. It's pent-up demand. And the fact that we're talking about an economy where the problems are that the pent-up demand has been unleashed sooner than we thought; this is a problem-solving economy, that's a problem I think we didn't think we'd be solving in spring of 2021.

**Julianne Dunn:** Yeah, no, certainly, that's a really good point, and the thing that I keep kind of holding on to in the back of my mind is how incredibly healthy the economy was when this thing happened. So, I think it's that I think contributes to our ability to be resilient through even something so catastrophic as a global pandemic.

But anyway, we'll just close. Thank you, guys, both so, so much. This has been very illuminating for me. Thank you to everyone that has tuned in. I hope that you found this presentation educational.

Our next FedTalk will be on July 15, and we will be actually discussing more on this question around inflation. I believe one of my colleagues from the Center for Inflation Research will be giving a talk entitled Inflation 101. So if you have more questions about inflation, definitely mark your calendars for that. But with that I will close and just say thanks to everyone again.

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