Lessons from the Supply Side

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The views expressed today are my own and not necessarily those of the Federal Reserve System or the FOMC.

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Welcome

Good afternoon, Motor City! And welcome to the Chicago Fed's 31st Annual Automotive Insights Symposium.

Before I jump in, I'd like to thank you all for joining us today.

This is one of our biggest events every year, and we love hosting you here at our Detroit branch.

This year in-person tickets sold out almost immediately. But I need to be honest. The fact that the hottest ticket in Detroit this week is here and not the New Orleans Superdome cuts me bad. Our K-9 bomb dogs here at the bank—Fox and Vice—moonlight on Sundays as bomb dogs for Lions games. So, they are pissed off, too. But I guess the Auto Symposium isn't bad for a second-best option—and it definitely beats watching the Eagles.

For everyone that could not get a ticket and are tuning in online, thank you for joining us…unless you are an Eagles fan who felt offended by that last bit. For you, I say READ THE ROOM.

Lastly, I want to thank Kristin Dziczek, Martin Lavelle, Thomas Klier, Rick Mattoon, Kristen Broady, and the whole Fed team. You know they do an amazing job with AIS year-after-year, and they've done it again.

Disclaimer

Before I say anything today, let me officially note that these are my own views and not those of the Federal Reserve System or the Federal Open Market Committee (FOMC).

Introduction: The strangeness of the past five years

The theme of my remarks today will be about the supply side of the economy and especially about supply chains and the stages of production for key industries.

Until recently, economists paid little attention to supply chains. Then, in 2020, we all found out the hard way how much they can matter for the economy and for inflation. As we seem to be entering a new period of risks to the global supply chain, some of the lessons we learned during the Covid-19 pandemic may have a direct bearing on monetary policy decision-making in the coming months.

Before we go into that, let me start with a high-level recap of how strange the last five years have been for the economy—and for monetary policy, in particular.

Normally, the Fed and the business cycle move together, in that the most cyclical industries are also the most interest rate sensitive. When the economy starts overheating, the Fed raises rates to slow things down. When things look bad, it lowers rates to fuel more activity. The Federal Reserve Act explicitly directs us to use monetary policy to maximize employment and stabilize prices, and that's basically how we do it.

So, when the Covid public health crisis began in 2020 and we faced a massive economic downturn, the Fed cut rates, and the government passed massive stimulus to counteract the slump. Some said it was too much stimulus—The economy could overheat and ignite inflation. But to others, it was "no worries; any inflation should be transitory. Plus, the Fed can always just raise rates to get things back on track."

But somewhere along the way there, things got strange. In 2021, inflation began soaring when the unemployment rate was still above 6%. Macro 101 would say that's not really supposed to happen. If unemployment is that high, the economy should not be overheating.

And the U.S. was not alone. Inflation soared in other countries, too, even ones that didn't have much Covid-related stimulus.

The next year, 2022, inflation didn't go away, even as the stimulus rolled off and the Fed raised rates quite a bit. Then, the mood darkened. If inflation isn't temporary, getting rid of it takes pain. Bloomberg economists forecasted a 100% chance of recession in 2023. A prominent economist and former Treasury Secretary said unemployment will need to rise above 6% for five consecutive years to bring inflation back down.

But then in 2023, an unprecedented thing happened. Was it an economic miracle? Inflation fell close to as much as it has ever fallen in a single year and not only was there no recession, but for the entire year, the unemployment rate was under 4%, which most people viewed as full employment. I called it "The Golden Path."

So, you see how essentially nothing in the past five years has looked anything like typical historical patterns, and we have collectively been trying to understand what the heck happened.

When we look back on this period, my overwhelming takeaway is that disruptions to the supply side of the economy, including to the supply chain, were the most important drivers of inflation over the last five years.

The damage the pandemic did to supply was what made the economy overheat, even when unemployment was high. Because supply chains are global and interconnected, it caused inflation even in places without stimulus. And once the supply side started

to heal, inflation could come down without a recession, even though that was without historical precedent.

For those who study the economy, in a way, it is not unlike the 2008 financial crisis. Before that, macroeconomists largely did not appreciate how interconnectedness in financial markets could cascade into serious problems. And then, all of a sudden, they had to. So, economists and central banks quickly began incorporating financial stability concerns into their thinking about the economy.

One decade later, a new crisis put another overlooked consideration front and center to the business cycle: the supply side. Nowhere is that more important or better understood than in the auto industry.

Next, let me describe a few lessons that came out of the pandemic about how supply chains affect inflation and the economy.

Supply-side lessons from the Covid times

Remember that economic theory says that the impact of supply disruptions on prices and the economy will depend on how easy it is to find substitutes. Prices go up most when there is no alternative.

The first lesson about supply from the Covid times was that in the short run, the supply chain is more specialized—with fewer substitutes—and therefore more fragile than you might think.

Start with products that have relatively simple supply chains.

Take yourself back to spring 2020. The economy is in lockdown, and we are living through the toilet paperpocalypse. Grocery stores are completely stocked out. Big box

stores resort to rationing. Sporadic Charmin-induced fist fights break out across the country. Everyone blames their neighbor for panic buying.

But economists keep asking, “What is stopping them from just making more toilet paper?”

Almost all the toilet paper used in the U.S. is made domestically, so it was not an import problem. Most toilet paper production plants are in rural areas where Covid prevalence was relatively low and lockdowns came online later, so people were still showing up for work.

The real problem was not panic buying. It was that there are two completely different toilet paper supply and distribution chains: one for home and one for the office. Home toilet paper is fluffy and on small cardboard rolls. It is distributed mainly through grocery and big box stores. Office toilet paper is rough and single ply. It comes on those massive dispenser rolls and gets distributed through office supply firms. Ultimately, these products are specialized, and it is not that easy to substitute one for the other in the near term.

When two thirds of the country suddenly stopped going to the office and started conducting all their *ahem* ~business~ at home, demand for home toilet paper went through the roof and grocery stores completely ran out. Meanwhile, back in the office segment, they were going through the great depression of the bathroom. There was no demand at all.

You will remember, it took some time to ramp up the right kind of production. Once that happened in a few weeks, maybe a couple months, the problem went away.

The same thing happened with beef. Despite all the beef coming from literally the same animal, it turns out restaurant beef and grocery store beef are not the same—different cuts, different sizes, different packaging, different labeling, and different distribution channels. When Covid hits, no one can eat in restaurants, so demand for restaurant beef

collapses. Instead, everyone wants to cook beef at home, and retail prices for beef soar almost 25% in a single quarter.

Toilet paper and beef are two products with really simple supply chains.

Now think about the mother of all supply chains: the automobile industry. A single model can have 30,000 separate components and parts. Every part has its own supply chain story, and many are shipped through multiple stages and can face major problems adjusting in real time. You may remember the Bloomberg story from 2017 tracking one simple capacitor's journey through the supply chain—shipped from Asia to an importer in Colorado, then to Ciudad Juarez in Mexico to be put on a circuit board and on to Matamoros, where it gets assembled into an actuator that adjusts a car's front seat. From there it goes to a seat manufacturing plant in Mississauga, Ontario, Canada, and then to an auto assembly plant and then to a dealership in a new car.

This idea leads directly to the second supply lesson of Covid times: The complexity and interdependence of supply chains means that problems can spill over into other markets and may take longer to resolve than you would have thought.

At the start of lockdowns, automakers predicted demand for new cars would fall with more people staying off the roads and quarantining at home. So, they reduced orders for computer chips. When they realized demand was in fact up rather than down, automakers scrambled to place orders, but by that time, chip manufacturers had diverted production to other high-demand/high-margin items, like consumer electronics, Pelotons, and lots more.

Chip manufacturers suddenly became a huge bottleneck to producing new cars at all. New car inventory disappeared, and auto inflation soared.

Then the spillovers began.

No new cars meant shortages at rental car companies, so prices there soared. Rental car companies tried holding on to their existing cars longer, so the supply of used cars dwindled, and used car prices soared. Delivery and logistics companies that rely on cars to conduct their work began raising prices as their costs rose. And so on and so on. This played out over years, not weeks—and in some ways is still happening.

Which brings me to the third supply lesson of the Covid times: Supply side disruptions can have a material impact on aggregate inflation. They aren't always just minor disturbances that average out at the macro level. It is dangerous to just ignore them.

My longtime colleague at Booth Business School, Chad Syverson, looked at the inflation of all different industries in the U.S. during this period and found that across industries, inflation did not look the way you might expect for a macro-overheated economy where the price of everything goes up.[1] Essentially, inflation was much greater for goods where supply shocks seemed more prevalent.

What it means for 2025 and the Fed

Taking those three lessons—1) The supply chain is more specialized and more fragile than you might think, 2) supply-side problems can spill over into other markets and may take a while to resolve, and 3) supply-side disruptions can have a material impact on aggregate inflation—Let's think about the current state of supply and what it means for 2025.

Coming into this week, I would say we have a strong economy. The job market seems fairly settled at a level we could plausibly call full employment. Inflation has come down and is approaching the Fed's 2% target. Growth is strong. Supply chains seem mostly healed and back to something like "normal."

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[1] Chad Syverson, 2023, "Structural Shifts in the Global Economy: Structural Constraints on Growth," remarks at 2023 Jackson Hole Symposium, available online, https://www.kansascityfed.org/Jackson Hole/documents/9775/Syverson_2023_JH_Symposium_Remarks.pdf.

Yet we now face a series of new challenges to the supply chain—from natural and manmade disasters from fires and hurricanes to collisions with bridges that take out major ports, canal cloggings, and threats of dockworker walkouts; geopolitical disruptions; immigration; and, of course, the threat of large tariffs and the potential for an escalating trade war. These threats are not of the scale of what occurred during the pandemic but passing over their potential consequences would be a mistake.

All of these raise a key question: Should central banks react differently to supply disruptions than to other kinds of business cycle fluctuations?

Take the stylized view of tariffs, for example. At risk of oversimplifying, pure economic theory suggests that if there is no retaliation, a tariff is a one-time increase in costs, and therefore its impact on inflation should be…wait for it…transitory. It says the tariff inflation is not a sign of persistent overheating and therefore the central bank should ignore it when setting monetary policy.

The data minded folks might also say that if we look at the trade skirmish and tariffs around 2018, they increased prices for the affected goods but didn't matter much for aggregate inflation.

But be careful—It is dangerous to assume away supply chain issues. Don't forget the initial stages of Covid. Compared to 2018, tariffs may apply to more countries or more goods or at higher rates, in which case the impact could turn out to be larger and longer lasting. We saw in Covid times that the more complex the supply chain, the longer it took to manage. The shocks might have started as transitory but quickly they became *traaaaansitory*, at best.

Remember that what matters for how tariffs impact inflation is the degree of substitutability. If companies have diversified their supply chains in the last five years to make them more resilient, they might be able to avoid tariffs without much price increase

by shifting production away from tariff-hit countries. But if in 2018 companies shifted all the easiest things out of China, then what's left might be the least substitutable goods. In that case, the impact on inflation might be much larger this time.

But it's worth remembering that almost half of U.S. imports are intermediate goods—parts and components—rather than final goods to consumers. Tariffs on intermediate goods raise the costs of production for domestic manufacturers of other goods, so the inflation impact is unlikely to stay only in the directly affected products. For industries with long supply chains that cross borders multiple times—remember the journey of that one capacitor—it can stack tariffs on top of tariffs.

When we talk to auto sector participants and ask how much of a tariff would get passed on into prices, opinions differ widely. Some participants believe it would rapidly go into prices and will mean higher consumer inflation. Many suppliers, though, think manufacturers would not allow prices to rise much and the suppliers will have to eat the cost. Suppliers don't have much margin for error these days and many fear a wave of bankruptcies.

Where does that leave us for monetary policy?

The Fed must set monetary policy to stabilize prices and maximize employment. We take into account anything that raises prices. If we see inflation rising or progress stalling in 2025, the Fed will be in the difficult position of trying to figure out if the inflation is coming from overheating or if it's coming from tariffs. That distinction will be critical for deciding when or even if the Fed should act.

And that fuzzy picture brings me to my one research plea: The only way to understand the dynamics in a time like this is to delve into industry details. In other words, look under the hood.

The supply side of the economy cannot be an afterthought for macroeconomics. We need to rely on industry expertise to figure this out. That means economic experts working alongside business and industry contacts on the ground.

You know that our Detroit branch has been central to maintaining the Chicago Fed's expertise and network in the auto industry, for example. AIS is one of our biggest events of the year for a reason. Whatever Saudi Arabia is to the oil business, that's what the Seventh District is to the auto business.

The Chicago Fed has a long history of housing a top-tier, universally respected Research Department with expertise in industrial organization and productivity.

We are proud to have staff dedicated to understanding these issues, and we benefit from industry collaboration, including insights we get from you.

Collectively, we will need to tap into this kind of expertise for all relevant industries as we face the supply side realities of the coming year.

Closeout

I want to thank you again for joining us at AIS.

The conversations started here are just the beginning.

Let's keep rolling.