Supply Chain Resiliency, Demand, and Inflation

Written Testimony of
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Chairman Brown, Ranking Member Toomey, and Senators of the Committee, thank you for the opportunity to testify today on the performance of supply chains through the Covid-19 pandemic. Even from a purely economic perspective, it has been a time of extraordinary shocks, unprecedented policy responses, and shifting economic behavior.

One salient outcome has been disappointment in the performance of global supply chains. Not only has it become significantly more expensive to move goods by ocean or air than it was pre-pandemic, but the amount of time it takes to move goods across the world has more than doubled. From the perspective of consumers and businesses, this has meant shortages, long waits, and rising prices.

In my testimony, I would like to address the question of why this happened. Why did we not continue to enjoy the ready availability of goods at moderate prices to which we had become accustomed? Of course, there could be many reasons, but I will focus on two potential dominant causes and then argue for a choice between them. I will also discuss the implications of the arguments for how we view supply chain resiliency and what we can expect for inflation.

Supply Chain Challenges

The first explanation attributes the shortages and the price hikes the country has experienced to a failure of global supply chains. At first blush, this seems obvious. Over the course of the pandemic, we saw periods when factories around the world (and in the United States) closed due to Covid infections, or were operating at limited capacity. We saw infections and restrictions hit truckers, warehouses, rail, and port operations. When health concerns severely limited international passenger air travel, we lost the hold capacity in the bellies of those planes that had accounted for roughly half of air cargo space. It is inarguable that the pandemic posed serious challenges for supply chain operations.

If one adopts this view, then one could well think that these problems will soon recede. There are several reasons why they might. First, if and when we improve the health situation in the United States and abroad, these particular stresses should go away. Second, if there is something particular that is broken with global supply chains, then we could just fix the problem and watch goods flow freely again. Finally, there are some who believe that if we just reduced our dependence on foreign goods, then we would be insulated from such shocks and enjoy greater resiliency in our supply chains.

All of these arguments are problematic, but the least compelling is the argument that sourcing from abroad is at the root of the problem and that nearshoring or onshoring will be the solution. The supply chain challenges that I described above were by no means limited to foreign suppliers, foreign ports, foreign warehouses, and foreign truckers. They were not confined to any one country. We experienced all of those difficulties in the United States as well. The pandemic surged in different places at different times. At some points Asia was hit most acutely, for example, but for substantial stretches over the last two years, Asian supplier countries have had the lowest case rates to deal with of major supplying countries. Even if it were economically feasible to produce all the goods we want in the United States at high quality and reasonable

prices – it is not – the result would only be enhanced resiliency if the United States were immune to the ravages of such pandemics. It is not.

A study by Bonadio et. al (2021) makes this point more carefully.[1] It concludes:

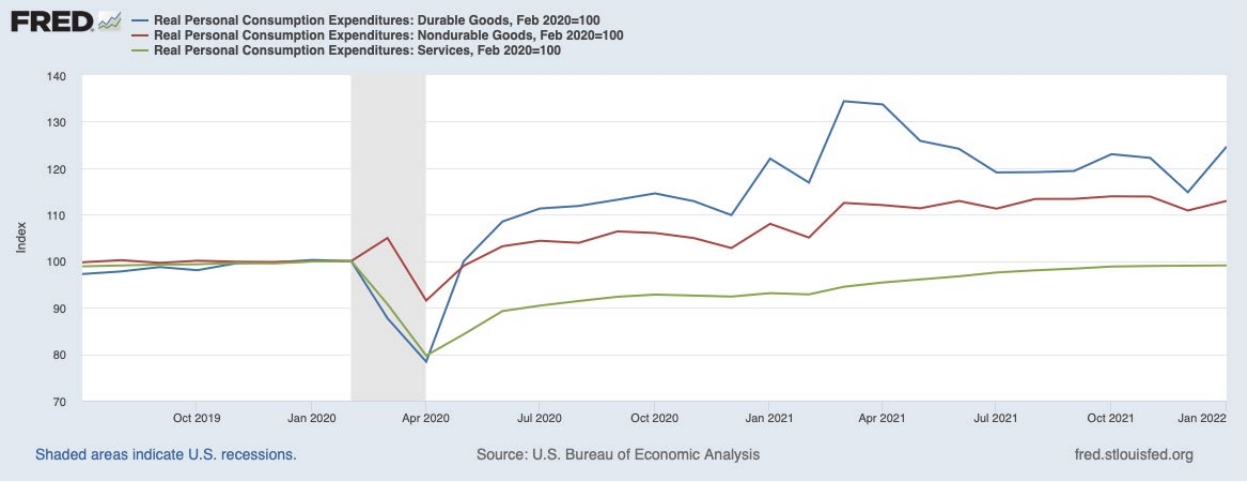
> …"renationalization" of global supply chains does not in general make countries more resilient to pandemic-induced contractions in labor supply. This is because eliminating reliance on foreign inputs increases reliance on the domestic inputs, which are also disrupted due to nationwide lockdowns. In fact, trade can insulate a country imposing a stringent lockdown from the pandemic-shock, as its foreign inputs are less disrupted than its domestic ones."

Even if we set aside the idea that putting all our eggs in a domestic basket will deliver resiliency, this *supply chain breakdown* explanation might appear to offer hope that relief from shortages and inflation just awaits a few technical fixes.

A Demand Shock

Before we blame everything on supply chains, we need to consider another powerful force at work that provides an alternative explanation for recent experience. The pandemic era economy has been characterized by a dramatic expansion in the demand for goods. This was not part of the conventional recession playbook. In general, a recession is characterized – defined – by a marked slowdown in economic activity. To be fair, as Figure 1 shows, there was an initial dip in demand for goods in the Covid recession, but the effect was as brief as the recession (the vertical gray bar in the chart).

Figure 1. Real Personal Consumption Expenditures
Source: St. Louis Fed (FRED)



In the graph, services (the bottom line) behave the way we expect recession consumption to work. Consumption of services fell from its pre-pandemic level and has only just worked its way back, almost two years later. In contrast, durable and nondurable goods consumption had

[1] Bonadio, Barthélémy, Zhen Huo, Andrei A. Levchenko, and Nitya Pandalai-Nayar, "Global Supply Chains in the Pandemic," NBER Working Paper No. 27224, April 2021.

regained its pre-pandemic level by the early summer of 2021 and it climbed from there. By the spring of 2021, durable goods consumption was almost 35% above where it had been in February 2020. If it had not been for the durables surge, non-durable goods consumption would look impressive in its own right, rising and staying more than 10% above its pre-pandemic level.

How could it be that goods consumption rose so sharply in the wake of such a powerful shock? We can look at three complementary explanations. First, there was the clear effect of health measures. When it became difficult to go to a gym, or a restaurant, or a movie theater, people instead purchased home exercise equipment, kitchenware, or entertainment centers.

Second, normally the principal constraint on purchases in a recession is falling incomes. But in the wake of the pandemic, personal income did not fall, due to powerful fiscal policies.

Figure 2. Real Personal Income and Government Transfers

Source: St. Louis Fed (FRED)

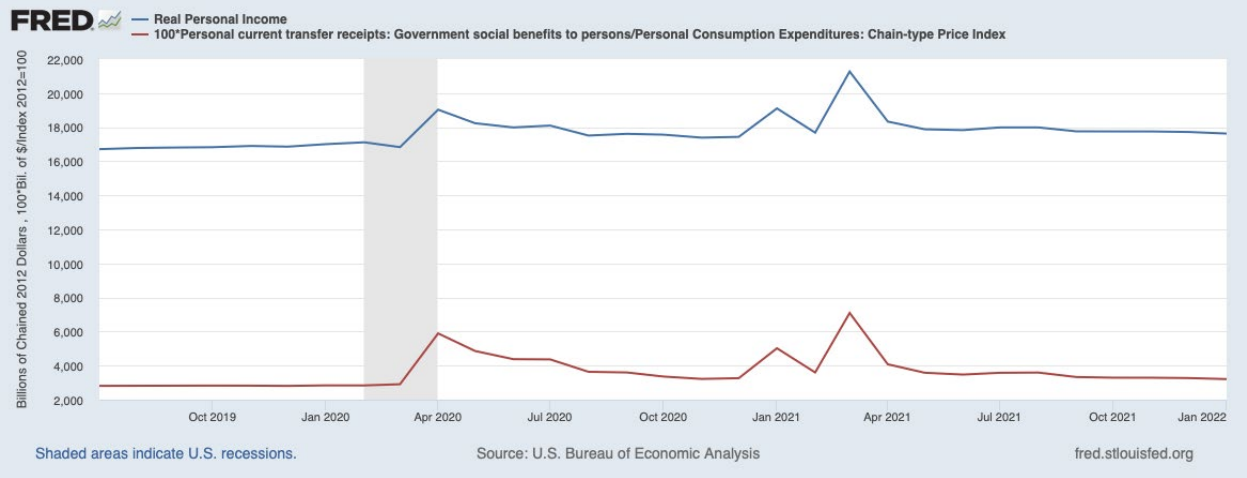
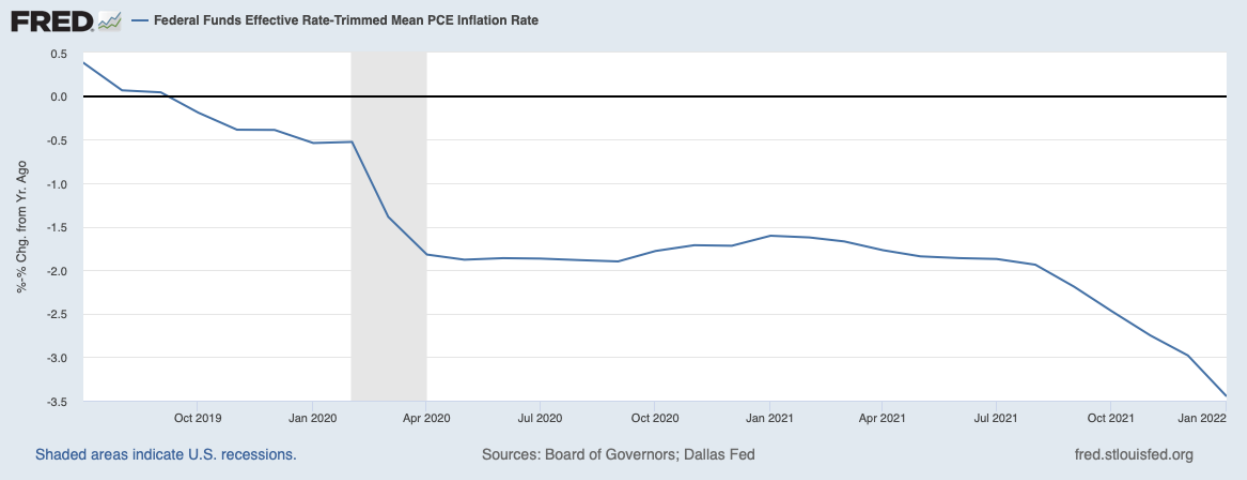


Figure 2 shows that real personal income never fell back to its level of March 2020, nor did the level of government social benefits. The jumps in social benefits match with jumps in income (unsurprising) and with jumps in the consumption of goods in Figure 1.

This stimulus was coupled with an extraordinarily accommodative monetary policy, as shown in Figure 3, which tracks the *real* Fed Funds rate, the nominal rate less the trimmed mean PCE inflation rate.[2] The nominal rate, for most of the period shown, was fixed near zero, but the inflation rate steadily mounted, driving the difference well into negative territory. While the graph does not show it, the previous low value of this series was just below -2.0% in late 2008 during the global financial crisis. The series dates back to the 1970s. Highly negative real interest rates provide an incentive for consumers and businesses to move purchases forward in time, thus stimulating present consumption.

[2] While the discussion focuses on the negative real Fed Funds rate, this was accompanied by a dramatic expansion of the Federal Reserve's balance sheet, from just over $4 trillion on the eve of the pandemic to almost $9 trillion today. See https://www.federalreserve.gov/monetarypolicy/bst_recenttrends.htm. This includes over $2.7 trillion in mortgage-backed securities.

Figure 3. Real Fed Funds Rate
Source: St. Louis Fed (FRED)

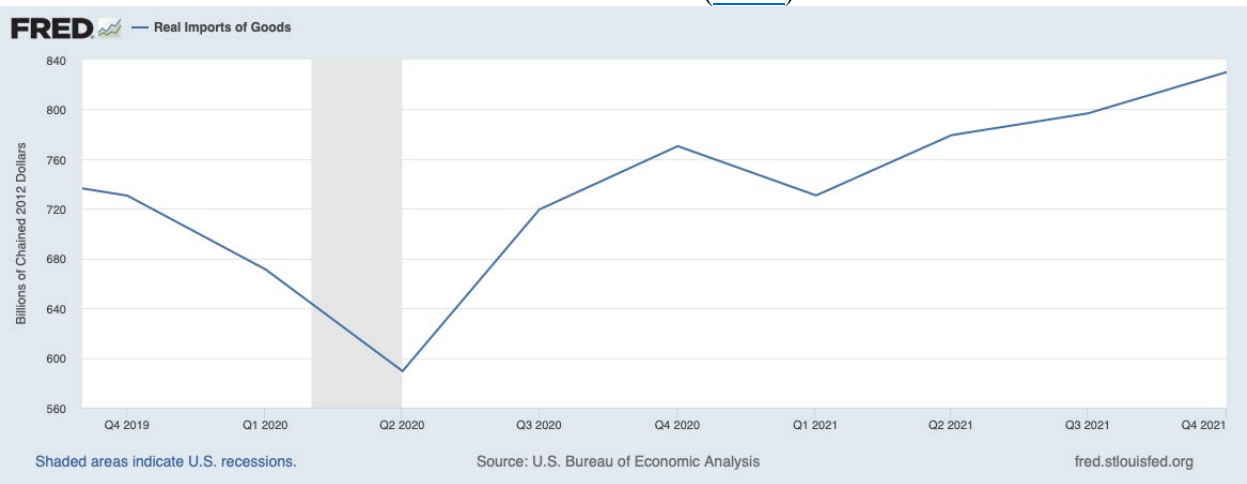


Thus, in this explanation of the pandemic economic experience, there was a dramatic increase in the demand for goods consumption, driven by higher incomes, very low interest rates, and a pandemic-induced shift in preferences toward goods and away from services.

Deciding Between the Explanations

Note that either an expansion of demand or a contraction of supply could drive up prices. However, only an expansion of demand would explain the additional quantity consumed. We already saw this expansion depicted in Figure 1, when consumption of durable and non-durable goods rose appreciably. Had the supply chain been unable to deliver the goods, quantities consumed would necessarily have fallen. Instead they grew significantly. The story of a broken supply chain as the source of trouble does not fit the evidence.

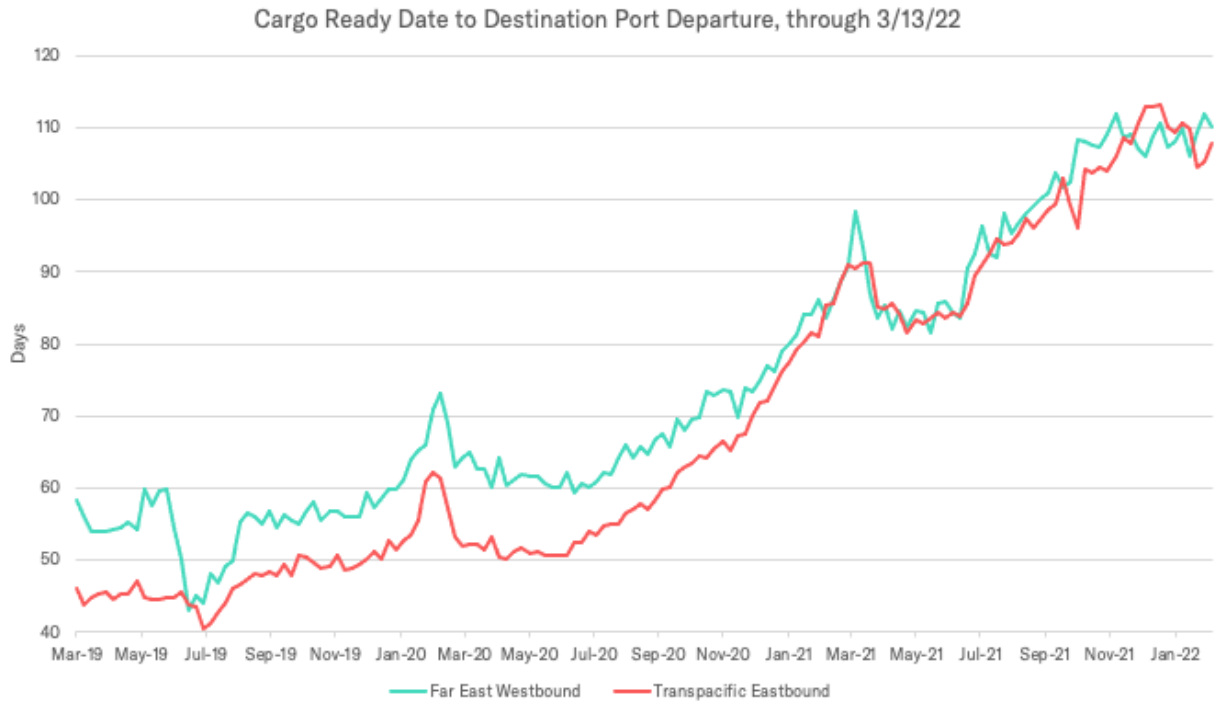
Figure 4. Real U.S. Goods Imports
Source: St. Louis Fed (FRED)



While Figure 1 illustrated this for consumption, this held true at the international supply level as well. Figure 4 shows quarterly real U.S. imports, not seasonally adjusted. Without seasonal adjustment the fairest comparison is to look at the fourth quarter of successive years. 2020Q4 was 5.4% above 2019Q4; and 2021Q4 was 13.6% above the figure from two years before. Thus, we not only saw strong, persistent growth in real imports, but the Q4 figures in 2020 and 2021 were record highs. This is not consistent with an international supply system that has broken down.

This still leaves us with an important question: if a supply chain breakdown was not the culprit, how do we explain the very high shipping prices and the extensive delays? Those were real and important, and they persist to the present day. Figure 5 shows Flexport's Ocean Timeliness Indicator, which measures the time it takes for containers to move from a factory in Asia to pickup at a destination port in either North America (Transpacific Eastbound) or to Europe (Far East Westbound).

Figure 5. Ocean Timeliness Indicator
Source: Flexport



The answer gets to what we mean by "resilient." The supply chain system was able to deliver significantly more goods in the face of surging demand, but it had its limits. It was built with a certain capacity in mind. In general, for international logistics, the capacity was meant to handle the peak season of imports leading up to year-end holidays. Normally that period would be preceded and followed by lulls, which would allow the system to catch up. Instead, the system has now been operating at or above peak capacity for almost two years. That has brought congestion, high prices, strains, and delays.

One might ask why we did not have an even more resilient system that could readily accommodate such surges in demand. The answer is that capacity is costly. For the public sector, there is a reluctance to allocate funds to build out infrastructure beyond any realistically-anticipated need. For the private sector, the cost of excess capacity can drive companies out of business.

It is also worth noting that capacity constraints apply both in the aggregate, but also in individual sectors. If everyone suddenly decides they want substantially more personal protective equipment (PPE) or home-sized toilet paper rolls, then even a well-functioning domestic private sector may have difficulty meeting demand in the short run. In some cases, as with imported toilet paper during the pandemic, international trade can provide a source of resilience.

Implications for Inflation

Beyond concerns about resilience, the question of how we should understand recent supply chain experience is important in thinking about what is likely to happen next with inflation. In traditional monetary analysis, when an excess of demand has caused inflation to rise, it has been necessary to raise interest rates above the inflation rate to rein in the demand.[3] This was done dramatically in the late 1970s and early 1980s.

It is interesting to note that the Federal Reserve has announced a different course. In their economic projections released on March 16, they project core PCE inflation to be 4.1% in 2022. Yet their estimates of the nominal Fed Funds rate do not exceed 2.8% through 2024. It is unlikely that negative real Fed Funds rates would do much to bring down inflation, so that raises the question of what else would drive inflation down? In response to such a question, Chairman Powell repeatedly cited supply chain improvement as an expected positive force.

If we believed that supply chains had broken down and that were a driving cause of inflation difficulties, this would be a plausible reason for hope. Just fix the broken supply chains. If instead, as argued above, supply chains have been overwhelmed by a surge in demand, then the most likely source of relief would be a reduction in demand. The reasoning gets circular if we do not distinguish cause and effect.

There are other possibilities for improvement, of course. The demand for goods could abate if the health situation improves and consumers revert to their pre-pandemic preference for services.[4] There could also be progress if supply chains became more efficient – e.g. through increased adoption of technology – or expanded capacity through investment. The latter is not likely to bring short-run relief.

In sum, if strong demand pushed the supply chain system beyond its limits, it seems unwise to count on near-term supply chain improvement in the absence of demand restraint.

[3] For a recent analysis of why inflation is a concern, see Blanchard, Olivier, "Why I Worry about Inflation, Interest Rates, and Unemployment," PIIE, March 14, 2022.

[4] Flexport tracks and forecasts this preference with its Post-Covid Indicator, updated monthly. To date, there is only limited evidence of reversion.

Before leaving the topic of inflation, it may be worth noting one type of policy that would be actively *counterproductive* if one wishes to combat price pressures: trade protection and impediments to international sourcing. Companies that source abroad do not do so because of the ease of operating a supply chain across thousands of miles and many time zones. They do so because they can produce that specific good for lower cost abroad. If they could have produced it for less domestically, it would almost certainly have been easier to do so. Thus, policies that compel more costly production are likely to add to cost pressures and rising prices.

Further, the U.S. labor market is currently operating at 3.8% unemployment, below the Federal Reserve Board's 4.0% estimate of long run unemployment. The Atlanta Fed's Wage Growth Tracker shows wage growth at the highest rate in the 25-year history of the series. Thus, policies that compel domestic production and add to labor demand are likely to increase price pressures.

Paths to Resiliency

There is no simple, low-cost policy that allows an economy to gracefully accommodate very large and sector-specific surges in demand. In specific cases, such as PPE, it may be worthwhile to maintain a stockpile if there are specific expectations of a demand surge. In general, though, an efficient trading system that allows for flexible, competitive sourcing is most likely to meet shifting demand. As a policy measure, this argues for an open, rules-based trading system.

Conclusion

The pandemic impacted supply chains directly, but also indirectly, as a shift in preferences and a strong policy response induced an extreme and sustained demand for goods. The global logistics system was able to partially accommodate this surge in demand, even amidst operational difficulties. But global supply chains had and have capacity constraints. As surging demand hit those constraints, costs have risen and goods have taken a long time moving from factories to customers. The resulting scarcity, along with pressures for increased production and hiring, have contributed to rising inflation. The measures most likely to ease supply chain pressures are those which curtail demand. The measures most likely to bring resilient supply chains are those which facilitate global sourcing.