

What Drives Inflation?

Lessons from Disaggregated Price Data

Based on BFI Working Paper 2024-24, [“What Drives Inflation? Lessons From Disaggregated Price Data,”](#) by Elisa Rubbo, Chicago Booth

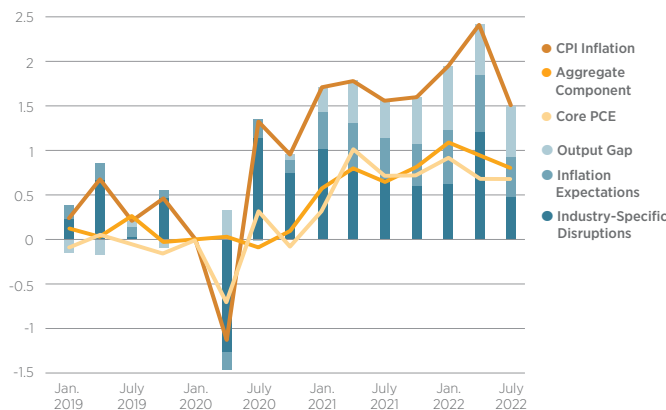
US inflation in the early phases of the COVID pandemic was entirely driven by disruptions in supply and demand across industries, whereas most of the subsequent increase in consumer prices is driven by aggregate demand.

When the COVID-19 pandemic swept through the United States beginning in early 2020, many US households changed their spending habits. For example, households spent less money at restaurants, theaters, and other social outlets, while many upgraded home offices and living spaces. At the same time, production-line and warehouse jobs could only be performed at limited capacity to avoid contagion, while many white-collar jobs could be easily performed remotely. For economists, such changes in demand or production capacity should mean a change in relative prices. In this case, we would expect prices at restaurants and entertainment venues to decrease, and prices for furniture or warehousing services to increase.

Some observers suggested that these relative price changes, driven by cross-sectional (i.e., asymmetric) shocks to demand and production capacity, can explain an increase in aggregate inflation; that is, the increased price for furniture, in our example, may far exceed the relative decrease in restaurant/entertainment prices, and therefore overall inflation would increase. For economists, this is not obviously the case. The argument is hard to analyze through the lens of the traditional New Keynesian framework, on which economists rely to study inflation dynamics, because this framework features an oversimplified model of production with just a single representative industry. That may work fine when the economy is driven by aggregate shocks to demand and supply, but such a model is ill-suited to explain the effect of cross-sectional shocks on aggregate prices.

This theoretical paper enriches the New Keynesian framework with a disaggregated model of production, meaning that it incorporates multiple industries and primary factors (like workers and capital assets), to study the effect of cross-sectional shocks which hit different parts of the economy asymmetrically. It then provides conditions for cross-sectional shocks to create an inflation output tradeoff. This new model also shows how to identify the components of inflation coming from aggregate demand vs. cross-sectional shocks based on relative price movements. This last point is important, especially as it applies

Figure 1 • Inflation Decomposition in the Baseline Calibration



to monetary policy, because monetary policy is not suited to address the effect of cross-sectional shocks but, rather, only to stabilize aggregate demand.

By incorporating multiple primary factors, this model also allows us to analyze supply-chain bottlenecks. Recall all those desks and chairs that were backordered during the pandemic, or that were sitting in cargo ships for weeks before unloading at a freight dock, only to wait even longer for an available trucker to haul it across the country. Why don't these industries compensate for higher demand or lower production capacity by using their primary factors (workers, structures, machines, land) more intensively? In short, they cannot; those primary factors simply are not available. We can think of a bottleneck as a decline in relative production capacity or an increase in relative demand for inelastically supplied goods (or goods whose production cannot be easily scaled up in the short run). This causes the aggregate potential output to fall, even when aggregate productivity and aggregate demand remain constant.

What does this mean for aggregate inflation, and what are the implications for monetary policy? The author, Elisa Rubbo, argues that—besides reducing the potential output—bottlenecks also cause an inflation-output tradeoff. This means that, even if monetary policymakers set interest rates to keep output at potential, they will still face higher inflation. This happens because, when prices cannot freely adjust in the short run, demand for bottleneck goods remains inefficiently high for a period, further exacerbating the inflationary pressures. While the paper provides a complete study — theoretical and otherwise — of why cross-sectional shocks (such as bottlenecks) can have such disruptive consequences for inflation, for the purposes of this brief report let us just focus on the accompanying Figure.

In the Figure, Rubbo decomposes the consumer price index (CPI, rust line), into the components

driven by output gaps (lighter bars) and industry-specific disruptions (dark blue bars). What the author dubs the Aggregate Component (orange line) is equal to the difference between the actual CPI inflation and the counterfactual inflation that would have prevailed had the Fed always kept a zero-output gap. We can see that the CPI was almost entirely driven by Industry-Specific Disruptions in the early phase of the Covid pandemic (from February to October 2020). Instead, the Aggregate Component explains a large fraction of CPI inflation after January 2021, meaning that loose monetary policy and stimulus policies are responsible for a sizable share of CPI inflation. Nonetheless Industry-Specific shocks still have an important role, likely due to higher energy prices. The personal consumption expenditure price index (core PCE, yellow line in the Figure) is effective at filtering out the effect of energy prices on CPI inflation, but it overstates the Aggregate Component in the early phases of the pandemic.

To conclude, this new theoretical framework argues that cross-sectional shocks create an inflation output tradeoff when they increase the relative demand for, or reduce the relative productivity of, industries that have more flexible prices or use less elastic primary factors. In this case, consumer prices increase even when monetary policy closes the output gap. This work also shows how to identify the components of aggregate inflation driven by the aggregate output gap vs. cross-sectional shocks, based on relative price movements. As applied to the United States during and after the Covid pandemic, this work shows that inflation in the early phases of the pandemic (until around October 2020) is entirely driven by cross-sectional shocks, whereas most of the subsequent increase in consumer prices is determined by aggregate demand. These theoretical lessons provide us with better real time indicators for monetary policy.

READ THE WORKING PAPER

NO. 2024-24 · FEBRUARY 2024

What Drives Inflation? Lessons from Disaggregated Price Data

bfi.uchicago.edu/working-paper/2024-24

ABOUT OUR SCHOLAR



Elisa Rubbo

*Assistant Professor of Economics
and Liew Family Junior Faculty Fellow,
Chicago Booth*

CHICAGO BOOTH