Discussion by John Romalis of "Pandemic-Era Inflation Drivers and Global Spillovers"

The paper is an ambitious attempt to quantify drivers of inflation in 2020-2022 using a simple structural model of the global economy incorporating a multi-regional input-output structure with trade in intermediate and final goods. Price increases are driven by demand shocks and productivity shocks, and cascade through the international supply chain to affect inflation in every country. The model can allow for different decompositions of the contributions to inflation, and counterfactual exercises.

I will give a brief overview and commentary on the structure, results, and future directions of the paper. The model is a 2-period model with Ricardian consumers optimizing over current versus future consumption. This structure may obscure some of the underlying causes of demand shocks that may have partially stemmed from big transfers and increases in government debt that will be repaid by future generations.

Households have Cobb-Douglas preferences over J sectoral consumption bundles, which is a relatively easy structure to work with but may miss some important substitution possibilities during the pandemic (such as food at home versus take-out versus food away from home), though the level of aggregation available in cross-country data likely makes this consideration moot.

Final consumption goods can be supplied by N countries, which allows inflation originating anywhere to affect prices everywhere. Production uses sector-specific labor and capital, and intermediate goods from potentially all sectors and countries. Capital is assumed to be at its steady state level, but labor employed may be lower due to downward nominal wage rigidity. Closed stores and restaurants, empty offices and schools, and grounded airlines and cruise ships suggest that the period also exhibited some underutilization of capital.

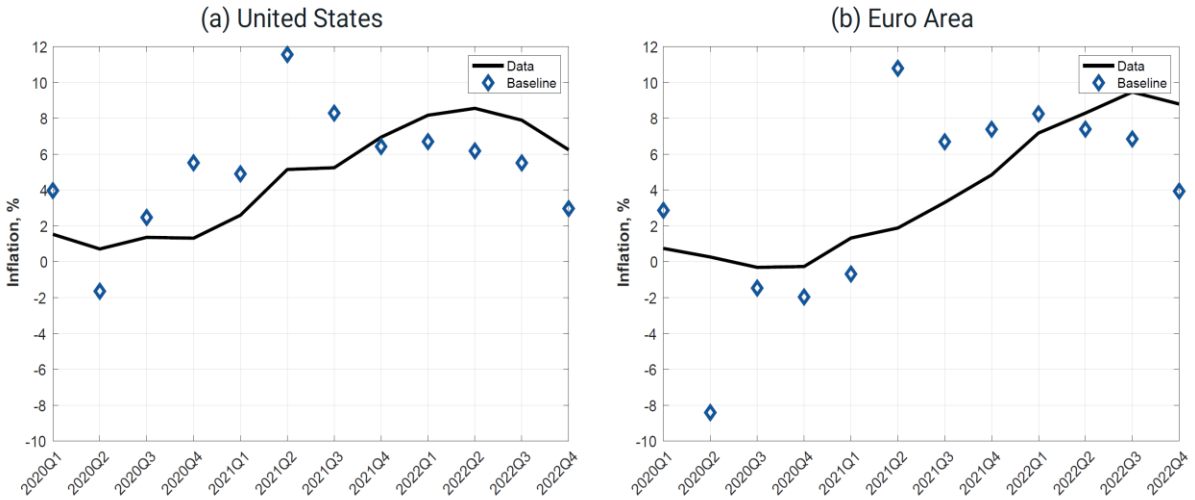
The model allows income to differ from GDP (factor income) due to the current account, and a country's claims on foreign production is driven by the bilateral current account balance. Although this last assumption is used in earlier research and presumably makes the model easier to solve, it is likely counterfactual and inconsistent with optimal portfolio theory. However, since GDP in most countries is very close to GNP, this assumption is largely innocuous.

The paper defines price indexes consistently with the CES demand structure. The paper defines four sets of shocks: country-level aggregate demand changes, country-sector level factor supply changes, country-sector level demand changes, and global energy price changes. Aggregate demand shocks are measured as changes in local currency expenditures. Country-sector level demand shocks are inferred from sector-level consumption expenditures. Energy price shocks are captured by a commodity price index constructed by the IMF. The model structure and the other shocks are used to decompose changes in total hours worked into labour-supply shocks and labour demand, with the nominal wage rigidity assumption playing an important role.

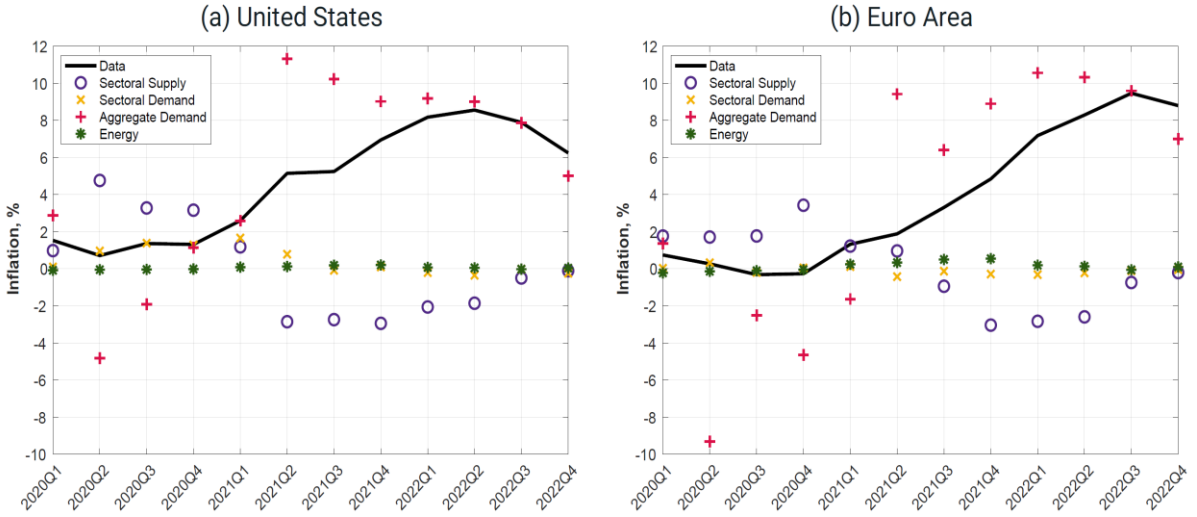
The model is then represented by an augmented input-output matrix. The Leontief inverse of this matrix traces through the effect of each of these shocks on country-sector level prices, and a first-order approximation of inflation can be expressed in terms three sets of shocks: aggregate demand shocks have a 1:1 impact on inflation (there is a simple MV=PY logic in the model); country-sector productivity shocks, where the weights are the shares of household expenditure directly or indirectly falling on the supplying country and sector; and country-sector labour supply shocks, where the country-sector weights are lower because labour's share of output is less than one due to the presence of capital and intermediate inputs. The simple device of the Leontief inverse very neatly traces through the direct and indirect effects of any shock to prices everywhere.

The empirical implementation of the model is no doubt at a very early stage, as the data collection currently seems a little rudimentary, with just three countries (USA, EU, Russia) and a ROW grouping. I suspect this will be improved in subsequent drafts. The inclusion of more countries could lead to a richer set of results. For example, all country groupings are relatively large, and this tends to depress the relative importance of shocks originating from abroad. One way to increase the number of countries would be to pull apart the EU into its constituent parts. But a more diverse set of countries might also be useful: some countries still experience relatively moderate inflation (Japan) or were slightly late in joining the inflation party (Australia). A further data-related issue is that the labour market shocks seem a little crude. While the paper utilizes extensive US hours worked data, data for other countries is inferred using the US relationship between hours worked and Covid restrictions. Adherence to restrictions may have been very heterogeneous, and I suspect that more direct data may be available here, or perhaps authors could use Google mobility data to get a more sensitive estimate of the impact of covid restrictions. Google Community Mobility Reports are available up to October 15, 2022.

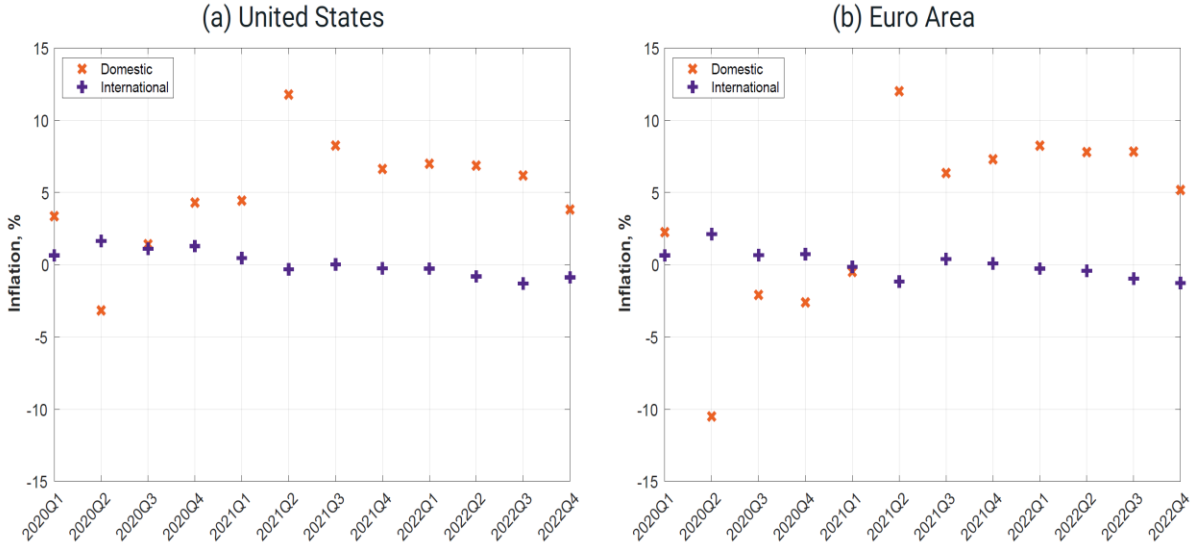
The model's results very broadly fit the inflation experience, but some big jumps in predictions require further investigation. The model seems to be much more volatile than the data. For example, the model predicts massive inflation jumps in 2021 Q2 in both the US and EU, far greater than what was observed, and predicts a massive inflation decline in the EU in 2020 Q2, far greater than was observed:



Early on, deflationary pressure from negative aggregate demand shocks appears to be offsetting inflationary pressure from negative supply shocks. From mid-2021, inflationary pressure from positive AD shocks dominates deflationary pressure from positive supply shocks. A close look at this pattern suggests the cause of the discrepancies between model predictions and data in the prior graph: prices are sluggish in responding to demand shocks, and wage rigidity may not be the only nominal rigidity that needs to be modelled.



A further interesting inflation decomposition finds that inflation changes overwhelmingly had domestic origins. This is driven by two things: the relative prominence of aggregate demand shocks; and the aggregation of countries into just four mostly large countries. Imports are relatively unimportant in large countries. The decomposition of the EU back into its constituent parts would produce some small countries with higher import shares in consumption, and potentially enable the international component to be more prominent.



I have a few other remarks on potential ways that the authors might enrich their modelling, though tractability reasons will limit what can be included in their framework. Input-Output tables may capture domestic trade costs, but they may be less good at capturing international trade costs. Shortages of container shipping exacerbated by delays at ports and diminished air-freight capacity led to large spikes in international trade costs that would have contributed to imported inflation yet might remain uncaptured by the input-output structure pieced together in the paper. There was anecdotal evidence of increased markups in some sectors, but markups will remain fixed in this model. Finally, it would be interesting to study the deeper causes of the aggregate demand shocks, and the international nature of this paper could be very informative here.