Supplementary Material for
The Inflationary Effects of Sectoral Reallocation

Francesco Ferrante[*] Sebastian Graves[†] Matteo Iacoviello[‡]

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[*]Federal Reserve Board.
[†]Federal Reserve Board.
[‡]Federal Reserve Board.

1 Data

Our estimation exercise uses data on 66 private industries for which the BEA publishes quarterly data on real gross output, prices, and real intermediate inputs dating back to 2005:Q1.[1] The industry names, BEA codes, nominal shares of gross output in 2021, and PCE category-based expenditures allocated to each industry are listed in Table A.1.

For each industry, we measure percent changes in prices, gross output, employment, and productivity between the end of 2019 and the end of 2021, relative to their pre-pandemic trend. We detrend each variable using an industry-specific trend calculated as the average growth rate for 2005-2019. The percent changes in the variables between 2019:Q4 and 2021:Q4 relative to the pre-pandemic trends are shown in Table A.2. We repeat this exercise for the period around the Russian invasion of Ukraine calculating percent changes of the variable between 2021:Q4 and 2022:Q2, and show these results in Table A.3.

- **Prices:** We measure prices using the published BEA series on Chain-Type Price Indexes for Gross Output by Industry.
- **Output:** We measure output using the published BEA series on chained Real Gross Output.
- **Employment:** Seasonally-adjusted non-farm Employment data are published at the 3-digit NAICS code level by the Bureau of Labor Statistics in the monthly B-1 tables of the Employment Situation News Release.[2] We aggregate these data at the BEA industry level using the concordance described in https://www.uspto.gov/sites/default/files/documents/oce-ip-economy-supplement.pdf.[3] For the farm sector, we have no data and assume no change in employment.[4]
- **Productivity:** For each industry, we follow Vom Lehn and Winberry (2022) and calculate productivity using a Solow residual approach. Lacking quarterly data on the capital stock, we assume a simplified industry constant-returns-to-scale production function with employment and intermediates inputs only. The intermediate inputs share for each industry is an average (between 2005 and 2021) of the ratio of intermediate inputs to gross output. The employment share is, accordingly, one minus the intermediate share. Sector level productivity is then calculated as log output minus the weighted average of log employment and log intermediates, using

[1] See the BEA website (https://www.bea.gov/data/gdp/gdp-industry) as well as Streitwieser (2010).

[2] See https://www.bls.gov/ces/data/employment-situation-table-download.htm.

[3] As a disproportionate amount of the employment margin between 2019 and 2021 was driven by the extensive margin, we ignore fluctuations in measured hours and equate number of employees in the data with labor input in our model.

[4] This is consistent with agricultural employment, as published in the Household Survey: https://fred.stlouisfed.org/series/LNS12034560.

as weights the industry-specific shares calculated above. Figure A.1 illustrates the TFP shocks that we feed into our model for the 2019:Q4-2021:Q4 period.[5]

The BLS publishes annual estimates of total factor productivity at the level of three- and four-digit NAICS industries.[6] We construct our own quarterly estimates since our model is quarterly. Our annualized estimates of productivity growth by industry have a high correlation with the published BLS data. For instance, when we calculate industry productivity growth in 2020-2021 relative to 2018-2019 using both measures, their correlation is 0.78.

Our calibration relies on consumption data for each of the 66 sectors in the model. We calculate values of γ_i^g and γ_i^s using the PCE Bridge provided by the BEA, which allocates PCE category-level consumption expenditures to NAICS industries.[7] This is possible for all industries apart from those in the wholesale/retail trade sectors. For these industries we calculate consumption expenditures from the BEA Input-Output tables and allocate all such spending to goods rather than services. This is consistent with the fact that the wholesale and retail margins reported in the PCE bridge are only present for goods spending.[8]

2 Robustness to Alternative Estimation Strategies

We now perform estimation of alternative versions of the model. Table A.4 reports the estimated parameters and selected properties of each of these versions.

Column 1 reports the estimated parameters and basic properties of the benchmark model. The reallocation shock can account for an increase in inflation of 3.5 percentage points, while all shocks combined lead to a total rise in inflation of 3.3 percent.

Column 2 shows that when we allow for the estimation of a separate cost of cutting employment (c^-), we find that this cost is estimated to be close to zero, while other parameters are largely unaffected. However, adding this extra parameter increases the uncertainty in the value of the estimated parameters.

In column 3 we modify the weighting scheme so that the estimation places an arbitrarily small weight (100 times smaller) on the cross-sectional standard deviations and correlations. The precision of the estimates deteriorates, thus bolstering our confidence in using cross-sectional moments to infer information about the parameters of our model.

[5] Given that in the model we assume that productivity shocks have a quarterly autocorrelation of 0.95, we rescale the productivity shocks in period 1 so that, on average, productivity changes by the total amount that we measure in the data between 2019:Q4 and 2021:Q4, also reported in Table A.2.

[6] See https://www.bls.gov/news.release/prin.toc.htm and https://www.bls.gov/news.release/prin2.toc.htm

[7] See https://www.bea.gov/industry/industry-underlying-estimates for the PCE bridge.

[8] Specifically, we use the "Use of Commodities by Industries, Before Redefinitions" table to calculate consumption expenditures for the wholesale/retail trade sectors.

The price stickiness in our model is roughly equivalent to a model with staggered price adjustment a-la Calvo in which prices change on average every 2 quarters. In column 4 we estimate a version of the model where we scale up the Rotemberg price adjustment costs so that they correspond, to a first order, to a Calvo model where prices change every 4 quarters, as in many New Keynesian models of the business cycle. While the estimated cost of increasing labor is slightly larger, and the effect of reallocation shocks is slightly smaller, the basic properties of the model are largely invariant to this modification. Of note, this version with higher price stickiness better matches the standard deviation of prices and output in the data, thus resulting is a slightly better overall fit.

In column 5 we estimate a version where we restrict the production function elasticities, ϵ_M and ϵ_Y, to be equal to 1. This version of the model fits the cross-sectional moments of the data worse, but only features a slightly smaller effect of reallocation shocks on inflation.

In column 6 we estimate a version of the model with persistence in the Taylor rule, of the form:

$$\log(1+i_t) = \rho_i \log(1+i_{t-1}) + (1-\rho_i)(\log\frac{1}{\beta} + \phi \log \Pi_t) \tag{A.1}$$

We re-estimate the model, setting $\rho_i = 0.7$, in line with the literature (and leaving $\phi = 1.5$). While this specification leads to less inflation overall, the demand reallocation shock remains the most important.

Finally, in column 7 we estimate the model allowing for household preferences over consumption goods to depart from Cobb-Douglas:

$$C_t = \left(\omega_t^{\frac{1}{\eta}}(C_t^g)^{\frac{\eta-1}{\eta}} + (1-\omega_t)^{\frac{1}{\eta}}(C_t^s)^{\frac{\eta-1}{\eta}}\right)^{\frac{\eta}{\eta-1}} \tag{A.2}$$

$$C_t^g = \left(\sum_i (\gamma_i^g)^{\frac{1}{\eta}}(C_{i,t})^{\frac{\eta-1}{\eta}}\right)^{\frac{\eta}{\eta-1}} \tag{A.3}$$

$$C_t^s = \left(\sum_i (\gamma_i^s)^{\frac{1}{\eta}}(C_{i,t})^{\frac{\eta-1}{\eta}}\right)^{\frac{\eta}{\eta-1}} \tag{A.4}$$

We set $\eta = 0.75$ in line with the estimate of Acemoglu and Guerrieri (2008). With this structure it is no longer the case that ω_t is equal to the expenditure share on goods. Thus we now estimate separately the size of the demand reallocation shock in order to match the rise in the goods expenditure share seen in the data[9]. This results in a slightly smaller demand reallocation shock $\Delta_\omega = 0.042$. As in column 4, the estimates of hiring costs and the elasticity across intermediates are higher. However, the inflationary effect of the demand reallocation shock is little changed.

[9] We put an arbitrarily large weight on this moment to ensure that the model matches the rise exactly.

3 Additional Figures and Exercises

Figure A.1 shows the sectoral TFP shocks that we estimate for the period 2019:Q4 to 2021:Q4. Figure A.2 plots the goods share of consumption expenditures at a monthly frequency, to highlight the spike in goods spending that occurred in March 2021. In Figures A.4 to A.6 we plot the effects of the sectoral TFP shocks and aggregate labor supply shock individually. Figure A.7 provides further details on the evolution of sectoral variables in response to the demand reallocation shock.

3.1 A Decomposition of Cross-Sectional Implications

As shown in the paper, a simple demand reallocation shock is able to explain a sizeable amount of the dispersion in industry-level inflation rates. In this section we compare different versions of the model in order to understand which features are key for generating this result. We consider five different versions of the model:

1. Without I-O linkages or labor adjustment costs
2. Without I-O linkages, with homogeneous price rigidity
3. Without I-O linkages, with heterogeneous price rigidity
4. With I-O linkages, with homogeneous price rigidity
5. Baseline calibration

Figure A.8 plots industry-level inflation rates in the model and the data for each of these calibrations. In the first calibration, without I-O linkages or labor adjustment costs, the model is unable to generate any dispersion in sectoral inflation rates. When we add hiring costs and homogeneous price rigidity, the model predicts little dispersion in inflation, based on only on whether the industry is a direct provider of goods or services (or both).[10] If we add either heterogeneous price rigidity or I-O linkages the model predicts some dispersion in inflation rates within goods or services industries. However, the correlation in inflation rates between the model and the data is improved further when including both of these features jointly, as in our baseline calibration. This shows the importance of both the input-output structure and heterogeneity in price stickiness across sectors.

We find it particularly encouraging that there is a sizeable correlation between inflation in the model and the data not only when considering all sectors but also considering the subsets of sectors that produce goods or services. This shows the important role that the input-output linkages and heterogeneous price rigidity play in the transmission of the demand reallocation shock.

[10] In the version of the model with no I-O linkages we recalibrate the labor adjustment cost parameter, c, in order to generate the same average difference between goods and services prices as in the baseline model.

An alternative way of showing the importance of input-output linkages and heterogeneity in price stickiness is shown in Figures A.9 and A.10. Both in the model and in the data, prices increased more in sectors that are used more intensively, either directly or indirectly, in the production of goods, as can be computed by using the Leontief inverse matrix. Furthermore, inflation is higher (lower) in the goods (services) sectors with lower price stickiness, both in the model and in the data, supporting the important role of heterogeneous nominal rigidities across sectors.

3.2 An Alternative Decomposition of Inflation

Due to the non-linearities in the model, the effect on inflation of the three shocks occurring simultaneously is notably smaller than what would be predicted by summing the effects of the three shocks individually. Consequently, it is difficult to decompose overall inflation into the contributions from each shock.

Rather than looking at the effect of each shock individually, an alternative is to look at the effect of removing each shock individually from our baseline. This allows us to ask how much lower inflation would have been had each shock not occurred.[11] When we do this, we find that the peak effect on inflation is 2.6 percentage points lower without the demand reallocation shock, 0.8 percentage points higher without the sectoral TFP shocks, and 0.6 percentage points lower without the labor supply shock. Thus, the central importance of the demand reallocation shock remains in this alternative decomposition.

[11] We thank Mishel Ghassibe for suggesting this alternative decomposition.

Table A.1: Summary Statistics for the Industries in our Model

BEA Code	Industry	Output Share	Goods Spending	Services Spending
111CA	Farms	1.55	83,607	705
113FF	Forestry, fishing, and related activities	0.15	3,603	5,765
211	Oil and gas extraction	1.94	0	0
212	Mining, except oil and gas	0.36	57	0
213	Support activities for mining	0.32	0	0
22	Utilities	1.60	0	285,419
23	Construction	4.61	0	0
321	Wood products	0.32	5,458	0
327	Nonmetallic mineral products	0.36	5,881	4,480
331	Primary metals	0.77	535	0
332	Fabricated metal products	1.12	17,348	463
333	Machinery	1.11	7,723	0
334	Computer and electronic products	1.28	94,980	24
335	Electrical equipment, appliances, and components	0.40	41,619	0
3361MV	Motor vehicles, bodies and trailers, and parts	2.09	243,648	0
3364OT	Other transportation equipment	0.97	20,827	0
337	Furniture and related products	0.21	56,822	0
339	Miscellaneous manufacturing	0.48	100,199	0
311FT	Food and beverage and tobacco products	3.11	612,836	18,393
313TT	Textile mills and textile product mills	0.15	23,218	0
315AL	Apparel and leather and allied products	0.05	150,460	0
322	Paper products	0.55	19,864	0
323	Printing and related support activities	0.25	5,358	5
324	Petroleum and coal products	2.94	176,634	0
325	Chemical products	2.51	327,999	0
326	Plastics and rubber products	0.75	41,173	0
42	Wholesale trade	5.99	615,608	0
441	Motor vehicle and parts dealers	1.11	169,781	0
445	Food and beverage stores	0.69	250,025	0
452	General merchandise stores	0.79	230,902	0
4A0	Other retail	3.30	874,540	0
481	Air transportation	0.79	0	165,837
482	Rail transportation	0.23	0	1,527
483	Water transportation	0.16	0	25,506
484	Truck transportation	1.13	0	12,719
485	Transit and ground passenger transportation	0.27	0	52,324
486	Pipeline transportation	0.15	0	0
487OS	Other transportation and support activities	0.69	0	25,447
493	Warehousing and storage	0.47	0	94
511	Publishing industries, except internet (includes software)	1.36	97,565	0
512	Motion picture and sound recording industries	0.56	7,163	17,981
513	Broadcasting and telecommunications	2.98	0	340,686
514	Data processing, internet publishing, and other information services	1.60	44,145	33,179
521CI	Federal Reserve banks, credit intermediation, and related activities	2.25	0	331,266
523	Securities, commodity contracts, and investments	1.69	0	251,927
524	Insurance carriers and related activities	3.75	0	430,919
525	Funds, trusts, and other fi—cial vehicles	0.33	0	157,331
HS	Housing	5.85	0	2,220,452
ORE	Other real estate	4.09	0	6,768
532RL	Rental and leasing services and lessors of intangible assets	1.23	15,318	101,274
5411	Legal services	0.98	0	111,136
5415	Computer systems design and related services	1.71	0	0
5412OP	Miscellaneous professional, scientific, and technical services	4.94	0	73,239
55	Management of companies and enterprises	2.19	0	0
561	Administrative and support services	3.18	0	74,546
562	Waste management and remediation services	0.31	0	29,304
61	Educational services	1.07	0	301,718
621	Ambulatory health care services	3.61	13,173	1,128,380
622	Hospitals	2.72	0	1,133,302
623	Nursing and residential care facilities	0.73	0	244,870
624	Social assistance	0.63	0	148,275
711AS	Performing arts, spectator sports, museums, and related activities	0.59	0	70,352
713	Amusements, gambling, and recreation industries	0.45	0	205,585
721	Accommodation	0.81	0	167,673
722	Food services and drinking places	2.53	0	822,730
81	Other services, except government	2.12	2,089	502,347

Note: The table shows summary statistics for the industries in our model. Output share is from 2019:Q4. Goods and services spending are for the year 2019 and expressed in millions of dollars.

Table A.2: Industry Summary Statistics in the 2020-2021 period

BEA Code	Industry	Share	% Change from 2019:Q4 to 2021:Q4 Prices	Output	Empl.	TFP
111CA	Farms	1.48	17.9	-3.8	0.0	-3.6
113FF	Forestry, fishing, and related activities	0.16	3.0	10.9	-6.1	-0.1
211	Oil and gas extraction	1.63	60.2	-25.5	-17.1	-14.9
212	Mining, except oil and gas	0.31	4.6	-7.7	-4.8	3.4
213	Support activities for mining	0.20	-3.1	-46.9	-36.9	7.7
22	Utilities	1.54	20.3	-2.0	-1.5	-6.3
23	Construction	4.38	8.6	-0.2	-1.2	-1.7
321	Wood products	0.30	29.5	-1.0	5.9	-3.6
327	Nonmetallic mineral products	0.35	5.5	3.0	-0.6	1.6
331	Primary metals	0.65	40.0	-12.5	-4.7	-7.6
332	Fabricated metal products	1.00	14.5	-7.7	-4.4	3.7
333	Machinery	1.11	5.5	4.1	-4.6	5.8
334	Computer and electronic products	1.35	8.1	5.4	1.3	-11.5
335	Electrical equipment, appliances, and components	0.39	8.5	2.0	1.3	1.8
3361MV	Motor vehicles, bodies and trailers, and parts	2.13	3.4	3.1	3.4	4.3
3364OT	Other transportation equipment	0.91	-1.0	-6.1	-2.1	-0.1
337	Furniture and related products	0.20	7.8	4.6	4.5	2.1
339	Miscellaneous manufacturing	0.52	1.8	14.2	1.3	5.1
311FT	Food and beverage and tobacco products	2.88	8.0	-5.2	-2.0	3.2
313TT	Textile mills and textile product mills	0.14	8.6	7.2	1.6	1.5
315AL	Apparel and leather and allied products	0.07	0.5	43.1	-1.3	4.1
322	Paper products	0.49	8.9	-5.4	0.2	0.6
323	Printing and related support activities	0.22	5.2	-5.0	-6.6	-1.4
324	Petroleum and coal products	2.49	31.3	-13.8	-6.4	-9.7
325	Chemical products	2.27	12.8	-4.9	2.7	0.9
326	Plastics and rubber products	0.64	13.5	-11.5	1.7	-1.1
42	Wholesale trade	6.31	4.9	4.5	-3.4	4.2
441	Motor vehicle and parts dealers	0.78	46.2	-37.0	-5.1	-26.2
445	Food and beverage stores	0.73	2.0	8.9	0.2	7.4
452	General merchandise stores	0.83	3.8	5.7	3.8	0.2
4A0	Other retail	3.61	9.2	8.5	-1.4	2.0
481	Air transportation	0.77	-12.4	-2.0	-0.2	-6.4
482	Rail transportation	0.23	0.2	1.3	-10.3	8.4
483	Water transportation	0.14	8.1	-14.9	-20.3	0.8
484	Truck transportation	1.21	13.6	9.4	-0.3	-3.2
485	Transit and ground passenger transportation	0.22	-5.1	-23.3	-27.0	5.4
486	Pipeline transportation	0.14	5.2	-11.1	-6.4	-6.1
487OS	Other transportation and support activities	0.79	15.7	15.5	6.8	-3.4
493	Warehousing and storage	0.51	8.9	-0.5	18.8	-4.9
511	Publishing industries, except internet (includes software)	1.64	-0.4	18.1	4.9	13.5
512	Motion picture and sound recording industries	0.58	1.2	4.5	-4.7	10.1
513	Broadcasting and telecommunications	3.05	1.0	-0.2	-3.9	0.5
514	Data processing, internet publishing, and other information services	2.08	2.8	8.0	3.7	3.3
521CI	Federal Reserve banks, credit intermediation, and related activities	2.19	-2.9	0.8	2.7	15.5
523	Securities, commodity contracts, and investments	1.71	8.2	2.6	0.1	0.8
524	Insurance carriers and related activities	3.89	0.0	-1.0	-3.5	0.0
525	Funds, trusts, and other fi—cial vehicles	0.43	-3.2	30.6	0.1	13.3
HS	Housing	5.76	0.6	0.0	-0.2	-0.7
ORE	Other real estate	4.28	3.1	3.2	-0.2	1.0
532RL	Rental and leasing services and lessors of intangible assets	1.12	5.1	-9.6	-12.0	-2.0
5411	Legal services	0.98	2.8	5.3	1.4	-1.3
5415	Computer systems design and related services	1.85	0.6	-1.1	-2.3	3.6
5412OP	Miscellaneous professional, scientific, and technical services	5.49	-1.0	8.0	1.2	4.9
55	Management of companies and enterprises	2.35	-3.4	5.0	-7.8	9.9
561	Administrative and support services	3.49	2.1	5.2	-2.9	5.7
562	Waste management and remediation services	0.32	2.4	5.1	-2.5	3.6
61	Educational services	1.01	1.3	-6.4	-5.9	-1.7
621	Ambulatory health care services	3.49	2.2	-5.3	-3.5	-0.2
622	Hospitals	2.70	2.1	-2.8	-4.4	1.9
623	Nursing and residential care facilities	0.67	1.8	-8.0	-15.2	7.0
624	Social assistance	0.63	4.7	-1.5	-10.2	2.9
711AS	Performing arts, spectator sports, museums, and related activities	0.59	0.1	-2.5	-20.7	11.0
713	Amusements, gambling, and recreation industries	0.37	4.4	-18.8	-14.9	-0.6
721	Accommodation	0.76	-1.4	-5.6	-29.2	17.3
722	Food services and drinking places	2.61	4.9	2.9	-12.6	5.9
81	Other services, except government	1.87	3.7	-9.6	-6.9	2.4

Note: The table shows summary statistics for prices, output, employment and productivity for the industries in our input-output model. Output share is from 2021:Q4.

Table A.3: Industry Summary Statistics in the first half of 2022

BEA Code	Industry	Share	% Change from 2021:Q4 to 2022:Q2 Prices	Output	Empl.	TFP
111CA	Farms	1.43	18.1	-2.4	0.0	-2.1
113FF	Forestry, fishing, and related activities	0.16	1.8	3.1	0.5	-1.9
211	Oil and gas extraction	1.66	27.6	0.0	11.9	-11.1
212	Mining, except oil and gas	0.31	11.5	1.9	1.7	-4.2
213	Support activities for mining	0.21	5.2	4.9	6.1	-0.8
22	Utilities	1.58	9.5	3.9	0.2	0.3
23	Construction	4.10	6.8	-5.0	1.8	-3.6
321	Wood products	0.28	9.2	-5.3	4.6	-4.2
327	Nonmetallic mineral products	0.34	3.7	-1.2	2.0	-2.1
331	Primary metals	0.66	2.1	4.3	2.2	1.4
332	Fabricated metal products	0.96	6.4	-2.0	2.0	-3.2
333	Machinery	1.09	6.2	-1.0	2.9	-3.2
334	Computer and electronic products	1.37	4.1	1.6	2.0	-7.9
335	Electrical equipment, appliances, and components	0.38	6.6	-2.2	2.6	-4.8
3361MV	Motor vehicles, bodies and trailers, and parts	2.30	2.5	8.5	0.8	1.9
3364OT	Other transportation equipment	0.93	2.5	2.7	1.1	-0.7
337	Furniture and related products	0.20	6.0	0.2	2.4	-2.8
339	Miscellaneous manufacturing	0.51	4.4	-0.6	2.3	-3.3
311FT	Food and beverage and tobacco products	2.73	6.0	-4.4	2.2	-1.7
313TT	Textile mills and textile product mills	0.13	3.5	-0.8	2.7	-1.2
315AL	Apparel and leather and allied products	0.07	3.2	7.3	4.9	-2.3
322	Paper products	0.46	6.7	-5.9	3.6	-3.5
323	Printing and related support activities	0.21	7.7	-0.3	2.8	-5.2
324	Petroleum and coal products	2.52	31.8	2.0	2.2	-1.7
325	Chemical products	2.16	4.4	-3.6	2.3	-5.1
326	Plastics and rubber products	0.62	4.6	-1.6	3.0	-3.6
42	Wholesale trade	6.40	4.7	1.6	2.0	-2.4
441	Motor vehicle and parts dealers	0.78	2.9	0.5	0.8	-3.5
445	Food and beverage stores	0.69	5.7	-4.2	1.3	-5.0
452	General merchandise stores	0.77	6.8	-6.9	2.6	-4.7
4A0	Other retail	3.68	2.9	2.1	0.9	-2.1
481	Air transportation	0.85	10.5	9.9	7.3	-6.9
482	Rail transportation	0.23	4.4	3.5	0.9	0.6
483	Water transportation	0.15	3.9	6.9	5.8	0.8
484	Truck transportation	1.16	12.4	-3.9	2.6	-7.5
485	Transit and ground passenger transportation	0.24	0.0	7.3	3.0	2.3
486	Pipeline transportation	0.14	2.5	2.5	-3.1	1.3
487OS	Other transportation and support activities	0.80	2.1	2.1	1.7	3.9
493	Warehousing and storage	0.52	6.7	-1.3	1.9	-2.9
511	Publishing industries, except internet (includes software)	1.74	-0.7	6.1	3.8	-5.5
512	Motion picture and sound recording industries	0.59	3.3	0.8	2.5	-3.6
513	Broadcasting and telecommunications	3.01	2.4	-1.6	1.9	-2.9
514	Data processing, internet publishing, and other information services	2.22	0.8	2.0	2.6	-3.1
521CI	Federal Reserve banks, credit intermediation, and related activities	2.20	0.1	1.5	0.4	-2.3
523	Securities, commodity contracts, and investments	1.67	-5.4	-2.0	0.6	-0.4
524	Insurance carriers and related activities	3.85	0.8	-1.6	0.4	-1.9
525	Funds, trusts, and other fi—cial vehicles	0.38	1.1	-11.3	0.6	-3.1
HS	Housing	5.72	1.6	0.0	0.8	-0.1
ORE	Other real estate	4.24	2.3	-0.8	0.8	-1.2
532RL	Rental and leasing services and lessors of intangible assets	1.11	3.9	-0.1	4.9	-5.6
5411	Legal services	0.98	-0.1	1.9	0.9	-0.3
5415	Computer systems design and related services	1.89	0.3	0.4	0.7	-1.3
5412OP	Miscellaneous professional, scientific, and technical services	5.57	1.9	1.2	1.9	-1.9
55	Management of companies and enterprises	2.35	-0.2	-0.4	0.0	0.2
561	Administrative and support services	3.59	2.3	2.1	1.5	0.6
562	Waste management and remediation services	0.33	2.2	2.3	0.9	-0.3
61	Educational services	1.02	0.5	1.1	1.7	-1.9
621	Ambulatory health care services	3.50	-0.1	0.1	0.3	-0.9
622	Hospitals	2.63	1.4	-2.9	0.1	-0.2
623	Nursing and residential care facilities	0.68	0.6	2.2	0.3	0.5
624	Social assistance	0.63	0.4	-0.1	0.3	2.5
711AS	Performing arts, spectator sports, museums, and related activities	0.64	-4.5	8.4	9.1	-0.6
713	Amusements, gambling, and recreation industries	0.37	1.8	0.4	2.9	-6.4
721	Accommodation	0.74	4.7	-2.8	6.4	-7.9
722	Food services and drinking places	2.71	1.6	3.9	2.8	-1.6
81	Other services, except government	1.84	1.8	-0.5	1.6	-0.5

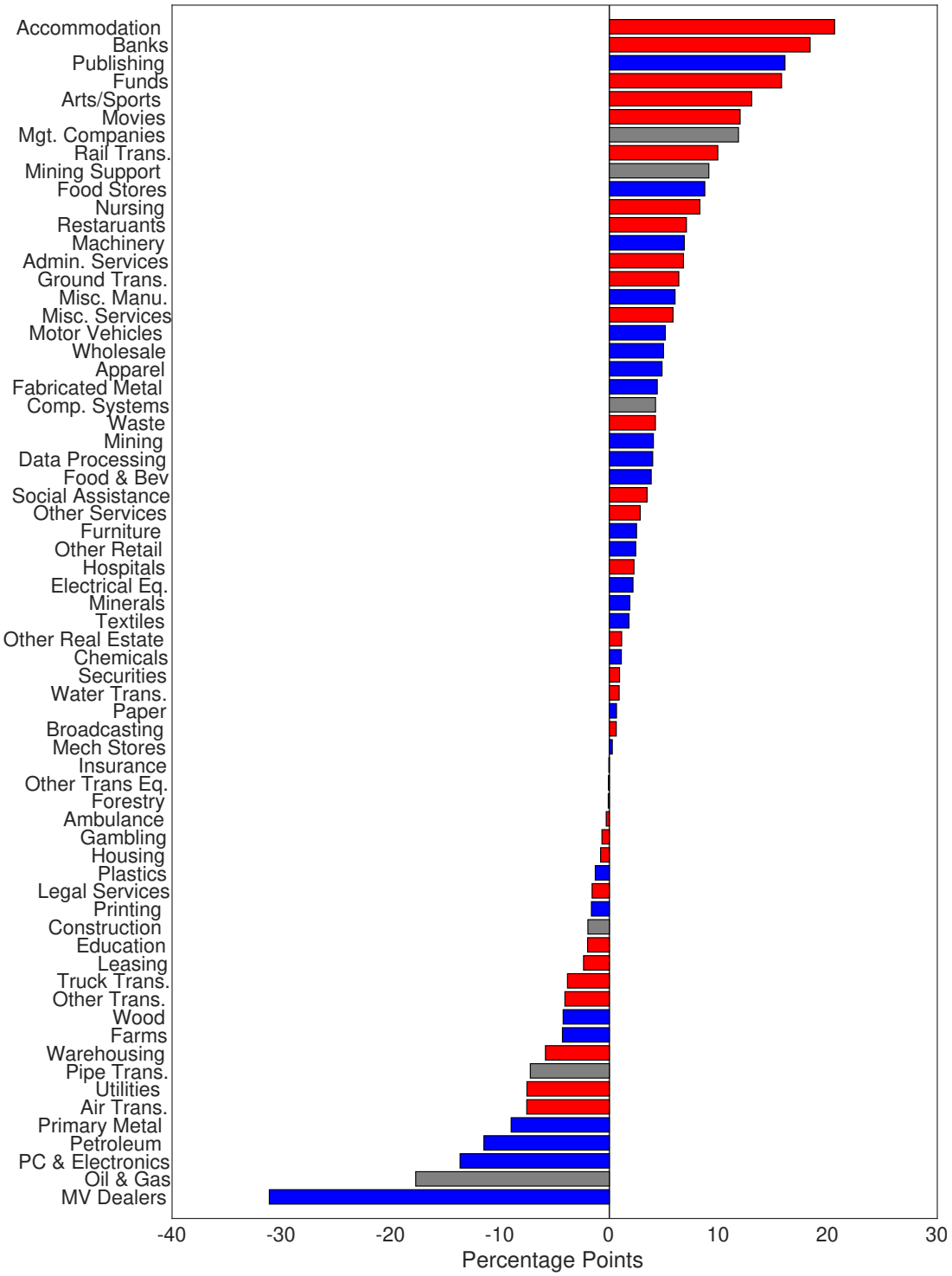
Note: The table shows key summary statistics for prices, output, employment and productivity for the industries used in our input-output model. Output share is from 2022:Q2.

Table A.4: Estimation Results for the Benchmark and for Alternative Models

	1 Bench.	2 Asym. Cost	3 No Cross Section	4 Stickier Prices	5 Unit Elasticity	6 Persistent Mon.Pol.	7 CES Cons.
c	19.08	19.08	46.36	39.78	32.43	19.65	52.06
(SE)	12.56	19.82	957.82	36.46	25.73	12.76	51.09
c^-	—	0	—	—	—	—	—
(SE)	—	5.89	—	—	—	—	—
ϵ_M	0.13	0.13	0.03	1.28	1	0.16	2.03
(SE)	0.24	0.24	21.85	0.41	—	0.24	0.44
ϵ_Y	0.82	0.82	0.88	0.64	1	0.82	0.81
(SE)	0.08	0.08	9.92	0.05	—	0.08	0.07
Δ_χ	0.09	0.09	0.09	0.1	0.08	0.09	0.08
(SE)	0.04	0.05	0.4	0.04	0.04	0.04	0.04
Inflation: (Δ_ω)	3.5	3.5	3.8	2.8	3.4	2.1	3.3
Inflation: Total	3.3	3.3	3.2	2.5	2.5	2.1	1.9
Total Loss	100	100	—	82.25	130.28	102.22	—

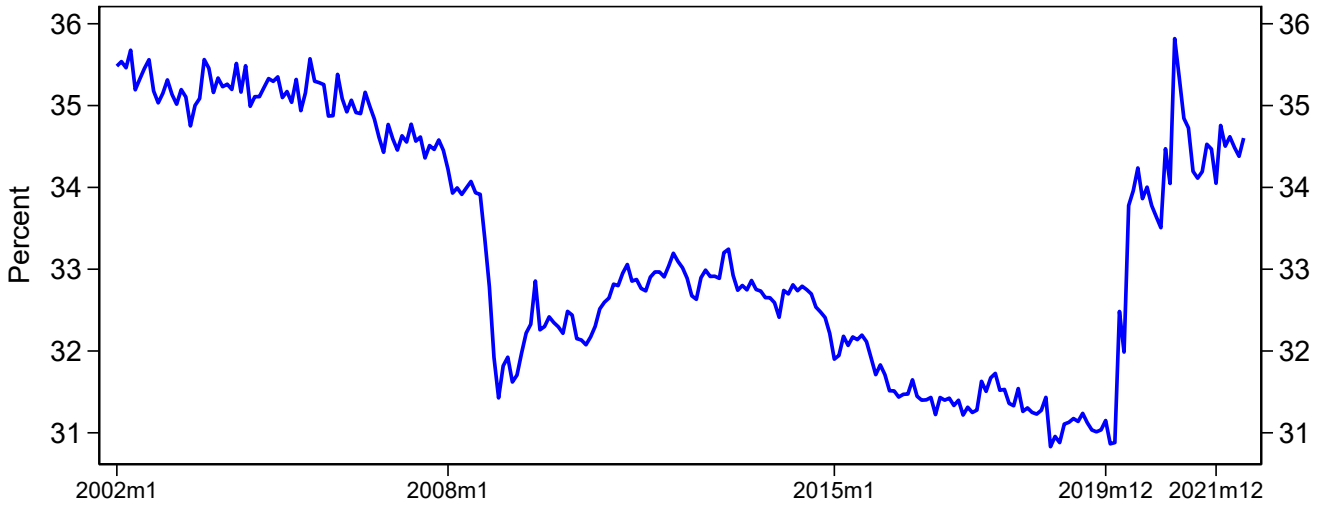
Note: See text for a description of the models. The total loss (squared norm of the distance between model and data moments) is normalized to 100 for the benchmark model, and expressed relative to the benchmark model for the estimated versions of the model that are directly comparable to the benchmark one.

Figure A.1: Sectoral TFP Shocks



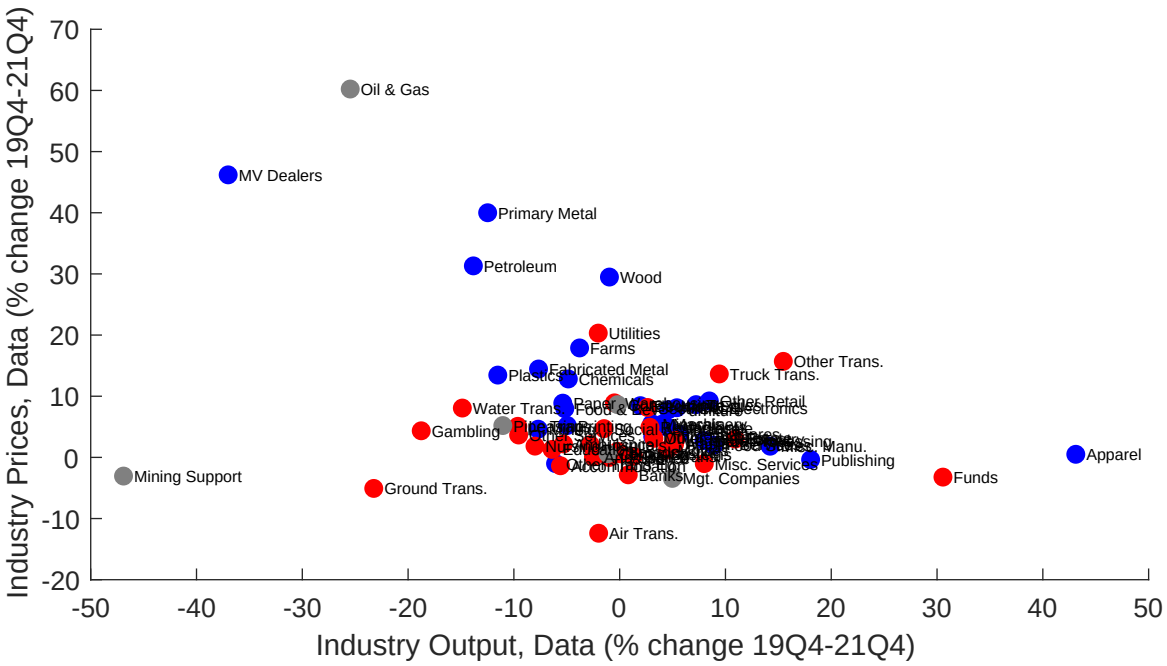
This bar chart shows the industry productivity shocks that we feed into our model. Services-producing industries are shown in red and goods-producing industries are shown in blue. Gray bars denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.2: Goods Share of Consumer Spending



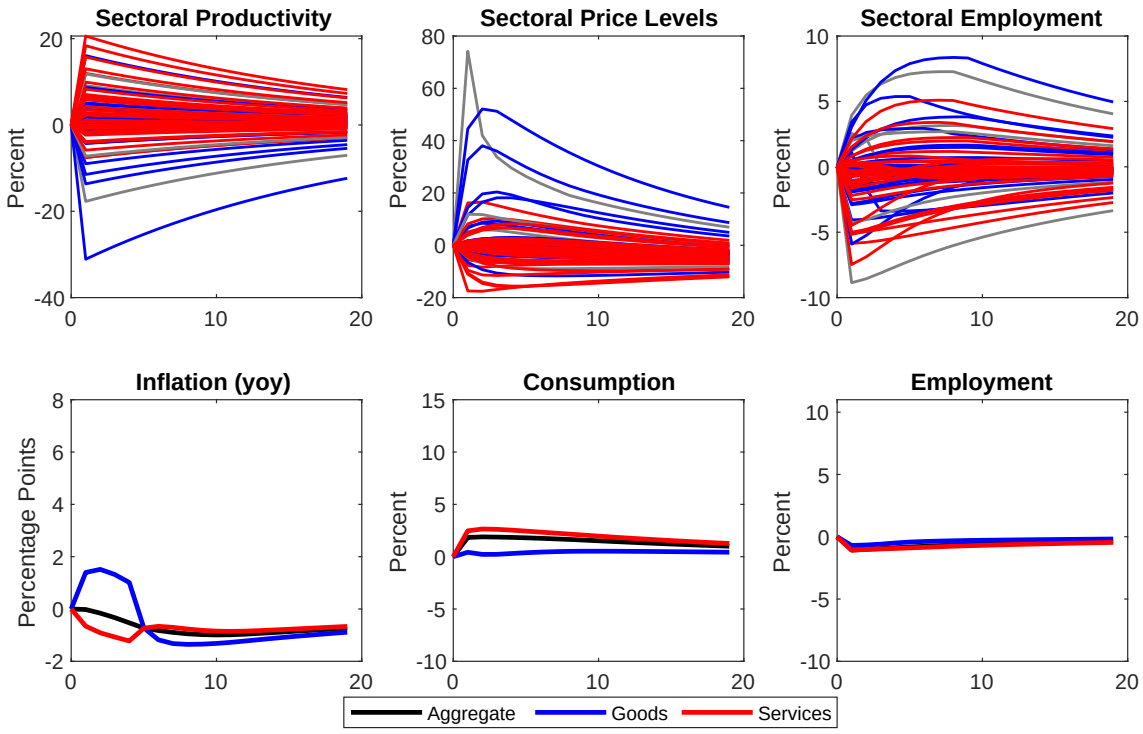
This figure plots the share of nominal consumption expenditures (PCE) that is spent on goods at a monthly frequency. Data Sources: Bureau of Economic Analysis and authors' calculations.

Figure A.3: Sectoral Price and Quantity Dynamics between 2019 and 2021



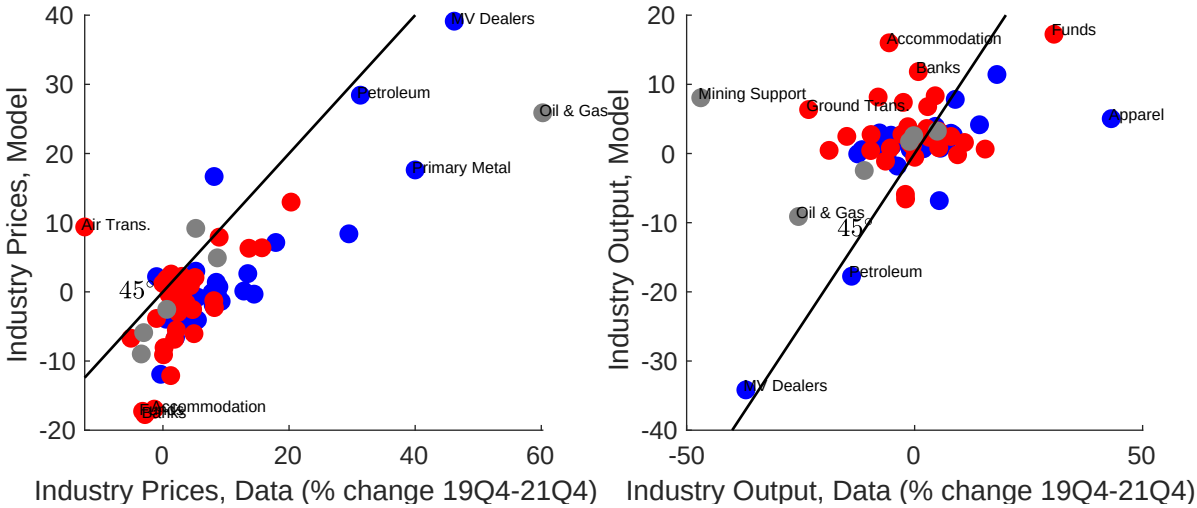
This figure plots the change in prices in each sector against the change in sectoral output, from 2019:Q4 to 2021:Q4. Changes in both prices and quantities are calculated relative to sector-specific trends. Services-producing industries are shown in red and goods-producing industries are shown in blue. Gray dots denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.4: Aggregate Effects of Sectoral TFP Shocks



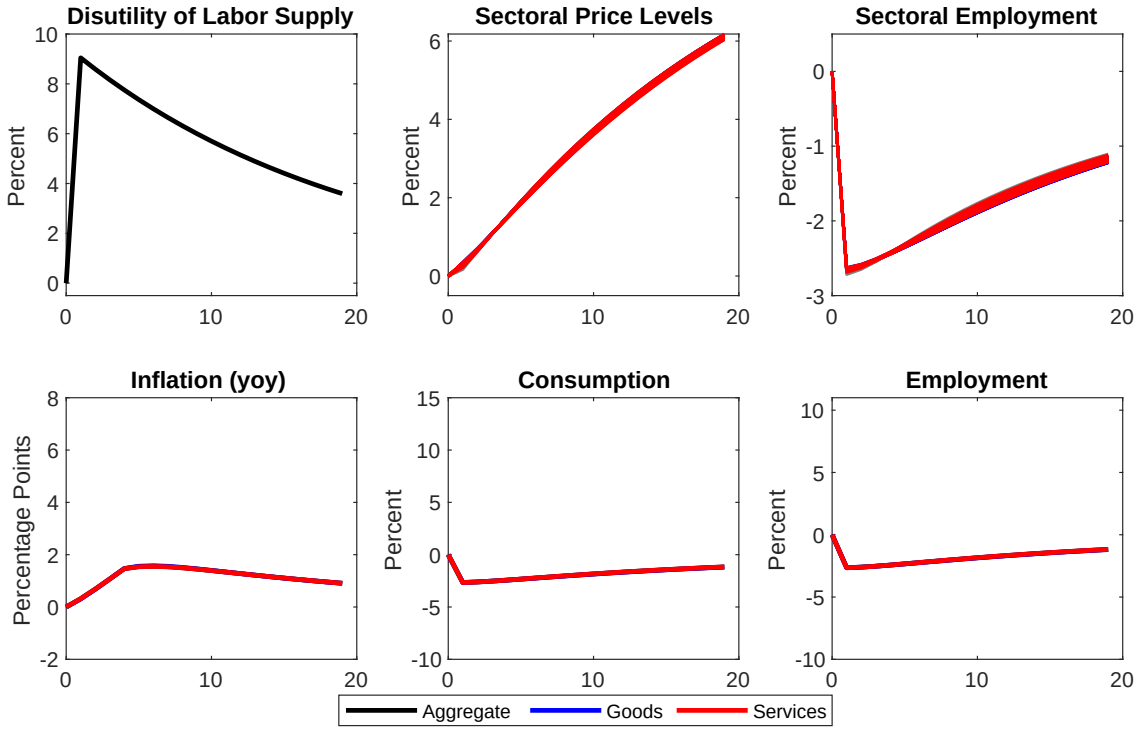
This figure plots the impulse response of key variables to estimated sectoral productivity shocks (using industry level data on output, added value and employment) in period 1. Each period is one quarter. Gray lines denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.5: Model and Data: Sectoral Responses to TFP Shocks



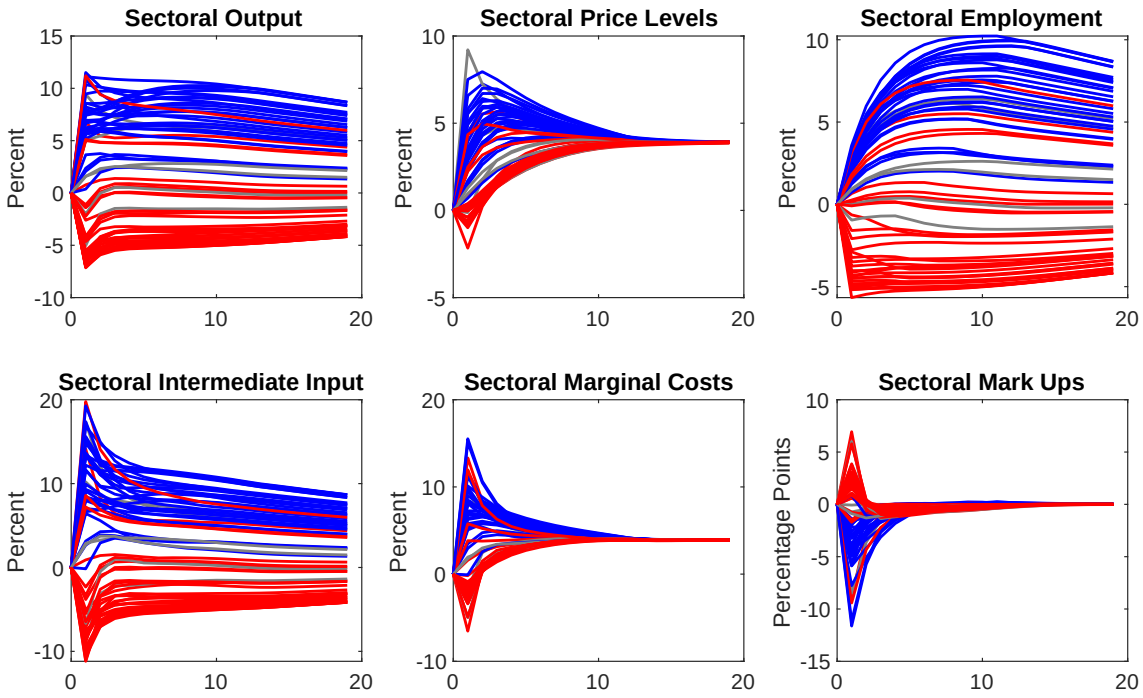
This figure compares the cross-sectional implication of the model with the data in response to the estimated sectoral TFP shocks at the industry level. Each dot is one industry. On the x-axis we plot inflation rates (percent change in the industry chain-type price price index) and real gross output growth for the 66 private industries for which BEA publishes GDP-by-industry data. On the y-axis we plot the model counterparts one year after the TFP shocks. Services-producing industries are shown in red and goods-producing industries are shown in blue. Gray dots denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.6: Aggregate Effects of Labor Supply Shock



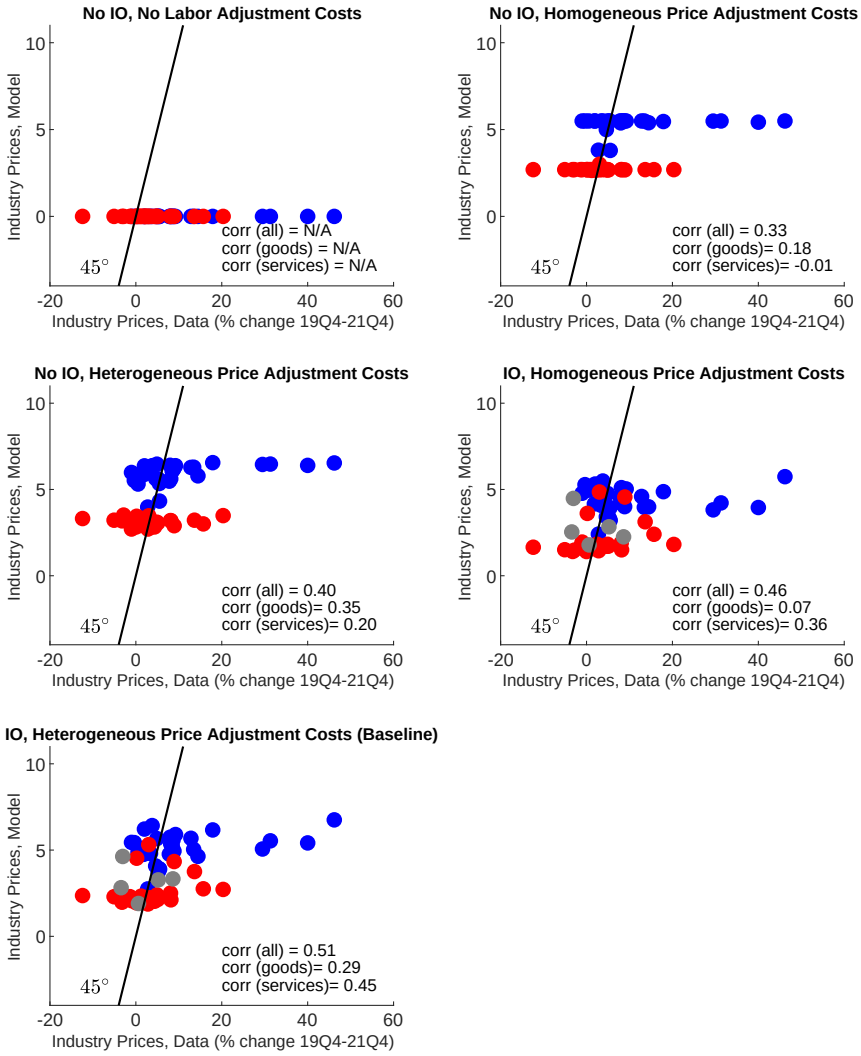
This figure plots the impulse response of key variables to a labor supply shock that increases the disutility of labor in period 1. Each period is one quarter. Gray lines denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.7: Model Implied Sectoral Dynamics (Demand Reallocation Shock)



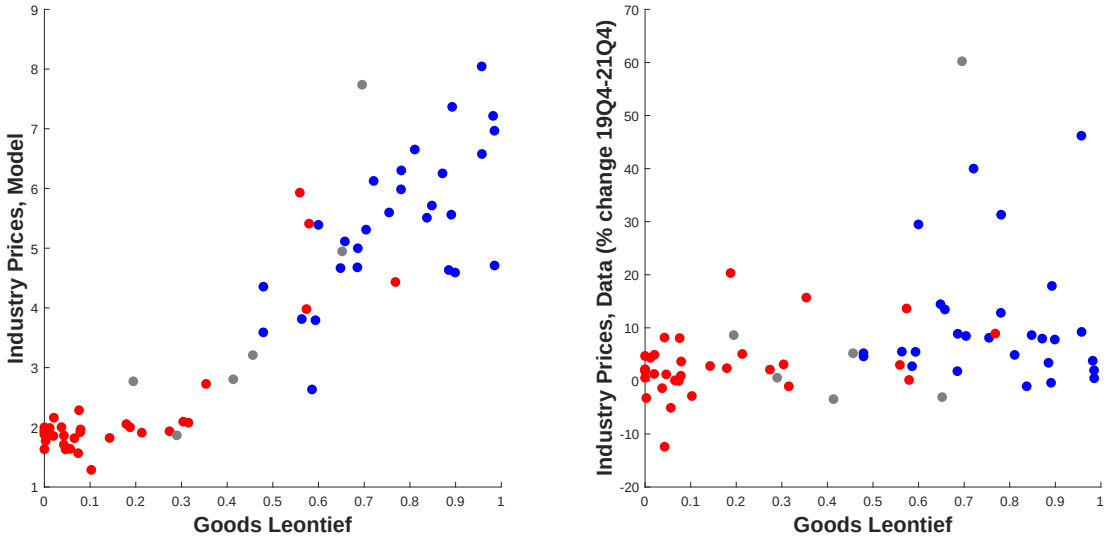
This Figure plots the dynamic response of sectoral variables to the demand reallocation shock that increases the value of the preference parameter for goods (ω_t) in period 1. Each period is one quarter. Services-producing industries are shown in red and goods-producing industries are shown in blue. Gray lines denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.8: Sectoral Inflation Response to Demand Reallocation Shock in Alternative Models



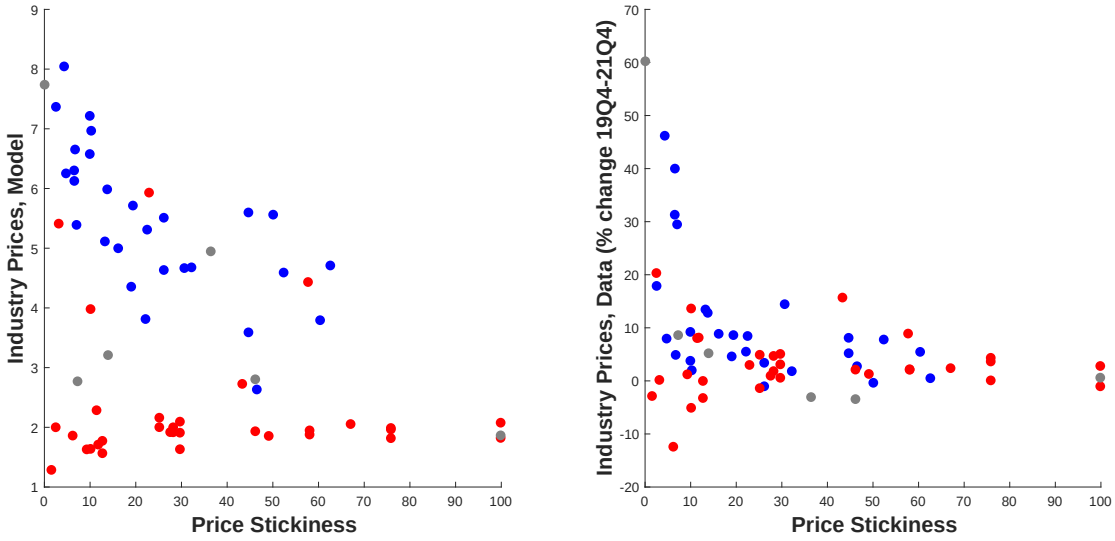
This figure compares the cross-sectional implications for inflation of different models against the data between 2019:Q4 and 2021:Q4. The first panel illustrates a model without input-output linkages or hiring costs. The second panel illustrates a model with hiring costs but no input-output linkages and with homogeneous price stickiness across sectors. The third panel illustrates a model with heterogeneous price rigidities across sectors but without input-output linkages. The fourth panel introduces input-output linkages but assumes that homogeneous price stickiness across sectors. The last panel illustrates the baseline model. Services-producing industries are in red and goods-producing industries are in blue. Gray dots denote sectors ("other" sectors) for which no output is directly consumed.

Figure A.9: Sectoral Inflation vs Goods Leontief (Demand Reallocation Shock)



This figure plots sectoral inflation against sectoral exposure to goods sector, measured by computing, for each sector, the cumulative goods share of the transpose of the Leontief inverse matrix (as defined in Baqaee and Farhi (2022)). Each value in the Leontief value is weighted by the final consumption share of the specific sector. A high value of the goods Leontief means that the sector is used, directly and indirectly, as in input in many goods-producing sectors. The scatterplot in the left panel is obtained using only the estimated demand reallocation shock, and the change in sectoral prices is computed over the first year of the simulation.

Figure A.10: Sectoral Inflation vs Price Stickiness (Demand Reallocation Shock)



This figure plots sectoral inflation against sectoral price stickiness, measured by the size of the Rotemberg cost, in the model and in the data. The scatterplot in the left panel is obtained using only the estimated demand reallocation shock, and the change in sectoral prices is computed over the first year of the simulation.

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