

Industry Effects of Unconventional Monetary Policy, Within and
Across Countries
Online Appendix

Eiji Goto

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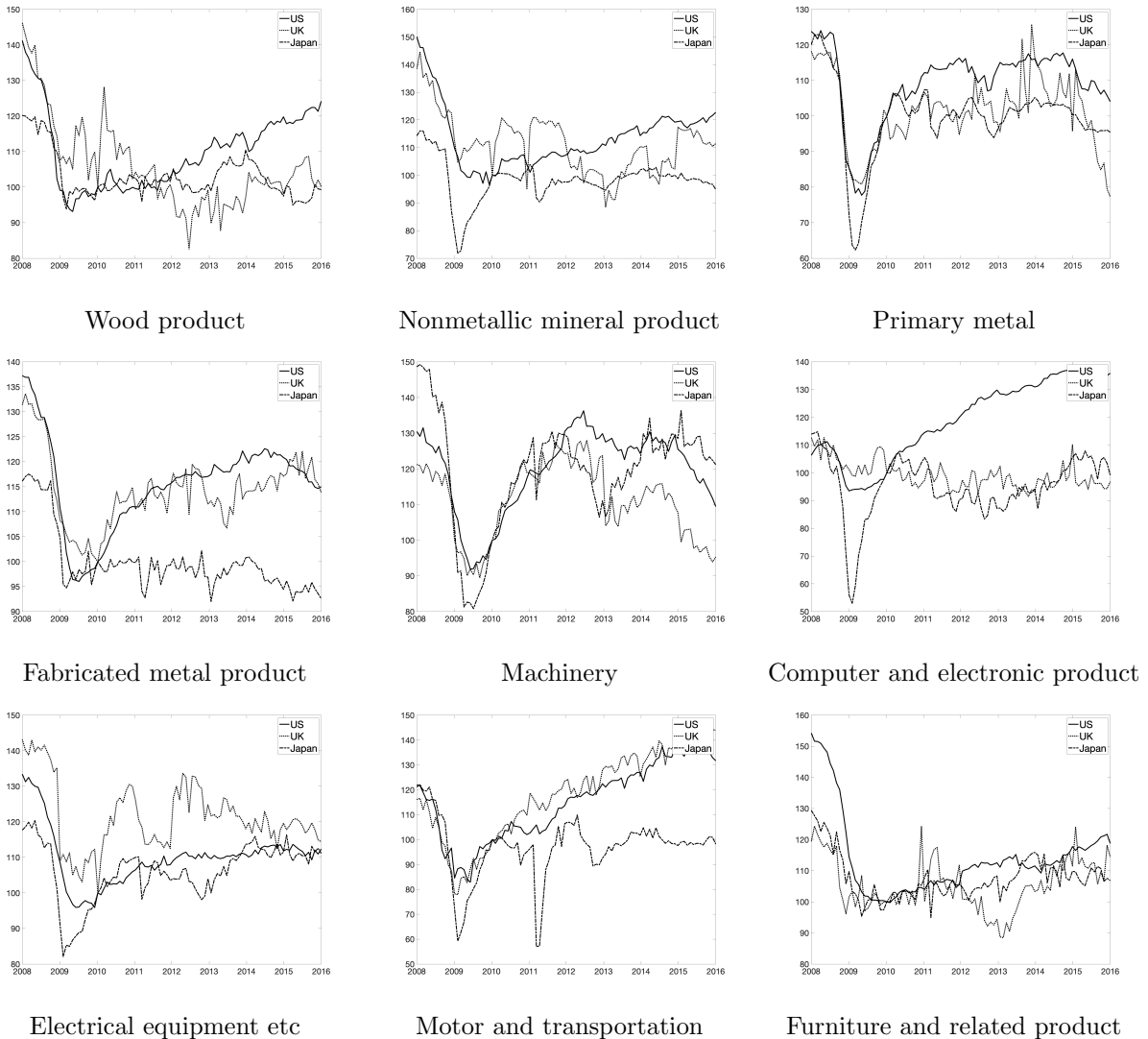
JEL classification: E32; E52; G32

Keywords: Unconventional monetary policy; Industry output; Monetary policy transmission mechanisms; Spillover effects

1 Figures

I plot industry output in Figures 1 and 2. Generally, industry output drops sharply during the financial crisis and increases thereafter. Strikingly, during the sample, most of the industries do not recover to the pre-recession level, displaying the severity of the recession. Further, I also plot other data used in this paper in Figure 3.

Figure 1: Industry Output I



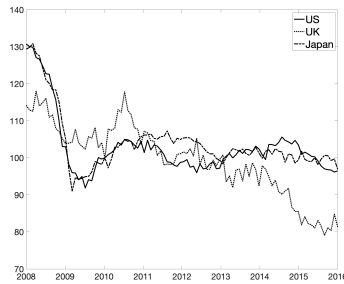
Note: All of the variables are normalized so that 2010M1=100.

Source: The Federal Reserve Board, the Ministry of Economy, Trade and Industry, and the Office for National Statistics.

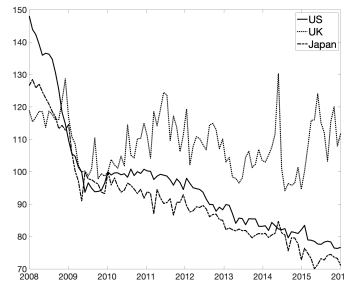
Figure 2: Industry Output II



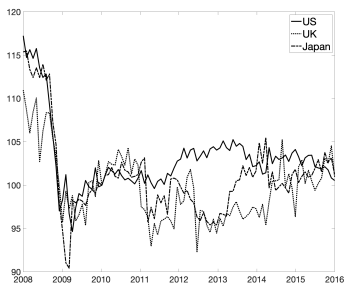
Food, beverage, and tobacco



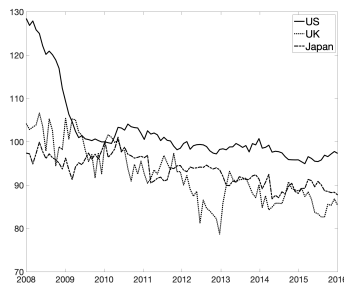
Textile mills product



Apparel and leather product



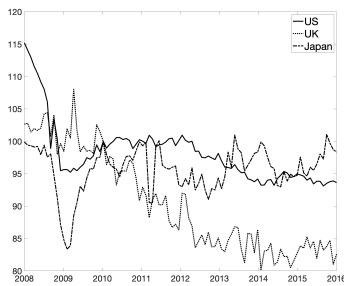
Paper



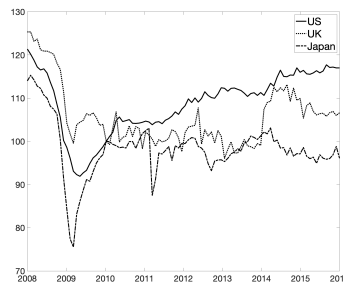
Printing activities



Petroleum and coal product



Chemical

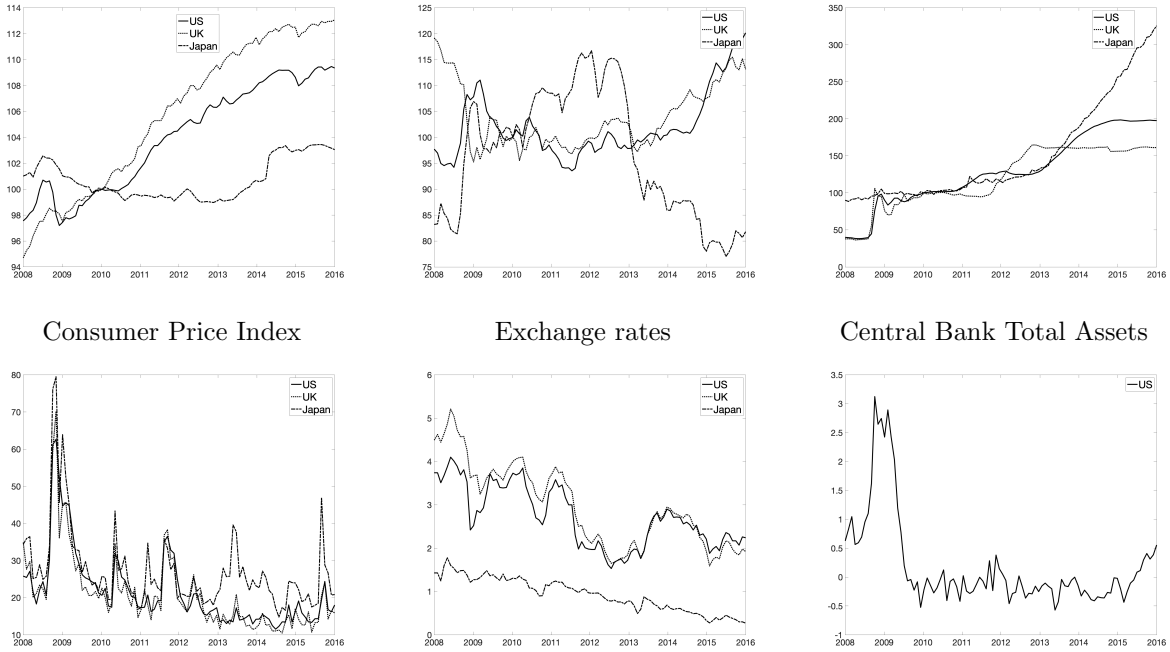


Plastic and rubber product

Note: All of the variables are normalized so that 2010M1=100.

Source: The Federal Reserve Board, the Ministry of Economy, Trade and Industry, and the Office for National Statistics.

Figure 3: Data Used in this Paper



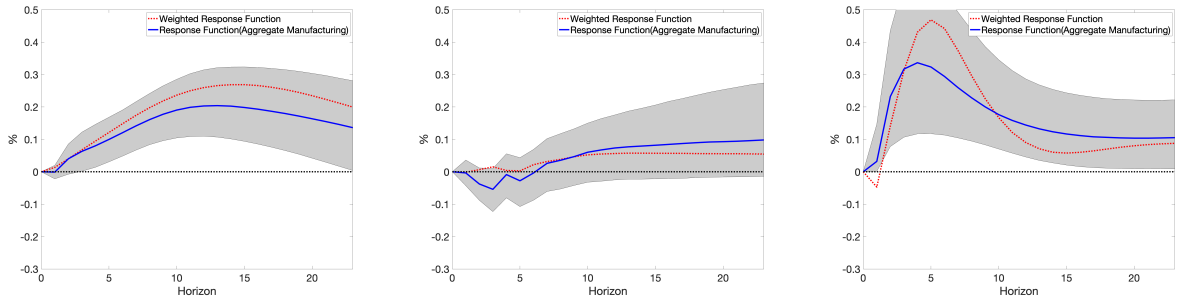
Stock Market Implied Volatility 10-year Treasury yield Excess Bond Premium

Note: Consumer Price Index, Exchange rate, and Central Bank Total Assets are normalized so that 2010M1=100.

Source: Consumer price index: FRED database, Central bank total assets: Federal Reserve Board and Datastream, Stock market implied volatility: Datastream, 10-year Treasury yield: the FRED database; Excess bond premium: ?

For stock market implied volatility, I use CBOE volatility index for the US, FTSE 100 volatility index for the UK, and Nikkei volatility index for Japan.

Figure 4: Weighted Impulse Response Functions



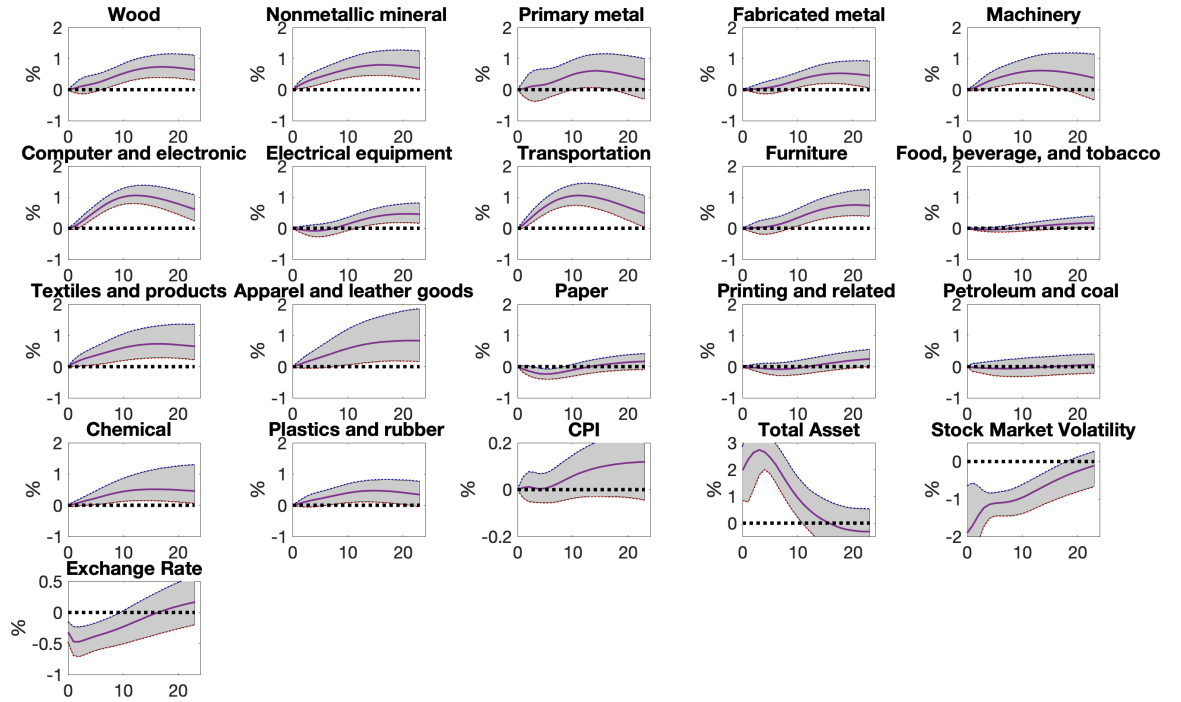
(a) US

(b) UK

(c) Japan

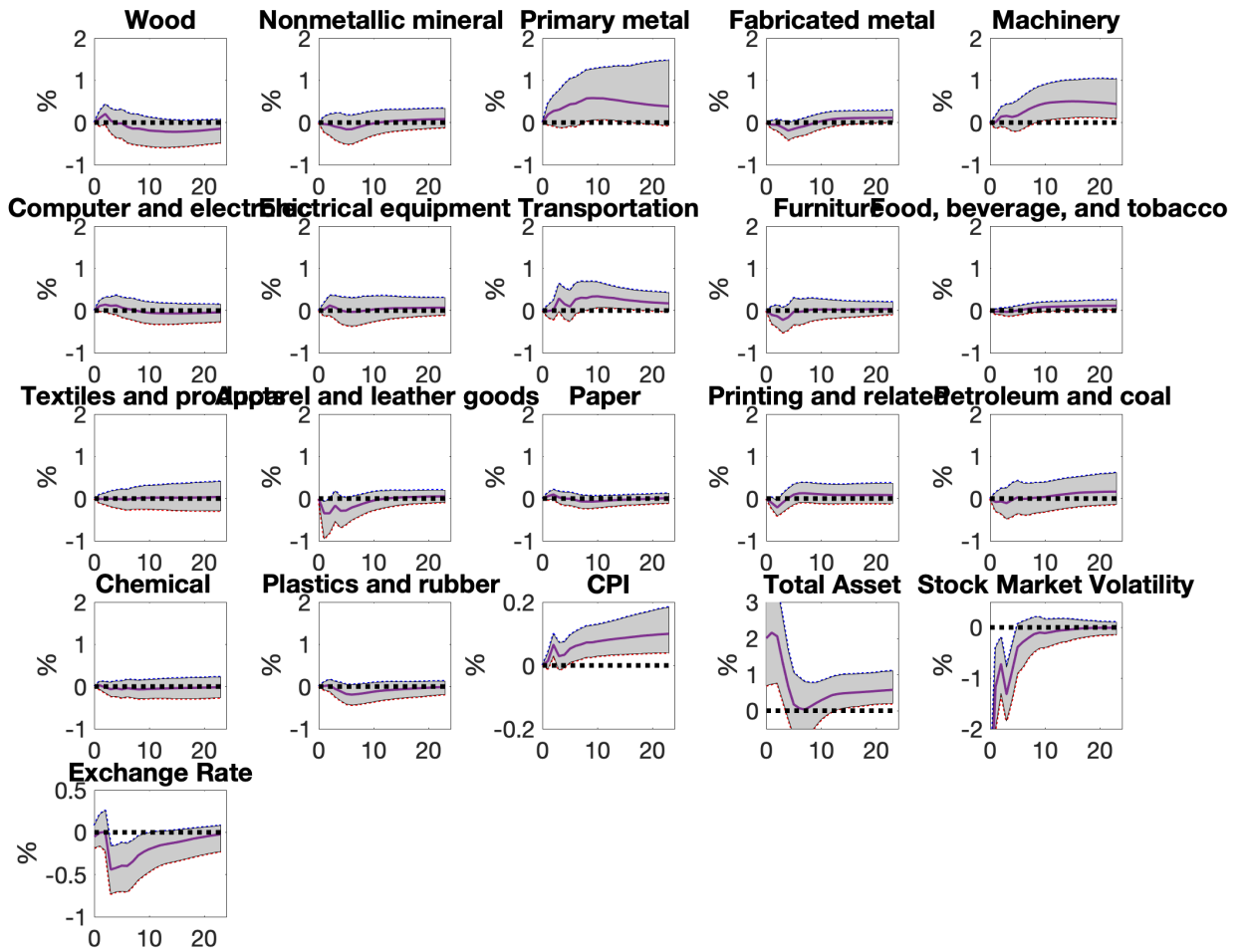
Note: The Median, 16th, and 84th Bayesian percentiles. Monthly horizon. The response function of aggregate manufacturing from the VAR model is attached for comparison.

Figure 5: Industry Response Functions (US, Sign Restriction)



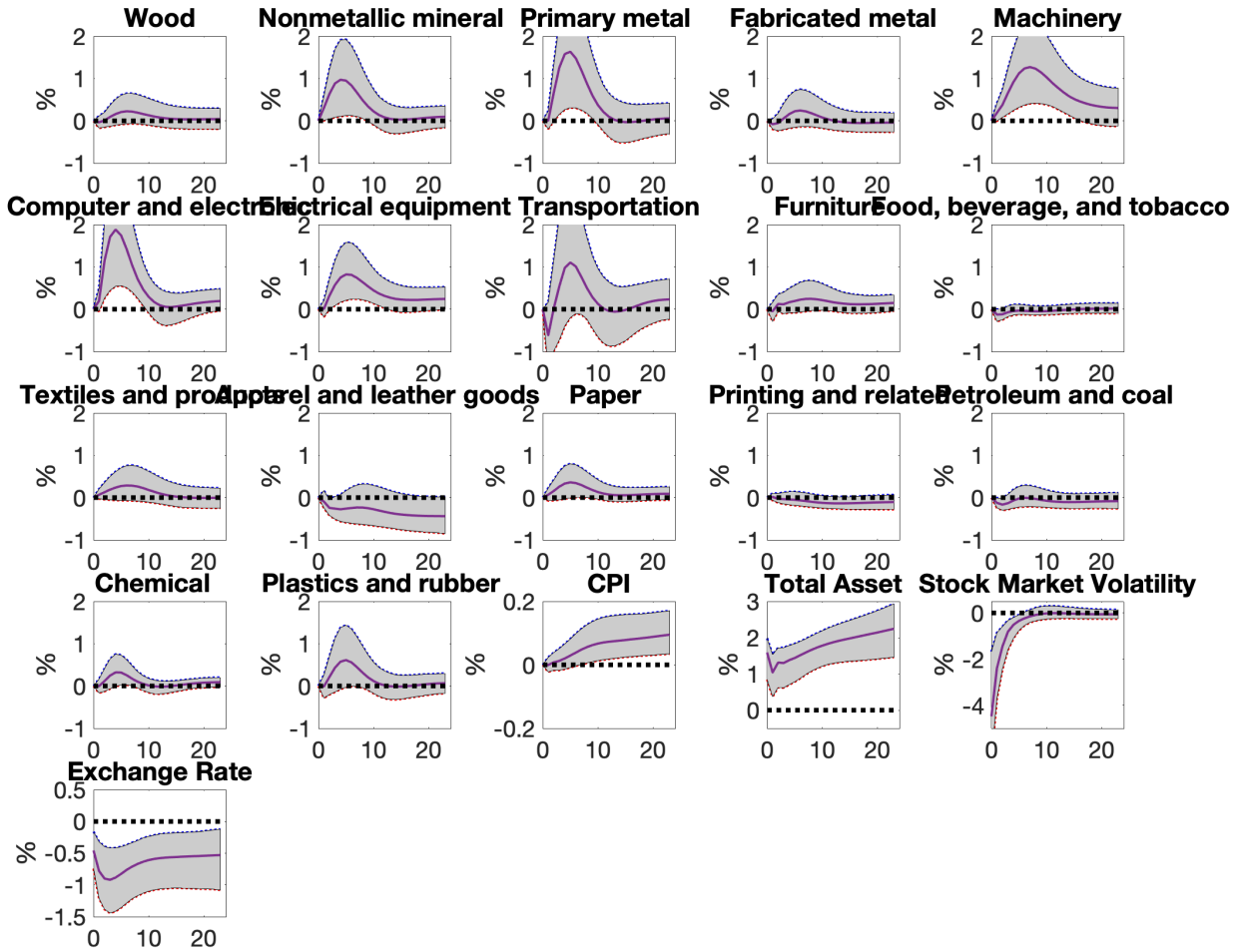
Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

Figure 6: Industry Response Functions (UK, Sign Restriction)



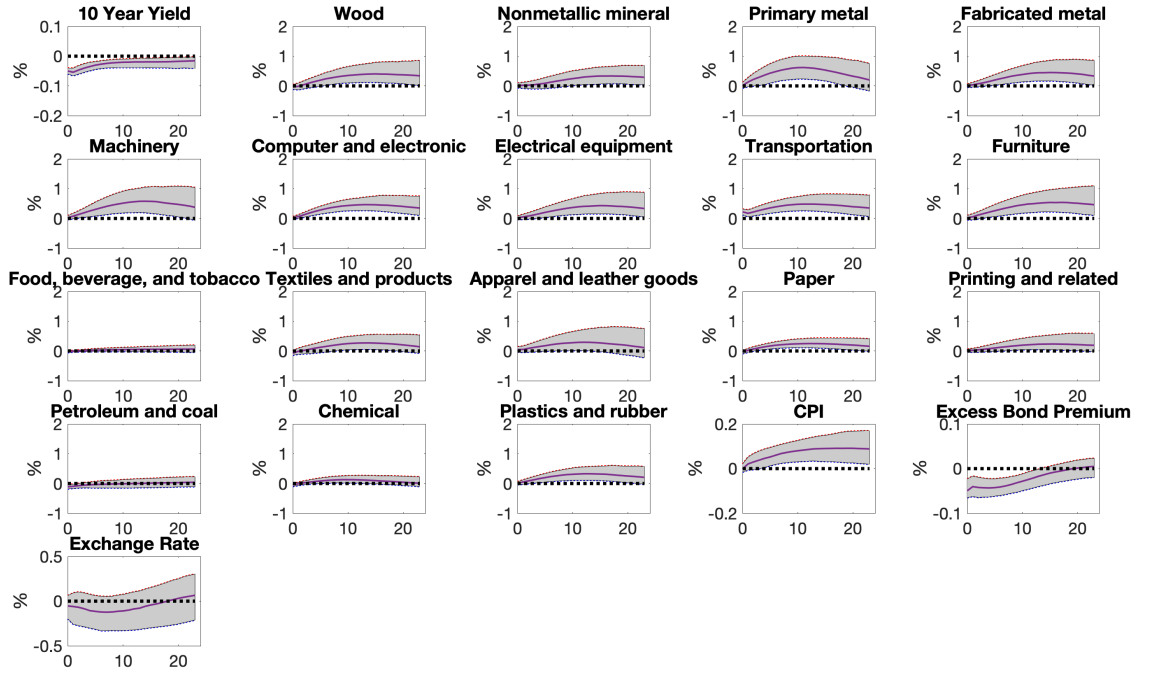
Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

Figure 7: Industry Response Functions (Japan, Sign Restriction)



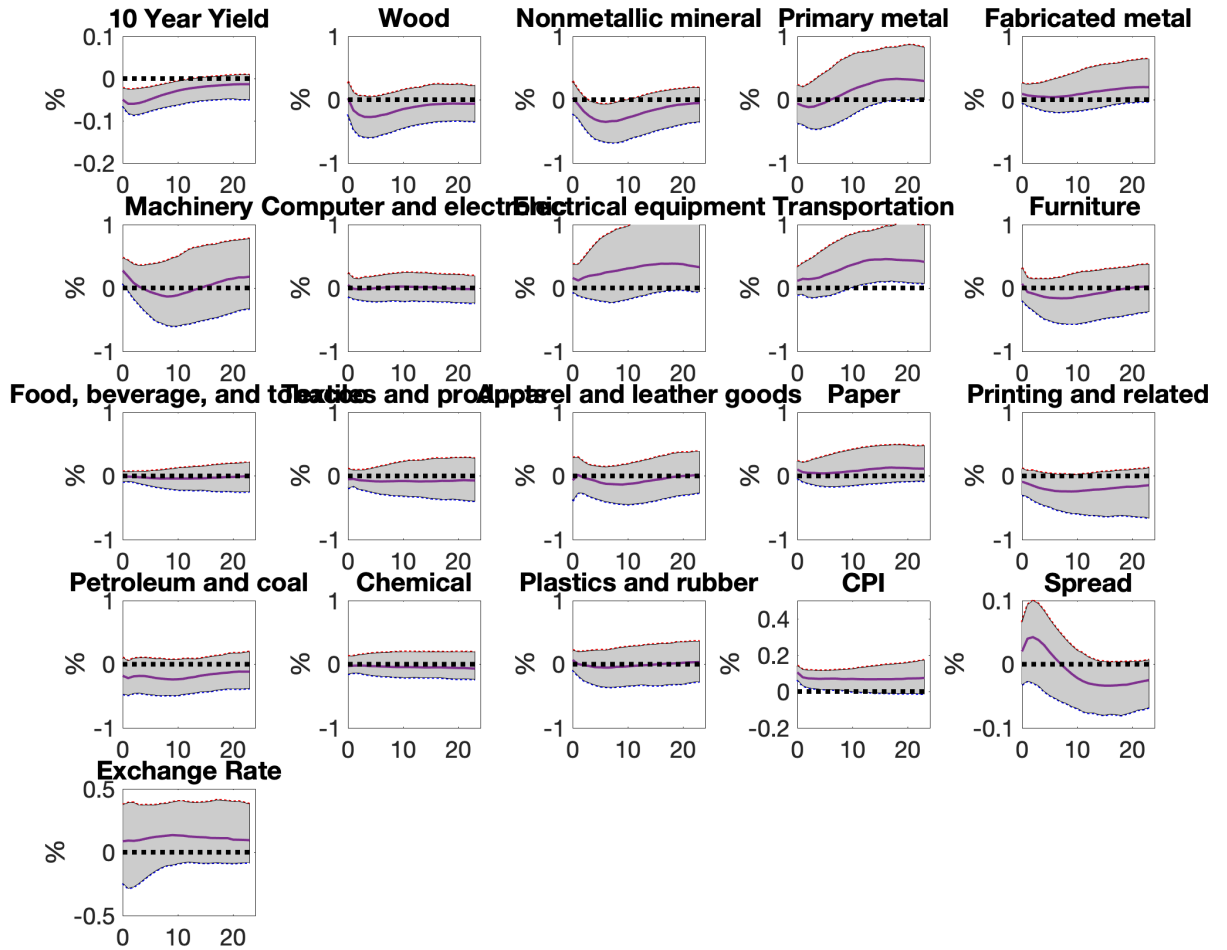
Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

Figure 8: Industry Response Functions (US, Proxy VAR)



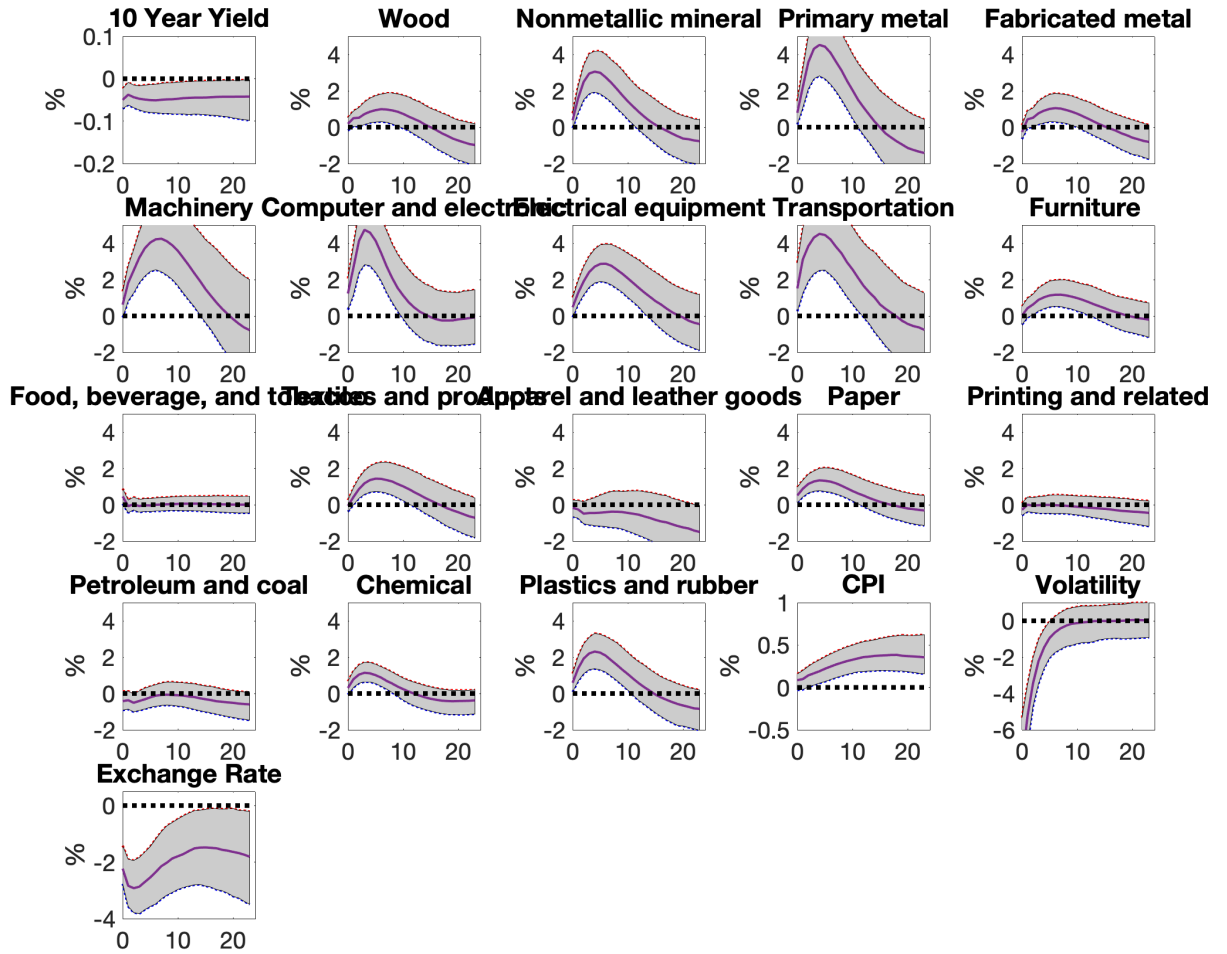
Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

Figure 9: Industry Response Functions (UK, Proxy VAR)



Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

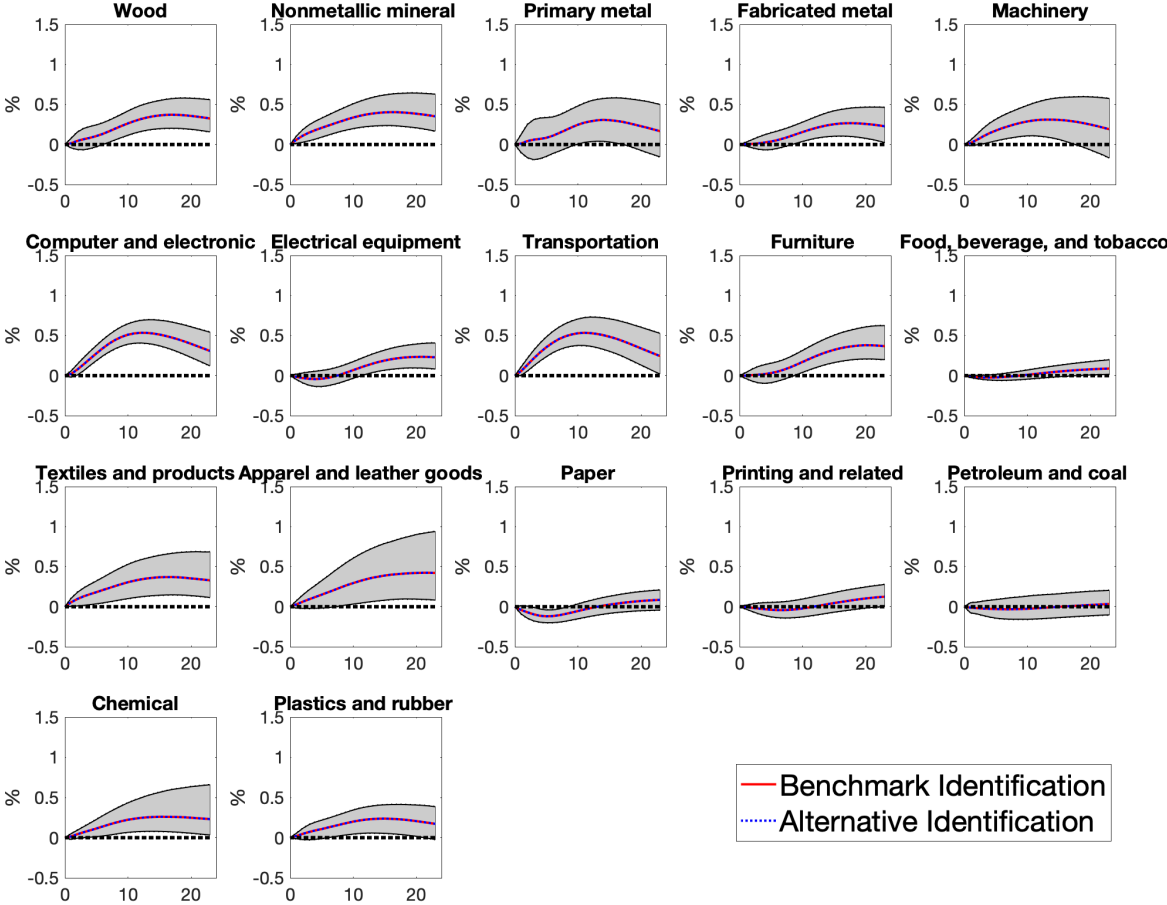
Figure 10: Industry Response Functions (Japan, Proxy VAR)



Note: The Median, 16th, and 84th Bayesian percentiles are reported. Monthly horizon.

Figure 11: Industry Response Functions (US, Sign Restriction with Longer Sign Restrictions)

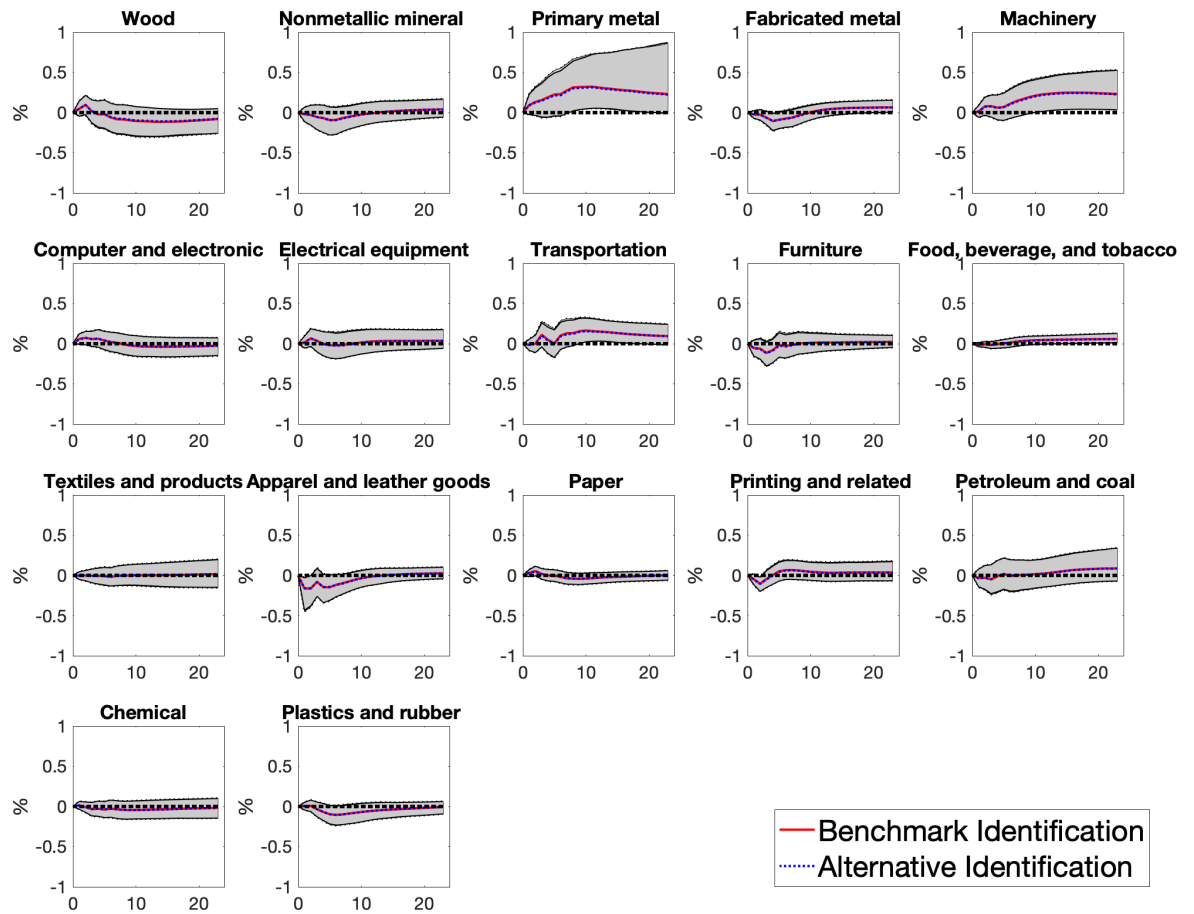
United States



Note: The Median Bayesian percentile is reported. Monthly horizon.

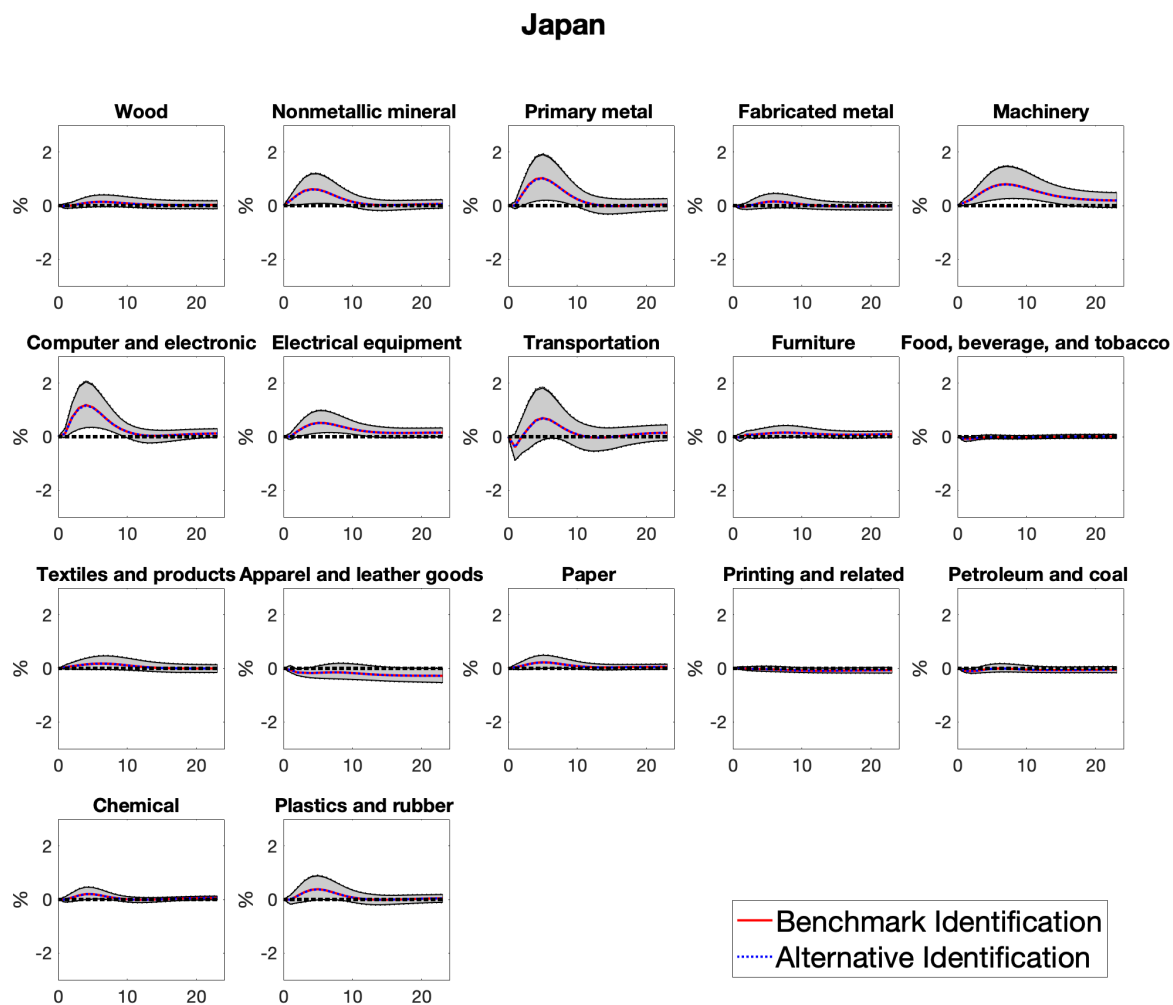
Figure 12: Industry Response Functions (UK, Sign Restriction with Longer Sign Restrictions)

United Kingdom



Note: The Median Bayesian percentile is reported. Monthly horizon.

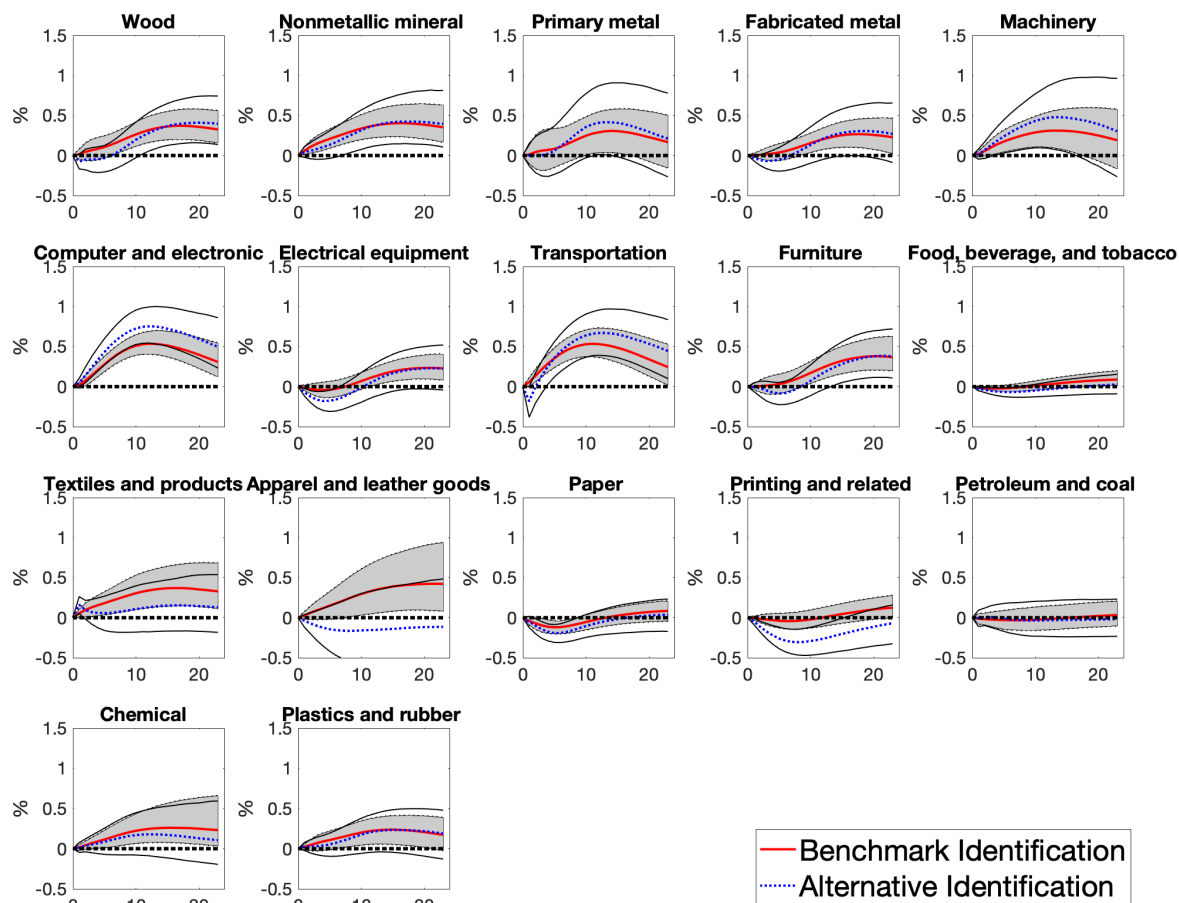
Figure 13: Industry Response Functions (Japan, Sign Restriction with Longer Sign Restrictions)



Note: The Median Bayesian percentile is reported. Monthly horizon.

Figure 14: Industry Response Functions (US, Sign Restriction with Long-Term Interest Rate)

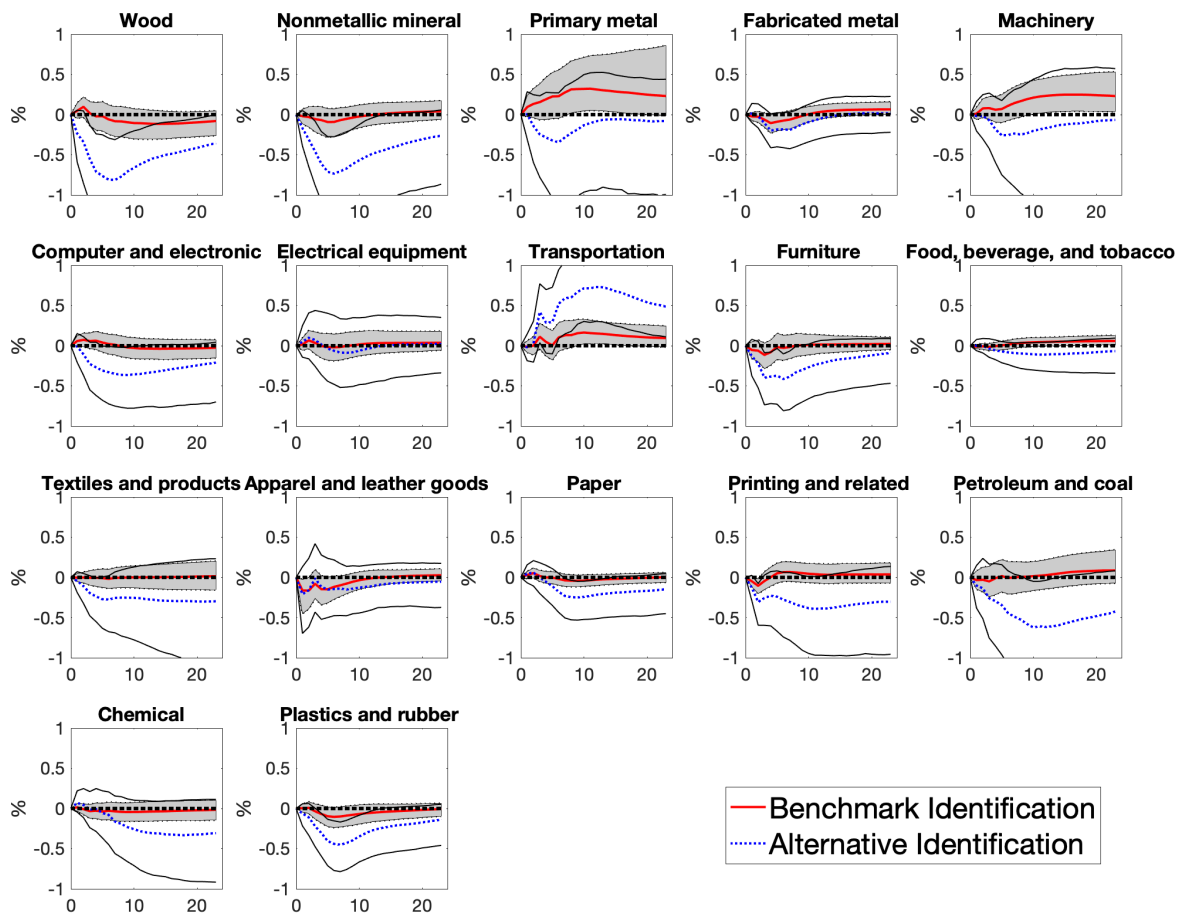
United States



Note: The Median Bayesian percentile is reported. Monthly horizon.

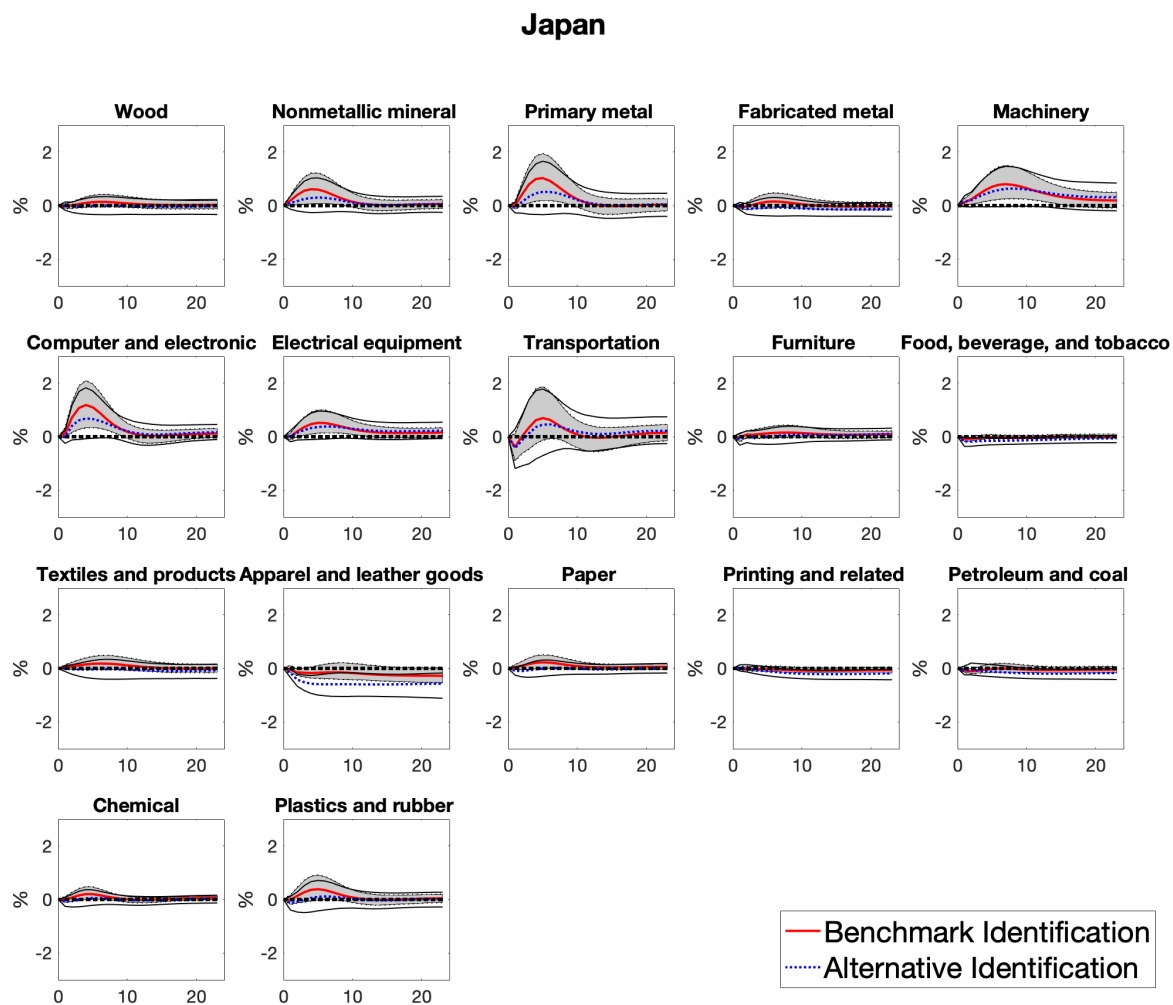
Figure 15: Industry Response Functions (UK, Sign Restriction with Long-Term Interest Rate)

United Kingdom



Note: The Median Bayesian percentile is reported. Monthly horizon.

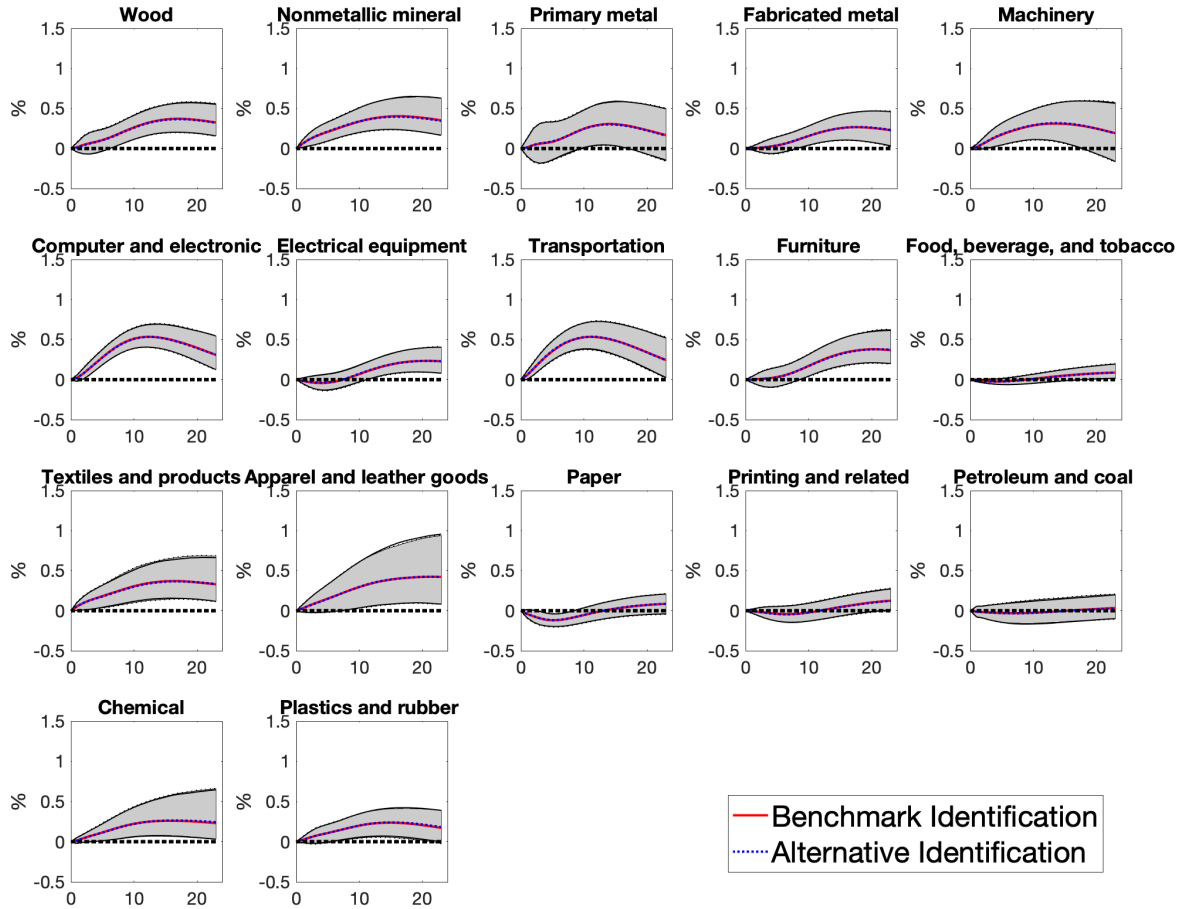
Figure 16: Industry Response Functions (Japan, Sign Restriction with Long-Term Interest Rate)



Note: The Median Bayesian percentile is reported. Monthly horizon.

Figure 17: Industry Response Functions (US, Sign Restriction with Reverse Order of Industries)

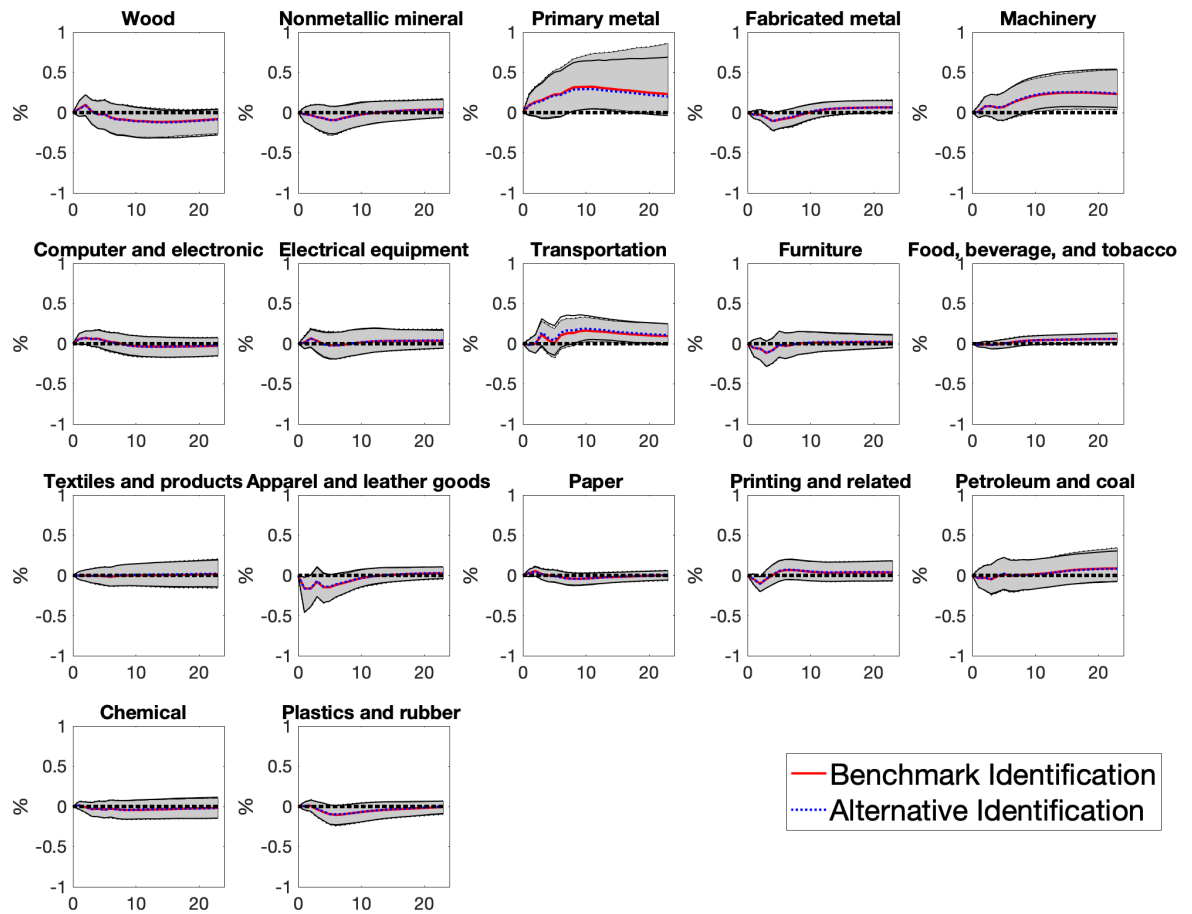
United States



Note: The Median Bayesian percentile is reported. Monthly horizon.

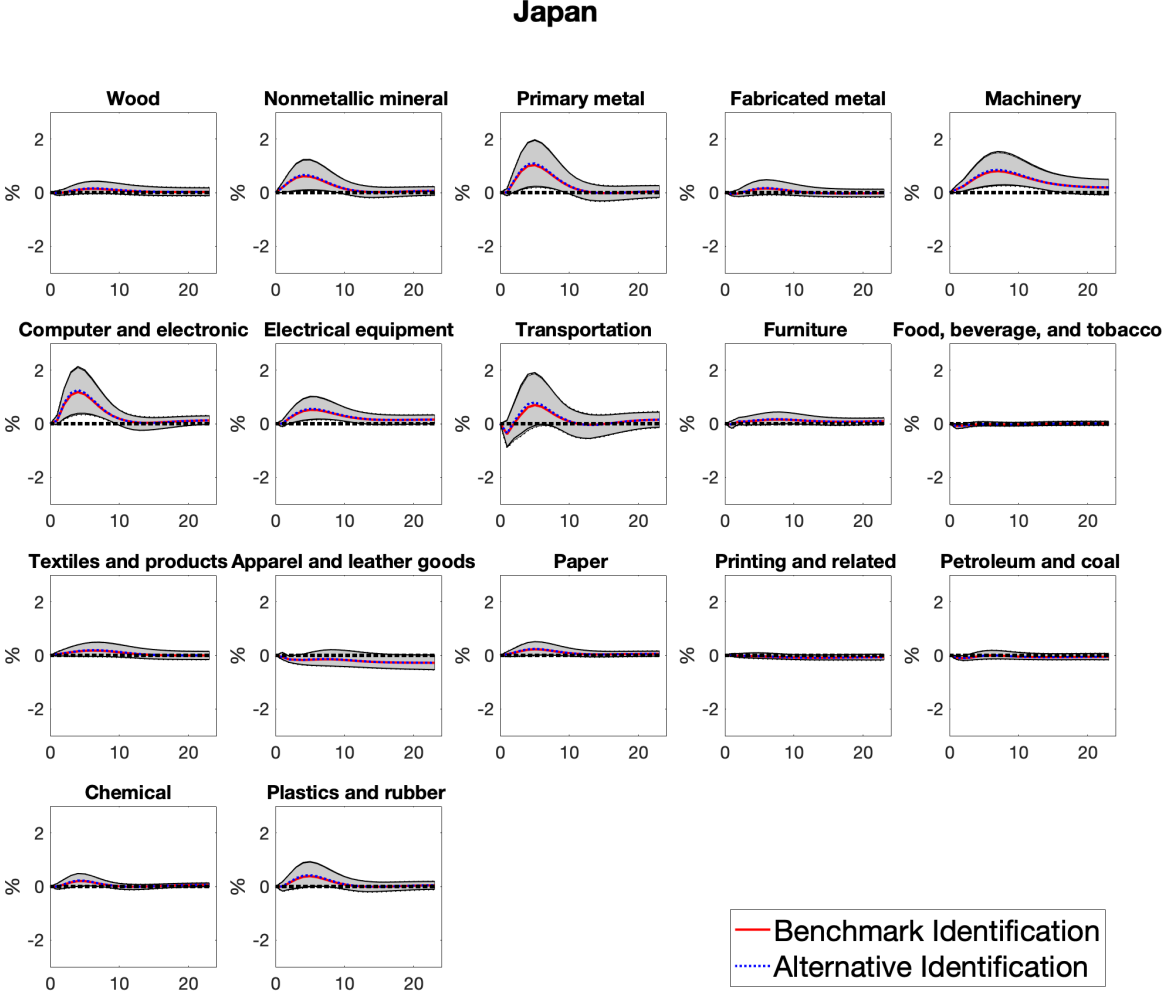
Figure 18: Industry Response Functions (UK, Sign Restriction with Reverse Order of Industries)

United Kingdom



Note: The Median Bayesian percentile is reported. Monthly horizon.

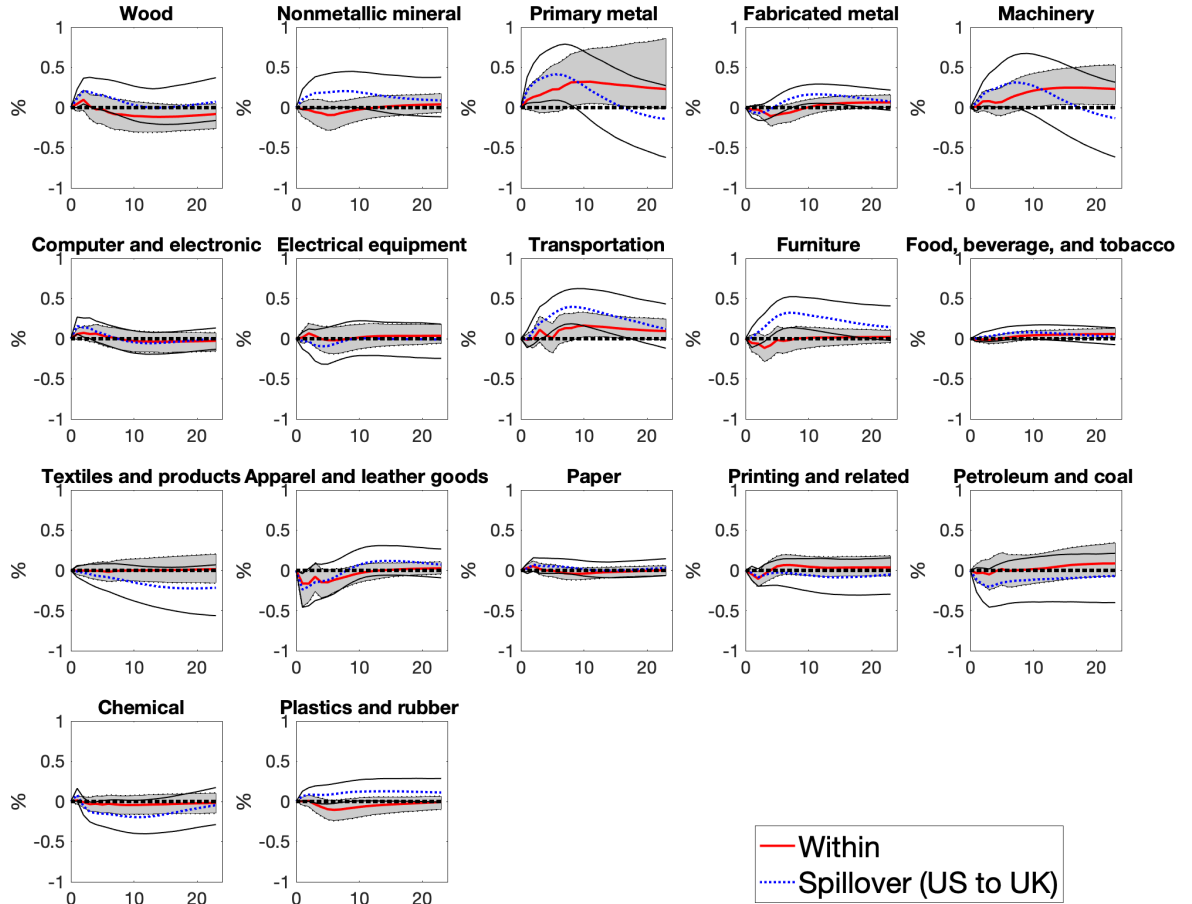
Figure 19: Industry Response Functions (JP, Sign Restriction with Reverse Order of Industries)



Note: The Median Bayesian percentile is reported. Monthly horizon.

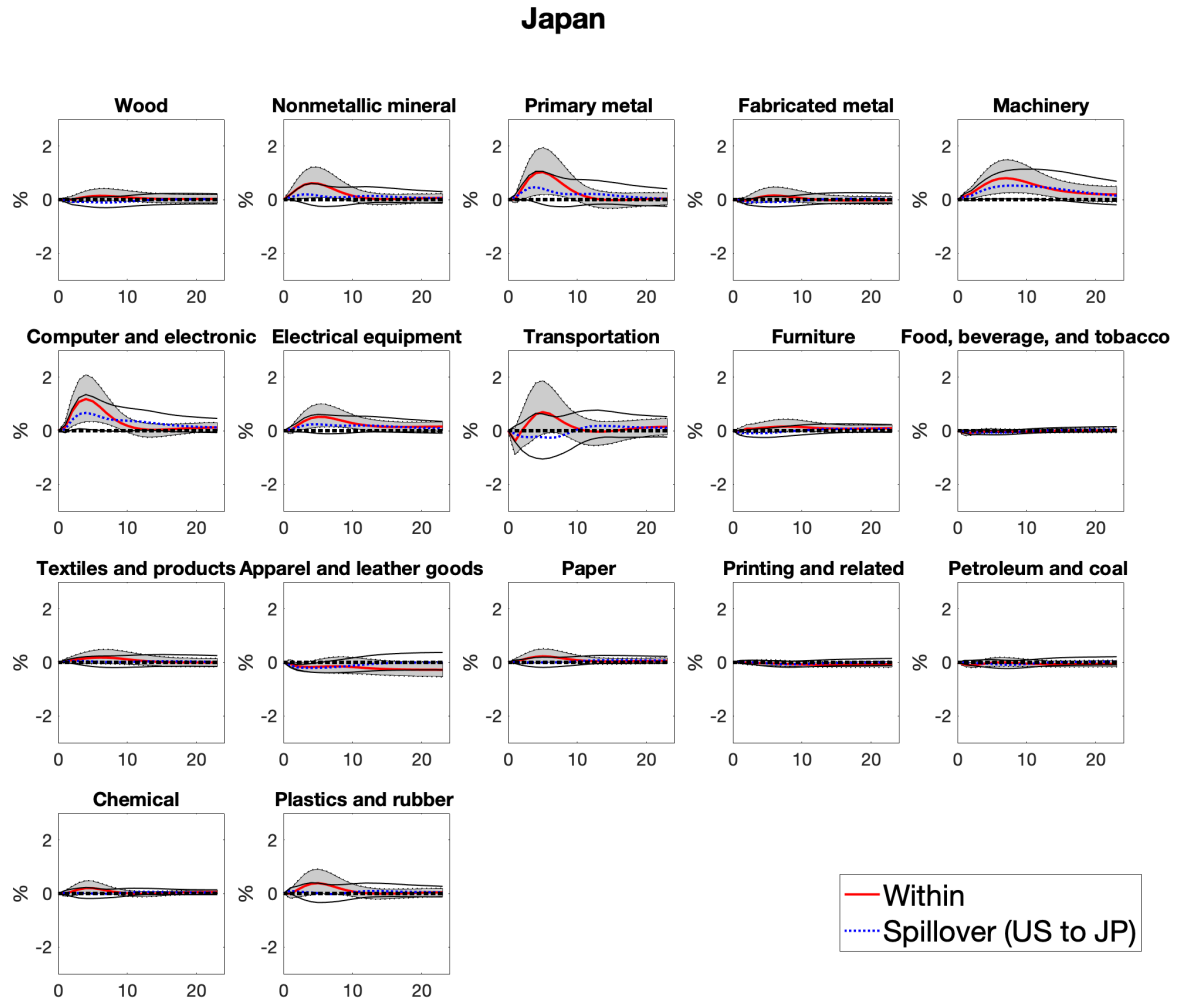
Figure 20: Industry Response Functions (Spillover Effects, Home US - Foreign UK)

United Kingdom



Note: The Median Bayesian percentile is reported. Monthly horizon.

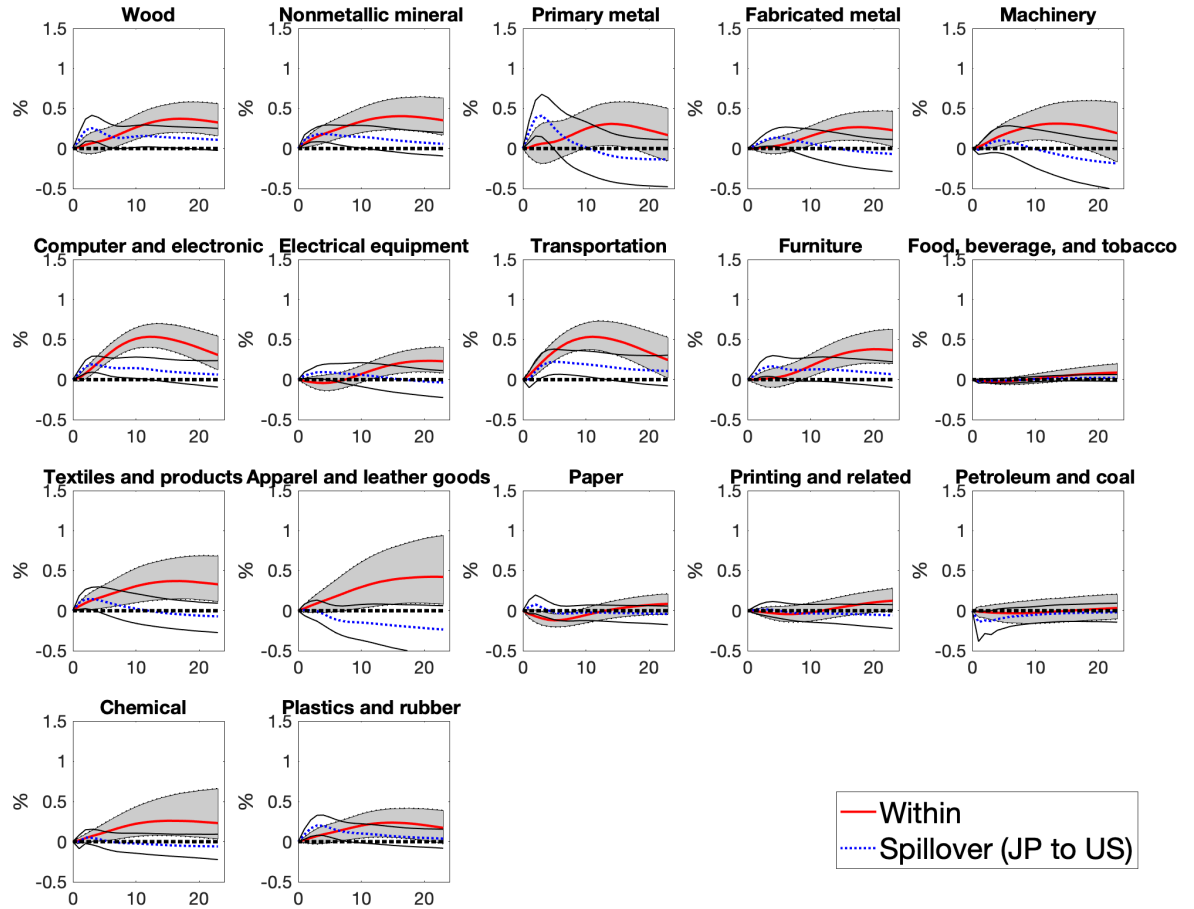
Figure 21: Industry Response Functions (Spillover Effects, Home US - Foreign Japan)



Note: The Median Bayesian percentile is reported. Monthly horizon.

Figure 22: Industry Response Functions (Spillover Effects, Home Japan - Foreign US)

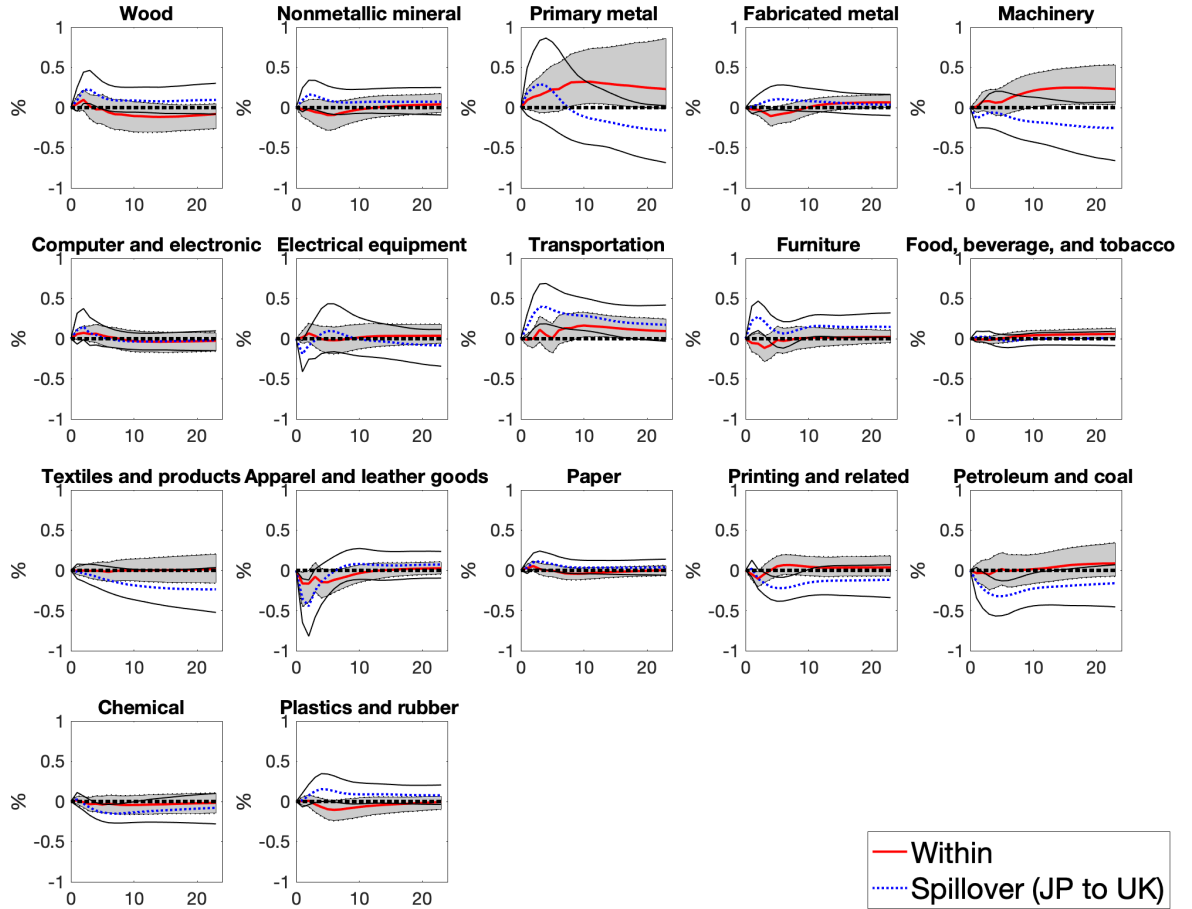
United States



Note: The Median Bayesian percentile is reported. Monthly horizon.

Figure 23: Industry Response Functions (Spillover Effects, Home Japan - Foreign UK)

United Kingdom



Note: The Median Bayesian percentile is reported. Monthly horizon.

2 Tables

Table 1: Monetary Policy Elasticity of Output (Proxy VAR)

Country Industry	US	UK	Japan	Country	US	UK	Japan
Food, beverage, and tobacco	0.062 (-0.040, 0.199)	-0.003 (-0.246, 0.209)	0.457 (0.054, 0.895)	Nonmetallic mineral product	0.334 (0.079, 0.648)	0.031 (-0.219, 0.293)	3.054 (1.934, 4.187)
Textile mills product	0.270 (0.062, 0.543)	-0.046 (-0.162, 0.092)	1.433 (0.728, 2.271)	Primary metal	0.619 (0.235, 1.003)	0.329 (-0.001, 0.830)	4.523 (2.818, 6.375)
Apparel and leather product	0.292 (0.015, 0.717)	0.018 (-0.264, 0.384)	-0.167 (-0.646, 0.261)	Fabricated metal product	0.450 (0.169, 0.850)	0.199 (-0.029, 0.645)	1.046 (0.294, 1.860)
Wood product	0.404 (0.121, 0.785)	0.023 (-0.226, 0.287)	0.989 (0.302, 1.821)	Machinery	0.578 (0.195, 1.051)	0.276 (0.071, 0.477)	4.248 (2.432, 6.240)
Paper	0.249 (0.116, 0.424)	0.132 (-0.098, 0.485)	1.341 (0.774, 1.998)	Computer and electronic product	0.464 (0.269, 0.709)	0.046 (-0.135, 0.238)	4.739 (2.821, 6.455)
Printing activities	0.233 (0.045, 0.530)	-0.090 (-0.299, 0.119)	0.002 (-0.379, 0.421)	Electrical equipment etc	0.431 (0.157, 0.836)	0.384 (-0.040, 1.161)	2.873 (1.851, 3.949)
Petroleum and coal product	0.040 (-0.111, 0.224)	-0.116 (-0.389, 0.174)	-0.065 (-0.642, 0.625)	Motor and transportation	0.481 (0.265, 0.759)	0.456 (0.101, 0.975)	4.514 (2.504, 6.821)
Chemical	0.128 (0.020, 0.255)	-0.020 (-0.139, 0.147)	1.140 (0.642, 1.712)	Furniture and related product	0.539 (0.212, 1.005)	0.065 (-0.196, 0.321)	1.169 (0.513, 1.985)
Plastic and rubber product	0.328 (0.113, 0.564)	0.066 (-0.090, 0.221)	2.306 (1.365, 3.308)	Industry average	0.347	0.103	1.977
				Industry median	0.334	0.046	1.341

Note: Lower and upper values of credible band in parenthesis. Credible band is an interval within which the estimate falls with the probability given. Elasticity is the maximum median impulse response function consistent with a 5 basis point decrease in 10-year government bond yield. For example, for the food, beverage, and tobacco industry in the US, a 5 basis point decrease in 10-year government bond yield increases the output by 0.062%.

Table 2: Regression Results

Explanatory variable	Maximum Response	Cumulative Response	24th Period Response	Maximum Response	Cumulative Response	24th Period Response	Maximum Response	Cumulative Response	24th Period Response
	Benchmark Identification	Benchmark Identification	Benchmark Identification	Proxy VAR	Proxy VAR	Proxy VAR	Shadow rate	Shadow rate	Shadow rate
Firm size (credit channel)	0.0501* (0.0256)	0.098* (0.359)	0.0309** (0.0147)	0.236* (0.136)	2.975* (1.481)	0.0176 (0.0321)	0.0563*** (0.0122)	1.058*** (0.337)	0.0418*** (0.0124)
Working capital (interest rate channel)	-0.0674** (0.0328)	-1.320** (0.524)	-0.0574** (0.0243)	-0.217 (0.182)	-2.138 (2.076)	-2.138 (0.0455)	-0.0425** (0.0186)	-0.907** (0.437)	-0.0393** (0.0175)
Debt to equity ratio (credit channel)	0.0664 (0.189)	-0.577 (0.731)	-0.0295 (0.0242)	-0.296 (0.321)	-3.258 (3.424)	-0.0307 (0.0801)	-0.0712*** (0.0231)	-1.374* (0.794)	-0.0267 (0.0314)
Short-term debt (interest rate channel)	0.189 (0.246)	1.864 (4.242)	0.0385 (0.141)	-0.0431 (0.937)	2.853 (10.73)	0.378 (0.261)	0.143 (0.115)	0.758 (3.005)	0.100 (0.109)
Country dummy	0.257*** (0.0595)	3.270*** (0.695)	0.0956*** (0.0256)	0.994*** (0.277)	11.66*** (2.924)	0.0923 (0.0795)	0.123*** (0.0260)	2.690*** (0.759)	0.117*** (0.0301)
US	-0.288 (0.263)	-3.365 (4.170)	-0.0592 (0.155)	-1.772 (1.273)	-22.45 (14.01)	-0.186 (0.318)	-0.429*** (0.127)	-7.291** (3.303)	-0.343*** (0.112)
UK	-0.445 (0.267)	-6.261 (4.257)	-0.196 (0.153)	-1.638 (1.212)	-24.25* (13.74)	-0.390 (0.303)	-0.433*** (0.134)	-8.175** (3.459)	-0.367*** (0.118)
UJ	-0.181 (0.273)	-4.669 (4.353)	-0.219 (0.157)	-0.157 (1.207)	-10.91 (12.99)	-1.120*** (0.342)	-0.378*** (0.127)	-7.292** (3.272)	-0.359*** (0.110)
Adj. R-sq	N	51	51	51	51	51	51	51	51
	0.653	0.613	0.704	0.639	0.528	0.664	0.564	0.250	0.293

Note: Pooled OLS (cross-industry and cross-country). Robust standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01. The durable dummy takes one if industries are wood product, nonmetallic mineral product, primary metal, fabricated metal product, machinery, computer and electronic product, electrical equipment etc, motor and transportation, and furniture and related product and 0 otherwise.