Appendix for Oil Price Shocks and Industrial Production:

Is the Relationship Linear?[*]

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Abstract

This paper tests the three leading specifications of asymmetric and possibly nonlinear feedback from the real price of oil to U.S. industrial production and its sectoral components. We show that the evidence of such feedback is sensitive to the estimation period. Support for a nonlinear model is strongest for samples starting before 1973. Instead, using post-1973 data only, the evidence against symmetry becomes considerably weaker. For example, at the aggregate level, there is no evidence against the hypothesis of symmetric responses to oil price innovations of typical magnitude, consistent with results by Kilian and Vigfusson (2009) for U.S. real GDP. There is strong evidence of asymmetries at the disaggregate level, however, especially for industries that are energy intensive in production (such as chemicals) or that produce goods that are energy-intensive in use (such as transportation equipment). Our analysis suggests that these asymmetries may be obscured in the aggregate data and highlights the importance of developing multi-sector models of the transmission of oil price shocks.

Key Words: Asymmetry; oil price; net increase; shocks; industrial production; transmission.

JEL Classification: C32, E37, Q43.

1 Impulse response function based test

We compute the impulse response function based test in the following manner:

(i) We estimate the two equations in (5) by OLS and keep the estimated coefficients, the standard deviations, and the residuals from the two equations. Let us denote these by $\widehat{B}_1$, $\widehat{B}_2$, $\widehat{s}_1$, $\widehat{s}_2$, $\widehat{\varepsilon}_1$,and $\widehat{\varepsilon}_2$, respectively.

(ii) Given a history $\{x_{t-1}, \ldots, x_{t-p}, y_{t-1}, \ldots, y_{t-p}\} \equiv \{X_t, Y_t\} \in \Omega^t$, we generate two paths of x_t such that

$$x_t^1 = B_1[1, X_t, Y_t] + \delta$$

$$x_t^2 = B_1[1, X_t, Y_t] + \varepsilon_{1t}$$

where ε_{1t} is drawn from the empirical distribution of ε_{1t} (i.e., resampled from the residual $\widehat{\varepsilon}_1$ in (5a) and δ equals two standard deviations, $2\widehat{s}_1$.

(iii) The updated information sets, together with the censored variables, are given by $\mathcal{I}_t^1 = \{1, x_t^1, X_t, Y_t, x_t^{1\#}, X_t^{1\#}\}$ and $\mathcal{I}_t^2 = \{1, x_t^2, X_t, Y_t, x_t^{2\#}, X_t^{2\#}\}$. Given these two histories, two paths for y_t are generated as:

$$y_t^1 = B_2\mathcal{I}_t^1 + \varepsilon_{2t}$$

$$y_t^2 = B_2\mathcal{I}_t^2 + \varepsilon_{2t}$$

where ε_{2t} is drawn from the empirical distribution of ε_{2t}. (Notice that the same value is used as ε_{2t} to generate y_t^1 and y_t^2).

(iv) We generate new information sets $\Omega_{t+1,1}^t = \{1, x_t^1, x_{t-1}, \ldots, x_{t-p+1}, y_t^1, y_{t-1}, \ldots, y_{t-p+1}\}$ and $\Omega_{t+1,2}^t = \{1, x_t^2, x_{t-1}, \ldots, x_{t-p+1}, y_t^2, y_{t-1}, \ldots, y_{t-p+1}\}$; the two paths for x_{t+1} are given by

$$x_{t+1}^1 = B_1\Omega_{t+1,1}^t + \varepsilon_{1t+1}$$

$$x_{t+1}^2 = B_1\Omega_{t+1,2}^t + \varepsilon_{1t+1}.$$

We repeat this step and (iii) alternatively $H + 1$ times.

(v) After R repetitions of steps (ii)-(iv) we generate the conditional IRF as

$$I_y\left(h, \delta, \Omega^t\right) = \frac{1}{R} \sum_{r=1}^{R} y_{t,r}^1 - \frac{1}{R} \sum_{r=1}^{R} y_{t,r}^2 \ \ \text{for } h = 0, 1, \dots, H$$

where $I_y\left(h, \delta, \Omega^t\right) \xrightarrow{p} E\left[y_{t+h}|\delta, \Omega^t\right] - E\left[y_{t+h}|\Omega^t\right]$ as $R \to \infty$. In our computation we set $R = 1000$.[1]

(vi) The unconditional IRF is generated by repeating (ii) to (v) for all possible Ω^t, $t = 1 : T$ and then taking the mean over all the histories:

$$I_y\left(h, \delta\right) = \frac{1}{T} \sum_{t=1}^{T} I_y\left(h, \delta, \Omega^t\right).$$

(vii) The variance-covariance matrix for $\left[I_y\left(h, \delta\right), I_y\left(h, -\delta\right)\right]$ is computed as follows. First, given the estimated parameters $\widehat{B}_1$, $\widehat{B}_2$, $\widehat{s}_1$, $\widehat{s}_2$, the residuals, and an arbitrary chosen history Ω^m, the system in (5) is used to generate pseudo-series of the same length of our data. Second, for each of the newly generated pseudo-series, (X^m, Y^m), we repeat steps (i) through (vi) to get the unconditional $IRFs$. Finally, for M unconditional $IRFs$, both for δ and $-\delta$, the variance covariance matrix is computed. The matrix has a size of $2\left(H + 1\right) \times 2\left(H + 1\right)$.

(viii) Finally the test statistic of symmetry of positive and negative (and censored in the case of the net oil price increase) is computed as

$$W = \left(R\widehat{\beta}\right)' \left(R\widehat{\Xi}R'\right)^{-1} \left(R\widehat{\beta}\right) \sim \chi_{H+1}^2$$

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[1] $R = 100$ is used when we compute the data mining robust critical values by simulation.

where

$$
\underset{2(H+1)\times 1}{\widehat{\beta}} =
\begin{bmatrix}
I_y(0,\delta) \\
\vdots \\
I_y(H,\delta) \\
I_y(0,-\delta) \\
\vdots \\
I_y(H,-\delta)
\end{bmatrix} ; \quad
\underset{(H+1)\times 2(H+1)}{R} =
\begin{bmatrix}
1 & \ldots & 0 & 1 & \ldots & 0 \\
\vdots & \ddots & \vdots & \vdots & \ddots & \vdots \\
0 & \ldots & 1 & 0 & \ldots & 1
\end{bmatrix} ;
$$

$$
\underset{2(H+1)\times 2(H+1)}{\Xi} = E\left[\left(\widehat{\beta}-\beta\right)\left(\widehat{\beta}-\beta\right)'\right]
$$

and symmetry means that

$$
I_y(h,\delta) = -I_y(h,-\delta) \ \text{ for } h = 0,1,2,...,H.
$$

2   Additional Test Results

This section contains the results for the IRF based test for horizons $h = 0$, 1, ...,12. Tables A.2-A.7 and A.8-A.15 contain the IRF based test results for the full sample for a real oil price shock and a nominal oil price shock, respectively. Tables A.16-A.21 and A.22-A.29 contain the IRF based test results for the 1973:1-2009:9 subsample for a real oil price shock and a nominal oil price shock, respectively. Figures A.1a to A.1e and A.2a to A.2e contain IRF Plots to a typical one-standard deviation and a large two-standard deviation innovation to the real oil price, respectively.

Table A.1. Industry code and sample period

Sector	Industry code	Sample period
Total Industrial Production	B50001	1947:1-2009:9
Foods and tobacco	B51211	1947:1-2009:9
Clothing	B51212	1947:1-2009:9
Durable consumer goods	B51100	1947:1-2009:9
Miscellaneous durable goods	B51123	1947:1-2009:9
Non durable consumer goods	B51200	1947:1-2009:9
Manufacturing (SIC)	B00004	1947:1-2009:9
Paper products	B51214	1954:1-2009:9
Chemical products	B51213	1954:1-2009:9
Transit equipment	B52110	1954:1-2009:9
Textiles materials	B53210	1967:1-2009:9
Paper materials	B53220	1967:1-2009:9
Chemical materials	B53230	1967:1-2009:9
Motor vehicles and parts	G3361T3	1967:1-2009:9
Food, beverage and tobacco	G311A2	1972:1-2009:9
Textiles and products	G313A4	1972:1-2009:9
Apparel and leather goods	G315A6	1972:1-2009:9
Paper	G322	1972:1-2009:9
Printing and related	G323	1972:1-2009:9
Chemicals	G325	1972:1-2009:9
Petroleum and coal	G324	1972:1-2009:9
Plastics and rubber	G326	1972:1-2009:9
Furniture	G337	1972:1-2009:9
Primary metal	G331	1972:1-2009:9
Fabricated metal	G332	1972:1-2009:9
Machinery	G333	1972:1-2009:9
Electrical equipment	G335	1972:1-2009:9
Motor vehicles	G3361	1972:1-2009:9
Manufacturing (NAICS)	GMF	1972:1-2009:9
Newspaper	G51111	1986:1-2009:9
Periodical books and other	G51112T9	1986:1-2009:9
Pottery, ceramics, and plumbing	G32711	1986:1-2009:9
Glass and glass products	G3272	1986:1-2009:9
Clay products and refractory	G3271	1986:1-2009:9
Industrial machinery	G3332	1986:1-2009:9
Other transportation equipment	N3369	1986:1-2009:9
Navigational, measuring and other	G3345	1986:1-2009:9

Table A.2 IRF based test of symmetry to 1 s.d. shock to the real oil price ($x_t^\# = x_t^1$)

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	*0.10*	*0.06*	0.11	*0.08*	0.11	0.11	**0.04**	*0.06*	**0.02**	**0.01**	**0.02**	**0.03**	**0.04**
Foods and tobacco	0.29	0.14	0.23	0.34	0.20	**0.03**	**0.04**	*0.06*	*0.07*	*0.07*	0.11	0.13	0.16
Clothing	**0.02**	**0.04**	**0.01**	**0.01**	**0.03**	**0.04**	*0.07*	*0.09*	0.13	0.17	0.23	0.22	0.27
Durable consumer goods	**0.03**	**0.04**	*0.08*	**0.04**	*0.07*	0.10	*0.08*	*0.06*	*0.06*	*0.07*	0.11	0.13	0.16
Miscellaneous durable goods	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.04**	*0.07*	*0.07*	0.11	0.11	0.15	0.14	0.18
Nondurable consumer goods	0.20	0.27	0.29	0.18	0.27	0.12	0.11	0.16	0.21	0.20	0.24	0.28	0.35
Manufacturing (SIC)	**0.05**	**0.01**	**0.03**	**0.04**	**0.04**	**0.04**	**0.03**	**0.04**	**0.02**	**0.02**	**0.03**	**0.05**	*0.07*
Paper products	0.21	0.30	*0.06*	**0.01**	**0.02**	**0.03**	**0.05**	**0.01**	**0.02**	**0.03**	*0.06*	*0.07*	*0.10*
Chemical products	0.85	0.22	0.35	0.17	0.17	0.20	0.16	0.23	0.28	*0.10*	*0.06*	*0.07*	*0.09*
Transit equipment	0.42	**0.04**	**0.01**	**0.01**	**0.01**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.05**	*0.06*	*0.08*
Textiles materials	*0.08*	**0.01**	**0.02**	**0.03**	**0.04**	**0.01**	**0.02**	**0.03**	**0.04**	0.06	0.06	*0.09*	0.13
Paper materials	*0.08*	**0.03**	*0.06*	0.11	0.11	0.16	0.21	0.25	0.33	0.41	0.38	0.30	0.23
Chemical materials	0.71	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.02**	**0.02**	**0.04**	**0.04**	*0.06*	**0.05**	*0.07*
Motor vehicles and parts	0.68	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**
Food, beverage and tobacco	0.47	0.16	0.28	0.33	0.33	0.14	0.14	0.21	0.28	0.35	0.41	0.50	0.57
Textiles and products	0.11	*0.09*	0.18	0.27	0.39	0.34	0.42	0.49	0.59	0.66	0.74	0.62	0.68
Apparel and leather goods	**0.03**	*0.08*	0.13	0.23	0.31	0.23	0.32	0.25	0.31	0.40	0.49	0.56	0.62
Paper	0.11	**0.02**	**0.04**	*0.08*	0.11	0.14	0.16	0.22	0.30	0.33	0.40	0.44	0.48
Printing and related	**0.01**	**0.03**	**0.04**	*0.08*	0.11	0.12	0.11	0.15	0.19	0.24	0.31	0.23	0.29
Chemicals	0.69	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**
Petroleum and coal	0.26	0.17	0.27	0.41	0.55	0.66	0.75	0.83	0.88	0.92	0.94	0.94	0.96
Plastics and rubber	**0.03**	*0.07*	0.12	0.14	0.23	0.32	0.39	0.47	0.51	0.60	0.55	0.22	*0.09*
Furniture	**0.01**	**0.04**	*0.06*	0.12	0.18	0.27	0.17	0.14	0.20	0.25	0.32	0.39	0.45
Primary metal	0.32	0.19	0.30	0.40	0.47	0.54	0.61	0.70	0.70	0.78	0.84	0.87	0.83
Fabricated metal	*0.09*	**0.04**	*0.08*	*0.08*	0.13	0.21	0.29	0.38	0.47	0.56	0.65	0.61	0.68
Machinery	*0.09*	**0.03**	*0.06*	0.11	*0.07*	0.12	0.17	0.24	0.25	0.31	0.40	0.48	0.56
Electrical equipment	*0.07*	0.17	0.31	0.31	0.44	0.52	0.43	0.40	0.48	0.57	0.65	0.17	0.12
Motor vehicles	0.46	**0.01**	**0.03**	**0.02**	**0.04**	*0.07*	*0.08*	0.11	0.15	0.18	0.19	0.22	0.27
Manufacturing (NAICS)	*0.06*	**0.00**	**0.01**	**0.02**	**0.03**	**0.03**	**0.02**	**0.04**	*0.06*	*0.06*	*0.09*	*0.09*	0.12
Newspaper	0.96	0.27	0.35	0.36	0.26	0.34	0.17	0.21	0.26	0.34	0.40	0.48	0.55
Periodical books and other	0.36	0.17	0.21	*0.06*	0.11	0.17	0.25	0.34	0.40	0.49	0.55	0.63	0.68
Pottery, ceramics and plumbing	0.30	*0.06*	*0.07*	**0.04**	*0.07*	*0.10*	0.12	0.17	0.21	0.19	0.25	0.32	0.39
Glass and glass products	0.16	0.28	0.29	0.29	0.28	0.25	0.25	0.24	0.32	0.39	0.47	0.54	0.62
Clay product and refractory	0.76	0.32	0.20	0.18	0.25	0.31	0.42	0.52	0.60	0.67	0.75	0.82	0.85
Industrial machinery	0.26	0.16	0.30	0.45	0.22	0.31	0.42	0.52	0.55	0.64	0.65	0.71	0.78
Other transportation equipment	0.26	0.28	0.45	0.59	0.68	0.62	0.54	0.64	0.69	0.71	0.77	0.83	0.85
Navigational, measuring and other	0.11	0.27	0.43	0.13	0.18	0.14	0.20	0.26	0.20	0.26	0.34	0.41	0.48

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.3. IRF based test of nonlinearity for 1 s.d. shock to the real oil price $\left(x_t^\# = x_t^{12}\right)$

Sector							Horizon						
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Foods and tobacco	0.34	0.33	0.47	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clothing	0.16	0.36	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.04**	**0.04**	*0.06*	*0.07*	*0.09*	**0.01**
Durable consumer goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.03**	**0.05**	*0.06*	*0.08*	**0.01**	**0.00**	**0.01**
Nondurable consumer goods	0.11	*0.07*	**0.04**	**0.02**	**0.02**	**0.03**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (SIC)	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.01**	**0.02**	**0.01**	**0.00**	**0.01**
Paper products	0.39	0.63	0.79	*0.08*	0.14	0.20	*0.09*	0.13	0.18	0.24	0.12	0.16	0.17
Chemical products	**0.02**	**0.03**	**0.05**	**0.02**	**0.04**	*0.07*	0.11	0.12	*0.07*	*0.08*	*0.06*	*0.08*	*0.10*
Transit equipment	0.28	**0.00**	**0.01**	**0.02**	**0.03**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Textiles materials	**0.04**	0.11	0.19	0.21	0.31	0.38	0.47	0.55	0.62	0.53	0.61	0.43	0.44
Paper materials	**0.01**	**0.04**	**0.02**	**0.03**	*0.06*	*0.09*	0.13	0.20	0.26	0.30	0.37	0.42	0.48
Chemical materials	0.60	**0.03**	*0.06*	0.11	0.17	0.19	0.27	0.26	0.33	0.39	0.47	0.26	0.32
Motor vehicles and parts	0.27	**0.04**	*0.06*	0.11	0.14	0.16	0.23	0.14	0.16	0.18	0.24	0.31	0.37
Food, beverage and tobacco	0.70	0.82	0.93	0.59	0.73	0.58	0.58	0.65	0.65	0.73	0.79	0.85	0.89
Textiles and products	0.18	0.28	0.46	0.58	0.60	0.41	0.52	0.60	0.66	0.73	0.79	0.74	0.78
Apparel and leather goods	0.55	0.80	0.11	0.16	0.24	0.33	0.43	0.53	0.63	0.67	0.74	0.81	0.69
Paper	*0.10*	0.24	0.13	0.21	0.27	0.38	0.50	0.59	0.68	0.70	0.73	0.76	0.83
Printing and related	**0.02**	*0.06*	0.12	0.20	0.28	0.23	0.32	0.40	0.47	0.53	0.62	0.69	0.76
Chemicals	0.54	0.20	0.26	0.37	0.48	0.50	0.57	0.66	0.74	0.73	0.69	0.68	0.75
Petroleum and coal	0.18	0.14	0.27	0.42	0.56	0.66	0.75	0.79	0.80	0.86	0.88	0.92	0.88
Plastics and rubber	0.20	0.37	0.49	0.58	0.64	0.76	0.74	0.82	0.84	0.89	0.51	0.59	0.67
Furniture	**0.02**	*0.06*	0.12	0.17	0.26	0.26	0.35	0.40	0.49	0.52	0.55	0.60	0.65
Primary metal	0.11	**0.04**	*0.09*	0.17	0.26	0.35	0.34	0.44	0.53	0.52	0.61	0.66	0.73
Fabricated metal	*0.06*	**0.04**	*0.08*	0.15	0.23	0.33	0.43	0.53	0.59	0.56	0.52	0.60	0.68
Machinery	0.16	*0.06*	*0.09*	0.16	0.25	0.31	0.39	0.37	0.39	0.42	0.50	0.59	0.64
Electrical equipment	*0.08*	0.15	0.29	0.34	0.46	0.57	0.62	0.72	0.79	0.75	0.56	0.49	0.57
Motor vehicles	**0.04**	**0.04**	*0.09*	0.16	0.24	0.32	0.39	0.42	0.52	0.61	0.69	0.76	0.73
Manufacturing (NAICS)	*0.07*	*0.08*	0.11	0.20	0.30	0.40	0.51	0.62	0.70	0.77	0.75	0.81	0.87
Newspaper	0.14	0.21	0.29	0.42	0.41	0.53	0.50	0.61	0.69	0.75	0.82	0.84	0.89
Periodical books and other	0.41	0.69	0.68	0.66	0.74	0.84	0.80	0.87	0.91	0.94	0.96	0.98	0.98
Pottery, ceramics and plumbing	0.37	0.59	0.59	0.74	0.84	0.72	0.70	0.76	0.83	0.88	0.88	0.92	0.95
Glass and glass products	0.24	0.38	0.57	0.69	0.81	0.71	0.79	0.64	0.73	0.79	0.72	0.79	0.85
Clay product and refractory	0.17	0.27	0.45	0.51	0.52	0.51	0.62	0.71	0.77	0.84	0.83	0.87	0.91
Industrial machinery	**0.04**	0.12	0.22	0.35	0.49	0.46	0.58	0.63	0.72	0.69	0.61	0.60	0.67
Other transportation equipment	0.96	0.77	0.18	0.23	0.29	0.39	0.50	0.59	0.69	0.67	0.72	0.79	0.84
Navigational, measuring and other	0.91	0.35	0.52	0.67	0.78	0.69	0.76	0.81	0.86	0.90	0.93	0.84	0.82

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.4. IRF based test of nonlinearity for 1 s.d. shock to the real oil price $\left(x_t^{\#} = x_t^{36}\right)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.55	0.14	**0.01**	**0.01**	**0.02**	**0.04**	*0.06*	*0.08*	0.12	0.13	*0.10*	**0.01**	**0.00**
Foods and tobacco	0.51	0.77	0.36	0.22	*0.07*	0.11	0.11	**0.02**	**0.01**	**0.02**	**0.03**	**0.01**	**0.01**
Clothing	0.66	0.79	0.86	0.85	0.92	0.96	0.96	0.98	0.81	0.87	0.91	0.94	0.75
Durable consumer goods	0.44	*0.09*	**0.01**	**0.02**	**0.03**	**0.05**	*0.06*	*0.08*	*0.09*	*0.06*	*0.08*	**0.02**	**0.01**
Miscellaneous durable goods	0.32	*0.08*	**0.01**	**0.02**	**0.04**	*0.06*	*0.09*	0.12	0.17	0.21	0.14	**0.03**	**0.03**
Nondurable consumer goods	0.93	0.35	**0.05**	**0.02**	**0.04**	*0.07*	0.11	0.11	0.15	0.19	0.25	0.13	*0.06*
Manufacturing (SIC)	0.47	*0.09*	**0.00**	**0.01**	**0.02**	**0.03**	**0.05**	*0.07*	0.11	0.15	0.15	**0.02**	**0.00**
Paper products	0.95	0.87	0.55	0.56	0.55	0.66	0.70	0.37	0.45	0.54	0.62	0.75	*0.09*
Chemical products	0.60	0.26	0.36	*0.08*	**0.03**	*0.06*	*0.09*	0.13	0.19	0.25	0.26	0.16	0.20
Transit equipment	0.60	0.73	**0.01**	**0.03**	*0.06*	*0.06*	**0.03**	**0.04**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**
Textiles materials	**0.05**	0.11	0.21	0.21	0.29	0.34	0.42	0.50	0.59	0.43	0.51	0.49	0.53
Paper materials	0.15	0.34	0.21	0.33	0.28	0.39	0.50	0.58	0.68	0.75	0.82	0.67	0.66
Chemical materials	0.92	0.15	0.28	0.29	0.40	0.25	0.35	0.45	0.52	0.60	0.66	0.51	0.49
Motor vehicles and parts	0.64	**0.05**	*0.08*	0.15	0.22	0.21	0.29	0.33	0.41	0.51	0.59	0.59	0.66
Food, beverage and tobacco	0.37	*0.07*	0.14	0.24	0.30	0.24	0.12	0.15	0.19	0.25	0.33	0.38	0.41
Textiles and products	0.88	0.11	0.20	0.31	0.39	0.39	0.49	0.59	0.68	0.75	0.80	0.83	0.88
Apparel and leather goods	0.91	0.44	0.55	0.31	0.33	0.43	0.53	0.33	0.42	0.44	0.50	0.56	0.44
Paper	0.17	0.26	0.17	0.16	0.24	0.32	0.40	0.47	0.55	0.64	0.71	0.75	0.78
Printing and related	0.11	0.22	0.32	0.45	0.54	0.54	0.64	0.69	0.66	0.73	0.80	0.78	0.83
Chemicals	0.32	**0.03**	**0.02**	**0.02**	**0.03**	*0.06*	*0.08*	0.12	0.17	0.15	0.20	0.26	0.31
Petroleum and coal	**0.03**	*0.07*	0.15	**0.02**	**0.03**	**0.04**	*0.06*	*0.09*	0.12	0.16	0.21	0.28	0.35
Plastics and rubber	0.70	0.26	0.33	0.43	0.55	0.26	0.35	0.25	0.26	0.30	0.38	0.43	0.30
Furniture	*0.07*	0.18	0.31	0.44	0.55	0.26	0.35	0.32	0.33	0.38	0.42	0.46	0.54
Primary metal	*0.07*	0.18	0.31	0.44	0.55	0.26	0.35	0.32	0.33	0.38	0.42	0.46	0.54
Fabricated metal	0.11	**0.05**	**0.05**	*0.09*	0.15	0.23	0.33	0.43	0.53	0.61	0.50	0.53	0.57
Machinery	0.11	*0.06*	*0.08*	0.15	0.23	0.19	0.22	0.25	0.26	0.32	0.36	0.42	0.47
Electrical equipment	0.25	0.35	0.56	0.65	0.78	0.87	0.78	0.84	0.87	0.91	0.74	0.80	0.81
Motor vehicles	0.99	**0.04**	*0.07*	0.12	0.20	0.25	0.33	0.42	0.51	0.54	0.61	0.67	0.75
Manufacturing (NAICS)	0.60	*0.07*	0.11	0.18	0.27	0.36	0.33	0.42	0.51	0.61	0.66	0.74	0.62
Newspaper	0.12	0.13	0.18	0.14	0.21	0.24	0.34	0.43	0.53	0.62	0.71	0.78	0.80
Periodical books and other	0.62	0.16	0.30	0.45	0.53	0.65	0.45	0.48	0.54	0.61	0.70	0.75	0.81
Pottery, ceramics and plumbing	0.65	0.72	0.88	0.96	0.98	0.90	0.83	0.89	0.92	0.95	0.97	0.98	0.99
Glass and glass products	0.46	0.75	0.89	0.92	0.93	0.96	0.93	0.95	0.97	0.90	0.93	0.96	0.98
Clay product and refractory	0.61	0.36	0.55	0.67	0.75	0.81	0.80	0.86	0.91	0.93	0.93	0.95	0.96
Industrial machinery	0.12	0.30	0.48	0.63	0.63	0.56	0.51	0.62	0.71	0.77	0.68	0.71	0.70
Other transportation equipment	0.41	0.58	0.39	0.47	0.47	0.60	0.68	0.72	0.81	0.86	0.89	0.91	0.94
Navigational, measuring and other	0.72	0.25	0.18	0.25	0.21	0.29	0.35	0.40	0.49	0.46	0.52	0.60	0.63

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.5. IRF based test of symmetry for 2 s.d. shock to the real oil price $\left(x_t^\# = x_t^1\right)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.15	0.10	0.20	0.11	0.17	0.14	0.06	0.07	0.01	0.01	0.01	0.01	0.01
Foods and tobacco	0.34	0.21	0.35	0.47	0.35	0.04	0.06	0.06	0.07	0.05	0.07	0.09	0.10
Clothing	0.02	0.05	0.00	0.01	0.02	0.03	0.04	0.04	0.06	0.09	0.11	0.10	0.13
Durable consumer goods	0.04	0.04	0.08	0.03	0.06	0.09	0.06	0.02	0.03	0.03	0.04	0.05	0.06
Miscellaneous durable goods	0.01	0.02	0.02	0.02	0.05	0.07	0.11	0.11	0.14	0.14	0.19	0.16	0.20
Nondurable consumer goods	0.24	0.35	0.42	0.26	0.37	0.17	0.15	0.22	0.29	0.24	0.26	0.27	0.34
Manufacturing (SIC)	0.07	0.02	0.05	0.04	0.06	0.05	0.04	0.04	0.01	0.01	0.02	0.03	0.04
Paper products	0.27	0.38	0.06	0.00	0.01	0.02	0.03	0.00	0.00	0.01	0.01	0.01	0.01
Chemical products	0.86	0.26	0.43	0.23	0.25	0.28	0.20	0.28	0.34	0.11	0.04	0.03	0.04
Transit equipment	0.47	0.08	0.02	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Textiles materials	0.10	0.01	0.03	0.03	0.03	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.05
Paper materials	0.09	0.02	0.04	0.09	0.07	0.11	0.12	0.13	0.19	0.25	0.22	0.12	0.03
Chemical materials	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
Motor vehicles and parts	0.71	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food, beverage and tobacco	0.49	0.17	0.28	0.34	0.35	0.09	0.07	0.08	0.11	0.15	0.17	0.23	0.29
Textiles and products	0.12	0.09	0.16	0.21	0.32	0.22	0.27	0.33	0.42	0.49	0.58	0.29	0.35
Apparel and leather goods	0.02	0.06	0.06	0.12	0.16	0.05	0.08	0.02	0.02	0.03	0.06	0.08	0.10
Paper	0.11	0.01	0.02	0.05	0.06	0.08	0.08	0.11	0.15	0.15	0.16	0.12	0.11
Printing and related	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.04	0.02	0.02
Chemicals	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petroleum and coal	0.30	0.19	0.31	0.46	0.60	0.69	0.77	0.84	0.88	0.92	0.94	0.94	0.96
Plastics and rubber	0.03	0.07	0.09	0.10	0.16	0.24	0.26	0.32	0.37	0.46	0.32	0.01	0.00
Furniture	0.01	0.02	0.04	0.08	0.12	0.19	0.04	0.03	0.06	0.07	0.11	0.12	0.08
Primary metal	0.36	0.20	0.28	0.34	0.41	0.45	0.51	0.61	0.55	0.64	0.70	0.74	0.69
Fabricated metal	0.11	0.04	0.06	0.04	0.08	0.12	0.18	0.24	0.31	0.40	0.48	0.33	0.40
Machinery	0.09	0.02	0.04	0.06	0.01	0.03	0.05	0.07	0.07	0.11	0.15	0.19	0.25
Electrical equipment	0.08	0.18	0.32	0.28	0.40	0.47	0.32	0.30	0.37	0.44	0.53	0.01	0.01
Motor vehicles	0.46	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01
Manufacturing (NAICS)	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Newspaper	0.96	0.24	0.26	0.21	0.12	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Periodical books and other	0.32	0.09	0.12	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.03
Pottery, ceramics and plumbing	0.28	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Glass and glass products	0.12	0.19	0.11	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clay product and refractory	0.75	0.24	0.06	0.02	0.03	0.04	0.07	0.11	0.12	0.17	0.22	0.27	0.27
Industrial machinery	0.25	0.10	0.20	0.32	0.02	0.02	0.03	0.05	0.03	0.04	0.02	0.03	0.04
Other transportation equipment	0.22	0.17	0.29	0.33	0.44	0.22	0.16	0.22	0.25	0.24	0.18	0.23	0.25
Navigational, measuring and other	0.10	0.25	0.40	0.06	0.07	0.03	0.04	0.06	0.02	0.02	0.03	0.04	0.04

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.6. IRF based test of nonlinearity for 2 s.d. shock to the real oil price $\left(x_t^{\#} = x_t^{12}\right)$

Sector							Horizon						
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Foods and tobacco	0.38	0.44	0.61	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clothing	0.16	0.38	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.03	0.00
Durable consumer goods	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
Miscellaneous durable goods	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Nondurable consumer goods	0.11	0.10	0.07	0.02	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing (SIC)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paper products	0.39	0.56	0.69	0.06	0.09	0.13	0.01	0.02	0.03	0.04	0.01	0.01	0.00
Chemical products	0.02	0.04	0.08	0.08	0.12	0.19	0.24	0.24	0.09	0.02	0.01	0.01	0.00
Transit equipment	0.39	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Textiles materials	0.01	0.05	0.06	0.03	0.05	0.07	0.07	0.09	0.08	0.04	0.05	0.00	0.00
Paper materials	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.00
Chemical materials	0.59	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Motor vehicles and parts	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food, beverage and tobacco	0.65	0.77	0.89	0.25	0.32	0.17	0.09	0.07	0.06	0.08	0.11	0.09	0.11
Textiles and products	0.11	0.12	0.22	0.24	0.14	0.07	0.11	0.11	0.09	0.13	0.13	0.02	0.02
Apparel and leather goods	0.46	0.71	0.22	0.06	0.06	0.08	0.11	0.15	0.21	0.22	0.28	0.34	0.07
Paper	0.02	0.06	0.01	0.02	0.01	0.02	0.03	0.04	0.06	0.06	0.06	0.01	0.01
Printing and related	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	0.47	0.04	0.07	0.10	0.12	0.11	0.15	0.21	0.24	0.17	0.06	0.00	0.00
Petroleum and coal	0.12	0.04	0.09	0.16	0.26	0.36	0.45	0.46	0.42	0.48	0.51	0.60	0.23
Plastics and rubber	0.07	0.13	0.16	0.11	0.16	0.23	0.08	0.11	0.14	0.19	0.00	0.00	0.00
Furniture	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Primary metal	0.06	0.01	0.01	0.02	0.04	0.05	0.01	0.02	0.04	0.03	0.04	0.01	0.01
Fabricated metal	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00
Machinery	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical equipment	0.02	0.01	0.03	0.04	0.07	0.08	0.09	0.13	0.17	0.10	0.01	0.00	0.00
Motor vehicles	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Manufacturing (NAICS)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00	0.00
Newspaper	0.06	0.02	0.05	0.09	0.03	0.04	0.03	0.04	0.06	0.06	0.09	0.10	0.13
Periodical books and other	0.30	0.51	0.31	0.09	0.14	0.22	0.11	0.13	0.17	0.18	0.23	0.29	0.14
Pottery, ceramics and plumbing	0.24	0.26	0.17	0.28	0.40	0.14	0.12	0.18	0.25	0.30	0.34	0.42	0.50
Glass and glass products	0.11	0.08	0.11	0.11	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Clay product and refractory	0.09	0.04	0.09	0.11	0.09	0.08	0.11	0.16	0.14	0.16	0.08	0.11	0.14
Industrial machinery	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.02	0.01	0.02	0.01
Other transportation equipment	0.96	0.70	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.00
Navigational, measuring and other	0.94	0.16	0.23	0.32	0.44	0.24	0.15	0.21	0.19	0.26	0.33	0.01	0.01

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.7. IRF based test of nonlinearity for 2 s.d. shock to the real oil price ($x_t^{\#} = x_t^{36}$)

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.20	**0.01**	**0.01**	**0.02**	**0.04**	*0.06*	**0.04**	*0.06*	*0.06*	*0.09*	**0.00**	**0.00**	**0.00**
Foods and tobacco	0.17	**0.03**	*0.07*	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clothing	0.35	0.64	0.35	0.50	0.64	0.76	0.72	0.56	0.60	0.65	0.73	0.77	0.38
Durable consumer goods	0.12	**0.01**	**0.01**	**0.02**	**0.03**	**0.03**	*0.06*	*0.08*	0.11	0.13	*0.07*	**0.00**	**0.00**
Miscellaneous durable goods	**0.03**	**0.00**	**0.01**	**0.02**	**0.03**	**0.04**	*0.07*	*0.08*	*0.08*	*0.09*	**0.01**	**0.00**	**0.00**
Nondurable consumer goods	0.86	**0.03**	**0.03**	**0.01**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**
Manufacturing (SIC)	0.11	**0.00**	**0.01**	**0.02**	**0.03**	*0.06*	**0.04**	*0.06*	*0.07*	0.11	**0.01**	**0.01**	**0.01**
Paper products	0.79	0.41	0.51	0.44	0.50	0.53	0.13	0.13	0.19	0.23	**0.01**	**0.01**	**0.01**
Chemical products	*0.08*	*0.06*	0.11	**0.03**	**0.05**	*0.07*	*0.08*	*0.09*	0.13	*0.09*	**0.05**	*0.07*	**0.04**
Transit equipment	*0.07*	**0.01**	**0.03**	*0.06*	*0.07*	**0.01**	**0.03**	**0.03**	**0.02**	**0.01**	**0.01**	**0.00**	**0.00**
Textiles materials	**0.04**	0.13	0.20	0.14	0.17	0.23	0.21	0.26	0.30	0.13	0.18	*0.07*	**0.03**
Paper materials	0.15	0.28	0.13	0.21	0.22	0.30	0.38	0.41	0.51	0.57	0.53	0.17	0.14
Chemical materials	0.91	*0.10*	0.15	**0.03**	**0.05**	**0.04**	**0.05**	*0.07*	*0.10*	0.12	0.11	**0.00**	**0.00**
Motor vehicles and parts	0.66	**0.01**	**0.02**	**0.04**	*0.07*	**0.02**	**0.03**	**0.05**	*0.06*	*0.08*	0.11	0.12	0.12
Food, beverage and tobacco	0.38	*0.06*	0.13	0.19	0.21	0.17	*0.06*	**0.05**	*0.07*	0.11	0.14	0.16	0.21
Textiles and products	0.89	*0.07*	0.14	0.20	0.26	0.24	0.33	0.42	0.49	0.56	0.61	0.54	0.47
Apparel and leather goods	0.96	0.46	0.55	0.33	0.30	0.31	0.39	0.30	0.39	0.37	0.45	0.53	0.45
Paper	0.16	0.33	0.20	0.27	0.35	0.47	0.41	0.39	0.40	0.40	0.47	0.46	0.53
Printing and related	*0.07*	0.11	*0.09*	0.11	*0.09*	0.15	0.20	0.28	0.23	0.31	0.38	0.44	0.46
Chemicals	0.35	**0.01**	**0.02**	**0.01**	**0.02**	**0.03**	**0.04**	*0.06*	*0.06*	*0.08*	*0.09*	*0.09*	0.12
Petroleum and coal	**0.02**	*0.08*	0.16	**0.02**	**0.04**	*0.07*	0.11	0.16	0.18	0.23	0.27	0.23	0.20
Plastics and rubber	0.71	0.27	0.29	0.27	0.38	0.44	**0.02**	**0.03**	**0.05**	*0.07*	**0.05**	*0.07*	*0.10*
Furniture	*0.06*	0.16	0.29	0.39	0.49	*0.10*	0.13	0.19	0.25	0.31	0.18	0.22	0.17
Primary metal	**0.03**	*0.10*	0.18	0.14	0.22	0.23	0.15	0.21	0.21	0.18	0.24	0.23	0.27
Fabricated metal	*0.10*	**0.01**	**0.02**	*0.06*	*0.08*	*0.09*	0.13	0.18	0.25	0.33	0.18	0.20	0.21
Machinery	0.07	**0.01**	**0.02**	**0.02**	**0.03**	**0.04**	*0.06*	*0.06*	*0.07*	*0.09*	*0.08*	*0.10*	0.11
Electrical equipment	0.23	0.29	0.46	0.52	0.64	0.71	0.44	0.55	0.64	0.71	0.42	0.38	0.45
Motor vehicles	0.99	**0.02**	**0.02**	**0.04**	*0.07*	**0.05**	*0.06*	*0.07*	*0.10*	0.12	0.17	0.18	0.17
Manufacturing (NAICS)	0.59	**0.01**	**0.03**	**0.03**	*0.06*	*0.09*	**0.03**	*0.06*	*0.08*	0.12	0.14	*0.10*	0.13
Newspaper	0.11	**0.01**	**0.03**	**0.05**	**0.02**	**0.03**	**0.04**	*0.06*	*0.09*	0.11	0.14	0.19	0.24
Periodical books and other	0.61	*0.07*	*0.09*	0.16	0.25	0.34	0.21	0.28	0.35	0.44	0.52	0.54	0.60
Pottery, ceramics and plumbing	0.60	0.76	0.90	0.97	0.98	0.76	0.83	0.89	0.93	0.95	0.96	0.98	0.99
Glass and glass products	0.41	0.63	0.77	0.79	0.74	0.74	0.43	0.53	0.57	0.59	0.65	0.67	0.72
Clay product and refractory	0.59	0.19	0.30	0.39	0.51	0.63	0.69	0.67	0.67	0.69	0.75	0.81	0.85
Industrial machinery	*0.10*	0.14	0.17	0.26	0.28	0.35	0.39	0.44	0.46	0.55	0.35	0.35	0.36
Other transportation equipment	0.38	0.62	0.16	0.28	0.30	0.28	0.38	0.48	0.56	0.64	0.70	0.75	0.81
Navigational, measuring and other	0.71	0.19	0.27	0.42	0.28	0.22	0.11	0.16	0.21	0.19	0.16	0.21	0.26

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.8. IRF based test of symmetry to 1 s.d. shock to the nominal oil price $(x_t^{\#} = x_t^1)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.13	**0.05**	0.11	*0.08*	0.11	*0.09*	**0.04**	*0.06*	**0.01**	**0.01**	**0.02**	**0.03**	**0.04**
Foods and tobacco	0.30	0.15	0.25	0.37	0.24	**0.05**	*0.06*	*0.07*	0.11	*0.10*	0.13	0.17	0.20
Clothing	**0.02**	**0.05**	**0.01**	**0.01**	**0.03**	**0.04**	*0.07*	*0.09*	0.13	0.17	0.23	0.18	0.21
Durable consumer goods	**0.04**	**0.04**	*0.07*	**0.03**	*0.06*	0.11	*0.09*	*0.07*	*0.08*	*0.10*	0.13	0.17	0.21
Miscellaneous durable goods	**0.00**	**0.01**	**0.01**	**0.02**	**0.03**	*0.06*	*0.09*	*0.10*	0.14	0.14	0.20	0.18	0.23
Nondurable consumer goods	0.19	0.25	0.26	0.19	0.29	0.16	0.11	0.16	0.21	0.18	0.22	0.25	0.32
Manufacturing (SIC)	*0.07*	**0.01**	**0.03**	**0.04**	**0.03**	**0.03**	**0.03**	**0.04**	**0.02**	**0.02**	**0.03**	**0.04**	*0.07*
Paper products	0.27	0.38	**0.05**	**0.01**	**0.02**	**0.03**	*0.06*	**0.01**	**0.02**	**0.04**	*0.06*	*0.08*	0.11
Chemical products	0.79	0.22	0.35	0.21	0.22	0.24	0.21	0.29	0.33	0.11	*0.07*	*0.08*	0.11
Transit equipment	0.46	*0.07*	**0.03**	**0.01**	**0.02**	**0.04**	*0.06*	**0.05**	**0.04**	**0.04**	*0.06*	*0.08*	*0.10*
Textiles materials	*0.09*	**0.01**	**0.03**	**0.04**	**0.05**	**0.01**	**0.03**	**0.04**	**0.05**	*0.07*	*0.08*	0.11	0.15
Paper materials	0.14	**0.03**	*0.06*	0.12	0.12	0.18	0.24	0.31	0.39	0.47	0.40	0.30	0.23
Chemical materials	0.77	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.03**	**0.03**	**0.04**	**0.04**	*0.06*	*0.06*	*0.08*
Motor vehicles and parts	0.66	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**
Food, beverage and tobacco	0.47	0.17	0.29	0.33	0.32	0.16	0.16	0.23	0.31	0.37	0.44	0.53	0.61
Textiles and products	0.11	*0.08*	0.17	0.25	0.38	0.36	0.43	0.48	0.57	0.64	0.73	0.61	0.67
Apparel and leather goods	**0.04**	0.11	0.16	0.27	0.37	0.27	0.37	0.29	0.36	0.45	0.54	0.62	0.68
Paper	0.17	**0.02**	**0.04**	*0.08*	0.11	0.15	0.18	0.25	0.34	0.36	0.43	0.46	0.49
Printing and related	**0.01**	**0.03**	**0.05**	*0.08*	0.12	0.14	0.13	0.17	0.21	0.25	0.32	0.26	0.33
Chemicals	0.74	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**
Petroleum and coal	0.21	0.15	0.24	0.37	0.51	0.62	0.72	0.81	0.86	0.90	0.92	0.93	0.94
Plastics and rubber	**0.04**	*0.07*	0.12	0.17	0.26	0.36	0.44	0.53	0.56	0.63	0.57	0.25	0.14
Furniture	**0.01**	**0.03**	*0.06*	0.12	0.19	0.28	0.22	0.20	0.27	0.32	0.40	0.46	0.53
Primary metal	0.39	0.16	0.27	0.37	0.42	0.50	0.58	0.67	0.65	0.74	0.81	0.84	0.84
Fabricated metal	*0.08*	**0.03**	*0.07*	*0.08*	0.13	0.21	0.29	0.38	0.47	0.57	0.65	0.62	0.69
Machinery	0.12	**0.03**	*0.07*	0.12	*0.08*	0.13	0.19	0.26	0.28	0.36	0.45	0.53	0.62
Electrical equipment	*0.07*	0.17	0.31	0.35	0.47	0.55	0.49	0.47	0.57	0.65	0.73	0.23	0.17
Motor vehicles	0.44	**0.01**	**0.03**	**0.02**	**0.03**	**0.03**	**0.03**	0.11	0.15	0.19	0.22	0.26	0.31
Manufacturing (NAICS)	*0.06*	**0.00**	**0.01**	**0.02**	**0.03**	**0.03**	**0.03**	**0.04**	*0.07*	*0.07*	*0.09*	*0.10*	0.13
Newspaper	0.95	0.28	0.36	0.35	0.25	0.34	0.17	0.21	0.27	0.35	0.39	0.47	0.54
Periodical books and other	0.41	0.19	0.23	*0.06*	0.11	0.18	0.26	0.35	0.42	0.51	0.56	0.65	0.69
Pottery, ceramics and plumbing	0.29	**0.05**	*0.06*	**0.03**	*0.06*	*0.09*	0.11	0.16	0.20	0.18	0.23	0.30	0.37
Glass and glass products	0.17	0.29	0.30	0.29	0.28	0.24	0.24	0.24	0.32	0.40	0.47	0.54	0.62
Clay product and refractory	0.67	0.28	0.19	0.16	0.22	0.28	0.38	0.49	0.57	0.63	0.71	0.78	0.83
Industrial machinery	0.32	0.16	0.31	0.46	0.23	0.32	0.42	0.53	0.55	0.65	0.64	0.71	0.77
Other transportation equipment	0.29	0.32	0.47	0.61	0.71	0.65	0.58	0.69	0.73	0.75	0.81	0.86	0.87
Navigational, measuring and other	0.11	0.26	0.41	0.12	0.17	0.16	0.23	0.30	0.23	0.29	0.37	0.44	0.52

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.9. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{12}\right)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Foods and tobacco	0.19	0.23	0.40	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clothing	0.18	0.36	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Durable consumer goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Nondurable consumer goods	**0.05**	**0.05**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (SIC)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Paper products	0.58	0.11	0.20	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Chemical products	**0.00**	**0.01**	**0.03**	**0.01**	**0.02**	**0.04**	*0.07*	**0.00**	0.13	*0.08*	**0.03**	**0.04**	*0.06*
Transit equipment	0.33	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Textiles materials	**0.00**	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.01**	**0.02**
Paper materials	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Chemical materials	0.15	**0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.03**	**0.02**	**0.02**
Motor vehicles and parts	*0.06*	**0.01**	**0.02**	**0.05**	**0.04**	**0.03**	**0.05**	**0.02**	**0.02**	**0.02**	**0.03**	**0.05**	**0.04**
Food, beverage and tobacco	0.61	0.60	0.75	0.53	0.67	0.30	0.24	0.27	0.15	0.20	0.26	0.33	0.40
Textiles and products	*0.09*	0.23	0.40	0.51	0.50	0.16	0.22	0.28	0.36	0.45	0.51	0.47	0.55
Apparel and leather goods	0.51	0.76	*0.06*	*0.07*	*0.08*	0.12	0.18	0.21	0.28	0.35	0.42	0.51	0.41
Paper	**0.04**	*0.10*	**0.02**	**0.03**	*0.06*	*0.09*	0.14	0.16	0.22	0.23	0.26	0.32	0.38
Printing and related	**0.01**	**0.02**	**0.05**	*0.09*	0.13	*0.08*	0.13	0.19	0.26	0.33	0.41	0.46	0.55
Chemicals	0.38	*0.09*	*0.10*	0.14	0.21	0.24	0.29	0.36	0.44	0.30	0.35	0.38	0.43
Petroleum and coal	0.25	0.12	0.22	0.33	0.47	0.55	0.65	0.69	0.71	0.77	0.80	0.85	0.69
Plastics and rubber	*0.06*	0.15	0.28	0.43	0.50	0.63	0.57	0.68	0.69	0.77	0.26	0.32	0.32
Furniture	**0.01**	**0.03**	*0.06*	*0.09*	*0.10*	0.11	0.17	0.21	0.28	0.33	0.38	0.42	0.50
Primary metal	0.19	**0.02**	*0.06*	0.11	0.17	0.25	0.21	0.27	0.36	0.36	0.43	0.45	0.53
Fabricated metal	**0.02**	**0.01**	**0.02**	**0.05**	*0.08*	0.13	0.20	0.26	0.33	0.36	0.35	0.41	0.49
Machinery	*0.09*	**0.01**	**0.01**	**0.02**	**0.04**	**0.05**	*0.07*	*0.07*	*0.07*	*0.07*	*0.09*	0.13	0.18
Electrical equipment	**0.04**	0.11	0.18	0.16	0.25	0.34	0.42	0.49	0.56	0.46	0.22	0.20	0.22
Motor vehicles	**0.01**	**0.02**	*0.06*	*0.09*	0.14	0.18	0.24	0.27	0.33	0.42	0.51	0.58	0.60
Manufacturing (NAICS)	**0.02**	**0.03**	**0.03**	*0.06*	*0.10*	0.14	0.21	0.29	0.35	0.44	0.43	0.52	0.57
Newspaper	0.18	0.23	0.36	0.49	0.47	0.59	0.60	0.71	0.72	0.79	0.85	0.87	0.91
Periodical books and other	0.37	0.66	0.71	0.62	0.73	0.83	0.79	0.87	0.92	0.94	0.96	0.98	0.97
Pottery, ceramics and plumbing	0.28	0.48	0.50	0.66	0.77	0.70	0.67	0.74	0.82	0.86	0.83	0.88	0.92
Glass and glass products	0.22	0.34	0.52	0.64	0.77	0.69	0.77	0.59	0.68	0.73	0.69	0.77	0.82
Clay product and refractory	0.11	0.20	0.36	0.44	0.48	0.46	0.54	0.63	0.64	0.73	0.70	0.76	0.82
Industrial machinery	**0.04**	0.12	0.22	0.34	0.48	0.47	0.58	0.61	0.71	0.66	0.55	0.56	0.64
Other transportation equipment	0.91	0.82	0.14	0.19	0.25	0.35	0.46	0.52	0.62	0.61	0.67	0.74	0.79
Navigational, measuring and other	0.97	0.42	0.58	0.69	0.77	0.66	0.75	0.83	0.87	0.92	0.94	0.82	0.78

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.10. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{36}\right)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Foods and tobacco	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clothing	0.83	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Durable consumer goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Nondurable consumer goods	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (SIC)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Paper products	0.41	0.52	0.20	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemical products	**0.02**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Transit equipment	0.26	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Textiles materials	**0.02**	*0.06*	0.13	*0.08*	**0.03**	*0.06*	*0.06*	**0.04**	*0.06*	**0.04**	*0.06*	**0.02**	**0.02**
Paper materials	*0.06*	*0.06*	0.12	*0.07*	0.12	0.18	0.25	0.29	0.37	0.43	0.47	0.27	0.31
Chemical materials	0.76	**0.02**	**0.01**	**0.02**	**0.04**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	*0.06*	**0.05**	**0.01**
Motor vehicles and parts	*0.06*	**0.03**	*0.07*	0.11	0.19	0.11	0.16	*0.06*	*0.06*	**0.03**	**0.04**	*0.06*	*0.08*
Food, beverage and tobacco	**0.02**	**0.01**	**0.02**	**0.03**	**0.03**	**0.04**	**0.03**	**0.04**	*0.06*	*0.08*	*0.10*	0.13	0.16
Textiles and products	0.52	*0.07*	0.12	0.15	0.22	0.20	0.22	0.26	0.32	0.22	0.24	0.29	0.36
Apparel and leather goods	0.60	0.48	0.35	0.26	0.21	0.28	0.36	0.27	0.35	0.42	0.50	0.59	0.57
Paper	0.12	*0.06*	0.12	0.11	0.18	0.27	0.20	0.22	0.29	0.33	0.38	0.44	0.49
Printing and related	0.11	0.24	0.41	0.34	0.48	0.58	0.65	0.73	0.80	0.84	0.89	0.75	0.80
Chemicals	0.57	**0.02**	**0.01**	**0.04**	**0.01**	**0.01**	**0.02**	**0.02**	**0.03**	**0.04**	*0.06*	*0.08*	*0.10*
Petroleum and coal	**0.01**	**0.03**	*0.07*	**0.03**	*0.06*	*0.09*	0.13	0.19	0.23	0.26	0.34	0.40	0.48
Plastics and rubber	0.50	0.45	0.52	0.58	0.72	0.82	0.14	*0.06*	*0.10*	0.13	0.18	0.19	0.14
Furniture	0.18	0.41	0.60	0.70	0.82	0.37	0.47	0.45	0.38	0.48	0.36	0.43	0.48
Primary metal	0.47	0.41	0.36	0.26	0.37	0.48	0.43	0.49	0.53	0.61	0.67	0.63	0.68
Fabricated metal	*0.10*	**0.03**	**0.02**	**0.03**	**0.04**	*0.07*	0.11	0.17	0.23	0.31	0.12	0.12	0.16
Machinery	0.21	**0.04**	**0.04**	*0.08*	0.14	*0.10*	0.14	0.19	0.17	0.24	0.30	0.36	0.43
Electrical equipment	0.64	0.36	0.54	0.66	0.73	0.84	0.65	0.62	0.68	0.76	0.62	0.69	0.66
Motor vehicles	*0.06*	0.11	0.19	0.31	0.43	0.52	0.62	0.69	0.77	0.74	0.80	0.81	0.83
Manufacturing (NAICS)	0.38	**0.05**	**0.04**	**0.04**	*0.07*	*0.08*	*0.08*	*0.10*	0.14	0.20	0.23	0.28	0.16
Newspaper	0.21	0.14	0.24	0.27	0.33	0.45	0.56	0.66	0.75	0.81	0.86	0.90	0.89
Periodical books and other	0.77	0.19	0.28	0.42	0.53	0.66	0.42	0.49	0.50	0.59	0.67	0.74	0.80
Pottery, ceramics and plumbing	0.50	0.43	0.62	0.78	0.88	0.85	0.81	0.88	0.91	0.95	0.97	0.98	0.99
Glass and glass products	0.32	0.58	0.77	0.84	0.90	0.95	0.92	0.93	0.95	0.89	0.91	0.94	0.96
Clay product and refractory	0.88	0.22	0.37	0.53	0.68	0.78	0.76	0.84	0.89	0.92	0.91	0.94	0.94
Industrial machinery	0.29	0.46	0.64	0.75	0.80	0.82	0.81	0.88	0.91	0.91	0.75	0.81	0.79
Other transportation equipment	0.33	0.54	0.33	0.41	0.52	0.61	0.71	0.80	0.86	0.91	0.94	0.96	0.98
Navigational, measuring and other	0.84	0.36	0.34	0.43	0.45	0.55	0.55	0.63	0.72	0.71	0.78	0.84	0.85

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.11. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price

Sector	x_t^1				x_t^{12}				x_t^{36}			
	0	1	6	12	0	1	6	12	0	1	6	12
Total index	0.13	__0.05__	__0.04__	__0.04**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__
Foods and tobacco	0.30	0.15	_0.06_	0.20	0.19	0.23	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__
Clothing	__0.02__	__0.05__	_0.07_	0.21	0.18	0.36	__0.00**__	__0.00**__	0.83	0.84	__0.00**__	__0.00**__
Durable consumer goods	__0.04__	__0.04__	_0.09_	0.21	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__
Miscellaneous durable goods	__0.00**__	__0.01__	_0.09_	0.23	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__
Nondurable consumer goods	0.19	0.25	0.11	0.32	__0.05__	__0.05__	__0.00**__	__0.00**__	__0.01*__	__0.00**__	__0.00**__	__0.00**__
Manufacturing (SIC)	_0.07_	__0.01__	__0.03__	_0.07**_	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__	__0.00**__
Paper products	0.27	0.38	0.06	__0.11*__	0.58	0.11	__0.00**__	__0.00**__	0.41	0.52	__0.01**__	__0.00**__
Chemical products	0.79	0.22	0.21	__0.11*__	__0.00*__	__0.01*__	_0.07**_	_0.06**_	0.02	__0.00**__	__0.00**__	__0.00**__
Transit equipment	0.46	_0.07_	_0.06_	_0.10**_	0.33	__0.00**__	__0.00**__	__0.00**__	0.26	__0.00**__	__0.00**__	__0.00**__
Textiles materials	_0.09_	__0.01__	__0.03**__	__0.15*__	__0.00**__	__0.01*__	__0.01**__	__0.02**__	__0.02__	_0.06_	_0.06*_	__0.02**__
Paper materials	0.14	__0.03__	0.24	0.23	__0.00**__	__0.01**__	__0.00**__	__0.01**__	_0.06_	_0.06_	0.25	0.31
Chemical materials	0.77	__0.00**__	__0.03**__	_0.08**_	0.15	__0.01**__	__0.01**__	__0.02**__	0.76	__0.02*__	__0.01**__	__0.01**__
Motor vehicles and parts	0.66	__0.01__	__0.00**__	__0.00**__	_0.06_	__0.01**__	__0.05**__	__0.04**__	_0.06_	0.03	0.16	_0.08**_
Food, beverage and tobacco	0.47	0.17	0.16	0.61	0.61	0.60	0.24	0.40	__0.02__	__0.01**__	__0.03**__	_0.16*_
Textiles and products	0.11	_0.08_	0.43	0.67	_0.09_	0.23	0.22	0.55	0.52	_0.07_	0.22	0.36
Apparel and leather goods	__0.04__	0.11	0.37	0.68	0.51	0.76	0.18	0.41	0.60	0.48	0.36	0.57
Paper	_0.17_	__0.02__	0.18	0.49	__0.04__	_0.10_	0.14	0.38	0.12	_0.06_	0.20	0.49
Printing and related	__0.01__	__0.03__	0.13	0.33	__0.01*__	__0.02__	0.13	0.55	0.11	0.24	0.65	0.80
Chemicals	0.74	__0.00**__	__0.00**__	__0.02**__	0.38	0.09	0.29	0.43	0.57	__0.02**__	__0.02**__	__0.10**__
Petroleum and coal	0.21	0.15	0.72	0.94	0.25	0.12	0.65	0.69	__0.01*__	__0.03__	0.13	0.48
Plastics and rubber	__0.04__	_0.07_	0.44	_0.14*_	_0.06_	0.15	0.57	0.32	0.50	0.45	0.14	_0.14*_
Furniture	__0.01__	__0.03__	0.22	0.53	__0.01*__	__0.03__	0.17	0.50	0.18	0.41	0.47	0.48
Primary metal	0.39	0.16	0.58	0.84	0.19	__0.02__	0.21	0.53	0.47	0.41	0.43	0.68
Fabricated metal	_0.08_	__0.03__	0.29	0.69	__0.02__	__0.01*__	0.20	0.49	_0.10_	__0.03__	0.11	_0.16*_
Machinery	0.12	__0.03__	0.19	0.62	0.09	__0.01*__	_0.07*_	__0.18**__	0.21	__0.04__	0.14	0.43
Electrical equipment	_0.07_	0.17	0.49	0.17	__0.04__	0.11	0.42	_0.22*_	0.64	0.36	0.65	0.66
Motor vehicles	0.44	__0.01__	_0.07_	0.31	__0.01__	__0.02__	0.24	0.60	_0.06_	0.11	0.62	0.83
Manufacturing (NAICS)	_0.06_	__0.00__	__0.03*__	__0.13*__	__0.02__	__0.03__	0.21	0.57	0.38	__0.05__	0.56	_0.16*_
Newspaper	0.95	0.28	0.17	0.54	0.18	0.23	0.60	0.91	0.21	0.14	0.56	0.89
Periodical books and other	0.41	0.19	0.26	0.69	0.37	0.66	0.79	0.97	0.77	0.19	0.42	0.80
Pottery, ceramics and plumbing	0.29	__0.05__	0.11	0.37	0.28	0.48	0.67	0.92	0.50	0.43	0.81	0.99
Glass and glass products	0.17	0.29	0.24	0.62	0.22	0.34	0.77	0.82	0.32	0.58	0.92	0.96
Clay product and refractory	0.67	0.28	0.38	0.83	0.11	0.20	0.54	0.82	0.88	0.22	0.76	0.94
Industrial machinery	0.32	0.16	0.42	0.77	__0.04__	0.12	0.58	0.64	0.29	0.46	0.81	0.79
Other transportation equipment	0.29	0.32	0.58	0.87	0.91	0.82	0.46	0.79	0.33	0.54	0.71	0.98
Navigational inst.	0.11	0.26	0.23	0.52	0.97	0.42	0.75	0.78	0.84	0.36	0.55	0.85

Notes: based on 1000 simulations of model (5). p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.** and * denote significance after accounting for data mining at a 5% and 10% level, respectively.

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Table A.12. IRF based test of symmetry for 2 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^1\right)$

	Horizon												
Sector	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.19	*0.08*	0.17	0.11	0.16	0.12	*0.06*	*0.07*	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Foods and tobacco	0.35	0.22	0.36	0.51	0.39	*0.06*	*0.06*	*0.07*	*0.10*	*0.06*	*0.09*	0.11	0.12
Clothing	**0.02**	**0.05**	**0.00**	**0.01**	**0.02**	**0.02**	**0.04**	**0.03**	*0.06*	*0.08*	*0.09*	*0.07*	*0.09*
Durable consumer goods	**0.04**	**0.03**	*0.07*	**0.03**	**0.05**	0.08	0.06	**0.03**	**0.03**	**0.03**	**0.05**	*0.06*	*0.08*
Miscellaneous durable goods	**0.01**	**0.03**	**0.02**	**0.03**	*0.06*	*0.09*	0.14	0.14	0.18	0.19	0.23	0.18	0.23
Nondurable consumer goods	0.24	0.33	0.39	0.28	0.40	0.21	0.16	0.22	0.29	0.21	0.23	0.24	0.30
Manufacturing (SIC)	0.11	**0.02**	**0.04**	**0.04**	**0.05**	**0.04**	**0.04**	**0.04**	**0.01**	**0.01**	**0.02**	**0.02**	**0.04**
Paper products	0.34	*0.47*	*0.06*	**0.00**	**0.01**	**0.02**	**0.03**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**
Chemical products	0.81	0.26	0.42	0.28	0.30	0.32	0.26	0.35	0.40	0.13	**0.04**	**0.05**	*0.07*
Transit equipment	0.51	0.11	**0.03**	**0.01**	**0.01**	**0.03**	**0.02**	**0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**
Textiles materials	0.11	**0.01**	**0.03**	**0.04**	**0.04**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.03**	**0.04**	0.06
Paper materials	0.15	**0.02**	**0.04**	*0.09*	*0.07*	0.12	0.15	0.18	0.25	0.30	0.24	0.11	**0.02**
Chemical materials	0.77	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Motor vehicles and parts	0.68	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Food, beverage and tobacco	0.49	0.18	0.27	0.33	0.33	0.11	*0.08*	*0.08*	0.12	0.14	0.17	0.23	0.29
Textiles and products	0.11	*0.08*	0.14	0.19	0.30	0.22	0.27	0.31	0.39	0.46	0.55	0.25	0.31
Apparel and leather goods	**0.02**	*0.06*	*0.07*	**0.04**	0.19	**0.05**	*0.08*	**0.02**	**0.02**	**0.03**	*0.06*	*0.07*	*0.09*
Paper	0.17	**0.01**	**0.02**	**0.04**	*0.06*	*0.08*	*0.08*	0.11	0.16	0.16	0.16	0.11	*0.09*
Printing and related	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.04**	**0.02**	**0.02**
Chemicals	0.76	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Petroleum and coal	0.23	0.17	0.25	0.39	0.54	0.64	0.73	0.81	0.85	0.90	0.92	0.92	0.94
Plastics and rubber	**0.03**	*0.06*	*0.08*	*0.10*	0.16	0.24	0.26	0.33	0.35	0.42	0.28	**0.00**	**0.00**
Furniture	**0.01**	**0.02**	**0.03**	*0.07*	*0.08*	0.16	*0.06*	**0.05**	*0.08*	*0.10*	0.14	0.15	0.11
Primary metal	0.43	0.15	0.24	0.28	0.33	0.37	0.43	0.53	0.43	0.53	0.60	0.64	0.64
Fabricated metal	*0.09*	**0.02**	**0.04**	**0.03**	*0.06*	0.11	0.15	0.21	0.28	0.37	0.45	0.30	0.34
Machinery	0.12	0.20	0.11	*0.08*	**0.02**	**0.03**	*0.06*	*0.08*	*0.08*	0.12	0.17	0.21	0.27
Electrical equipment	*0.07*	0.16	0.30	0.30	0.42	0.50	0.38	0.38	0.46	0.54	0.63	**0.01**	**0.01**
Motor vehicles	0.43	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Manufacturing (NAICS)	**0.05**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**
Newspaper	0.95	0.25	0.27	0.19	*0.08*	0.12	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Periodical books and other	0.37	0.12	0.15	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.02**	**0.03**
Pottery, ceramics and plumbing	0.27	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Glass and glass products	0.13	0.20	0.11	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clay product and refractory	0.65	0.19	*0.06*	**0.01**	**0.02**	**0.02**	**0.04**	*0.07*	*0.08*	0.12	0.16	0.20	0.22
Industrial machinery	0.31	0.11	0.20	0.33	**0.02**	**0.02**	**0.03**	**0.05**	**0.03**	**0.04**	**0.02**	**0.02**	**0.03**
Other transportation equipment	0.25	0.22	0.31	0.35	0.48	0.25	0.19	0.27	0.28	0.29	0.24	0.29	0.29
Navigational, measuring and other	*0.09*	0.23	0.37	**0.04**	*0.06*	**0.04**	**0.05**	*0.07*	**0.02**	**0.02**	**0.04**	**0.04**	**0.05**

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.13. IRF based test of nonlinearity for 2 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{12}\right)$

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Foods and tobacco	0.39	0.48	0.67	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clothing	0.34	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Durable consumer goods	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.06	0.08	0.09	0.01	0.00	0.00
Miscellaneous durable goods	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nondurable consumer goods	0.16	0.17	0.14	0.02	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing (SIC)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Paper products	0.70	0.38	0.56	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.00	0.00	0.00
Chemical products	0.03	0.08	0.16	0.16	0.23	0.33	0.44	0.54	0.62	0.48	0.18	0.13	0.07
Transit equipment	0.56	0.04	0.03	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Textiles materials	0.01	0.02	0.05	0.02	0.02	0.02	0.02	0.03	0.01	0.01	0.01	0.00	0.00
Paper materials	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.01	0.01	0.00	0.00
Chemical materials	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor vehicles and parts	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food, beverage and tobacco	0.61	0.59	0.78	0.33	0.41	0.18	0.08	0.05	0.02	0.03	0.04	0.06	0.08
Textiles and products	0.07	0.17	0.31	0.34	0.22	0.06	0.08	0.09	0.09	0.12	0.12	0.03	0.03
Apparel and leather goods	0.47	0.72	0.02	0.03	0.03	0.06	0.08	0.09	0.13	0.15	0.21	0.25	0.06
Paper	0.01	0.04	0.00	0.01	0.01	0.02	0.04	0.04	0.06	0.06	0.06	0.01	0.01
Printing and related	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	0.35	0.02	0.02	0.04	0.06	0.04	0.07	0.10	0.13	0.03	0.02	0.00	0.00
Petroleum and coal	0.21	0.07	0.14	0.24	0.35	0.44	0.53	0.52	0.52	0.55	0.60	0.68	0.22
Plastics and rubber	0.01	0.02	0.04	0.07	0.11	0.15	0.06	0.09	0.11	0.16	0.00	0.00	0.00
Furniture	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Primary metal	0.18	0.01	0.01	0.02	0.04	0.02	0.02	0.03	0.04	0.05	0.07	0.02	0.02
Fabricated metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.00	0.00
Machinery	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical equipment	0.02	0.03	0.07	0.07	0.13	0.17	0.20	0.27	0.36	0.22	0.01	0.00	0.00
Motor vehicles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manufacturing (NAICS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Newspaper	0.11	0.04	0.09	0.13	0.05	0.07	0.07	0.07	0.07	0.06	0.08	0.11	0.13
Periodical books and other	0.26	0.50	0.42	0.08	0.14	0.21	0.11	0.14	0.20	0.21	0.26	0.32	0.14
Pottery, ceramics and plumbing	0.16	0.17	0.11	0.19	0.26	0.11	0.09	0.13	0.19	0.21	0.22	0.28	0.35
Glass and glass products	0.11	0.06	0.08	0.07	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Clay product and refractory	0.06	0.03	0.06	0.08	0.10	0.09	0.11	0.15	0.12	0.12	0.06	0.07	0.11
Industrial machinery	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Other transportation equipment	0.90	0.73	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Navigational, measuring and other	0.93	0.26	0.39	0.44	0.56	0.35	0.29	0.38	0.36	0.44	0.53	0.01	0.01

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.14. IRF based test of nonlinearity for 2 s.d. shock to the nominal oil price $\left(x_t^{\#} = x_t^{36}\right)$

Sector						Horizon							
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.03**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**
Foods and tobacco	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Clothing	0.87	0.93	**0.03**	*0.06*	*0.06*	0.11	0.15	0.14	0.14	0.19	0.22	0.24	*0.06*
Durable consumer goods	**0.00**	**0.00**	**0.00**	**0.01**	**0.02**	**0.04**	*0.06*	*0.06*	*0.06*	**0.04**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Nondurable consumer goods	0.12	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (SIC)	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**
Paper products	0.60	0.76	0.59	0.29	0.42	0.13	*0.09*	0.11	0.12	0.15	0.15	0.16	0.16
Chemical products	*0.07*	**0.02**	*0.06*	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.04**	**0.04**	**0.03**	**0.04**	**0.04**
Transit equipment	0.47	**0.02**	**0.01**	**0.02**	**0.03**	**0.01**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Textiles materials	*0.07*	0.18	0.32	0.20	0.17	0.20	0.24	0.28	0.31	0.21	0.27	0.11	*0.08*
Paper materials	0.15	0.24	0.12	0.19	0.29	0.40	0.52	0.51	0.61	0.64	0.72	0.24	0.16
Chemical materials	0.80	**0.02**	**0.03**	**0.04**	*0.08*	**0.05**	*0.06*	*0.09*	0.13	0.18	0.19	**0.01**	**0.01**
Motor vehicles and parts	0.15	**0.02**	**0.05**	*0.10*	0.16	*0.08*	*0.09*	0.12	0.14	*0.09*	0.12	0.16	0.16
Food, beverage and tobacco	**0.04**	**0.02**	**0.03**	*0.06*	**0.05**	*0.07*	**0.03**	**0.01**	**0.02**	**0.03**	**0.05**	*0.06*	*0.08*
Textiles and products	0.57	*0.09*	0.18	0.24	0.25	0.25	0.34	0.43	0.46	0.31	0.34	0.38	0.36
Apparel and leather goods	0.64	0.50	0.38	0.42	0.26	0.25	0.27	0.15	0.21	0.17	0.22	0.26	0.25
Paper	0.11	0.17	0.15	0.23	0.32	0.41	0.40	0.35	0.29	0.29	0.36	0.39	0.47
Printing and related	*0.08*	0.14	0.21	*0.10*	0.11	0.17	0.23	0.32	0.38	0.45	0.53	0.50	0.52
Chemicals	0.63	**0.00**	**0.01**	**0.01**	**0.02**	**0.04**	**0.04**	*0.06*	*0.07*	0.11	0.12	*0.09*	0.11
Petroleum and coal	**0.02**	*0.06*	0.11	**0.04**	*0.06*	*0.10*	0.15	0.21	0.22	0.29	0.36	0.29	0.28
Plastics and rubber	0.54	0.41	0.38	0.33	0.40	0.53	**0.01**	**0.01**	**0.02**	**0.03**	**0.03**	**0.04**	*0.06*
Furniture	0.15	0.33	0.52	0.58	0.72	0.13	0.13	0.18	0.25	0.27	0.18	0.21	0.20
Primary metal	0.48	0.32	0.45	0.48	0.43	0.35	0.20	0.28	0.34	0.30	0.35	0.42	0.44
Fabricated metal	0.14	**0.00**	**0.01**	**0.03**	*0.06*	*0.06*	*0.08*	0.12	0.17	0.23	0.12	0.14	0.14
Machinery	0.21	**0.01**	**0.02**	**0.02**	**0.02**	**0.04**	*0.07*	*0.06*	*0.10*	0.11	0.14	0.19	0.21
Electrical equipment	0.68	0.32	0.51	0.65	0.65	0.67	0.30	0.40	0.44	0.51	0.38	0.28	0.35
Motor vehicles	*0.09*	*0.06*	**0.04**	*0.06*	*0.10*	0.11	**0.04**	**0.05**	*0.07*	*0.09*	0.12	*0.08*	*0.09*
Manufacturing (NAICS)	0.41	**0.01**	**0.03**	**0.03**	**0.05**	*0.08*	**0.04**	*0.06*	*0.09*	0.11	0.14	*0.06*	*0.08*
Newspaper	0.16	**0.02**	**0.05**	*0.08*	**0.02**	**0.02**	**0.03**	**0.05**	*0.06*	*0.07*	0.11	0.14	0.19
Periodical books and other	0.76	*0.09*	*0.06*	0.11	0.18	0.26	*0.09*	0.13	0.17	0.23	0.29	0.31	0.35
Pottery, ceramics and plumbing	0.45	0.47	0.67	0.81	0.90	0.76	0.82	0.89	0.93	0.95	0.96	0.98	0.99
Glass and glass products	0.25	0.34	0.48	0.53	0.59	0.68	0.47	0.57	0.56	0.54	0.63	0.70	0.75
Clay product and refractory	0.84	0.13	0.24	0.37	0.51	0.64	0.66	0.72	0.65	0.65	0.71	0.78	0.80
Industrial machinery	0.26	0.24	0.27	0.33	0.41	0.53	0.55	0.62	0.65	0.71	0.44	0.40	0.38
Other transportation equipment	0.25	0.49	*0.06*	*0.09*	0.15	0.14	0.21	0.28	0.36	0.44	0.52	0.56	0.64
Navigational, measuring and other	0.82	0.19	0.28	0.42	0.38	0.34	0.14	0.20	0.20	0.23	0.15	0.20	0.26

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.15. IRF based test of nonlinearity for 2 s.d. shock to the nominal oil price

	x_t^1					x_t^{12}				x_t^{36}			
Sector	0	1	6	7	12	0	1	6	12	0	1	6	12
Total index	0.19	0.08	0.06	0.07	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	0.03	**0.00**	0.00	**0.00****
Foods and tobacco	0.35	0.22	0.06	0.07	0.12	0.39	0.48	**0.00**	**0.00**	0.00	**0.00****	**0.00****	**0.00****
Clothing	**0.02**	**0.05**	**0.04**	**0.03**	0.09	0.34	0.58	**0.00**	0.00	0.87	0.93	0.15	0.06
Durable consumer goods	**0.04**	**0.03**	0.06	**0.03**	0.08	**0.00**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	0.06	**0.00****
Miscellaneous durable goods	**0.01**	**0.03**	0.14	0.14	0.23	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00****
Nondurable consumer goods	0.24	0.33	0.16	0.22	0.30	0.16	0.17	**0.00**	**0.00**	0.12	**0.00****	**0.00****	**0.00****
Manufacturing (SIC)	0.11	**0.02**	**0.04**	**0.04**	**0.04**	**0.01**	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00****
Paper products	0.34	0.47	**0.03**	**0.00**	**0.01**	0.70	0.38	**0.01**	**0.00**	0.60	0.76	0.09	0.00
Chemical products	0.81	0.26	0.26	0.35	0.07	**0.03**	0.08	0.44	0.07	0.07	**0.02**	**0.01**	**0.04**
Transit equipment	0.51	0.11	**0.02**	**0.01**	**0.00**	0.56	**0.04**	**0.00**	**0.00**	0.47	**0.02**	**0.01**	**0.00****
Textiles materials	0.11	**0.01**	**0.01**	**0.02**	0.06	**0.01**	**0.02**	**0.02**	**0.00**	0.07	0.18	0.24	0.08
Paper materials	0.15	**0.02**	0.15	0.18	**0.02**	**0.00**	**0.01**	**0.01**	**0.00**	0.15	0.24	0.52	0.16
Chemical materials	0.77	**0.00**	**0.00**	**0.00**	**0.00**	0.23	**0.00**	**0.00**	**0.00**	0.80	**0.02**	0.06	**0.01**
Motor vehicles and parts	0.68	**0.00**	**0.00**	**0.00**	**0.00**	0.11	**0.00**	**0.00**	**0.00**	0.15	**0.02**	0.09	0.16
Food, beverage and tobacco	0.49	0.18	0.08	0.08	0.29	0.61	0.59	0.08	0.08	**0.04**	**0.02**	**0.03**	0.08
Textiles and products	0.11	0.08	0.27	0.31	0.31	0.07	0.17	0.08	**0.03**	0.57	0.09	0.34	0.36
Apparel and leather goods	**0.02**	0.06	0.08	**0.02**	0.09	0.47	0.72	0.08	0.06	0.64	0.50	0.27	0.25
Paper	0.17	**0.01**	0.08	0.11	0.09	**0.01**	**0.04**	**0.04**	**0.01**	0.11	0.17	0.40	0.47
Printing and related	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	0.08	0.14	0.23	0.52
Chemicals	0.76	**0.00**	**0.00**	**0.00**	**0.00**	0.35	**0.02**	0.07	**0.00**	0.63	**0.00**	**0.04**	0.10
Petroleum and coal	0.23	0.17	0.73	0.81	0.94	0.21	0.07	0.53	0.22	**0.02**	0.06	0.15	0.28
Plastics and rubber	**0.03**	0.06	0.26	0.33	**0.00**	**0.01**	**0.02**	0.06	**0.00**	0.54	0.41	**0.01**	0.06
Furniture	**0.01**	**0.02**	0.06	**0.05**	0.11	**0.00**	**0.00**	**0.00**	**0.00**	0.15	0.33	0.13	0.20
Primary metal	0.43	0.15	0.43	0.53	0.64	0.18	**0.01**	**0.02**	**0.02**	0.48	0.32	0.20	0.44
Fabricated metal	0.09	**0.02**	0.15	0.21	0.34	**0.00**	**0.00**	**0.00**	**0.00**	0.14	**0.00**	0.08	0.14
Machinery	0.12	**0.02**	0.06	0.08	0.27	0.08	**0.03**	**0.00**	**0.00**	0.21	**0.01**	0.07	0.21
Electrical equipment	0.07	0.16	0.38	0.38	**0.01**	**0.02**	**0.00**	0.20	**0.00**	0.68	0.32	0.30	0.35
Motor vehicles	0.43	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	0.09	0.06	**0.04**	0.09
Manufacturing (NAICS)	**0.05**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	0.41	**0.01**	**0.04**	0.08
Newspaper	0.95	0.25	**0.00**	**0.00**	**0.00**	0.11	**0.04**	0.07	0.13	0.16	**0.02**	**0.03**	0.19
Periodical books and other	0.37	0.12	**0.00**	**0.01**	**0.03**	0.26	0.50	0.11	0.14	0.76	0.09	0.09	0.35
Pottery, ceramics and plumbing	0.27	**0.02**	**0.00**	**0.00**	**0.00**	0.16	0.17	0.09	0.35	0.45	0.47	0.82	0.99
Glass and glass products	0.13	0.20	**0.00**	**0.00**	**0.00**	0.11	0.06	**0.00**	**0.01**	0.25	0.34	0.47	0.75
Clay product and refractory	0.65	0.19	**0.04**	0.07	0.22	0.06	**0.03**	0.10	0.10	0.84	0.13	0.66	0.80
Industrial machinery	0.31	0.10	**0.03**	**0.05**	**0.03**	**0.01**	**0.01**	**0.02**	**0.01**	0.26	0.24	0.55	0.38
Other transportation equipment	0.25	0.22	0.19	0.27	0.29	0.90	0.73	**0.01**	**0.00**	0.25	0.49	0.21	0.64
Navigational, measuring and other	0.09	0.23	**0.05**	0.07	**0.05**	0.93	0.26	0.29	**0.01**	0.82	0.19	0.14	0.26

Notes: based on 1000 simulations of model (5). p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.** and * denote significance after accounting for data mining at a 5% and 10% level, respectively.

Table A.16. IRF based test of symmetry for 1 s.d. shock to the real oil price ($x_t^{\#} = x_t^1$) - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.14	*0.06*	0.13	0.11	0.17	0.16	*0.07*	0.11	0.11	*0.10*	0.13	0.15	0.18
Foods and tobacco	0.29	0.13	0.25	0.35	0.31	0.25	0.31	0.24	0.30	0.34	0.41	0.49	0.57
Clothing	*0.09*	0.20	0.21	0.33	0.42	0.37	0.47	0.47	0.47	0.54	0.55	0.63	0.71
Durable consumer goods	0.11	*0.08*	0.16	*0.09*	0.14	0.22	0.13	0.16	0.20	0.12	0.16	0.21	0.27
Miscellaneous durable goods	**0.02**	*0.07*	0.11	0.18	0.28	0.39	0.51	0.59	0.69	0.77	0.83	0.75	0.81
Nondurable consumer goods	0.13	0.29	0.48	0.65	0.67	0.53	0.53	0.63	0.72	0.72	0.71	0.70	0.75
Manufacturing (SIC)	*0.09*	*0.06*	*0.06*	*0.08*	0.13	0.18	0.11	0.17	*0.10*	0.22	0.28	0.35	0.42
Paper products	0.15	0.33	*0.07*	**0.01**	**0.02**	**0.03**	*0.06*	*0.07*	0.24	0.14	0.18	0.24	0.29
Chemical products	0.68	0.17	0.12	*0.07*	*0.07*	0.11	0.14	0.17	0.24	0.26	0.23	0.29	0.28
Transit equipment	0.50	0.12	*0.06*	*0.08*	0.14	0.20	0.14	0.18	0.18	0.24	0.27	0.32	0.38
Textiles materials	0.14	*0.06*	0.12	0.14	0.17	0.13	0.19	0.24	0.32	0.40	0.38	0.46	0.46
Paper materials	*0.07*	**0.02**	*0.06*	*0.10*	0.11	0.18	0.22	0.19	0.26	0.33	0.30	0.24	0.29
Chemical materials	0.65	**0.01**	**0.02**	**0.03**	*0.06*	*0.06*	*0.08*	0.12	0.18	0.24	0.30	0.27	0.22
Motor vehicles and parts	0.71	**0.02**	**0.04**	**0.02**	**0.04**	*0.06*	*0.07*	*0.10*	0.13	0.11	0.13	0.15	0.20
Food, beverage and tobacco	0.25	0.13	0.24	0.31	0.28	0.20	0.24	0.19	0.23	0.30	0.37	0.46	0.54
Textiles and products	0.18	*0.07*	0.13	0.17	0.26	0.33	0.42	0.48	0.57	0.64	0.72	0.69	0.76
Apparel and leather goods	*0.10*	0.25	0.31	0.42	0.52	0.47	0.59	0.61	0.62	0.67	0.69	0.76	0.82
Paper	**0.05**	**0.02**	*0.06*	*0.10*	0.11	0.17	0.18	0.23	0.29	0.33	0.34	0.30	0.37
Printing and related	*0.07*	*0.08*	0.14	0.18	0.28	0.28	0.37	0.47	0.57	0.64	0.71	0.76	0.80
Chemicals	0.79	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.03**	**0.03**	*0.06*	*0.08*	0.11	0.11	0.11
Petroleum and coal	0.27	0.12	0.23	0.26	0.38	0.50	0.61	0.70	0.78	0.85	0.90	0.92	0.95
Plastics and rubber	*0.07*	0.18	0.25	0.29	0.42	0.54	0.64	0.74	0.79	0.84	0.74	0.57	0.63
Furniture	**0.03**	*0.09*	0.17	0.28	0.35	0.42	0.38	0.41	0.48	0.58	0.65	0.63	0.55
Primary metal	0.52	0.20	0.19	0.26	0.38	0.48	0.54	0.63	0.52	0.61	0.68	0.75	0.81
Fabricated metal	0.16	0.19	0.26	0.34	0.47	0.60	0.67	0.76	0.81	0.85	0.90	0.88	0.92
Machinery	*0.10*	*0.06*	0.14	0.23	0.12	0.17	0.25	0.31	0.37	0.45	0.52	0.54	0.61
Electrical equipment	0.13	0.28	0.46	0.50	0.64	0.74	0.75	0.75	0.82	0.85	0.90	0.36	0.32
Motor vehicles	0.88	**0.03**	*0.06*	*0.07*	0.12	0.18	0.15	0.18	0.22	0.19	0.24	0.28	0.32
Manufacturing (NAICS)	*0.10*	**0.03**	*0.06*	0.09	0.15	0.20	0.12	0.17	0.18	0.23	0.30	0.36	0.43

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.17. IRF based test of nonlinearity for 1 s.d. shock to the real oil price $\left(x_t^\# = x_t^{12}\right)$ - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.12	*0.09*	0.18	0.29	0.37	0.47	0.50	0.56	0.56	0.65	0.74	0.70	0.74
Foods and tobacco	0.42	0.62	0.81	0.87	0.77	0.80	0.77	0.84	0.83	0.88	0.92	0.94	0.96
Clothing	0.86	0.50	0.11	0.19	0.29	0.37	0.47	0.42	0.52	0.58	0.66	0.72	0.71
Durable consumer goods	0.22	0.30	0.49	0.66	0.73	0.83	0.84	0.88	0.93	0.93	0.96	0.91	0.94
Miscellaneous durable goods	*0.07*	0.12	0.14	0.24	0.32	0.40	0.44	0.54	0.63	0.62	0.65	0.72	0.78
Nondurable consumer goods	0.31	0.59	0.45	0.46	0.56	0.67	0.65	0.67	0.70	0.78	0.84	0.88	0.92
Manufacturing (SIC)	0.14	*0.06*	*0.10*	0.16	0.22	0.32	0.39	0.39	0.48	0.56	0.64	0.67	0.74
Paper products	0.42	0.49	0.69	0.31	0.44	0.57	0.42	0.47	0.55	0.51	0.50	0.58	0.66
Chemical products	0.22	0.44	0.57	0.44	0.58	0.70	0.76	0.83	0.89	0.89	0.93	0.96	0.97
Transit equipment	0.23	0.13	0.23	0.34	0.42	0.33	0.43	0.47	0.35	0.39	0.46	0.44	0.48
Textiles materials	*0.07*	0.16	0.29	0.35	0.46	0.44	0.34	0.37	0.41	0.48	0.57	0.65	0.70
Paper materials	**0.04**	0.11	0.15	0.14	0.23	0.34	0.44	0.55	0.64	0.70	0.77	0.81	0.86
Chemical materials	0.46	0.12	0.18	0.17	0.27	0.31	0.40	0.41	0.50	0.60	0.68	0.63	0.69
Motor vehicles and parts	0.27	0.12	0.16	0.27	0.32	0.41	0.52	0.48	0.54	0.51	0.58	0.67	0.73
Food, beverage and tobacco	0.32	0.48	0.69	0.77	0.70	0.63	0.63	0.72	0.70	0.76	0.83	0.86	0.90
Textiles and products	0.93	0.78	0.17	0.28	0.40	0.50	0.60	0.55	0.64	0.65	0.73	0.80	0.74
Apparel and leather goods	**0.03**	*0.10*	0.12	0.15	0.23	0.33	0.44	0.54	0.63	0.72	0.77	0.82	0.87
Paper	**0.04**	0.11	0.20	0.22	0.32	0.35	0.44	0.49	0.55	0.61	0.70	0.75	0.81
Printing and related	0.17	*0.10*	0.18	0.29	0.42	0.39	0.46	0.48	0.49	0.58	0.66	0.71	0.74
Chemicals	*0.06*	*0.09*	0.17	0.12	0.20	0.29	0.36	0.43	0.53	0.60	0.64	0.68	0.75
Petroleum and coal	0.27	0.38	0.49	0.61	0.75	0.83	0.73	0.77	0.82	0.87	0.83	0.88	0.92
Plastics and rubber	**0.03**	0.11	0.20	0.26	0.38	0.33	0.44	0.43	0.51	0.54	0.62	0.69	0.75
Furniture	**0.03**	0.11	0.20	0.26	0.38	0.33	0.44	0.43	0.51	0.54	0.62	0.69	0.75
Primary metal	**0.05**	**0.05**	*0.08*	0.14	0.22	0.31	0.40	0.48	0.55	0.58	0.55	0.60	0.63
Fabricated metal	0.19	**0.03**	*0.06*	0.11	0.16	0.21	0.29	0.37	0.43	0.47	0.56	0.63	0.71
Machinery	*0.07*	0.15	0.28	0.40	0.52	0.64	0.70	0.77	0.84	0.74	0.81	0.82	0.87
Electrical equipment	*0.07*	0.15	0.28	0.40	0.52	0.64	0.70	0.77	0.84	0.74	0.81	0.82	0.87
Motor vehicles	0.17	*0.09*	0.16	0.25	0.34	0.43	0.54	0.60	0.69	0.67	0.70	0.77	0.81
Manufacturing (NAICS)	0.16	*0.06*	*0.09*	0.16	0.22	0.31	0.39	0.40	0.49	0.56	0.65	0.67	0.74

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.18. IRF based test of nonlinearity for 1 s.d. shock to the real oil price $\left(x_t^{\#} = x_t^{36}\right)$ - 1973-2009 subsample

Sector							Horizon						
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.88	0.18	0.26	0.39	0.50	0.63	0.65	0.71	0.75	0.81	0.86	0.79	0.80
Foods and tobacco	0.28	0.11	0.22	0.35	0.42	0.16	*0.06*	*0.09*	0.12	0.16	0.22	0.27	0.33
Clothing	0.80	0.25	0.17	0.14	0.21	0.25	0.34	0.31	0.39	0.48	0.54	0.62	0.67
Durable consumer goods	0.99	*0.08*	0.17	0.25	0.24	0.15	0.22	0.26	0.34	0.43	0.52	0.60	0.66
Miscellaneous durable goods	0.15	0.13	**0.05**	*0.08*	0.12	0.18	0.26	0.34	0.43	0.52	0.61	0.68	0.63
Nondurable consumer goods	0.41	0.26	0.44	0.60	0.66	0.77	0.76	0.82	0.88	0.90	0.93	0.96	0.97
Manufacturing (SIC)	0.53	*0.06*	**0.05**	*0.08*	0.13	0.16	0.21	0.15	0.20	0.26	0.28	0.32	0.26
Paper products	0.69	0.37	0.55	0.72	0.61	0.73	0.21	0.24	0.31	0.29	0.35	0.43	0.47
Chemical products	0.19	0.28	*0.06*	0.11	0.16	0.24	0.29	0.33	0.42	0.51	0.56	0.64	0.62
Transit equipment	**0.02**	**0.00**	**0.00**	**0.01**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.00**	**0.00**
Textiles materials	0.20	0.29	0.40	0.44	0.19	0.28	0.20	0.25	0.33	0.40	0.45	0.41	0.48
Paper materials	0.31	0.31	0.23	0.26	0.30	0.36	0.30	0.38	0.48	0.57	0.66	0.74	0.72
Chemical materials	0.79	0.20	0.16	*0.07*	0.12	0.17	*0.08*	0.13	0.18	0.20	0.26	0.26	0.26
Motor vehicles and parts	0.34	**0.02**	**0.05**	*0.07*	0.12	*0.07*	0.11	0.15	0.20	0.25	0.32	0.38	0.39
Food, beverage and tobacco	0.35	0.12	0.24	0.37	0.43	*0.07*	**0.03**	**0.05**	*0.07*	*0.10*	0.14	0.18	0.24
Textiles and products	0.81	0.19	0.29	0.32	0.43	0.35	0.46	0.57	0.63	0.68	0.76	0.77	0.82
Apparel and leather goods	0.89	0.50	0.52	0.38	0.48	0.57	0.68	0.52	0.59	0.68	0.76	0.82	0.84
Paper	0.27	0.24	0.12	0.15	0.16	0.22	0.19	0.24	0.29	0.37	0.45	0.54	0.59
Printing and related	*0.10*	*0.07*	0.38	0.47	0.45	0.34	0.44	0.45	0.54	0.64	0.71	0.71	0.66
Chemicals	0.35	*0.06*	**0.01**	**0.02**	**0.03**	*0.06*	*0.08*	0.12	0.15	0.15	0.21	0.19	0.22
Petroleum and coal	**0.05**	*0.06*	*0.09*	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.04**	*0.07*	*0.07*	*0.10*
Plastics and rubber	0.96	0.31	0.50	0.62	0.72	0.81	0.20	0.17	0.14	**0.02**	**0.03**	**0.05**	*0.07*
Furniture	0.11	0.16	0.28	0.42	0.56	0.19	0.26	0.25	0.28	0.36	0.39	0.46	0.54
Primary metal	*0.06*	0.15	0.14	*0.08*	0.13	0.20	0.21	0.21	0.16	0.19	0.09	0.11	0.13
Fabricated metal	0.18	0.11	**0.02**	**0.05**	*0.06*	*0.10*	0.15	0.19	0.27	0.35	0.24	0.27	0.33
Machinery	*0.08*	0.14	*0.08*	*0.07*	0.11	*0.06*	*0.09*	0.13	0.13	0.18	0.12	0.13	0.11
Electrical equipment	0.20	0.39	0.59	0.66	0.78	0.87	0.68	0.67	0.72	0.76	0.40	0.47	0.37
Motor vehicles	0.94	*0.08*	0.15	0.17	0.24	*0.09*	0.13	0.17	0.21	0.26	0.33	0.39	0.46
Manufacturing (NAICS)	0.57	*0.06*	**0.05**	*0.08*	0.13	0.16	0.20	0.16	0.21	0.27	0.28	0.32	0.26

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{36}$. p-values are based on the χ_{H+1}^2. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.19. IRF based test of symmetry for 2 s.d. shock to the real oil price $\left(x_t^\# = x_t^1\right)$ - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.01**	**0.01**	**0.02**	**0.03**	**0.05**	**0.03**	**0.02**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Foods and tobacco	0.26	0.51	0.72	0.85	0.79	0.65	0.57	0.62	0.59	0.60	0.51	0.58	0.66
Clothing	*0.06*	0.14	*0.09*	0.15	0.18	**0.05**	*0.08*	**0.03**	**0.03**	**0.04**	**0.04**	*0.06*	*0.08*
Durable consumer goods	*0.09*	**0.03**	*0.07*	**0.01**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.01**	**0.04**	**0.04**	*0.08*	0.14	0.21	0.27	0.32	0.40	0.50	0.56	0.39	0.46
Nondurable consumer goods	0.11	0.24	0.41	0.57	0.57	0.41	0.35	0.46	0.53	0.51	0.54	0.50	0.53
Manufacturing (SIC)	*0.06*	**0.00**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**
Paper products	0.16	0.34	*0.06*	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**
Chemical products	0.70	0.12	0.11	**0.01**	**0.01**	**0.02**	**0.01**	**0.02**	**0.03**	**0.01**	**0.00**	**0.00**	**0.00**
Transit equipment	0.54	*0.10*	**0.02**	**0.03**	*0.06*	*0.09*	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**
Textiles materials	0.14	**0.04**	*0.08*	*0.08*	*0.09*	**0.02**	**0.03**	**0.03**	*0.06*	*0.07*	**0.04**	*0.06*	**0.05**
Paper materials	*0.07*	**0.01**	**0.03**	*0.06*	*0.08*	0.12	0.16	0.11	0.16	0.20	0.17	*0.09*	*0.08*
Chemical materials	0.66	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.00**
Motor vehicles and parts	0.72	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Food, beverage and tobacco	0.28	*0.10*	0.18	0.24	0.17	0.06	0.07	**0.03**	**0.04**	**0.04**	*0.06*	*0.08*	0.11
Textiles and products	0.18	**0.04**	*0.06*	0.23	*0.10*	0.13	0.19	0.21	0.28	0.34	0.42	0.34	0.41
Apparel and leather goods	*0.06*	0.18	0.16	0.23	0.28	0.11	0.17	*0.10*	0.11	0.13	0.14	0.18	0.23
Paper	**0.04**	**0.01**	**0.01**	**0.03**	**0.03**	*0.06*	*0.07*	*0.10*	0.13	0.13	**0.10**	**0.04**	*0.06*
Printing and related	**0.04**	**0.03**	**0.04**	**0.04**	*0.07*	0.11	0.11	0.15	0.21	0.25	0.31	0.25	0.26
Chemicals	0.80	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Petroleum and coal	0.29	0.11	0.20	0.24	0.36	0.48	0.59	0.66	0.75	0.82	0.87	0.89	0.92
Plastics and rubber	*0.07*	0.19	0.20	0.18	0.28	0.38	0.49	0.60	0.62	0.68	0.38	*0.06*	*0.07*
Furniture	**0.02**	*0.06*	0.11	0.19	0.22	0.29	*0.09*	0.12	0.15	0.20	0.25	0.22	0.11
Primary metal	0.54	0.19	0.18	0.26	0.37	0.48	0.52	0.60	0.37	0.46	0.52	0.58	0.64
Fabricated metal	0.16	0.14	0.18	0.23	0.33	0.45	0.54	0.62	0.68	0.73	0.79	0.74	0.80
Machinery	*0.08*	**0.04**	*0.08*	0.14	**0.03**	*0.09*	*0.09*	0.11	*0.09*	0.12	0.15	0.14	0.17
Electrical equipment	0.13	0.25	0.41	0.40	0.54	0.64	0.56	0.50	0.57	0.59	0.68	**0.04**	**0.04**
Motor vehicles	0.89	**0.01**	**0.02**	**0.00**	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (NAICS)	*0.07*	**0.00**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.20. IRF based test of nonlinearity for 2 s.d. shock to the real oil price $\left(x_t^{\#} = x_t^{12}\right)$ - 1973-2009 subsample

Sector	0	1	2	3	4	5	6	7	8	9	10	11	12
							Horizon						
Total index	0.24	*0.06*	0.11	0.16	0.15	0.24	0.23	0.31	0.31	0.40	0.39	**0.04**	**0.03**
Foods and tobacco	0.64	0.89	0.94	0.98	0.40	0.48	0.29	0.38	0.31	0.40	0.46	0.51	0.54
Clothing	0.84	0.37	**0.01**	**0.03**	*0.06*	*0.08*	0.11	*0.06*	*0.09*	*0.09*	*0.09*	*0.06*	**0.03**
Durable consumer goods	*0.07*	**0.00**	**0.01**	**0.02**	**0.03**	*0.06*	**0.03**	**0.04**	*0.07*	*0.09*	0.12	*0.07*	*0.07*
Miscellaneous durable goods	**0.01**	**0.00**	**0.01**	**0.01**	**0.02**	**0.03**	**0.01**	**0.01**	**0.02**	**0.02**	**0.01**	**0.00**	**0.00**
Nondurable consumer goods	0.22	0.44	0.15	*0.09*	*0.08*	0.13	**0.02**	**0.02**	**0.02**	**0.03**	**0.03**	**0.02**	**0.02**
Manufacturing (SIC)	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.00**
Paper products	0.31	0.34	0.54	*0.08*	0.11	0.17	**0.01**	**0.02**	**0.03**	**0.02**	**0.01**	**0.01**	**0.01**
Chemical products	0.11	0.23	0.35	0.21	0.31	0.42	0.43	0.42	0.48	0.33	0.35	0.39	0.38
Transit equipment	0.18	**0.03**	*0.06*	0.11	0.11	**0.02**	**0.02**	**0.03**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Textiles materials	**0.01**	**0.04**	*0.08*	**0.05**	*0.09*	**0.05**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**
Paper materials	**0.01**	**0.02**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.04**	*0.06*	**0.04**	*0.07*	*0.07*	**0.01**
Chemical materials	0.38	**0.01**	**0.02**	**0.02**	**0.03**	**0.03**	**0.05**	**0.05**	*0.06*	*0.09*	0.10	**0.01**	**0.01**
Motor vehicles and parts	0.23	**0.03**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.04**	*0.05*	*0.07*
Food, beverage and tobacco	0.22	0.32	0.51	0.55	0.21	0.14	**0.03**	**0.03**	**0.02**	**0.03**	**0.04**	*0.07*	*0.09*
Textiles and products	*0.06*	0.12	0.23	0.30	*0.06*	**0.02**	**0.01**	**0.02**	**0.03**	**0.04**	*0.06*	**0.01**	**0.00**
Apparel and leather goods	0.94	0.70	**0.04**	*0.07*	0.12	0.17	0.21	0.13	0.19	0.14	0.16	0.16	*0.06*
Paper	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.03**	**0.02**	**0.01**
Printing and related	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.01**
Chemicals	0.11	**0.01**	**0.01**	**0.03**	**0.04**	**0.03**	**0.05**	*0.06*	**0.04**	*0.06*	*0.06*	*0.06*	*0.07*
Petroleum and coal	**0.02**	**0.03**	*0.06*	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.03**	**0.03**	**0.05**	*0.07*	**0.03**
Plastics and rubber	0.20	0.23	0.22	0.17	0.27	0.33	**0.04**	*0.07*	*0.08*	0.11	**0.00**	**0.00**	**0.00**
Furniture	**0.00**	**0.01**	**0.01**	**0.02**	**0.04**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**
Primary metal	*0.09*	**0.04**	*0.09*	0.14	0.20	0.22	0.11	*0.10*	0.12	0.15	*0.06*	*0.06*	**0.05**
Fabricated metal	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**
Machinery	0.07	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Electrical equipment	**0.02**	**0.02**	**0.05**	*0.09*	0.11	0.14	0.12	0.17	0.22	**0.04**	**0.02**	**0.00**	**0.00**
Motor vehicles	0.11	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.05**	*0.07*	*0.06*
Manufacturing (NAICS)	*0.06*	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.00**

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.21. IRF based test of nonlinearity for 2 s.d. shock to the real oil price $\left(x_t^\# = x_t^{36}\right)$ - 1973 - 2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.67	**0.03**	*0.06*	**0.03**	*0.06*	0.11	**0.05**	*0.07*	0.11	0.15	0.14	*0.06*	*0.09*
Foods and tobacco	0.30	0.17	0.32	0.43	0.35	0.30	0.12	*0.10*	0.14	0.17	0.23	0.29	0.36
Clothing	0.88	0.27	0.29	0.23	0.34	0.28	0.37	0.28	0.36	0.45	0.50	0.55	0.63
Durable consumer goods	0.67	*0.09*	0.16	0.26	0.35	0.35	0.25	0.34	0.35	0.43	0.52	0.34	0.35
Miscellaneous durable goods	0.17	*0.06*	*0.10*	0.12	0.15	0.19	0.20	0.27	0.35	0.35	0.28	0.30	0.38
Nondurable consumer goods	0.53	0.20	0.28	0.37	0.51	0.63	0.28	0.37	0.46	0.56	0.59	0.64	0.69
Manufacturing (SIC)	0.56	**0.02**	*0.06*	*0.06*	*0.08*	0.13	**0.03**	*0.06*	*0.08*	*0.09*	0.11	*0.07*	*0.10*
Paper products	0.77	0.43	0.64	0.79	0.66	0.77	*0.06*	*0.08*	0.11	0.11	*0.09*	0.11	0.13
Chemical products	0.29	0.29	*0.10*	0.13	0.20	0.28	0.38	0.47	0.57	0.60	0.62	0.68	0.65
Transit equipment	*0.06*	**0.03**	*0.06*	0.11	0.12	*0.08*	0.12	0.17	0.15	0.18	0.23	*0.07*	*0.09*
Textiles materials	0.23	0.43	0.49	0.43	0.38	0.38	0.39	0.44	0.53	0.61	0.69	0.60	0.65
Paper materials	0.31	0.49	0.32	0.40	0.41	0.54	0.37	0.37	0.42	0.43	0.46	0.52	0.60
Chemical materials	0.79	*0.06*	0.11	**0.02**	**0.04**	*0.06*	**0.05**	*0.07*	0.11	0.14	0.14	**0.04**	*0.06*
Motor vehicles and parts	0.49	**0.04**	**0.03**	*0.06*	*0.10*	*0.06*	*0.06*	*0.10*	0.13	0.19	0.25	0.24	0.31
Food, beverage and tobacco	0.37	0.17	0.30	0.39	0.31	0.20	*0.06*	*0.06*	*0.09*	0.12	0.16	0.21	0.26
Textiles and products	0.89	0.20	0.36	0.31	0.36	0.31	0.42	0.53	0.51	0.57	0.66	0.65	0.63
Apparel and leather goods	0.98	0.58	0.69	0.57	0.55	0.53	0.64	0.44	0.54	0.62	0.68	0.73	0.78
Paper	0.28	0.44	0.17	0.26	0.27	0.39	0.28	0.23	0.30	0.30	0.35	0.42	0.50
Printing and related	0.11	0.18	0.24	0.17	0.11	0.16	0.20	0.26	0.30	0.36	0.39	0.47	0.50
Chemicals	0.42	**0.02**	**0.02**	**0.02**	**0.03**	**0.05**	*0.07*	0.11	0.11	0.16	0.18	0.11	0.13
Petroleum and coal	**0.04**	0.11	0.15	**0.03**	*0.06*	*0.10*	0.11	*0.09*	0.18	0.25	0.21	0.27	0.25
Plastics and rubber	0.95	0.33	0.42	0.38	0.52	0.59	*0.06*	*0.09*	0.13	**0.04**	*0.06*	**0.05**	**0.03**
Furniture	*0.09*	0.21	0.36	0.51	0.65	0.18	0.21	0.28	0.36	0.45	0.40	0.46	0.36
Primary metal	*0.06*	0.13	0.21	0.18	0.21	0.24	*0.10*	0.14	0.11	0.14	*0.08*	0.11	0.15
Fabricated metal	0.20	**0.04**	*0.07*	0.14	0.15	0.20	0.23	0.32	0.37	0.46	0.32	0.39	0.45
Machinery	*0.09*	**0.05**	0.11	0.11	0.14	0.13	0.18	0.14	0.20	0.26	0.25	0.31	0.21
Electrical equipment	0.21	0.31	0.49	0.56	0.64	0.68	0.28	0.36	0.45	0.54	0.39	0.33	0.41
Motor vehicles	0.96	*0.07*	*0.06*	*0.10*	0.15	0.14	**0.04**	*0.06*	*0.07*	*0.10*	0.13	0.15	0.17
Manufacturing (NAICS)	0.60	**0.03**	*0.07*	*0.07*	*0.09*	0.14	**0.04**	*0.06*	*0.09*	0.11	0.11	*0.08*	0.11

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.22. IRF based test of symmetry for 1 s.d. shock to the nominal oil price $(x_t^{\#} = x_t^1)$ - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.01**	**0.02**	*0.06*	0.11	0.15	0.15	0.18	0.18	0.11	0.15	0.21	0.26	0.32
Foods and tobacco	0.24	0.50	0.71	0.84	0.77	0.67	0.58	0.67	0.66	0.63	0.61	0.68	0.75
Clothing	0.35	0.42	0.11	0.18	0.24	0.27	0.32	0.20	0.24	0.32	0.40	0.32	0.38
Durable consumer goods	*0.06*	0.11	0.22	0.25	0.37	0.39	0.35	0.21	0.15	0.20	0.26	0.17	0.21
Miscellaneous durable goods	0.11	0.25	0.35	0.43	0.56	0.68	0.62	0.66	0.75	0.81	0.81	0.86	0.88
Nondurable consumer goods	*0.07*	0.19	0.34	0.50	0.63	0.37	0.42	0.44	0.48	0.49	0.41	0.40	0.47
Manufacturing (SIC)	**0.03**	**0.04**	*0.08*	0.14	0.23	0.26	0.30	0.32	0.20	0.26	0.33	0.34	0.41
Paper products	0.18	0.38	*0.06*	**0.01**	**0.02**	**0.03**	*0.06*	*0.08*	0.11	0.14	0.19	0.24	0.31
Chemical products	0.64	0.16	0.11	0.08	*0.07*	0.12	0.16	0.20	0.27	0.27	0.26	0.33	0.33
Transit equipment	0.60	0.16	*0.07*	*0.09*	0.16	0.24	0.18	0.23	0.21	0.28	0.32	0.35	0.41
Textiles materials	0.14	*0.06*	0.13	0.16	0.21	0.16	0.23	0.27	0.35	0.44	0.39	0.47	0.50
Paper materials	0.12	**0.02**	*0.06*	*0.10*	0.12	0.19	0.24	0.21	0.29	0.36	0.31	0.24	0.28
Chemical materials	0.71	**0.01**	**0.02**	**0.03**	*0.06*	*0.07*	*0.09*	0.13	0.19	0.25	0.31	0.31	0.25
Motor vehicles and parts	0.70	**0.02**	**0.04**	**0.02**	**0.04**	*0.07*	*0.08*	0.11	0.14	0.12	0.15	0.18	0.23
Food, beverage and tobacco	0.24	0.15	0.27	0.31	0.28	0.21	0.26	0.20	0.24	0.29	0.37	0.45	0.53
Textiles and products	0.18	*0.08*	0.14	0.18	0.27	0.35	0.42	0.47	0.56	0.64	0.72	0.68	0.75
Apparel and leather goods	0.11	0.28	0.35	0.47	0.56	0.49	0.60	0.63	0.66	0.70	0.72	0.78	0.84
Paper	*0.08*	**0.02**	*0.06*	0.11	0.13	0.20	0.22	0.27	0.34	0.38	0.37	0.33	0.40
Printing and related	*0.07*	*0.09*	0.14	0.18	0.28	0.29	0.37	0.46	0.56	0.62	0.69	0.74	0.79
Chemicals	0.81	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	**0.05**	*0.07*	*0.10*	0.11	0.12
Petroleum and coal	0.20	*0.09*	0.19	0.19	0.30	0.40	0.52	0.62	0.71	0.79	0.85	0.87	0.91
Plastics and rubber	*0.08*	0.18	0.24	0.31	0.44	0.57	0.67	0.77	0.82	0.88	0.79	0.61	0.67
Furniture	**0.03**	*0.09*	0.17	0.29	0.36	0.45	0.43	0.47	0.56	0.65	0.69	0.68	0.61
Primary metal	0.61	0.16	0.15	0.22	0.32	0.40	0.48	0.55	0.47	0.57	0.65	0.72	0.79
Fabricated metal	0.14	0.17	0.26	0.34	0.47	0.60	0.67	0.76	0.82	0.86	0.91	0.89	0.92
Machinery	0.13	*0.07*	0.16	0.26	0.14	0.20	0.28	0.34	0.40	0.48	0.56	0.58	0.65
Electrical equipment	0.12	0.26	0.43	0.49	0.62	0.74	0.79	0.80	0.86	0.90	0.93	0.42	0.34
Motor vehicles	0.81	**0.03**	*0.07*	*0.07*	0.12	0.18	0.17	0.20	0.24	0.25	0.31	0.37	0.42
Manufacturing (NAICS)	0.11	**0.03**	*0.06*	*0.09*	0.16	0.19	0.13	0.19	0.20	0.25	0.33	0.39	0.47

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.23. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price $\left(x_t^{\#} = x_t^{12}\right)$ - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	**0.04**	**0.04**	*0.08*	0.14	0.16	0.20	0.22	0.27	0.23	0.31	0.38	0.36	0.37
Foods and tobacco	0.34	0.47	0.68	0.82	0.62	0.59	0.49	0.59	0.46	0.53	0.62	0.66	0.73
Clothing	0.90	0.47	**0.04**	*0.09*	0.14	0.17	0.22	0.19	0.27	0.34	0.42	0.49	0.44
Durable consumer goods	**0.03**	**0.04**	*0.09*	0.15	0.22	0.31	0.39	0.46	0.53	0.51	0.60	0.64	0.71
Miscellaneous durable goods	**0.02**	**0.04**	**0.02**	*0.06*	*0.07*	0.11	0.16	0.23	0.30	0.34	0.40	0.47	0.53
Nondurable consumer goods	0.14	0.33	0.34	0.37	0.46	0.54	0.47	0.44	0.42	0.51	0.58	0.66	0.73
Manufacturing (SIC)	**0.05**	**0.03**	**0.04**	*0.08*	0.11	0.15	0.20	0.21	0.25	0.33	0.41	0.39	0.45
Paper products	0.29	0.32	0.50	0.11	0.18	0.24	0.23	0.27	0.32	0.31	0.27	0.33	0.41
Chemical products	0.18	0.38	0.51	0.35	0.46	0.58	0.64	0.67	0.76	0.76	0.83	0.88	0.91
Transit equipment	0.97	0.34	0.22	0.31	0.40	0.31	0.42	0.48	0.29	0.35	0.41	0.24	0.22
Textiles materials	**0.04**	*0.06*	0.11	0.15	0.22	0.17	0.11	0.12	0.12	0.14	0.17	0.20	0.26
Paper materials	**0.02**	*0.07*	*0.06*	**0.02**	**0.04**	*0.06*	0.11	0.15	0.19	0.20	0.22	0.27	0.34
Chemical materials	0.28	*0.06*	*0.08*	0.12	0.19	0.18	0.21	0.22	0.29	0.38	0.46	0.47	0.51
Motor vehicles and parts	0.11	*0.06*	0.11	0.20	0.22	0.31	0.41	0.39	0.42	0.38	0.46	0.54	0.62
Food, beverage and tobacco	0.23	0.33	0.52	0.68	0.56	0.38	0.33	0.42	0.26	0.31	0.39	0.43	0.51
Textiles and products	*0.08*	0.21	0.34	0.49	0.39	0.11	0.13	0.18	0.24	0.31	0.38	0.42	0.46
Apparel and leather goods	0.81	0.74	*0.10*	0.17	0.22	0.25	0.32	0.29	0.38	0.44	0.52	0.61	0.50
Paper	**0.01**	**0.04**	**0.03**	**0.02**	**0.03**	**0.04**	0.07	0.11	0.15	0.18	0.21	0.26	0.31
Printing and related	**0.02**	**0.04**	*0.10*	0.12	0.19	0.18	0.25	0.32	0.39	0.39	0.48	0.55	0.62
Chemicals	0.11	*0.06*	*0.09*	0.16	0.25	0.20	0.25	0.28	0.30	0.38	0.47	0.52	0.52
Petroleum and coal	*0.08*	*0.10*	0.16	*0.09*	0.15	0.22	0.29	0.37	0.47	0.47	0.55	0.53	0.61
Plastics and rubber	*0.06*	*0.09*	0.19	0.31	0.44	0.57	0.53	0.58	0.58	0.67	0.60	0.67	0.70
Furniture	**0.01**	**0.02**	*0.06*	*0.07*	0.12	*0.09*	0.14	0.11	0.14	0.20	0.26	0.33	0.39
Primary metal	0.45	0.13	0.25	0.37	0.51	0.64	0.67	0.50	0.60	0.65	0.39	0.46	0.54
Fabricated metal	**0.01**	**0.01**	**0.01**	**0.02**	**0.03**	*0.06*	*0.10*	0.13	0.18	0.22	0.22	0.22	0.27
Machinery	0.15	**0.01**	**0.02**	**0.03**	*0.06*	*0.07*	0.12	0.17	0.20	0.22	0.29	0.33	0.41
Electrical equipment	**0.03**	*0.08*	0.16	0.25	0.26	0.37	0.43	0.38	0.47	0.41	0.49	0.50	0.56
Motor vehicles	**0.05**	*0.06*	0.11	0.18	0.22	0.30	0.41	0.45	0.53	0.55	0.57	0.65	0.72
Manufacturing (NAICS)	*0.06*	**0.03**	**0.04**	0.08	0.11	0.16	0.21	0.22	0.26	0.34	0.42	0.40	0.47

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

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Table A.24. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{36}\right)$ - 1973-2009 subsample

Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.47	0.11	0.11	*0.09*	0.15	0.18	0.19	0.15	0.20	0.25	0.25	0.29	0.29
Foods and tobacco	**0.05**	**0.03**	*0.07*	0.11	0.12	*0.07*	*0.06*	*0.08*	0.13	0.16	0.22	0.27	0.33
Clothing	0.56	0.35	0.17	0.20	0.31	0.25	0.33	0.33	0.40	0.48	0.57	0.63	0.71
Durable consumer goods	0.12	0.21	0.35	0.51	0.65	0.61	0.66	0.54	0.64	0.72	0.76	0.82	0.86
Miscellaneous durable goods	0.27	0.17	**0.05**	*0.06*	*0.10*	0.15	0.22	0.28	0.36	0.44	0.51	0.60	0.67
Nondurable consumer goods	0.18	*0.09*	0.18	0.30	0.43	0.54	0.35	0.33	0.41	0.51	0.52	0.60	0.66
Manufacturing (SIC)	0.39	*0.10*	*0.06*	*0.06*	0.11	0.15	0.17	0.13	0.19	0.25	0.27	0.34	0.35
Paper products	0.82	0.82	0.94	0.98	0.88	0.94	0.29	0.33	0.41	0.47	0.51	0.59	0.64
Chemical products	0.44	0.29	0.20	0.30	0.37	0.49	0.59	0.67	0.75	0.82	0.84	0.89	0.88
Transit equipment	0.30	0.15	0.13	0.17	0.19	0.22	0.30	0.36	0.39	0.47	0.48	0.36	**0.02**
Textiles materials	0.35	0.58	0.70	0.76	0.61	0.62	0.49	0.40	0.40	0.45	0.54	0.57	0.65
Paper materials	0.23	0.13	0.18	0.23	0.35	0.47	0.34	0.44	0.54	0.63	0.71	0.78	0.78
Chemical materials	0.95	0.20	0.11	*0.06*	*0.06*	*0.10*	*0.10*	*0.10*	0.11	0.11	0.11	0.14	0.17
Motor vehicles and parts	0.21	0.38	0.54	0.70	0.81	0.69	0.72	0.68	0.71	0.68	0.75	0.82	0.85
Food, beverage and tobacco	*0.08*	**0.05**	0.11	0.17	0.15	*0.06*	**0.05**	*0.08*	0.12	0.16	0.21	0.27	0.34
Textiles and products	0.43	0.14	0.16	0.14	0.22	0.16	0.20	0.16	0.15	0.16	0.21	0.28	0.35
Apparel and leather goods	0.67	0.60	0.46	0.52	0.60	0.55	0.67	0.64	0.73	0.80	0.86	0.88	0.90
Paper	0.18	0.16	0.12	0.20	0.29	0.39	0.27	0.35	0.44	0.53	0.62	0.70	0.73
Printing and related	*0.10*	0.25	0.42	0.38	0.49	0.52	0.60	0.69	0.78	0.84	0.88	0.81	0.82
Chemicals	0.75	*0.06*	**0.01**	**0.02**	**0.04**	*0.06*	*0.07*	*0.08*	*0.08*	*0.08*	0.11	0.14	0.15
Petroleum and coal	*0.06*	0.12	0.16	*0.08*	0.14	0.21	0.19	0.26	0.31	0.39	0.48	0.56	0.64
Plastics and rubber	0.72	0.45	0.66	0.79	0.87	0.93	0.26	0.25	0.26	0.12	0.17	0.20	0.23
Furniture	0.25	0.50	0.70	0.78	0.88	0.29	0.37	0.37	0.43	0.52	0.54	0.62	0.69
Primary metal	0.61	0.34	0.28	0.31	0.37	0.48	0.47	0.50	0.46	0.54	0.34	0.38	0.45
Fabricated metal	0.25	*0.06*	**0.01**	**0.01**	**0.02**	**0.04**	*0.07*	*0.09*	0.13	0.18	0.17	0.14	0.17
Machinery	0.29	0.17	0.12	0.16	0.24	0.22	0.31	0.36	0.35	0.40	0.32	0.37	0.41
Electrical equipment	0.68	0.51	0.71	0.83	0.79	0.87	0.63	0.60	0.60	0.66	0.54	0.62	0.67
Motor vehicles	0.16	0.28	0.41	0.56	0.70	0.65	0.65	0.69	0.76	0.80	0.86	0.89	0.91
Manufacturing (NAICS)	0.43	*0.10*	*0.06*	*0.07*	0.12	0.16	0.19	0.15	0.21	0.28	0.29	0.35	0.36

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.25. IRF based test of nonlinearity for 1 s.d. shock to the nominal oil price - 1973-2009 subsample

Sector	x_t^1				x_t^{12}				x_t^{36}			
	0	1	6	12	0	1	6	12	0	1	6	12
Total index	**0.01**	**0.02**	0.18	0.32	**0.04**	**0.04**	0.22	0.37	0.47	0.11	0.19	0.29
Foods and tobacco	0.24	0.50	0.58	0.75	0.34	0.47	0.49	0.73	**0.05**	**0.03**	*0.06***	0.33
Clothing	0.35	0.42	0.32	0.38	0.90	0.47	0.22	0.44	0.56	0.35	0.33	0.71
Durable consumer goods	*0.06*	0.11	0.35	0.21	**0.03**	**0.04**	0.39	0.71	0.12	0.21	0.66	0.86
Miscellaneous durable goods	0.11	0.25	0.62	0.88	**0.02**	**0.04**	0.16	0.53	0.27	0.17	0.22	0.67
Nondurable consumer goods	*0.07*	0.19	0.42	0.47	0.14	0.33	0.47	0.73	0.18	*0.09*	0.35	0.66
Manufacturing (SIC)	**0.03**	**0.04**	0.30	0.41	**0.05**	**0.03**	0.20	0.45	0.39	*0.10*	0.17	0.35
Paper products	0.18	0.38	*0.06*	0.31	0.29	0.32	0.23	0.41	0.82	0.82	0.29	0.64
Chemical products	0.64	0.16	0.16	0.33	0.18	0.38	0.64	0.91	0.44	0.29	0.59	0.88
Transit equipment	0.60	0.16	0.18	0.41	0.97	0.34	0.42	0.22	0.30	0.15	0.30	**0.02***
Textiles materials	0.14	*0.06*	0.23	0.50	**0.04**	*0.06*	0.11	0.26	0.35	0.58	0.49	0.65
Paper materials	0.12	**0.02**	0.24	0.28	**0.02**	*0.07*	0.11	0.34	0.23	0.13	0.34	0.78
Chemical materials	0.71	**0.01**	*0.09*	0.25	0.28	*0.06*	0.21	0.51	0.95	0.20	*0.10*	0.17
Motor vehicles and parts	0.70	**0.02**	*0.08*	0.23	0.11	*0.06*	0.41	0.62	0.21	0.38	0.72	0.85
Food, beverage and tobacco	0.24	0.15	0.26	0.53	0.23	0.33	0.33	0.51	*0.08*	**0.05**	**0.05***	0.34
Textiles and products	0.18	*0.08*	0.42	0.75	*0.08*	0.21	0.13	0.46	0.43	0.14	0.20	0.35
Apparel and leather goods	0.11	0.28	0.60	0.84	0.81	0.74	0.32	0.50	0.67	0.60	0.67	0.90
Paper	*0.08*	**0.02**	0.22	0.40	**0.01**	**0.04**	*0.07*	0.31	0.18	0.16	0.27	0.73
Printing and related	*0.07*	*0.09*	0.37	0.79	**0.02**	**0.04**	0.25	0.62	*0.10*	0.25	0.60	0.82
Chemicals	0.81	**0.00**	**0.02**	0.12	0.11	*0.06*	0.25	0.52	0.75	*0.06*	*0.07*	0.15
Petroleum and coal	0.20	*0.09*	0.52	0.91	*0.08*	*0.10*	0.29	0.61	*0.06*	0.12	0.19	0.64
Plastics and rubber	*0.08*	0.18	0.67	0.67	*0.06*	*0.09*	0.53	0.70	0.72	0.45	0.26	0.23
Furniture	**0.03**	*0.09*	0.43	0.61	**0.01**	**0.02**	0.14	0.39	0.25	0.50	0.37	0.69
Primary metal	0.61	0.16	0.48	0.79	0.45	0.13	0.67	0.54	0.61	0.34	0.47	0.45
Fabricated metal	0.14	0.17	0.67	0.92	**0.01**	**0.01**	*0.10*	0.27	0.25	*0.06*	*0.07*	0.17
Machinery	0.13	*0.07*	0.28	0.65	0.15	**0.01**	0.12	0.41	0.29	0.17	0.31	0.41
Electrical equipment	0.12	0.26	0.79	0.34	**0.03**	*0.08*	0.43	0.56	0.68	0.51	0.63	0.67
Motor vehicles	0.81	**0.03**	0.17	0.42	**0.05**	*0.06*	0.41	0.72	0.16	0.28	0.65	0.91
Manufacturing (NAICS)	0.11	**0.03**	0.13	0.47	*0.06*	**0.03**	0.21	0.47	0.43	*0.10*	0.19	0.36

Notes: based on 1000 simulations of model (5). p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.** and * denote significance after accounting for data mining at a 5% and 10% level, respectively.

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Table A.26. IRF based test of symmetry for 2 s.d. shock to the nominal oil price $\left(x_t^{\#} = x_t^1\right)$ -1973-2009 subsample

Sector							Horizon						
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.12	**0.02**	*0.06*	**0.03**	*0.06*	0.02	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Foods and tobacco	0.28	0.11	0.18	0.26	0.15	*0.09*	0.11	**0.04**	*0.07*	**0.04**	*0.06*	*0.07*	0.11
Clothing	*0.07*	0.17	0.11	0.17	0.20	**0.04**	*0.06*	**0.03**	**0.03**	**0.04**	**0.05**	*0.06*	*0.08*
Durable consumer goods	*0.08*	**0.02**	*0.06*	**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Miscellaneous durable goods	**0.01**	**0.04**	**0.04**	*0.08*	0.14	0.22	0.28	0.32	0.41	0.51	0.56	0.37	0.42
Nondurable consumer goods	0.11	0.24	0.40	0.56	0.54	0.40	0.33	0.43	0.50	0.47	0.51	0.47	0.51
Manufacturing (SIC)	*0.07*	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**
Paper products	0.19	0.40	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**
Chemical products	0.65	0.11	*0.08*	**0.01**	**0.01**	**0.02**	**0.02**	**0.03**	**0.04**	**0.01**	**0.00**	**0.00**	**0.00**
Transit equipment	0.63	0.14	**0.03**	**0.04**	*0.07*	0.11	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Textiles materials	0.15	**0.04**	*0.08*	*0.09*	0.11	**0.02**	**0.04**	**0.04**	*0.06*	*0.08*	**0.04**	*0.06*	**0.05**
Paper materials	0.12	**0.01**	**0.02**	**0.05**	*0.07*	0.11	0.15	0.12	0.17	0.20	0.16	*0.07*	*0.06*
Chemical materials	0.72	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.00**	**0.00**
Motor vehicles and parts	0.70	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Food, beverage and tobacco	0.26	0.11	0.19	0.22	0.16	*0.06*	*0.07*	**0.02**	**0.04**	**0.03**	**0.04**	*0.06*	*0.08*
Textiles and products	0.17	**0.03**	0.24	*0.06*	*0.10*	0.14	0.18	0.18	0.24	0.29	0.37	0.27	0.34
Apparel and leather goods	*0.07*	0.19	0.16	0.24	0.30	*0.10*	0.15	*0.08*	0.11	0.12	0.13	0.16	0.21
Paper	*0.07*	**0.01**	**0.01**	**0.02**	**0.03**	*0.06*	*0.07*	*0.10*	0.13	0.13	*0.09*	**0.03**	**0.04**
Printing and related	**0.04**	**0.03**	**0.04**	**0.03**	*0.06*	*0.07*	*0.09*	0.13	0.19	0.21	0.26	0.22	0.24
Chemicals	0.82	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Petroleum and coal	0.22	*0.07*	0.14	0.16	0.25	0.36	0.47	0.55	0.64	0.73	0.79	0.82	0.87
Plastics and rubber	*0.08*	0.17	0.16	0.18	0.27	0.37	0.48	0.59	0.64	0.72	0.40	*0.06*	*0.07*
Furniture	**0.01**	**0.04**	*0.09*	0.16	0.19	0.26	0.11	0.15	0.19	0.25	0.28	0.25	0.12
Primary metal	0.62	0.14	0.13	0.19	0.29	0.38	0.43	0.49	0.26	0.34	0.40	0.46	0.53
Fabricated metal	0.14	0.11	0.17	0.20	0.30	0.41	0.49	0.57	0.65	0.71	0.78	0.69	0.75
Machinery	0.12	**0.04**	*0.09*	0.17	**0.04**	*0.06*	0.11	0.12	*0.10*	0.13	0.17	0.15	0.19
Electrical equipment	0.11	0.22	0.36	0.37	0.50	0.62	0.60	0.59	0.65	0.69	0.77	*0.06*	**0.04**
Motor vehicles	0.82	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**
Manufacturing (NAICS)	*0.07*	**0.00**	**0.01**	**0.01**	**0.02**	**0.02**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**

Notes: based on 1000 simulations of model (5) where $x_t^{\#} = x_t^1$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.27. IRF based test of nonlinearity for 2 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{12}\right)$ - 1973-2009 subsample

| Sector	Horizon												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Foods and tobacco	0.29	0.38	0.59	0.72	0.24	0.23	0.04	0.04	0.03	0.03	0.06	0.07	0.10
Clothing	0.89	0.41	0.01	0.02	0.03	0.03	0.05	0.02	0.03	0.05	0.05	0.03	0.01
Durable consumer goods	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.02	0.03	0.05	0.06	0.02	0.03
Miscellaneous durable goods	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nondurable consumer goods	0.08	0.21	0.11	0.07	0.06	0.10	0.01	0.01	0.00	0.01	0.01	0.00	0.01
Manufacturing (SIC)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Paper products	0.22	0.22	0.39	0.02	0.02	0.04	0.01	0.02	0.03	0.02	0.01	0.01	0.01
Chemical products	0.11	0.22	0.37	0.24	0.34	0.44	0.45	0.29	0.35	0.27	0.30	0.37	0.36
Transit equipment	0.99	0.26	0.17	0.26	0.32	0.13	0.14	0.20	0.01	0.00	0.00	0.00	0.00
Textiles materials	0.01	0.01	0.03	0.02	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paper materials	0.01	0.02	0.02	0.00	0.01	0.02	0.03	0.04	0.06	0.03	0.04	0.04	0.01
Chemical materials	0.20	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.00
Motor vehicles and parts	0.09	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.04	0.06
Food, beverage and tobacco	0.17	0.21	0.37	0.49	0.15	0.08	0.01	0.01	0.00	0.01	0.01	0.01	0.02
Textiles and products	0.02	0.07	0.13	0.22	0.04	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
Apparel and leather goods	0.82	0.69	0.03	0.06	0.08	0.09	0.12	0.04	0.06	0.07	0.08	0.08	0.02
Paper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Printing and related	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Chemicals	0.07	0.00	0.01	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03
Petroleum and coal	0.05	0.06	0.09	0.01	0.01	0.02	0.03	0.04	0.07	0.04	0.06	0.06	0.03
Plastics and rubber	0.03	0.02	0.03	0.05	0.09	0.13	0.02	0.03	0.03	0.05	0.00	0.00	0.00
Furniture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Primary metal	0.46	0.07	0.14	0.15	0.21	0.23	0.12	0.06	0.08	0.11	0.03	0.04	0.04
Fabricated metal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machinery	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electrical equipment	0.01	0.02	0.05	0.00	0.01	0.09	0.07	0.06	0.09	0.03	0.01	0.00	0.00
Motor vehicles	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.03	0.03
Manufacturing (NAICS)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{12}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.28. IRF based test of nonlinearity for 2 s.d. shock to the nominal oil price $\left(x_t^\# = x_t^{36}\right)$ - 1973-2009 subsample

Sector							Horizon						
	0	1	2	3	4	5	6	7	8	9	10	11	12
Total index	0.45	**0.03**	*0.06*	**0.03**	**0.05**	*0.07*	**0.05**	*0.07*	0.11	0.14	0.14	**0.03**	**0.03**
Foods and tobacco	**0.05**	*0.07*	0.13	0.23	0.14	0.16	*0.09*	**0.05**	**0.05**	*0.07*	*0.10*	0.11	0.14
Clothing	0.62	0.29	0.20	0.29	0.39	0.17	0.23	0.13	0.17	0.23	0.29	0.31	0.37
Durable consumer goods	0.12	*0.07*	0.11	0.19	0.26	0.14	**0.04**	*0.06*	*0.09*	0.12	0.12	0.11	*0.09*
Miscellaneous durable goods	0.23	**0.04**	*0.08*	0.13	0.16	0.16	0.16	0.23	0.30	0.38	0.25	0.24	0.29
Nondurable consumer goods	0.18	0.14	0.14	0.16	0.25	0.34	0.16	0.22	0.28	0.34	0.42	0.45	0.53
Manufacturing (SIC)	0.40	**0.02**	**0.04**	*0.07*	*0.08*	0.12	**0.04**	*0.07*	*0.10*	0.14	0.16	*0.06*	*0.07*
Paper products	0.88	0.86	0.94	0.98	0.90	0.94	0.12	0.16	0.14	0.20	*0.10*	*0.09*	0.11
Chemical products	0.51	0.20	0.20	0.14	0.23	0.28	0.38	0.49	0.58	0.60	0.56	0.64	0.69
Transit equipment	0.30	0.29	0.40	0.51	0.42	0.33	0.38	0.49	0.27	0.18	0.22	0.11	0.14
Textiles materials	0.34	0.63	0.76	0.70	0.74	0.55	0.55	0.51	0.58	0.63	0.70	0.60	0.64
Paper materials	0.22	0.32	0.17	0.27	0.33	0.44	0.27	0.27	0.34	0.33	0.37	0.45	0.53
Chemical materials	0.96	**0.05**	*0.09*	**0.03**	*0.06*	*0.07*	*0.09*	0.13	0.15	0.16	0.14	**0.05**	*0.06*
Motor vehicles and parts	0.27	0.26	0.20	0.28	0.40	0.30	0.11	0.15	0.18	0.22	0.28	0.33	0.38
Food, beverage and tobacco	*0.08*	0.11	0.16	0.27	0.16	0.16	*0.08*	**0.04**	*0.06*	*0.06*	*0.09*	0.11	0.15
Textiles and products	0.52	0.17	0.32	0.31	0.35	0.27	0.37	0.44	0.41	0.42	0.51	0.58	0.56
Apparel and leather goods	0.74	0.61	0.49	0.61	0.54	0.31	0.39	0.24	0.31	0.33	0.41	0.42	0.49
Paper	0.17	0.31	*0.08*	0.14	0.17	0.25	0.19	0.16	0.22	0.24	0.29	0.37	0.44
Printing and related	*0.10*	0.18	0.25	0.14	*0.09*	0.14	0.17	0.24	0.30	0.38	0.40	0.48	0.54
Chemicals	0.75	**0.01**	**0.02**	**0.04**	*0.06*	*0.10*	0.11	0.15	0.11	0.15	0.16	*0.09*	0.12
Petroleum and coal	**0.04**	0.11	0.18	*0.09*	*0.07*	0.11	0.13	0.19	0.22	0.28	0.25	0.28	0.16
Plastics and rubber	0.72	0.33	0.39	0.44	0.50	0.63	*0.06*	*0.06*	*0.08*	*0.09*	*0.08*	*0.06*	**0.03**
Furniture	0.21	0.43	0.64	0.73	0.82	0.21	0.19	0.26	0.34	0.43	0.39	0.40	0.30
Primary metal	0.58	0.20	0.29	0.40	0.35	0.37	0.14	0.20	0.22	0.21	*0.06*	*0.08*	*0.08*
Fabricated metal	0.27	**0.01**	**0.01**	**0.03**	*0.06*	*0.07*	*0.10*	0.14	0.18	0.21	0.20	0.24	0.26
Machinery	0.27	**0.03**	*0.08*	0.12	0.15	0.19	0.27	0.17	0.22	0.28	0.29	0.37	0.33
Electrical equipment	0.65	0.43	0.62	0.76	0.68	0.70	0.18	0.24	0.29	0.37	0.36	0.14	0.18
Motor vehicles	0.18	0.13	*0.08*	0.15	0.23	0.14	**0.03**	*0.06*	*0.06*	*0.07*	*0.09*	0.11	*0.06*
Manufacturing (NAICS)	0.44	**0.02**	*0.06*	*0.07*	*0.08*	0.12	**0.05**	*0.07*	0.11	0.15	0.17	*0.08*	*0.09*

Notes: based on 1000 simulations of model (5) where $x_t^\# = x_t^{36}$. p-values are based on the χ^2_{H+1}. Bold and italics denote significance at the 5% and 10% level, respectively.

Table A.29. IRF based test of symmetry for 2 s.d. shock to the nominal oil price- 1973-2009 subsample

| Sector	x_t^1				x_t^{12}				x_t^{36}			
	0	1	6	12	0	1	6	12	0	1	6	12
Total index	0.12	**0.02**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	0.45	**0.03**	**0.05**	**0.03**
Foods and tobacco	0.28	0.11	0.11	0.11	0.29	0.38	**0.04**	*0.10*	**0.05**	*0.07*	*0.09*	0.14
Clothing	*0.07*	0.17	*0.06*	*0.08*	0.89	0.41	**0.05**	**0.01**	0.62	0.29	0.23	0.37
Durable consumer goods	*0.08*	**0.02**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.03**	0.12	*0.07*	**0.04**	*0.09*
Miscellaneous durable goods	**0.01**	**0.04**	0.28	0.42	**0.00**	**0.00**	**0.00**	**0.00**	0.23	**0.04**	0.16	0.29
Nondurable consumer goods	0.11	0.24	0.33	0.51	*0.08*	0.21	**0.01**	**0.01**	0.18	0.14	0.16	0.53
Manufacturing (SIC)	*0.07*	**0.00**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	0.40	**0.02**	**0.04**	*0.07*
Paper products	0.19	0.40	**0.00**	**0.01**	0.22	0.22	**0.01**	**0.01**	0.88	0.86	0.12	0.11
Chemical products	0.65	0.11	**0.02**	**0.00**	0.11	0.22	0.45	0.36	0.51	0.20	0.38	0.69
Transit equipment	0.63	0.14	**0.02**	**0.01**	0.99	0.26	0.14	**0.00**	0.30	0.29	0.38	0.14
Textiles materials	0.15	**0.04**	**0.04**	**0.05**	**0.01**	**0.01**	**0.00**	**0.00**	0.34	0.63	0.55	0.64
Paper materials	0.12	**0.01**	0.15	*0.06*	**0.01**	**0.02**	**0.03**	**0.01**	0.22	0.32	0.27	0.53
Chemical materials	0.72	**0.00**	**0.00**	**0.00**	0.20	**0.00**	**0.01**	**0.00**	0.96	**0.05**	*0.09*	*0.06*
Motor vehicles and parts	0.70	**0.00**	**0.00**	**0.00**	*0.09*	**0.01**	**0.01**	*0.06*	0.27	0.26	0.11	0.38
Food, beverage and tobacco	0.26	0.11	*0.07*	*0.08*	0.17	0.21	**0.01**	**0.02**	*0.08*	0.11	*0.08*	0.15
Textiles and products	0.17	**0.03**	0.18	0.34	**0.02**	*0.07*	**0.00**	**0.00**	0.52	0.17	0.37	0.56
Apparel and leather goods	*0.07*	0.19	0.15	0.21	0.82	0.69	0.12	**0.02**	0.74	0.61	0.39	0.49
Paper	*0.07*	**0.01**	*0.07*	0.04	**0.00**	**0.00**	**0.00**	**0.01**	0.17	0.31	0.19	0.44
Printing and related	**0.04**	**0.03**	*0.09*	0.24	**0.01**	**0.00**	**0.00**	**0.01**	*0.10*	0.18	0.17	0.54
Chemicals	0.82	**0.00**	**0.00**	**0.00**	*0.07*	**0.00**	**0.02**	**0.03**	0.75	**0.01**	0.11	0.12
Petroleum and coal	0.22	*0.07*	0.47	0.87	**0.05**	*0.06*	**0.03**	**0.03**	**0.04**	0.11	0.13	0.16
Plastics and rubber	*0.08*	0.17	0.48	*0.07*	**0.03**	**0.02**	**0.02**	**0.00**	0.72	0.33	*0.06*	**0.03**
Furniture	**0.01**	**0.04**	0.11	0.12	**0.00**	**0.00**	**0.00**	**0.00**	0.21	0.43	0.19	0.30
Primary metal	0.62	0.14	0.43	0.53	0.46	*0.07*	0.12	**0.04**	0.58	0.20	0.14	*0.08*
Fabricated metal	0.14	0.11	0.49	0.75	**0.00**	**0.00**	**0.00**	**0.00**	0.27	**0.01**	*0.10*	0.26
Machinery	0.12	**0.04**	0.11	0.19	*0.07*	**0.00**	**0.00**	**0.00**	0.27	**0.03**	0.27	0.33
Electrical equipment	0.11	0.22	0.60	**0.04**	**0.01**	**0.02**	*0.07*	**0.00**	0.65	0.43	0.18	0.18
Motor vehicles	0.82	**0.00**	**0.00**	**0.00**	**0.02**	**0.00**	**0.00**	**0.03**	0.18	0.13	**0.03**	*0.06*
Manufacturing (NAICS)	*0.07*	**0.00**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	0.44	**0.02**	**0.05**	*0.09*

Notes: based on 1000 simulations of model (5) . p-values are based on the χ^2_{H+1} . Bold and italics denote significance at the 5% and 10% level, respectively.** and * denote significance after accounting for data mining at a 5% and 10% level, respectively.
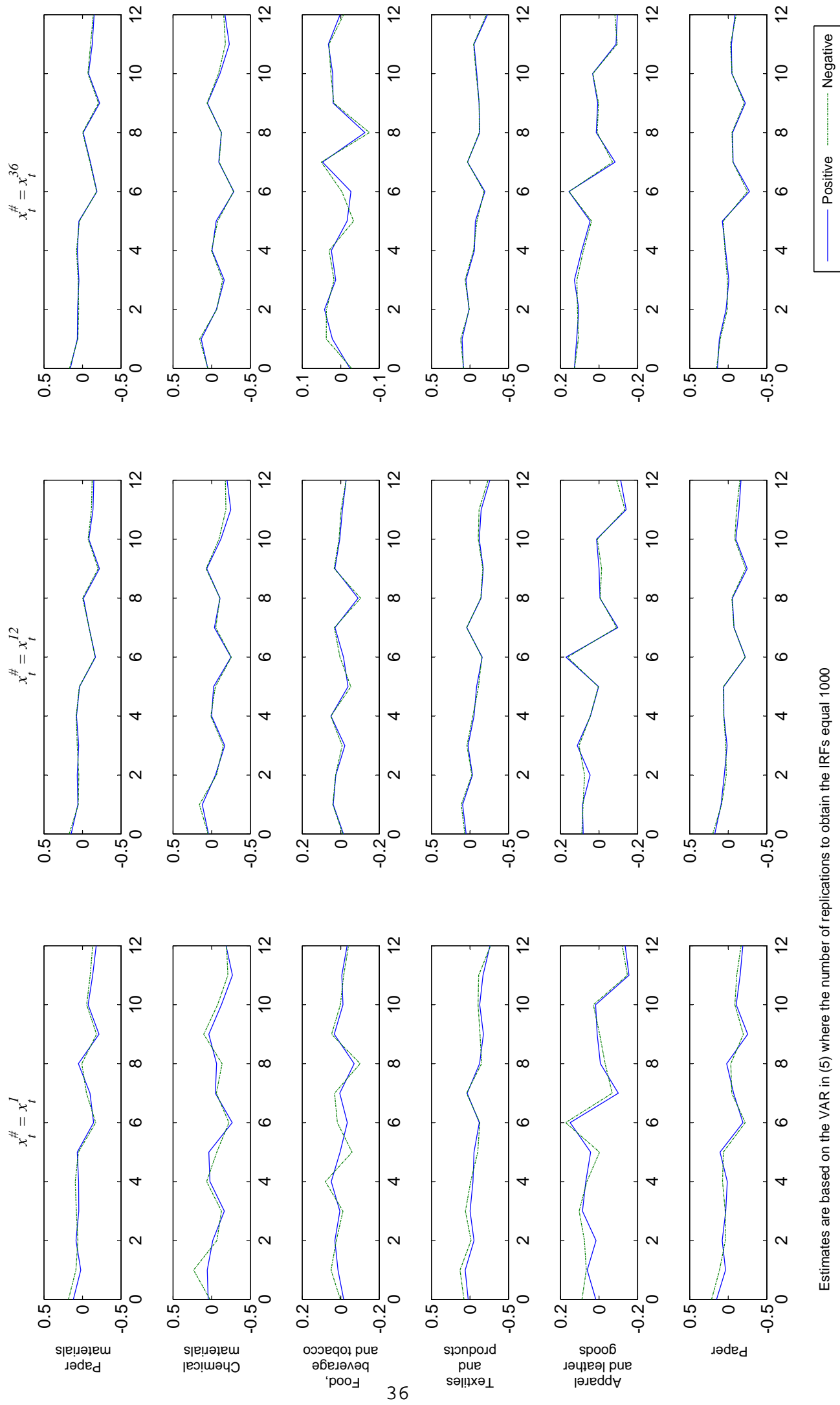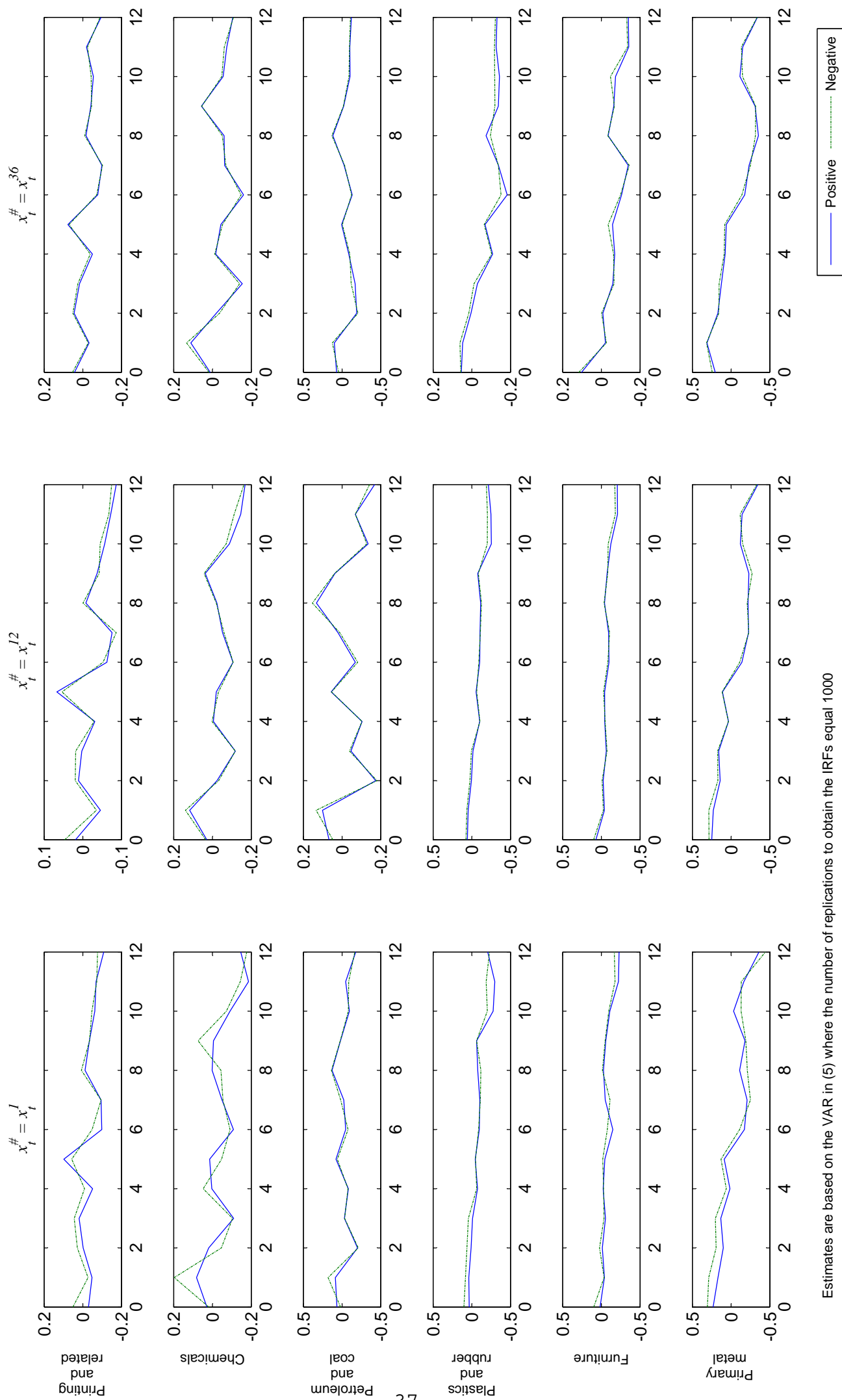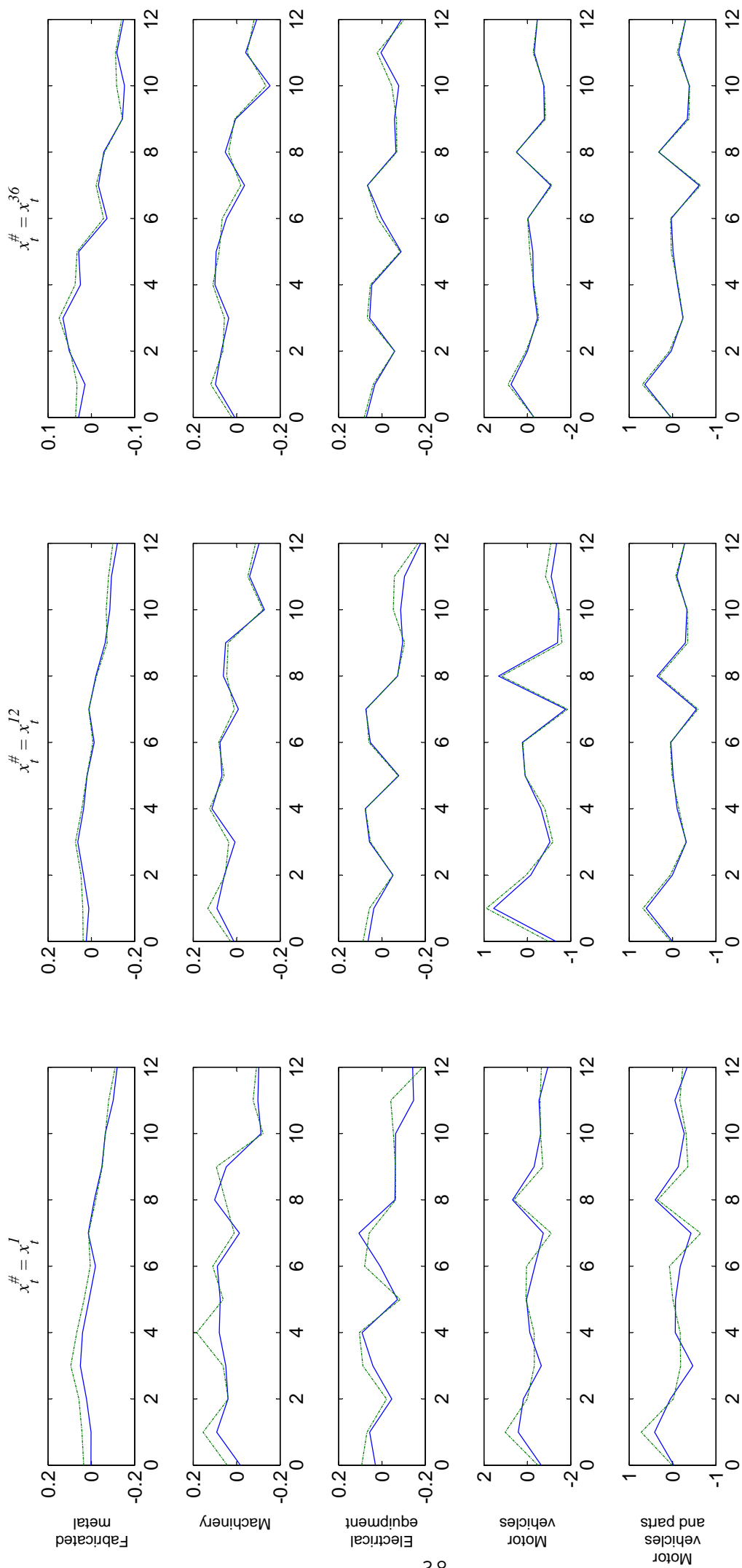
Figure A.1a: Impulse response to one standard deviation positive and negative shocks to the real oil price (percentage)
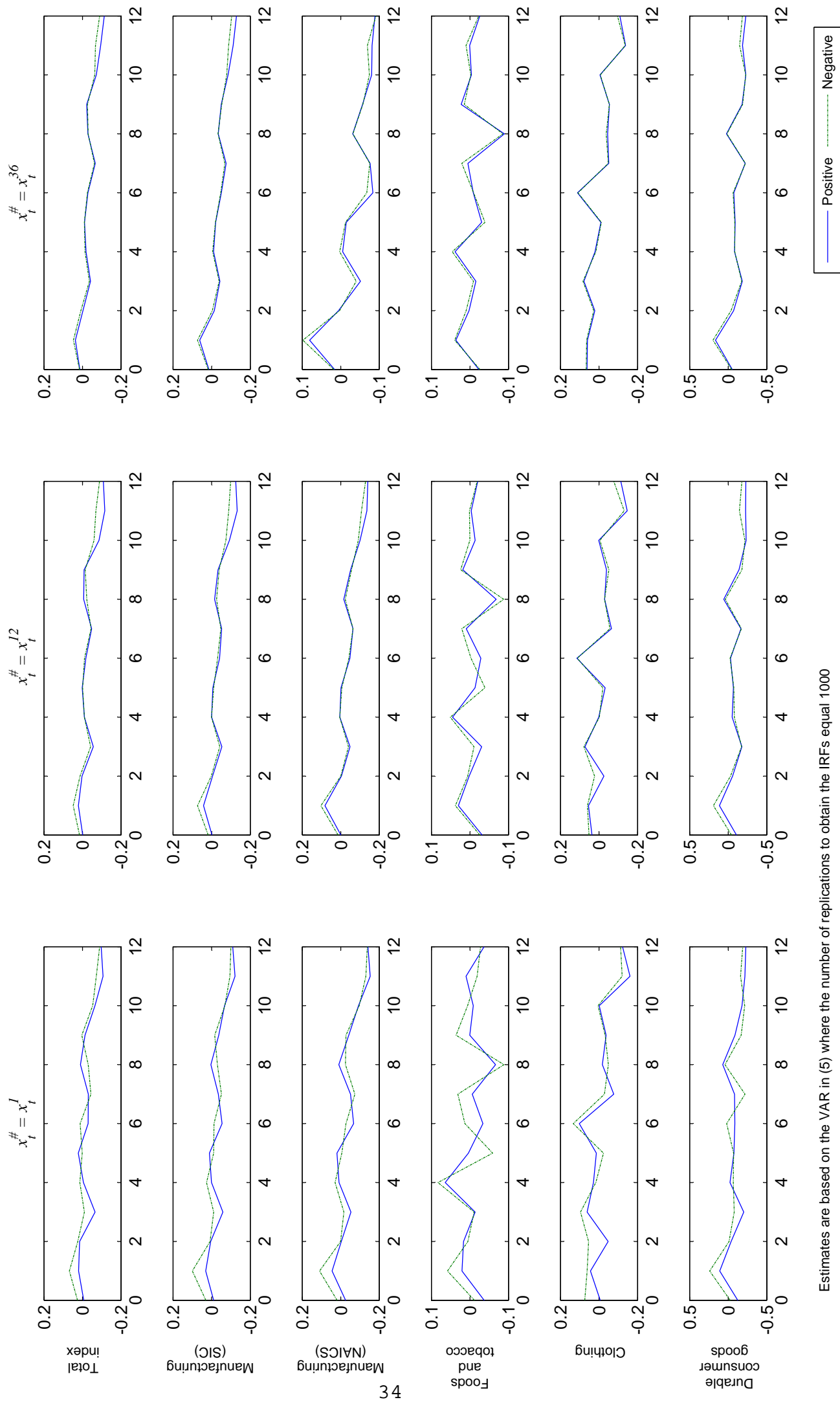
Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000
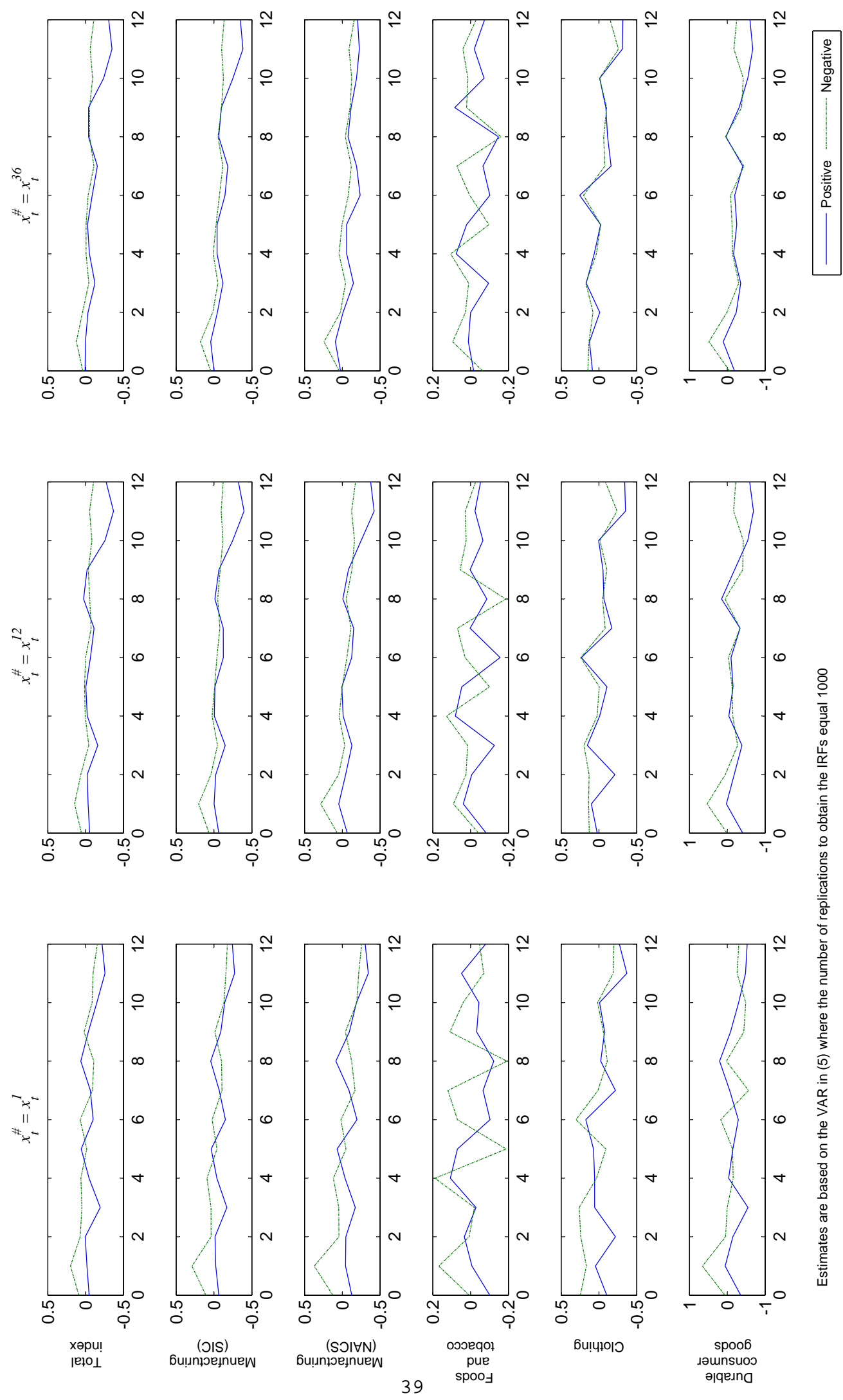
Positive — Negative

Figure A.1b: Impulse response to one standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

— Positive   - - - Negative

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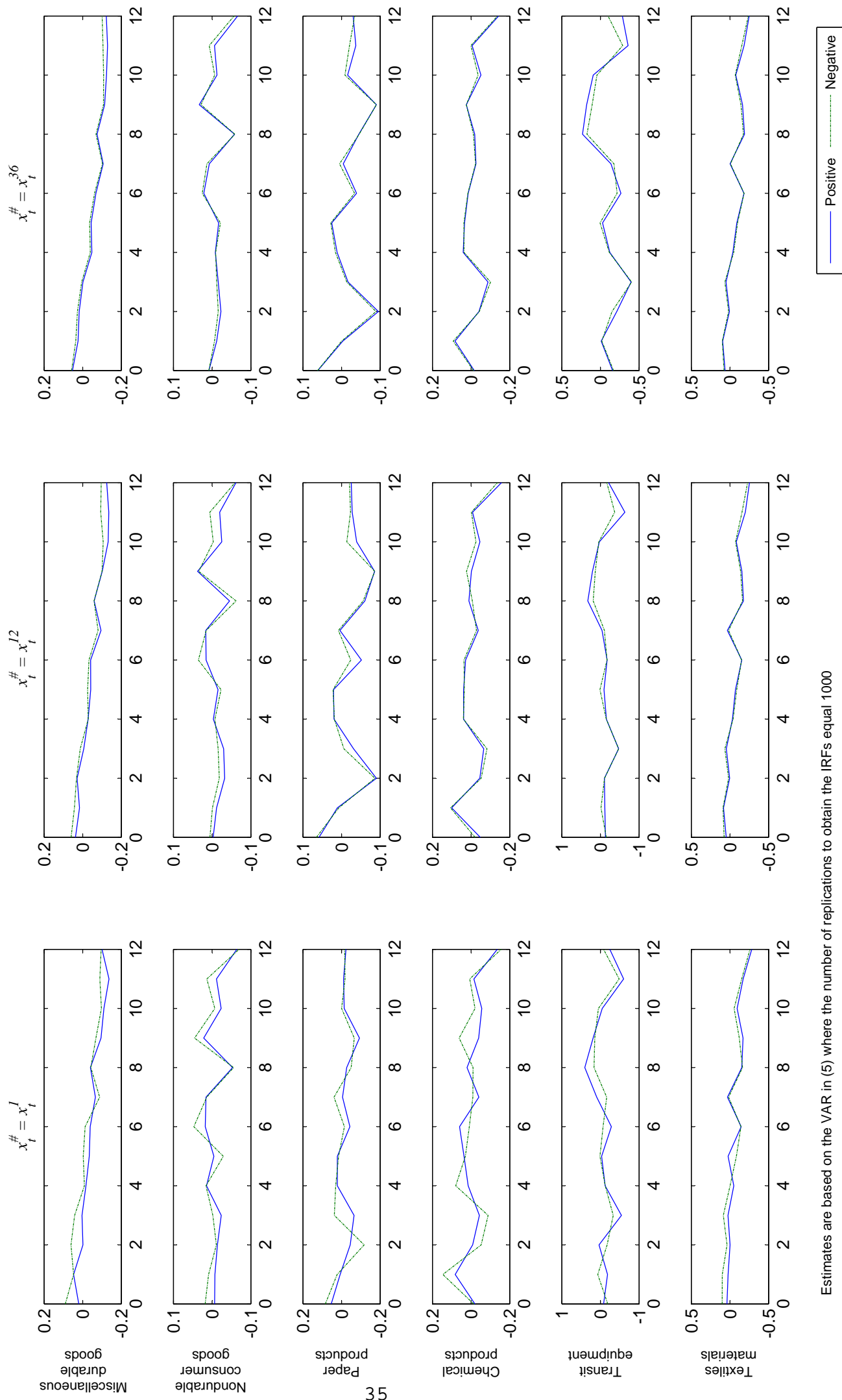
Figure A.1c: Impulse response to one standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

Figure A.1d: Impulse response to one standard deviation positive and negative shocks to the real oil price (percentage)
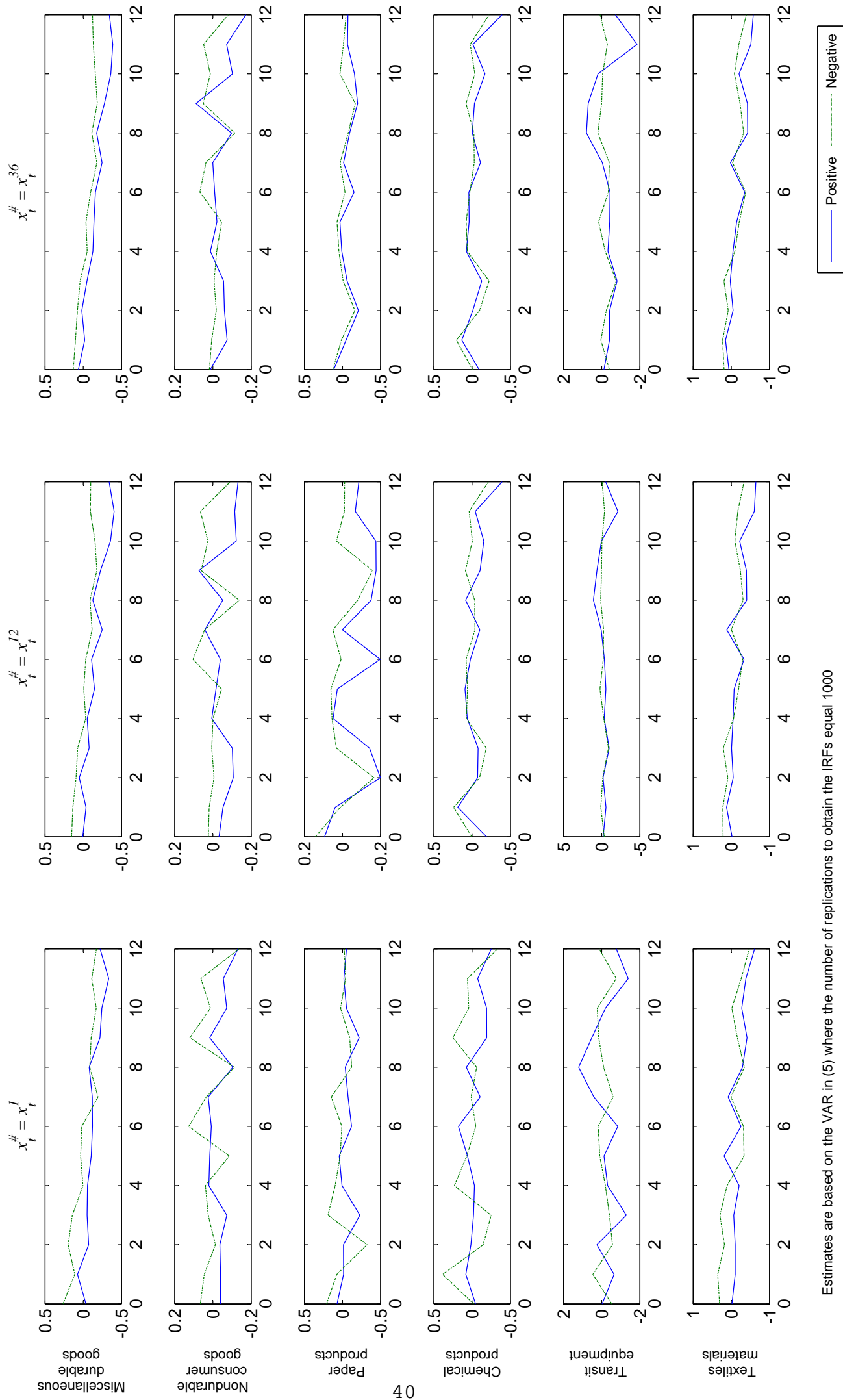
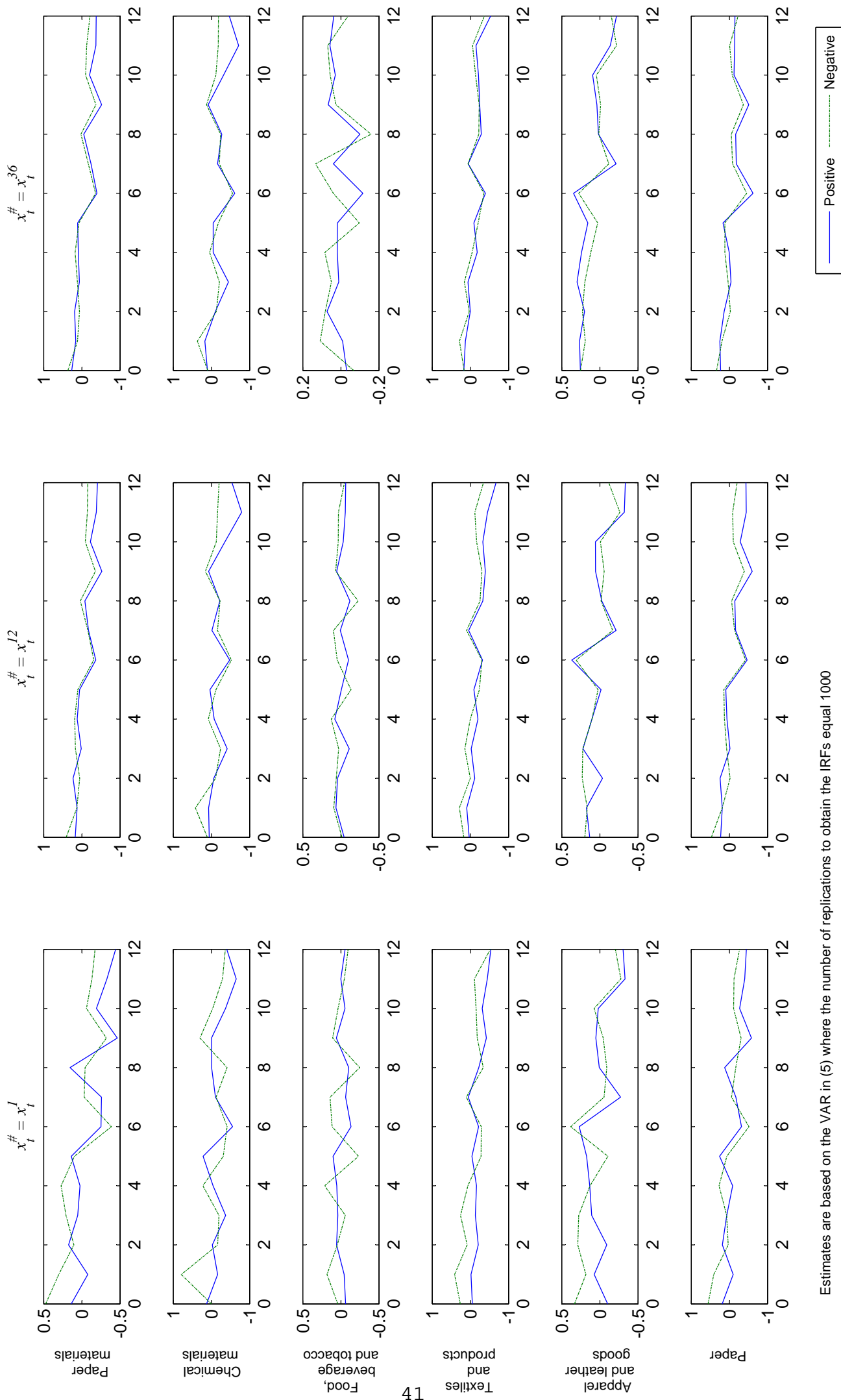Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

Figure A.1e: Impulse response to one standard deviation positive and negative shocks to the real oil price (percentage)

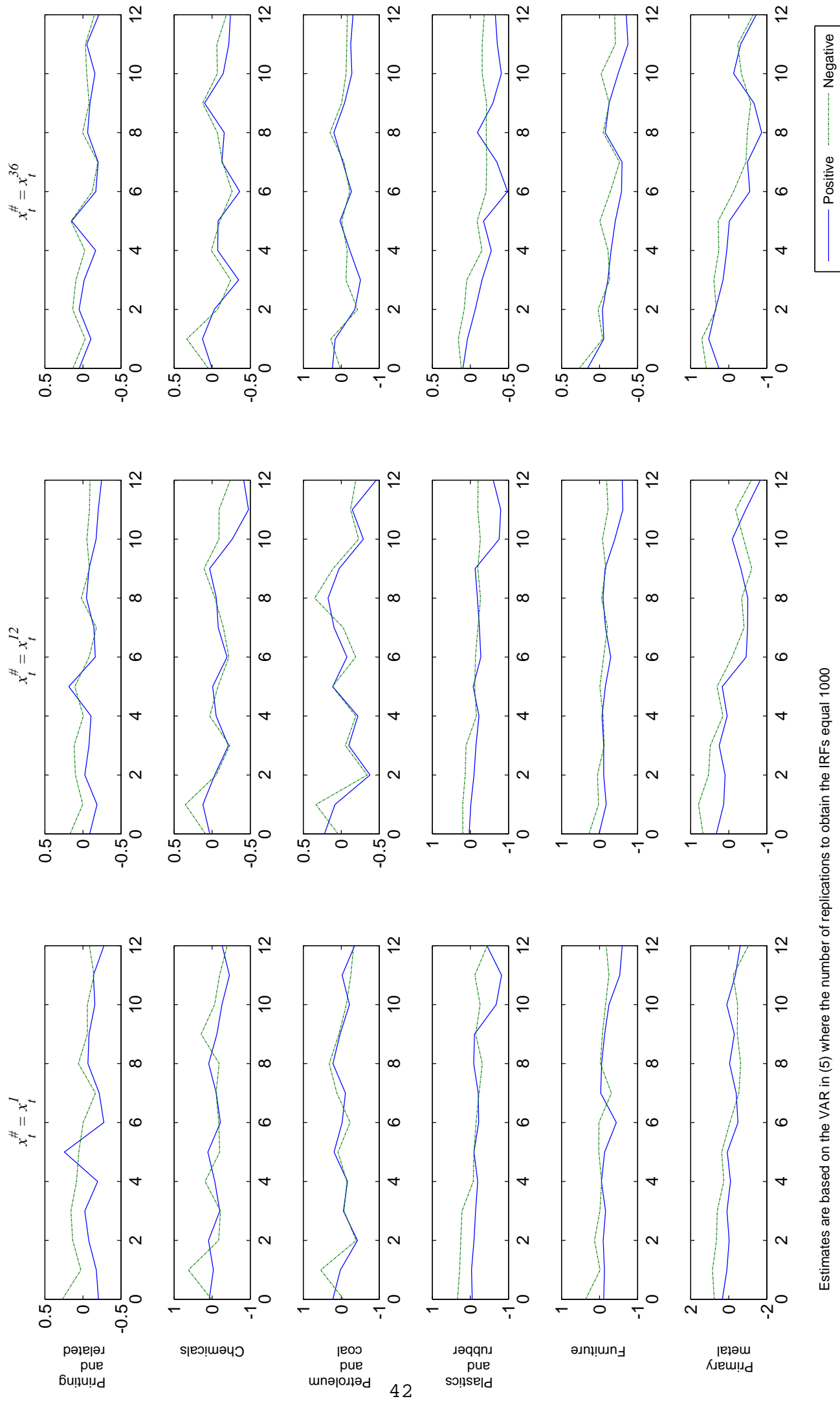Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

Figure A.2a: Impulse response to two standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

Figure A.2b: Impulse response to two standard deviation positive and negative shocks to the real oil price (percentage)
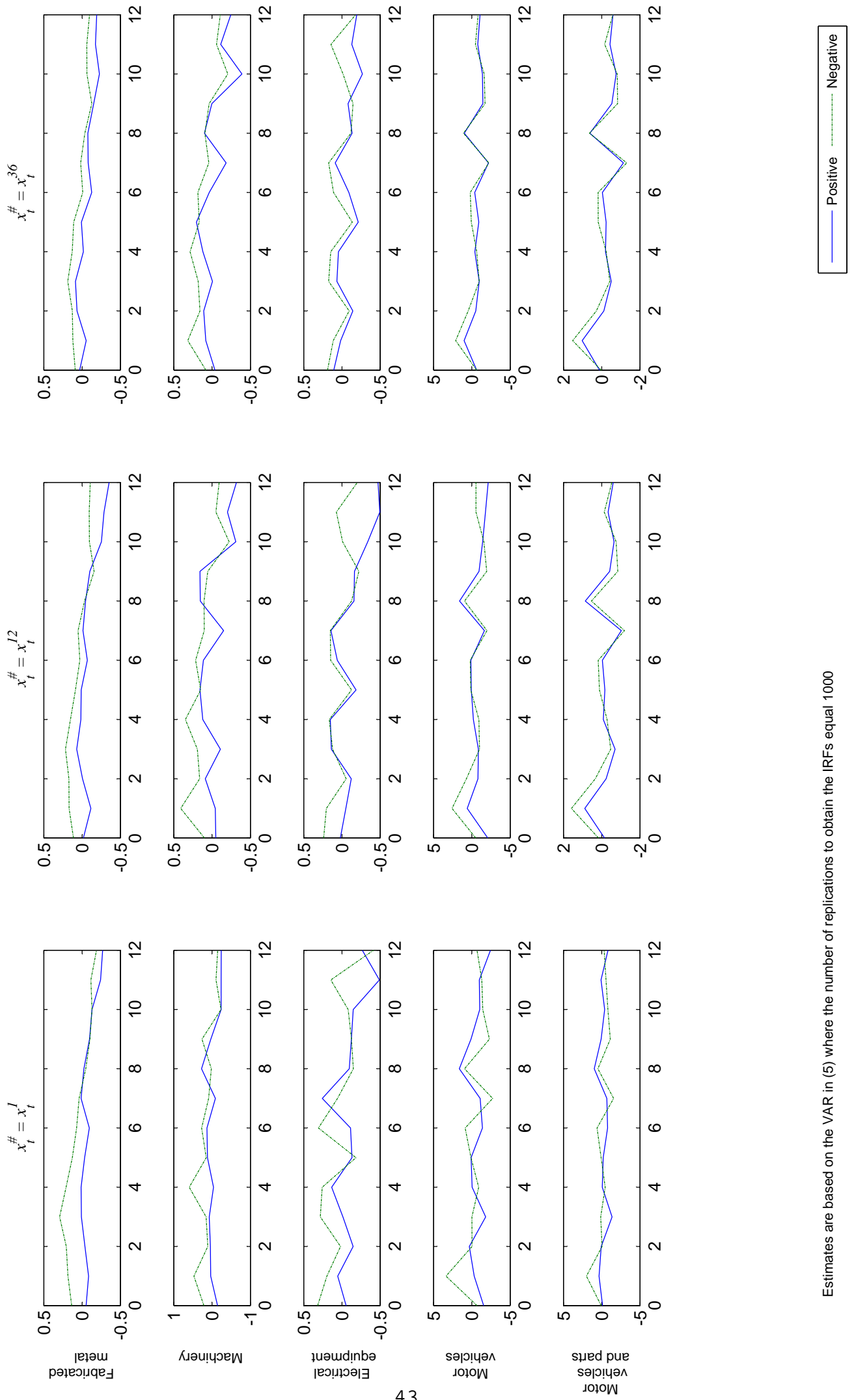
Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

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Figure A.2c: Impulse response to two standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

— Positive ----- Negative

Figure A.2d: Impulse response to two standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000

Figure A.2e: Impulse response to two standard deviation positive and negative shocks to the real oil price (percentage)

Estimates are based on the VAR in (5) where the number of replications to obtain the IRFs equal 1000