Appendix for

The Effects of Oil Price Shocks on Job Reallocation

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1 Computation of the Impulse Response Functions

Because our simultaneous equation model, (8), is nonlinear in x_t, computing the impulse response functions –hereafter $IRFs$– in the usual textbook manner is erroneous (see Gallant, Rossi and Tauchen 1993 and Koop, Pesaran and Potter 1996). In particular, the textbook $IRFs$ may overestimate the effect of an oil price shock when the variable of interest has been censored, as it is the case with $x_t^{\#}$ (see Kilian and Vigfusson 2011b.) In such framework, the $IRFs$ depend on the history of $x_t^{\#}$ and the magnitude of the shock. Following Koop et al. (1996) and Kilian and Vigfusson (2011a), we compute the $IRFs$ for 13 horizons ($h = 0, 1, \ldots 12$) by Monte Carlo integration, conditional on the history and the size of the shock, in the following manner:

(1) Estimate the model (8) via OLS equation by equation and keep the estimated coefficients (denoted by $\widehat{B}_1$, $\widehat{B}_2$, $\widehat{B}_3$), the standard deviations ($\widehat{s}_1$, $\widehat{s}_2$, $\widehat{s}_3$), and the residuals ($\widehat{\varepsilon}_1$, $\widehat{\varepsilon}_2$, and $\widehat{\varepsilon}_3$) from the three equations.

(2) Given a history $\{x_{t-1}, \ldots, x_{t-p}, NEG_{t-1}, ..., NEG_{t-p}, POS_{t-1}, ...,POS_{t-p}\} = \{X_t, N_t, P_t\} \in \Omega^t$, generate two time paths of x_t such that:

$$\begin{aligned} x_t^1 &= \widehat{B}_1 [1, X_t, N_t, P_t] + \delta \\ x_t^2 &= \widehat{B}_1 [1, X_t, , N_t, P_t] + \varepsilon_{1t} \end{aligned} \tag{1}$$

where ε_{1t} is drawn from the empirical distribution of ε_{1t} (i.e., resampled with replacement from the residual $\widehat{\varepsilon}_1$ in (8)) and δ equals either one or two standard deviations.

(3) The updated information sets, together with the censored variables are given by $\mathcal{I}_t^1 = \{1, x_t^1, X_t, N_t, P_t, x_t^{1\#}, X_t^{1\#}\}$ and $\mathcal{I}_t^2 = \{1, x_t^2, X_t, N_t, P_t, x_t^{2\#}, X_t^{2\#}\}$. Given these two histories, two

paths for NEG_t are generated as:

$$\begin{aligned} NEG_t^1 &= \widehat{B}_2 \mathcal{I}_t^1 + \varepsilon_{2t} \\ NEG_t^2 &= \widehat{B}_2 \mathcal{I}_t^2 + \varepsilon_{2t} \end{aligned} \tag{2}$$

where ε_{2t} is drawn from the empirical distribution of ε_{2t}. (Notice that the same value is used as ε_{2t} to generate NEG_t^1 and NEG_t^2 as we are interested only in the effect of a shock to oil prices.)

(4) The new updated information sets are given by $\widetilde{\mathcal{I}}_t^1 = \{1,\, x_t^1,\, N_t^1,\, X_t,\, N_t,\, P_t,\, x_t^{1\#},\, X_t^{1\#}\}$ and $\widetilde{\mathcal{I}}_t^2 = \{1,\, x_t^2,\, N_t^2,\, X_t,\, N_t,\, P_t,\, x_t^{2\#},\, X_t^{2\#}\}$. Given these two histories, two paths for POS_t are generated:

$$\begin{aligned} POS_t^1 &= \widehat{B}_3 \mathcal{I}_t^1 + \varepsilon_{3t} \\ POS_t^2 &= \widehat{B}_3 \mathcal{I}_t^2 + \varepsilon_{3t} \end{aligned}$$

where ε_{3t} is drawn from the empirical distribution of ε_{3t}. (Again, notice that the same value is used as ε_{3t} to generate POS_t^1 and POS_t^2.)

(5) Generate new information sets $\Omega_{t+1,1}^t = \{1,\, x_t^1,\, x_{t-1},\, \ldots,\, x_{t-p+1},\, NEG_t^1,\, NEG_{t-1},\, \ldots,\, NEG_{t-p+1},\, POS_t^1,\, POS_{t-1},\, \ldots,\, POS_{t-p+1}\}$ and $\Omega_{t+1,2}^t = \{1,\, x_t^2,\, x_{t-1},\, \ldots,\, x_{t-p+1},\, NEG_t^2,\, NEG_{t-1},\, \ldots,\, NEG_{t-p+1},\, POS_t^2,\, POS_{t-1},\, \ldots,\, POS_{t-p+1}\}$; the two paths for x_{t+1} are given by

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

Repeat steps (2)-(5) $H+1$ times.

(6) After R repetitions of steps (2)-(5), generate the conditional $IRFs$ as

$$I_{NEG}\left(h,\delta,\Omega^{t}\right)=\frac{1}{R}\sum_{r=1}^{R}NEG_{t,r}^{1}-\frac{1}{R}\sum_{r=1}^{R}NEG_{t,r}^{2}\ \text{ for } h=0,1,\ldots,H$$

and

$$I_{POS}\left(h,\delta,\Omega^{t}\right)=\frac{1}{R}\sum_{r=1}^{R}POS_{t,r}^{1}-\frac{1}{R}\sum_{r=1}^{R}POS_{t,r}^{2}\ \text{ for } h=0,1,\ldots,H$$

where $I_{NEG}\left(h,\delta,\Omega^{t}\right)\xrightarrow{p}E\left[NEG_{t+h}|\delta,\Omega^{t}\right]-E\left[NEG_{t+h}|\Omega^{t}\right]$ as $R\rightarrow\infty$ and $I_{POS}\left(h,\delta,\Omega^{t}\right)\xrightarrow{p}$ $E\left[POS_{t+h}|\delta,\Omega^{t}\right]-E\left[POS_{t+h}|\Omega^{t}\right]$ as $R\rightarrow\infty$. In our computation we set $R=10,000$.

(7) The unconditional $IRFs$ are generated by repeating (2) to (6) for all possible Ω^{t}, $t=1:T$ and then taking the mean over all the histories.

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

and

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

(8) The variance-covariance matrix for $\left[I_{NEG}\left(h,\delta\right),I_{POS}\left(h,\delta\right)\right]$ is computed as follows. First, given the estimated parameters $\widehat{B}_1$, $\widehat{B}_2$, $\widehat{B}_3$, $\widehat{s}_1$, $\widehat{s}_2$, $\widehat{s}_3$, the residuals, and an arbitrary chosen history Ω^{m}, the system in (8) is used to generate pseudo-series of the same length of our data. Second, for each of the newly generated pseudo-series, (X^{m},N^{m},P^{m}), we repeat steps (1) through (7) to get the unconditional $IRFs$. Finally, for M unconditional $IRFs$, both for NEG and POS , the variance covariance matrix is computed. The matrix has a size of $2\left(H+1\right)\times2\left(H+1\right)$.

2 Additional Tables and Figures

Table A.1. IRF based test of symmetry in the response to a 1 s.d. oil price shock (updated for $x_t^{\#} = x_t^1$)

	$x_t^{\#} = x_t^1$		
Sector	NET	SUM	EXC
Total manufacturing (1972:Q2-2005:Q1)	0.16	0.19	0.14
Total manufacturing (1972:Q2-1998:Q4)	0.62	0.70	0.29
Food	0.51	0.53	0.40
Tobacco	0.33	0.81	**0.04**
Textiles	0.88	0.86	**0.04**
Apparel	0.80	0.89	0.51
Lumber	0.39	0.58	**0.00**
Furniture and fixtures	0.33	0.55	**0.04**
Paper	0.85	0.70	0.15
Printing	0.57	0.83	0.48
Chemicals	0.53	0.75	0.48
Petroleum and coal	0.12	0.16	**0.05**
Rubber and plastics	0.51	0.68	*0.10*
Leather	0.56	0.54	**0.02**
Stone, clay and glass	0.65	0.83	**0.04**
Primary metals	0.76	0.74	0.41
Fabricated metals	0.78	0.83	0.27
Industrial machinery	0.98	0.83	0.56
Electronic and electric equipment	0.73	0.80	0.58
Transportation equipment	0.63	1.00	0.17
Instruments and related products	0.57	0.71	0.18
Miscellaneous manufacturing	0.96	0.78	0.23
Motor vehicles and passenger car bodies	0.50	0.68	0.29
Truck and bus bodies	0.99	0.79	0.12
Motor vehicle parts and accessories	0.91	0.61	0.11
Truck trailers	0.31	0.73	0.25

Notes: Computations are based on 10,000 simulations of model (8). p-values are based on the χ^2_{H+1}. Bold and italics refer to significance at the 5% and 10% level, respectively. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Table A.2. IRF based test of symmetry in the response to positive and negative innovations in the real oil price

	1 s.d.				2 s.d.			
	Job creation		Job destruction		Job creation		Job destruction	
Sector / Innovation	$x_t^{\#}=x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$	$x_t^{\#}=x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$	$x_t^{\#}=x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$	$x_t^{\#}=x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$
Total manufacturing (1972:Q2-2014:Q2)	0.31	0.83	0.40	0.13	**0.01**	0.68	**0.00**	**0.00**
Total manufacturing (1972:Q2-1998:Q4)	0.74	0.87	0.73	0.66	0.16	0.80	*0.06*	0.38
Food	0.93	1.00	0.83	0.22	0.92	0.99	0.73	*0.07*
Tobacco	0.89	0.28	0.82	0.67	0.80	**0.03**	0.64	0.42
Textiles	0.95	0.91	0.48	0.90	0.78	0.83	**0.00**	0.86
Apparel	0.79	0.92	0.59	0.93	0.44	0.84	0.13	0.84
Lumber	0.54	0.29	0.42	0.56	**0.05**	*0.06*	*0.07*	0.40
Furniture and fixtures	0.67	0.89	0.38	0.52	*0.09*	0.71	**0.00**	0.25
Paper	0.76	0.87	0.72	0.85	0.32	0.64	0.17	0.67
Printing	0.75	0.67	0.74	0.65	0.38	0.55	0.29	0.34
Chemicals	0.50	0.62	0.46	0.65	0.18	0.47	*0.10*	0.48
Petroleum and coal	0.56	0.34	0.23	0.13	*0.10*	0.17	**0.00**	**0.02**
Rubber and plastics	0.80	0.49	0.44	0.58	0.30	0.15	**0.02**	0.39
Leather	0.67	0.66	0.97	0.65	0.33	0.50	0.93	0.46
Stone, clay and glass	0.72	0.64	0.71	0.77	0.12	0.25	0.24	0.56
Primary metals	0.76	0.79	0.71	0.73	0.36	0.54	0.22	0.51
Fabricated metals	0.73	0.65	0.54	0.93	0.19	0.23	**0.02**	0.89
Industrial machinery	0.73	0.91	0.81	0.93	0.31	0.72	0.60	0.85
Electronic and electric equipment	0.91	0.69	0.41	0.81	0.77	0.47	**0.02**	0.62
Transportation equipment	0.94	0.39	0.88	0.97	0.87	*0.08*	0.55	0.93
Instruments and related products	0.82	0.47	0.58	0.66	0.55	0.24	0.12	0.47
Miscellaneous manufacturing	0.72	0.63	0.79	0.98	0.25	0.40	0.59	0.99
Motor vehicles and passenger car bodies	0.79	0.42	0.78	0.80	0.37	0.17	0.25	0.62
Truck and bus bodies	0.88	0.95	0.72	0.97	0.29	0.80	0.27	0.95
Motor vehicle parts and accessories	0.79	0.56	0.78	0.93	0.57	0.26	0.33	0.83
Truck trailers	0.86	0.43	0.51	0.18	0.72	0.35	**0.03**	*0.08*

Notes: Computations are based on 10,000 simulations of model (8). p-values are based on the χ^2_{H+1}. Bold and italics refer to significance at the 5% and 10% level, respectively. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Table A.3. IRF based test of symmetry in the response to a 1 s.d. oil price shock in a model à la DH (2001)

	Job creation			Job destruction		
Sector / Oil price measure	$x_t^{\#}= x_t^1$	$x_t^{\#}= x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$	$x_t^{\#}= x_t^1$	$x_t^{\#}= x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$
Apparel	1.00	0.98	1.00	0.91	0.83	0.84
Rubber and plastics	0.95	0.89	0.93	0.78	0.63	0.74
Primary metals	0.97	0.98	0.91	0.71	0.66	0.65
Industrial machinery	0.97	0.74	0.77	0.89	0.97	0.84
Electronics and electric equipment	0.77	0.66	0.66	0.51	0.65	0.51
Transportation equipment	0.96	0.97	0.92	0.97	0.63	0.95

Notes: Computations are based on 10,000 simulations of model (8) augmented with a macro block including job destruction and job creation in total manufacturing and the quality spread, as in Davis and Haltiwanger (2001), and estimated on their sample (1973-1988). p-values are based on the χ^2_{H+1}.Bold and italics refer to significance at the 5% and 10% level, respectively. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Table A.4. Cumulative change in job flows due to a 1 s.d. real oil price shock

	$x_t^{\#} = x_t^4$						$x_t^{\#} = \widetilde{x}_t^{abs}$					
	NET		SUM		EXC		NET		SUM		EXC	
Sector / Quarters since the shock	4	8	4	8	4	8	4	8	4	8	4	8
Total manufacturing (1972:Q2-2014:Q2)	-0.41	-1.02	0.38	1.13	-0.44	-0.31	-0.58	-1.31	0.50	1.19	-0.66	-0.85
Total manufacturing (1972:Q2-1998:Q4)	-0.78	-1.10	0.90	1.72	0.02	0.39	-0.82	-1.40	1.06	2.31	0.12	0.58
Food	-0.33	-0.55	1.00	2.04	0.40	1.20	-0.35	-0.90	1.02	2.09	0.26	0.69
Tobacco	1.16	1.31	-0.03	0.03	-2.45	-2.77	0.51	-0.07	0.71	1.66	-2.07	-1.87
Textiles	-1.23	-1.07	0.88	1.62	-0.37	-0.28	-1.23	-1.35	0.86	1.89	-0.37	0.04
Apparel	0.04	-0.36	0.52	0.91	-0.62	-0.87	-0.01	-0.66	0.71	1.51	-0.08	-0.26
Lumber	-3.22	-3.11	2.09	3.79	-1.18	-0.03	-3.15	-3.01	2.24	4.60	-1.13	0.57
Furniture and fixtures	-1.78	-2.31	1.09	2.35	-0.94	-0.62	-1.92	-2.66	1.33	2.86	-0.77	-0.62
Paper	-0.89	-1.14	0.48	1.18	-0.43	-0.27	-0.88	-1.25	0.48	1.32	-0.44	-0.24
Printing	-0.45	-0.62	0.48	0.53	-0.28	-0.47	-0.64	-0.98	0.81	1.31	-0.21	-0.61
Chemicals	-0.25	-0.60	0.59	1.22	-0.17	0.09	-0.35	-0.97	0.63	1.35	-0.01	0.09
Petroleum and coal	-0.59	-0.84	1.54	1.86	-0.31	-0.33	-0.53	-1.20	1.53	2.68	-0.06	0.35
Rubber and plastics	-1.97	-1.99	1.60	3.08	-0.52	0.22	-2.13	-2.96	1.54	3.32	-0.70	-0.07
Leather	0.07	-0.32	-0.29	0.06	-1.84	-1.98	0.08	-0.32	-0.04	0.25	-0.98	-1.27
Stone, clay, and glass	-1.91	-2.53	1.26	2.31	-0.94	-0.63	-2.00	-3.06	1.30	2.77	-1.20	-1.45
Primary metals	-1.00	-2.26	0.63	2.24	-1.11	-0.80	-1.10	-3.09	0.68	2.83	-1.23	-1.29
Fabricated metals	-1.47	-1.89	1.28	2.33	-0.51	0.05	-1.54	-2.15	1.35	2.84	-0.46	-0.03
Industrial machinery	-0.23	-1.29	0.17	0.61	-0.63	-1.27	-0.36	-2.10	0.29	1.35	-0.53	-1.53
Electronic and electric equipment	-1.01	-1.47	0.88	1.70	-0.37	-0.31	-1.24	-1.86	1.02	2.06	-0.55	-1.05
Transportation equipment	-2.19	-2.36	3.01	4.67	0.76	2.08	-2.22	-2.72	2.90	4.75	0.27	0.90
Instruments and related products	0.31	-0.07	0.38	0.78	-0.58	-0.69	-0.05	-0.87	0.48	1.27	-0.52	-1.38
Miscellaneous manufacturing	-1.31	-1.53	1.02	1.31	-0.52	-0.83	-1.38	-2.63	1.23	2.08	-0.33	-0.85
Motor vehicles and passenger car bodies	-4.73	-4.47	12.42	16.10	7.40	10.15	-4.71	-6.25	11.35	17.51	5.23	9.32
Truck and bus bodies	-2.96	-3.74	0.28	1.30	-3.07	-3.13	-2.44	-3.28	0.93	3.67	-1.60	-0.01
Motor vehicle parts and accessories	-3.73	-2.74	3.55	5.20	-0.22	0.26	-3.72	-3.49	3.39	5.73	-0.46	0.89
Truck trailers	-5.10	-4.99	5.50	10.80	0.40	2.69	-6.14	-8.15	5.30	11.89	-1.35	1.40

Notes: This table reports the cumulative change (measured in percentage points) in net employment (NET), job reallocation (SUM), and excess reallocation (EXC) due to a positive one standard deviation innovation in the real oil price. Computations are based on 10,000 simulations of model (8).

Table A.5. Test for the absence of job reallocation

	1 s.d. oil price shock		2 s.d. oil price shock	
Sector / Oil price measure	$x_t^{\#}= x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$	$x_t^{\#}= x_t^4$	$x_t^{\#}=\widetilde{x}_t^{abs}$
Total Manufacturing (1972:Q2-2014:Q2)	*0.09*	0.24	**0.04**	0.16
Total Manufacturing (1972:Q2-1998:Q4)	0.14	*0.09*	*0.06*	0.26
Food	0.21	0.61	0.35	0.87
Tobacco	0.98	0.55	0.99	0.40
Textiles	*0.07*	**0.04**	**0.01**	0.22
Apparel	0.65	0.59	0.70	0.74
Lumber	**0.05**	0.08	**0.02**	0.37
Furniture and fixtures	**0.05**	**0.05**	**0.00**	0.15
Paper	0.32	0.28	0.13	0.63
Printing	0.88	0.30	0.81	0.31
Chemicals	0.22	0.30	0.13	0.33
Petroleum and coal	0.11	0.26	**0.01**	0.29
Rubber and plastics	**0.01**	**0.03**	**0.00**	0.18
Leather	0.78	0.61	0.85	0.42
Stone, clay, and glass	**0.04**	0.04	**0.02**	0.15
Primary metals	0.37	0.26	0.16	0.20
Fabricated metals	0.26	0.20	*0.10*	0.59
Industrial machinery	0.89	0.90	0.73	0.84
Electronic and electric equipment	0.26	0.25	**0.03**	0.34
Transportation equipment	0.12	0.15	*0.09*	0.55
Instruments and related products	0.30	0.41	0.20	0.64
Miscellaneous manufacturing	0.32	0.55	0.34	0.89
Motor vehicles and passenger car bodies	0.13	0.23	**0.02**	0.20
Truck and bus bodies	0.37	0.46	0.32	0.67
Motor vehicle parts and accessories	*0.07*	**0.04**	**0.02**	0.11
Truck trailers	**0.01**	*0.06*	**0.00**	*0.10*

Notes: Computations are based on 10,000 simulations of model (8). $p-values$ are based on the χ^2_{H+1}. Bold and italics refer to significance at the 5% and 10% level, respectively. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Table A.6. Test for the absence of job reallocation in response to a an oil price shock of 1 s.d. in a model à la DH (2001)

Sector / Oil price measure	$x_t^{\#} = x_t^1$	$x_t^{\#} = x_t^4$	$x_t^{\#} = \widetilde{x}_t^{abs}$
Apparel	0.94	0.87	0.71
Rubber and plastics	*0.09*	0.20	**0.03**
Primary metals	0.28	0.41	0.43
Industrial machinery	1.00	0.87	0.83
Electronics and electric equipment	0.46	0.67	0.63
Transportation equipment	0.28	0.16	0.12

Notes: Computations are based on 10,000 simulations of model (8), augmented with a macro block including total job destruction, total job creation and the quality spread as in Davis and Haltiwanger (2001) and estimated on their sample specification (1973-1988). p-values are based on the χ^2_{H+1}.Bold and italics refer to significance at the 5% and 10% level, respectively. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Table A.7. Cumulative change in job flows after a 16% positive oil price shock ($x_t^{\#} = x_t^4$)

	1972-1984						1985-1998					
	NET		SUM		EXC		NET		SUM		EXC	
Sector / Quarters since the shock	4	8	4	8	4	8	4	8	4	8	4	8
Total manufacturing (1972:Q2-2014:Q2)	-0.83	-1.86	0.34	1.47	-1.97	-2.36	-0.13	-0.62	0.19	0.69	-0.56	-0.59
Total manufacturing (1972:Q2-1998:Q4)	-0.83	-1.86	0.34	1.47	-1.97	-2.36	-0.46	-0.58	0.86	1.12	0.20	0.32
Food	-0.58	-1.26	0.14	2.47	-2.87	-1.39	0.03	-0.11	1.06	1.75	0.08	0.54
Tobacco	1.42	1.13	0.47	1.04	-1.85	-2.31	2.63	2.89	-0.03	-0.28	-4.61	-6.47
Textiles	-0.91	-1.85	-0.06	2.14	-4.32	-4.70	-0.75	-0.75	0.79	0.99	-0.07	0.04
Apparel	-1.11	-2.03	0.06	1.59	-3.54	-4.85	0.62	0.89	1.02	0.99	-0.30	-0.67
Lumber	-6.72	-6.85	0.47	2.63	-6.77	-7.12	-1.30	-1.36	1.02	1.01	-0.60	-0.92
Furniture and fixtures	-4.11	-4.83	1.40	4.02	-3.05	-3.11	-0.83	-0.95	1.40	1.69	-0.16	-0.26
Paper	-2.81	-3.54	0.33	1.81	-2.64	-3.55	0.01	0.04	-0.09	-0.12	-0.69	-0.82
Printing	-0.73	-1.57	0.66	1.61	-1.09	-1.20	-0.47	-0.44	1.04	0.88	-0.18	-0.73
Chemicals	0.49	-0.27	0.15	2.08	-3.24	-3.34	0.00	-0.11	0.27	0.30	-0.44	-0.61
Petroleum and coal	0.12	1.20	2.01	1.87	-5.37	-7.15	-0.09	-0.24	0.79	0.98	-0.60	-0.84
Rubber and plastics	-2.84	-2.55	1.89	4.82	-1.79	-1.36	-0.99	-1.12	1.20	1.28	-0.14	-0.25
Leather	1.31	-0.79	-1.71	-0.55	-5.48	-6.96	0.12	0.36	-0.05	-0.15	-2.63	-3.54
Stone, clay and glass	-3.43	-4.72	0.32	2.25	-5.42	-6.15	-1.40	-1.79	1.06	1.01	-0.86	-1.64
Primary metals	4.80	-1.11	-3.44	-1.05	-13.49	-18.01	-0.08	0.00	-0.14	-0.10	-1.45	-1.57
Fabricated metals	-3.09	-3.92	-0.26	1.54	-4.99	-5.49	0.10	0.36	0.58	0.40	-0.66	-1.16
Industrial machinery	4.50	1.08	-3.96	-4.20	-10.36	-16.48	0.00	0.11	0.31	0.17	-0.64	-1.12
Electronic and electric equipment	-2.24	-4.34	0.47	2.28	-3.82	-5.17	-0.32	-0.18	0.73	1.03	0.05	0.06
Transportation equipment	-3.53	-5.94	4.19	6.31	-2.29	-3.09	-1.03	-1.21	1.63	2.23	-0.11	0.07
Instruments and related products	2.42	-0.08	-0.03	0.92	-4.58	-6.59	0.33	0.48	0.26	0.32	-0.39	-0.69
Miscellaneous manufacturing	-2.20	-2.74	1.11	3.03	-3.02	-3.53	-0.65	-0.34	1.79	1.37	-0.19	-1.02
Motor vehicles and passenger car bodies	-15.73	-13.66	29.46	29.80	10.27	6.49	-0.29	-0.38	4.12	7.30	-1.21	0.71
Truck and bus bodies	-11.91	-11.45	-0.25	1.22	-12.54	-12.63	-0.11	-1.96	0.62	1.61	-2.33	-3.19
Motor vehicle parts and accessories	-10.16	-7.67	6.54	8.97	-4.65	-7.92	-1.06	-0.40	1.73	2.26	0.04	-0.23
Truck trailers	0.34	-6.50	1.13	10.38	-20.79	-31.08	-3.99	-2.25	5.67	8.11	1.22	1.89

Notes: This table reports the cumulative change (measured in percentage points) in net employment (NET), job reallocation (SUM), and excess reallocation (EXC) due to a positive one standard deviation innovation in the real oil price. Computations are based on 10,000 simulations of model (8).

Table A.8. Cumulative change in job flows after a 16% positive oil price shock ($x_t^{\#}=\widetilde{x}_t^{abs}$)

	1972-1984						1985-1998					
	NET		SUM		EXC		NET		SUM		EXC	
Sector / Quarters since the shock	4	8	4	8	4	8	4	8	4	8	4	8
Total manufacturing (1972:Q2-2014:Q2)	-2.88	-4.41	2.13	4.47	-1.31	-2.79	-0.67	-2.74	-0.29	1.72	-2.01	-2.07
Total manufacturing (1972:Q2-1998:Q4)	-2.88	-4.41	2.13	4.47	-1.31	-2.79	-0.56	-0.77	1.05	1.51	0.29	0.52
Food	-1.74	-3.88	3.22	9.81	0.62	5.05	-0.16	-0.38	0.54	0.13	-0.45	-1.10
Tobacco	-3.18	-1.61	0.44	5.66	-6.73	-9.15	1.44	1.19	0.46	1.00	-4.84	-5.86
Textiles	-3.59	-0.10	2.61	4.84	-2.99	-8.10	-1.08	-1.15	0.89	1.14	-0.20	-0.35
Apparel	-2.82	-4.39	2.16	6.36	-1.52	-2.14	-0.01	-0.67	1.24	1.70	0.48	0.06
Lumber	-10.57	-6.27	2.80	6.68	-9.00	-13.77	-1.38	-1.65	1.07	1.17	-1.00	-1.31
Furniture and fixtures	-6.81	-6.69	3.95	8.99	-3.97	-7.25	-1.11	-1.44	1.38	1.77	-0.32	-0.59
Paper	-3.89	-6.34	1.16	3.40	-2.80	-6.15	-0.22	-0.19	0.16	0.45	-0.45	-0.27
Printing	-3.22	-5.70	2.16	5.44	-1.35	-1.61	-0.61	-0.43	1.27	1.48	-0.35	-1.35
Chemicals	-1.69	-3.39	2.24	5.68	-0.57	-0.76	-0.57	-0.73	0.25	0.07	-1.00	-1.56
Petroleum and coal	-3.09	5.24	3.19	0.95	-6.54	-20.07	0.13	0.05	0.94	1.40	-0.47	-0.52
Rubber and plastics	-5.64	-6.23	2.94	8.99	-3.83	-5.12	-1.11	-1.35	1.05	1.10	-0.77	-1.13
Leather	-1.49	-0.64	-0.19	1.53	-6.43	-11.46	-0.74	-1.19	0.19	-0.03	-1.68	-3.67
Stone, clay and glass	-6.84	-7.88	2.37	5.69	-5.07	-8.56	-1.91	-4.18	1.16	2.03	-2.04	-4.04
Primary metals	-4.85	-7.95	2.07	7.97	-7.83	-12.97	-0.63	-2.09	-0.24	0.27	-2.27	-3.24
Fabricated metals	-6.85	-8.58	2.08	5.74	-6.16	-8.20	-0.30	-0.63	0.55	0.44	-0.98	-1.62
Industrial machinery	-0.98	-6.21	-0.88	1.96	-6.88	-16.15	-0.37	-1.03	0.27	0.19	-1.43	-2.41
Electronic and electric equipment	-5.80	-9.36	2.13	6.52	-4.64	-9.51	-1.00	-1.91	0.73	1.22	-0.78	-1.21
Transportation equipment	-7.27	-11.64	6.22	10.59	-3.31	-8.02	-0.75	-0.99	1.53	1.89	-1.20	-2.14
Instruments and related products	-0.04	0.71	1.67	2.85	-2.72	-7.33	-0.19	-0.96	0.51	0.71	-0.98	-2.34
Miscellaneous manufacturing	-4.10	-7.54	1.91	6.86	-2.90	-4.22	-1.20	-1.09	2.04	1.77	-0.65	-1.45
Motor vehicles and passenger car bodies	-16.74	-26.13	34.53	38.89	15.36	10.13	0.32	-0.79	2.01	2.56	-3.71	-5.37
Truck and bus bodies	-10.52	-11.60	-0.95	0.42	-12.89	-15.24	-0.49	-2.68	0.09	0.61	-2.77	-4.66
Motor vehicle parts and accessories	-11.84	-10.79	8.99	14.54	-2.86	-2.12	-1.13	-0.61	1.38	1.79	-1.21	-1.68
Truck trailers	-9.34	-15.02	7.85	22.19	-9.98	-14.84	-6.13	-4.41	4.18	5.64	-4.03	-5.16

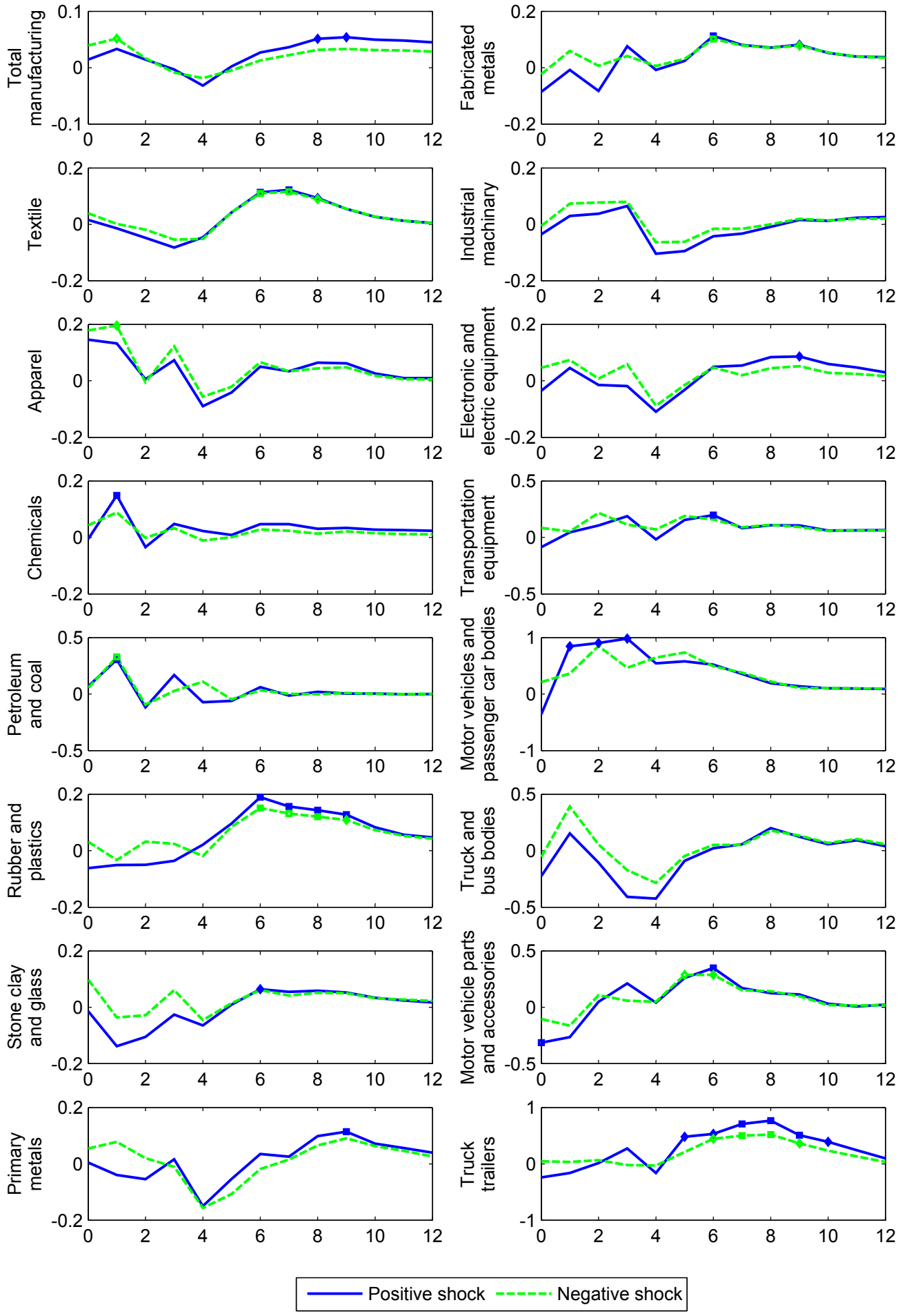
Notes: This table reports the cumulative change (measured in percentage points) in net employment (NET), job reallocation (SUM), and excess reallocation (EXC) due to a positive one standard deviation innovation in the real oil price. Computations are based on 10,000 simulations of model (8).

Table A.9. Test for the absence of job reallocation in response to a 16% oil price shock

	$x_t^{\#} = x_t^4$		$x_t^{\#} = \widetilde{x}_t^{abs}$	
Sector / Sub-sample	1972-1984	1985-1998	1972-1984	1985-1998
Total manufacturing (1972:Q2-2014:Q2)	0.70	0.54	0.62	**0.00**
Total manufacturing (1972:Q2-1998:Q4)	0.70	**0.04**	0.62	**0.01**
Food	0.87	0.23	0.77	0.57
Tobacco	0.80	0.51	0.87	0.63
Textiles	1.00	0.53	0.18	0.27
Apparel	0.57	0.76	0.47	0.70
Lumber	0.86	0.33	0.47	0.52
Furniture and fixtures	0.53	0.12	0.20	0.25
Paper	0.41	0.98	0.61	0.92
Printing	0.93	0.45	0.87	0.18
Chemicals	0.27	0.67	0.38	0.90
Petroleum and coal	0.22	0.28	*0.07*	**0.04**
Rubber and plastics	*0.09*	**0.04**	*0.06*	0.25
Leather	0.94	0.77	0.90	0.52
Stone, clay and glass	0.86	0.34	0.37	0.37
Primary metals	1.00	0.67	0.49	0.72
Fabricated metals	0.94	0.57	0.52	0.50
Industrial machinery	1.00	0.79	0.61	0.89
Electronic and electric equipment	0.56	0.59	0.37	0.69
Transportation equipment	0.84	**0.04**	0.70	**0.05**
Instruments and related products	0.88	0.79	0.36	0.75
Miscellaneous manufacturing	0.79	0.22	0.82	*0.10*
Motor vehicles and passenger car bodies	0.31	0.57	0.52	0.40
Truck and bus bodies	0.85	0.18	0.92	0.60
Motor vehicle parts and accessories	0.65	0.19	0.73	0.17
Truck trailers	*0.10*	**0.05**	0.29	**0.00**

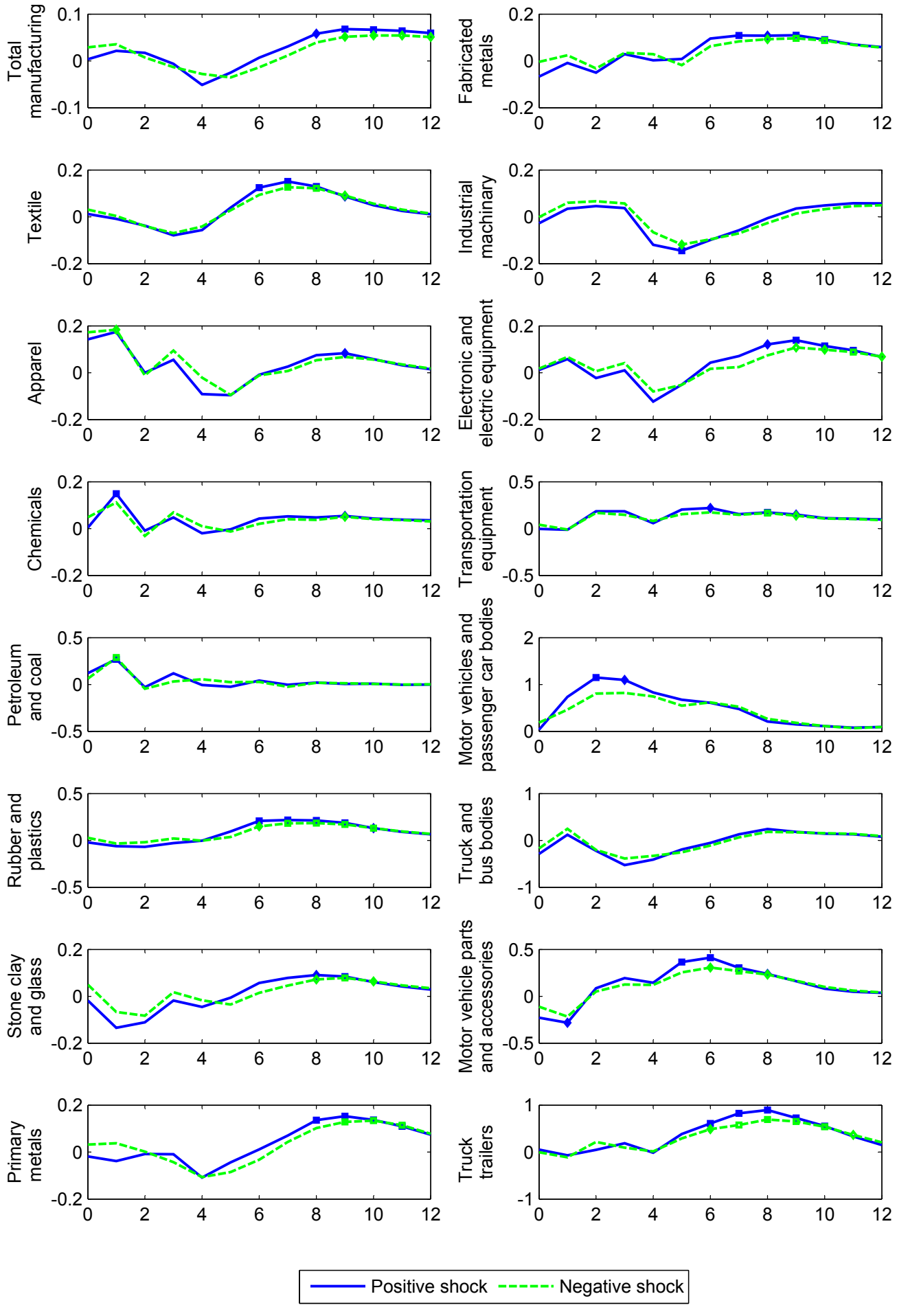
Notes: Computations are based on 10,000 simulations of model (8). p-values are based on the χ^2_{H+1}. Bold and italics refer to significance at the 5% and 10% level. ** and * denote significance after accounting for data mining at the 5% and 10% level, respectively.

Figure A1a: Job creation responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^1$)



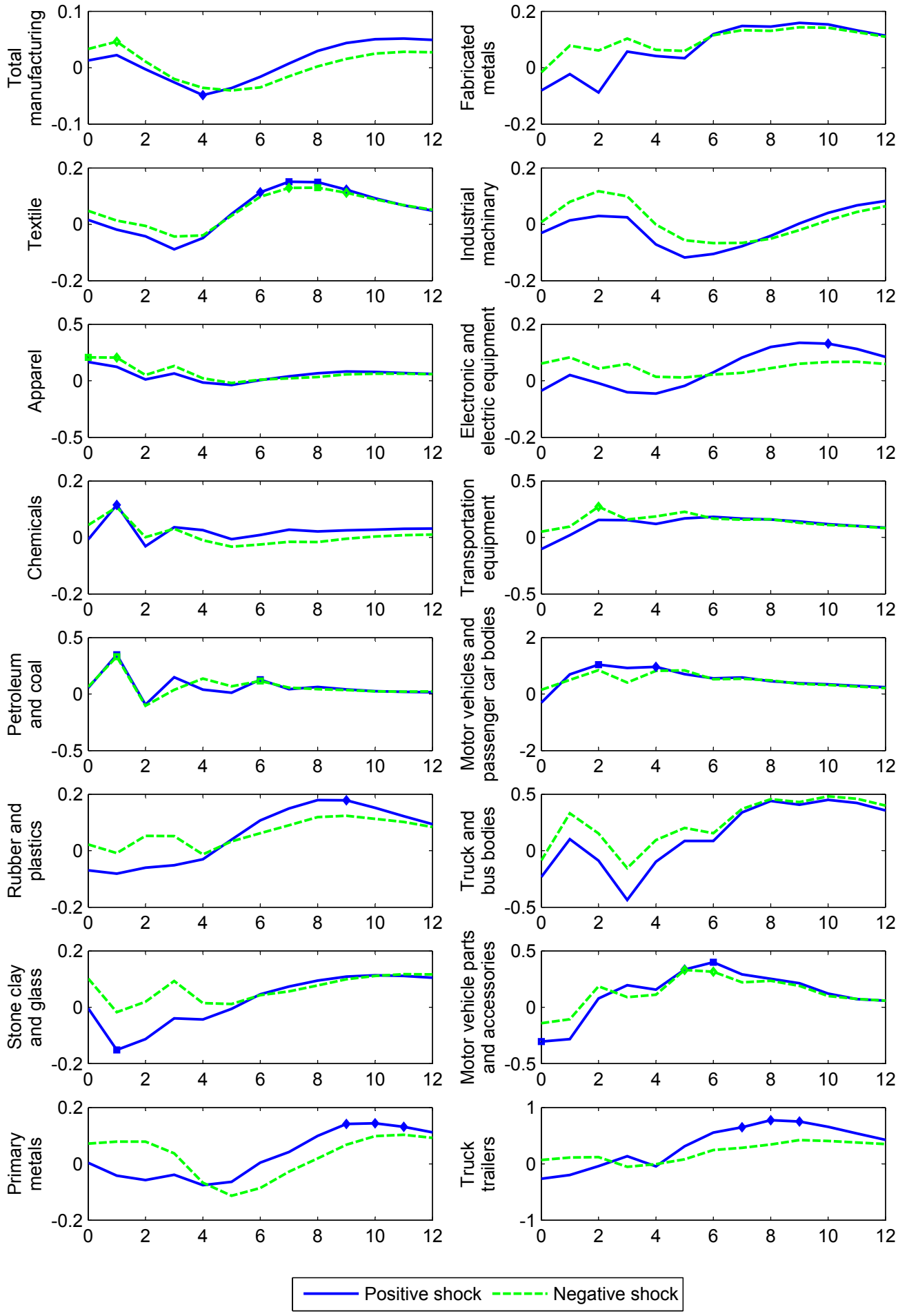
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A1b: Job creation responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^4$)



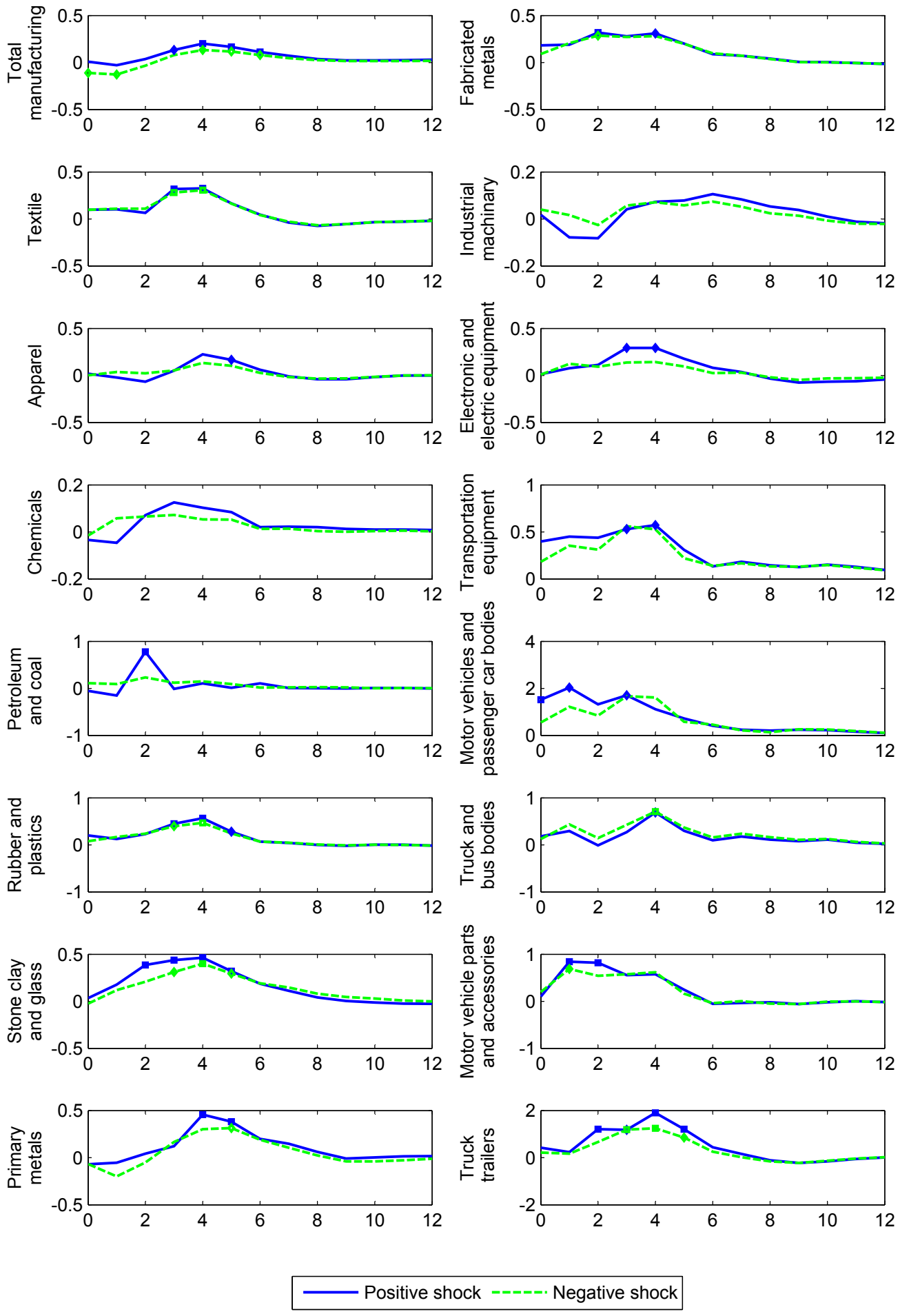
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A1c: Job creation responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^{abs}$)



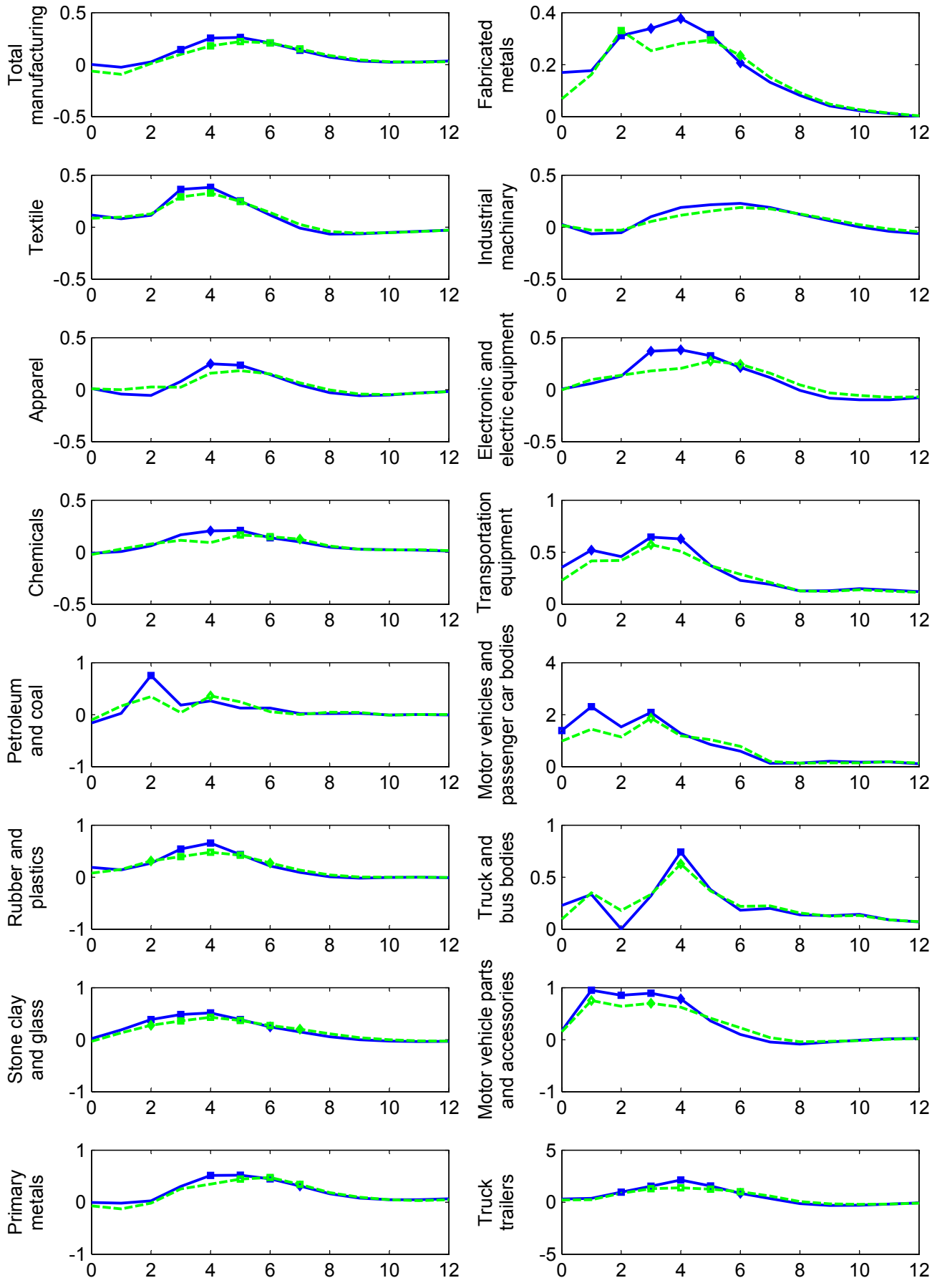
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A2a: Job destruction responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^1$)



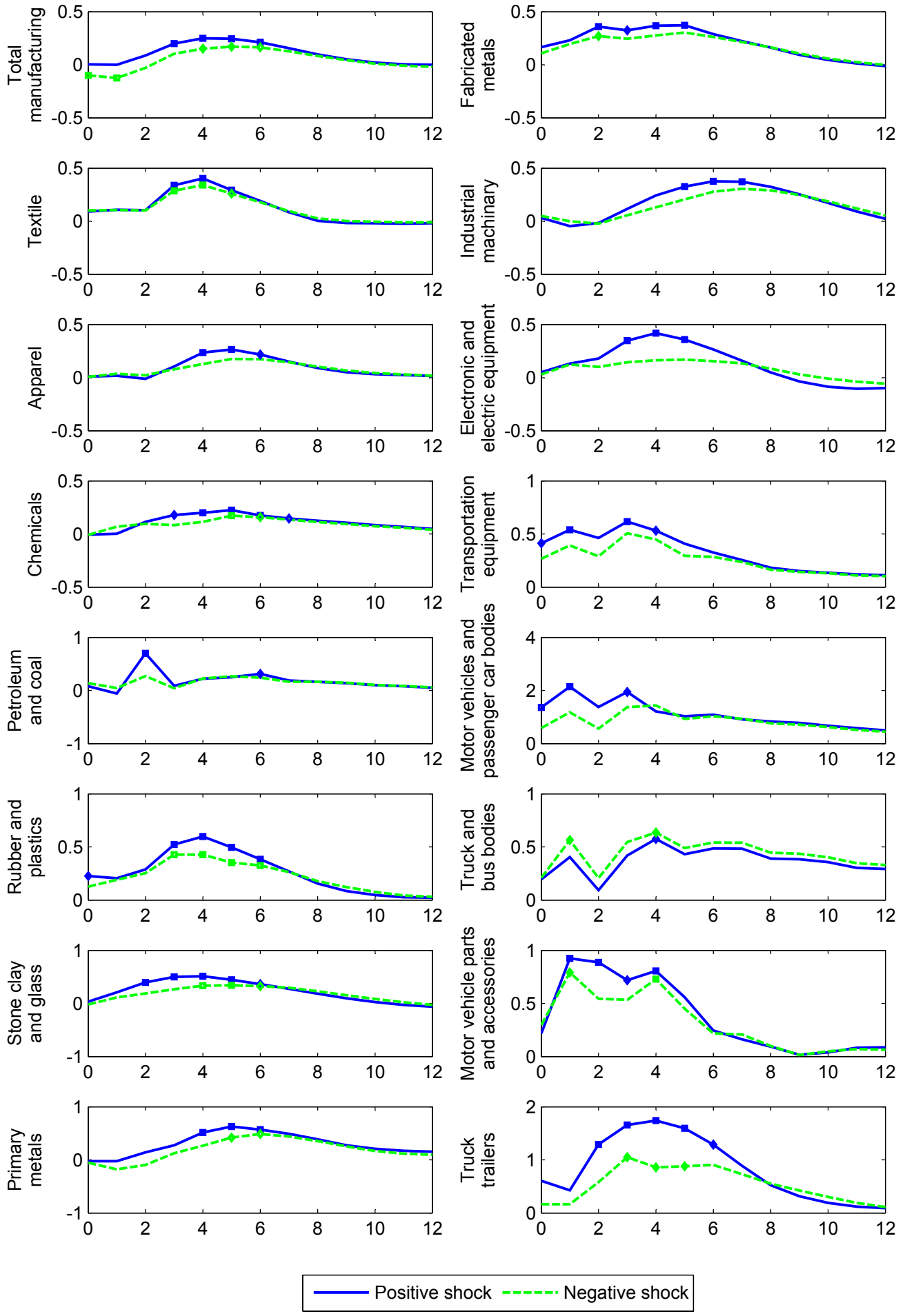
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A2b: Job destruction responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^4$)



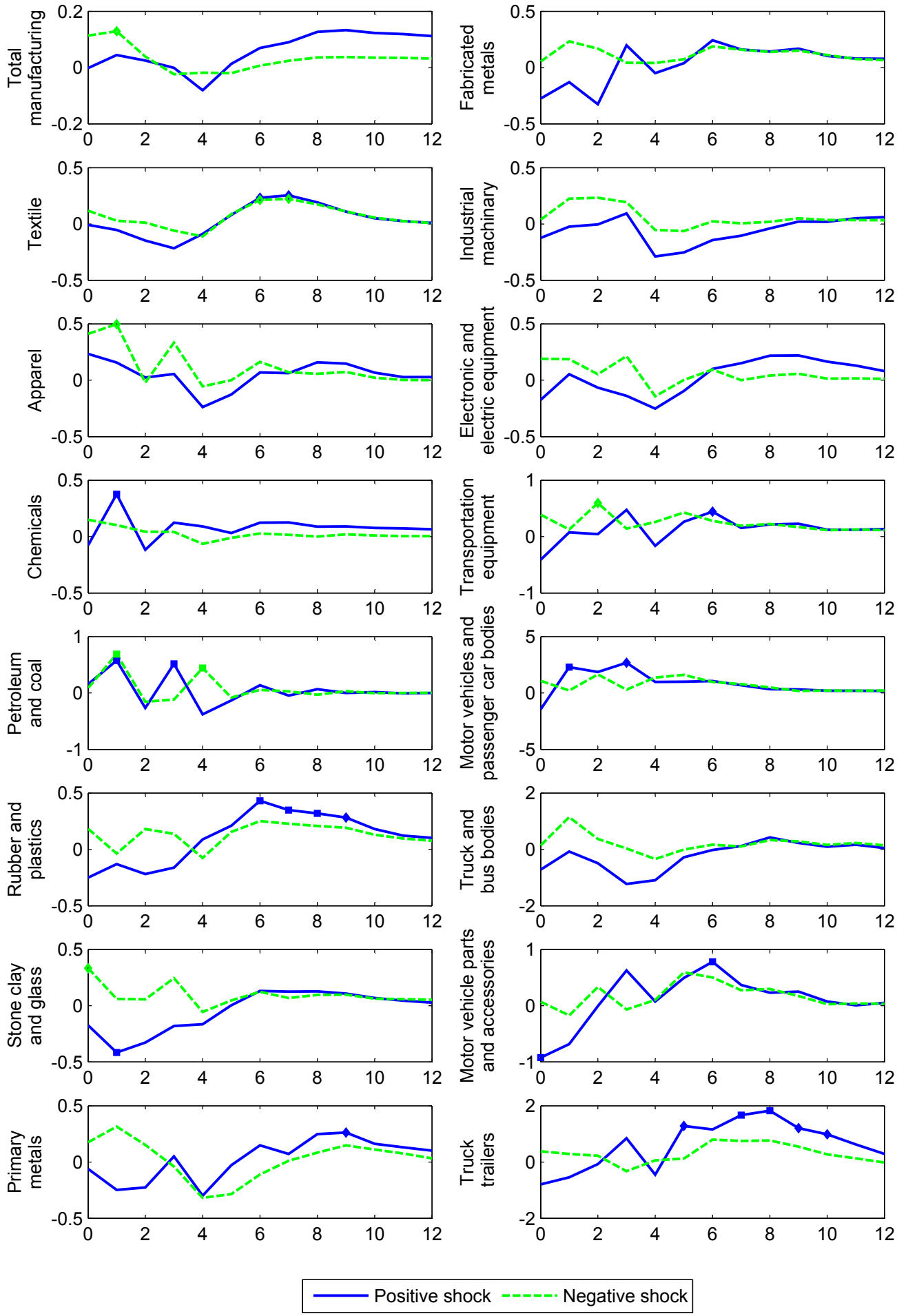
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A2c: Job destruction responses to positive and negative oil price shock of 1 s.d. ($x_t^{\#} = x_t^{abs}$)



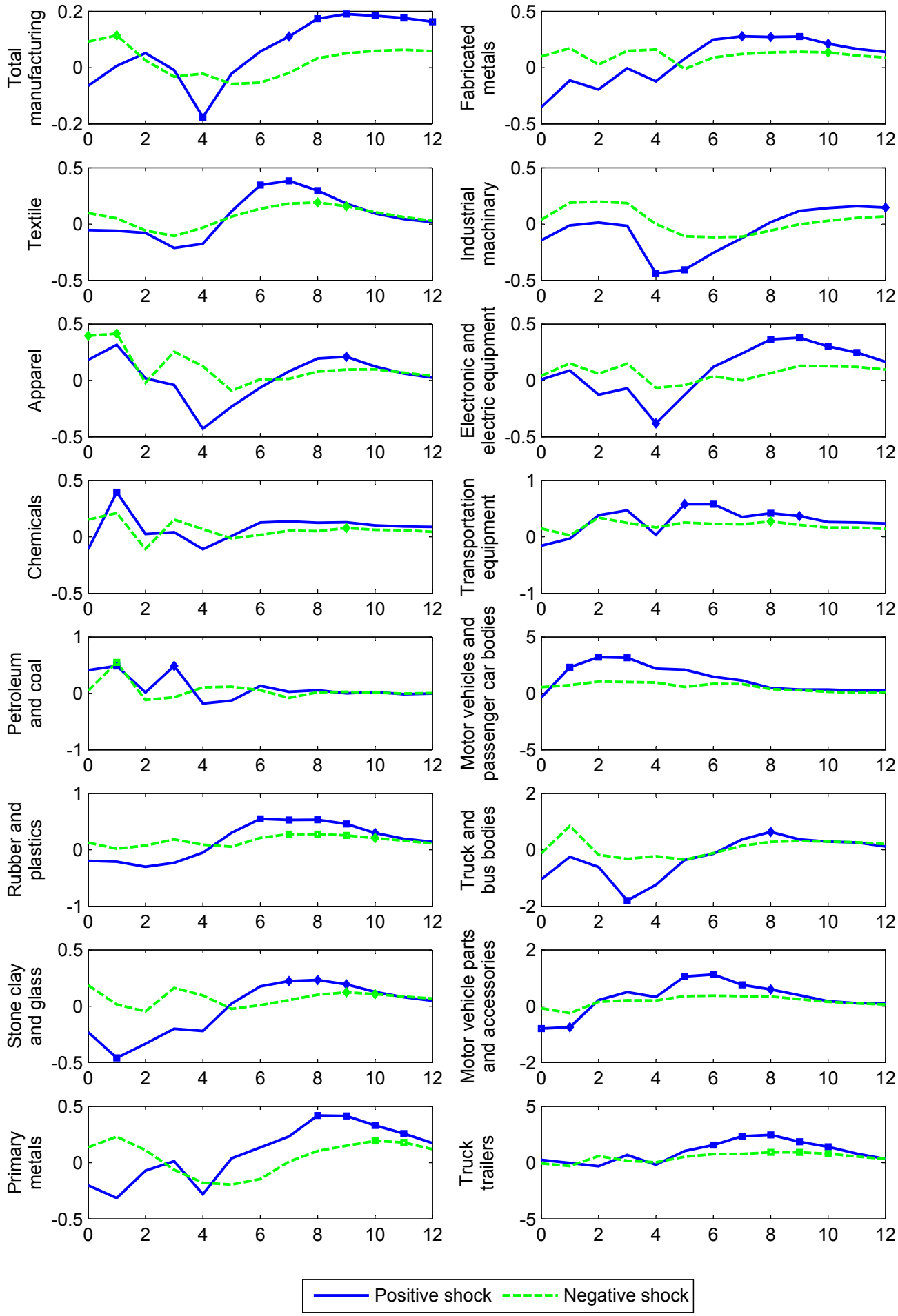
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A3a: Job creation responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^1$)



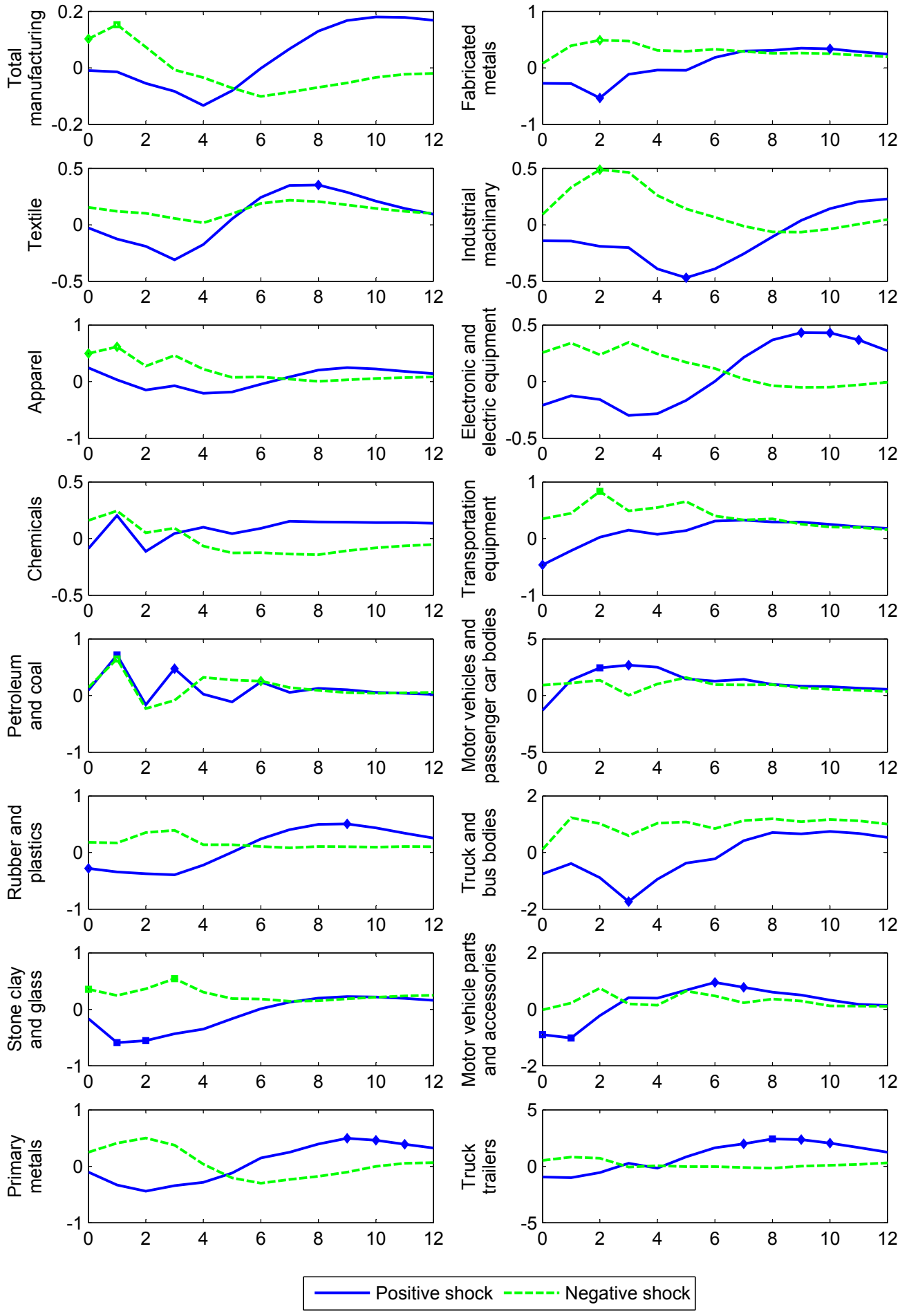
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A3b: Job creation responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^4$)



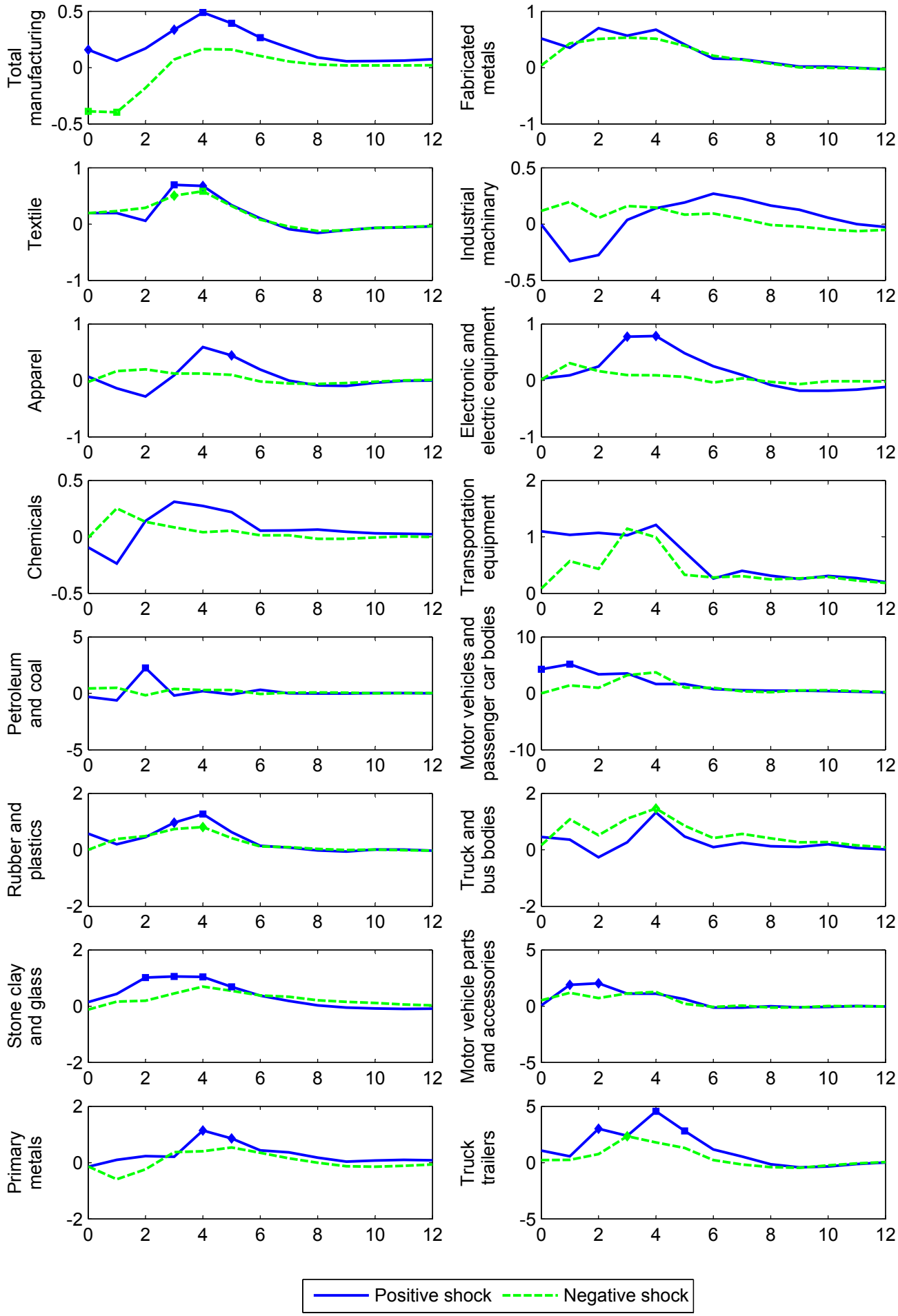
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A3c Job creation responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^{abs}$)



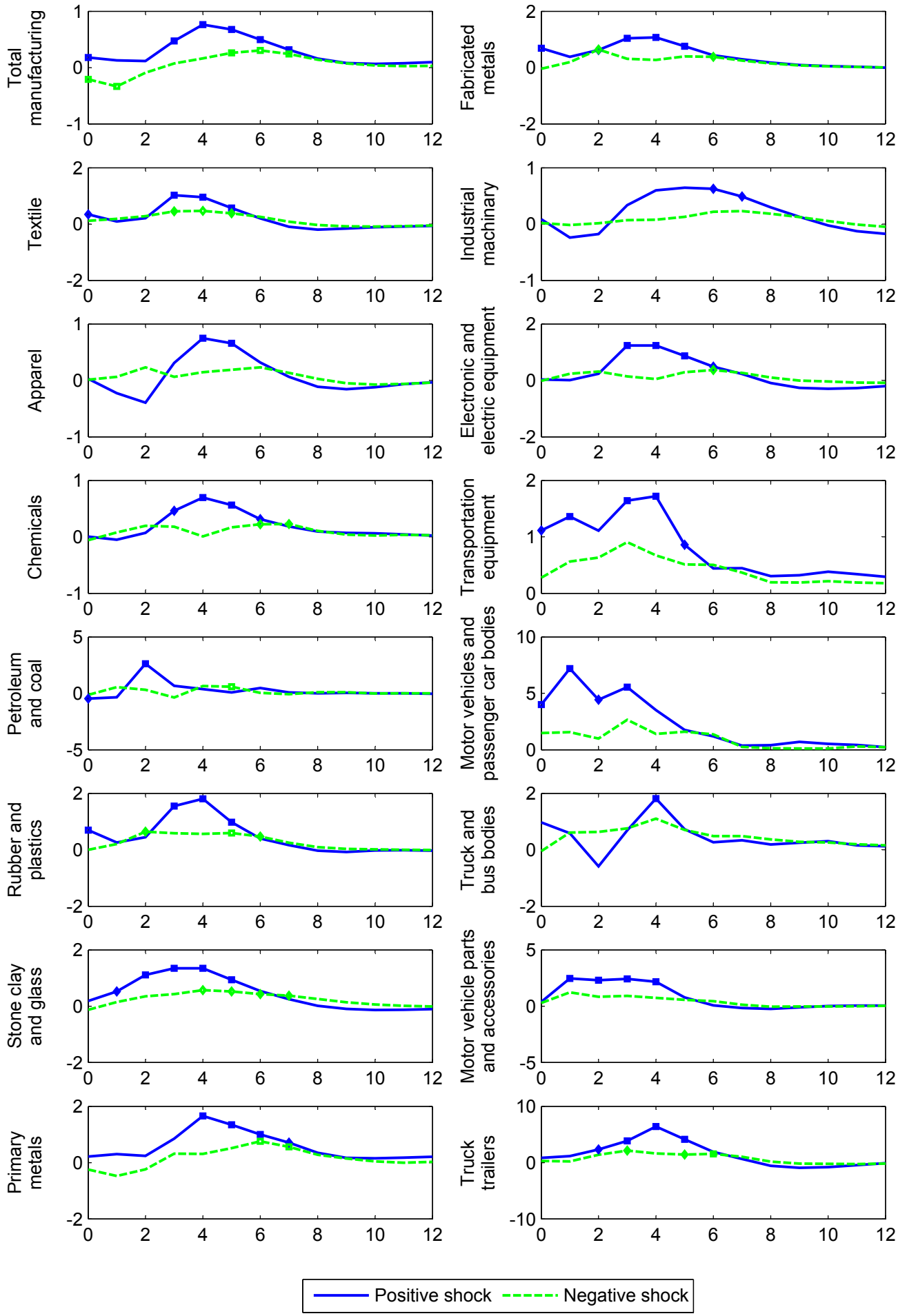
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A4a: Job destruction responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^1$)



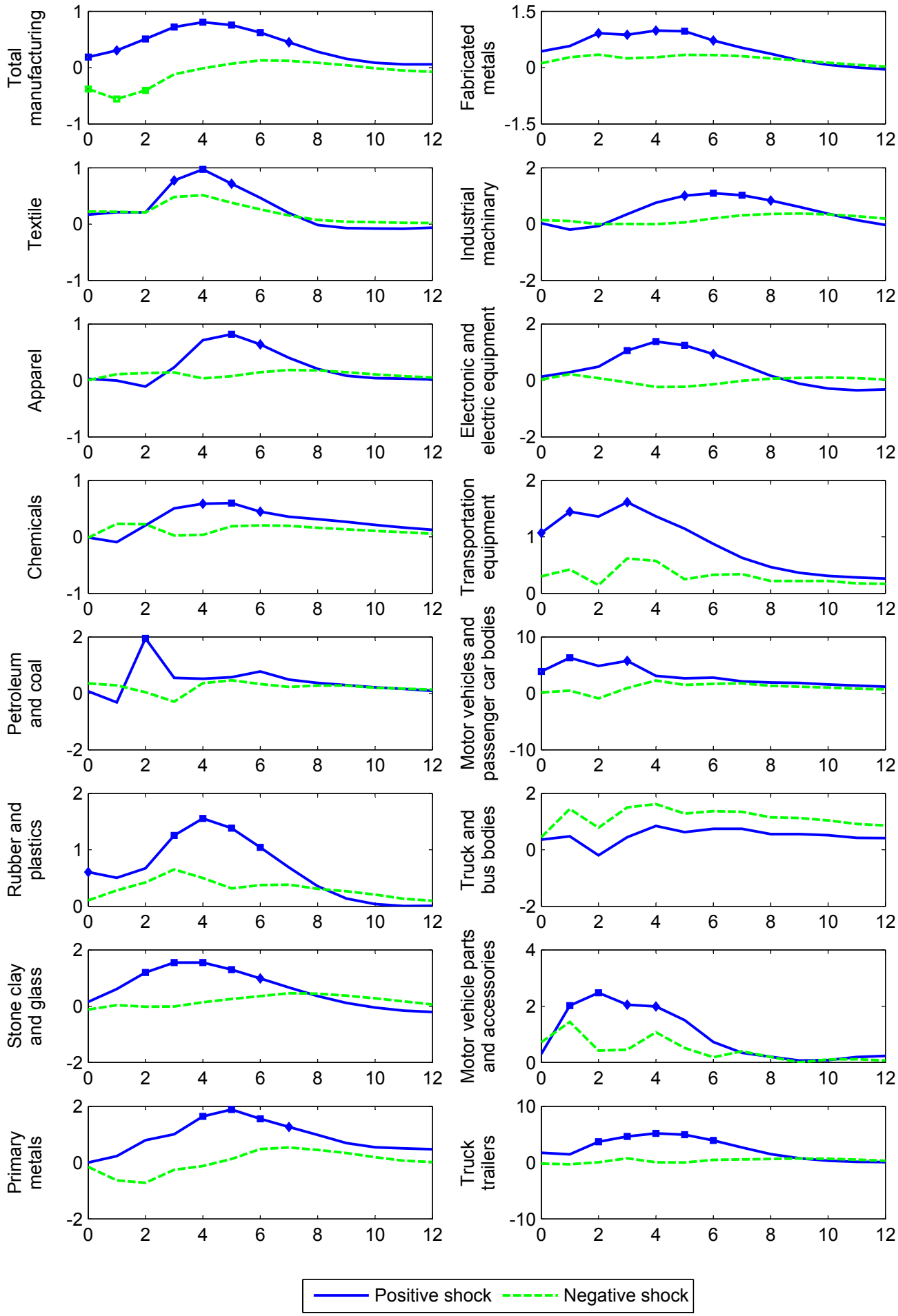
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A4b: Job destruction responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^4$)



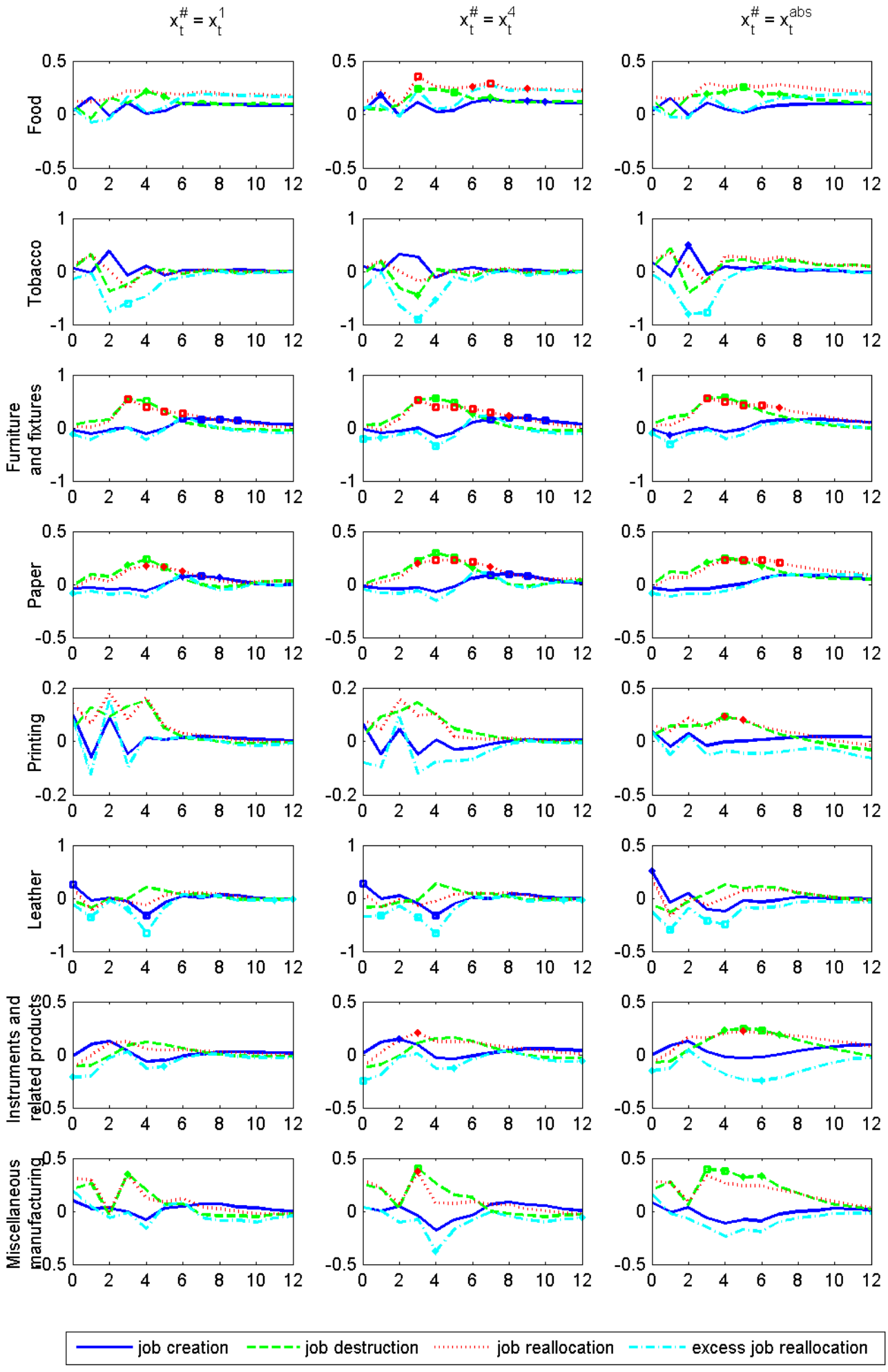
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A4c: Job destruction responses to positive and negative oil price shock of 2 s.d. ($x_t^{\#} = x_t^{abs}$)



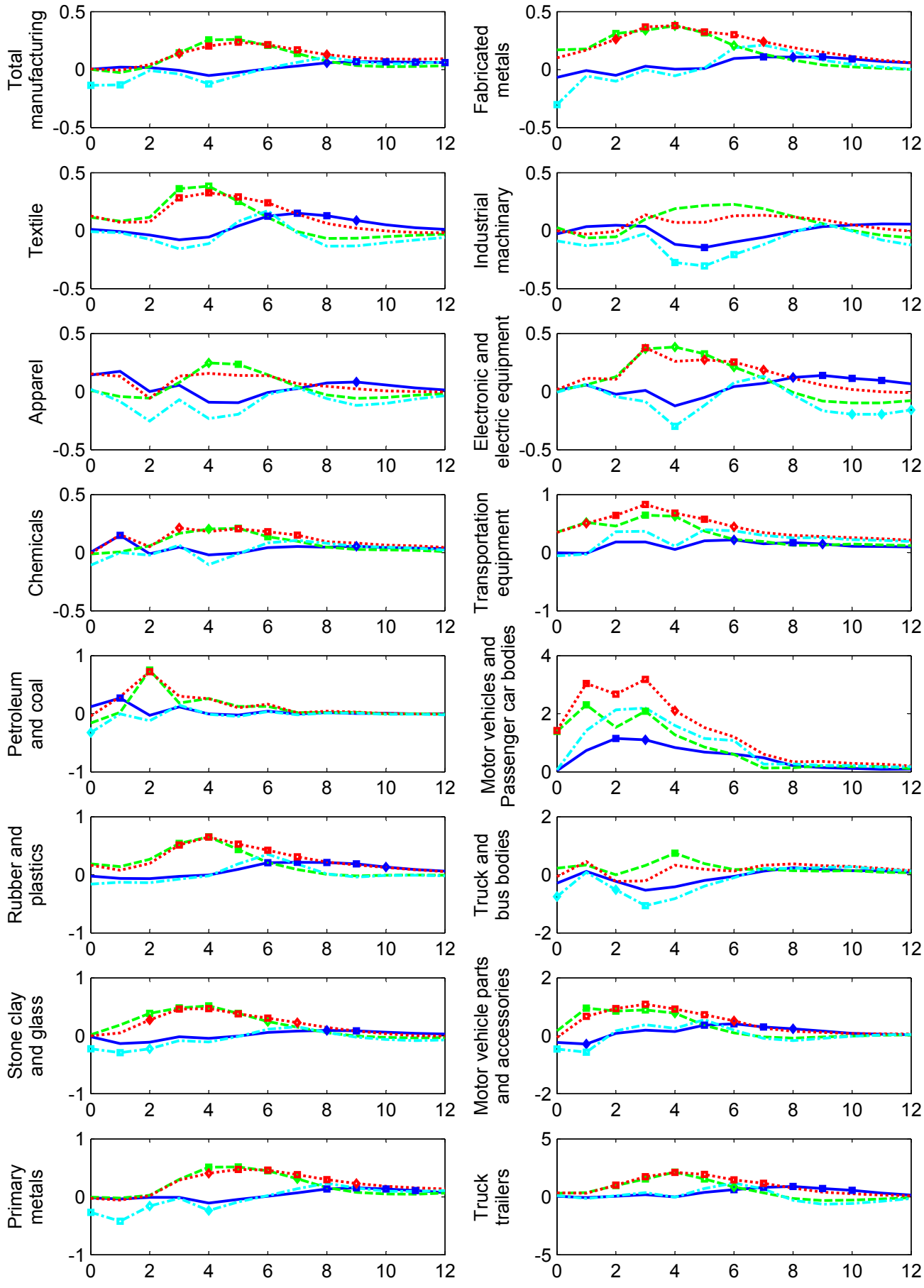
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A.5: Job creation and job destruction responses to a positive oil price shock of 1 s.d.



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A6a: Job creation and job destruction responses to a positive oil price shock of 1 s.d. ($x_t^{\#} = x_t^4$)



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A6b: Job creation and job destruction responses to a positive oil price shock of 1 s.d. ($x_t^{\#} = x_t^{abs}$)

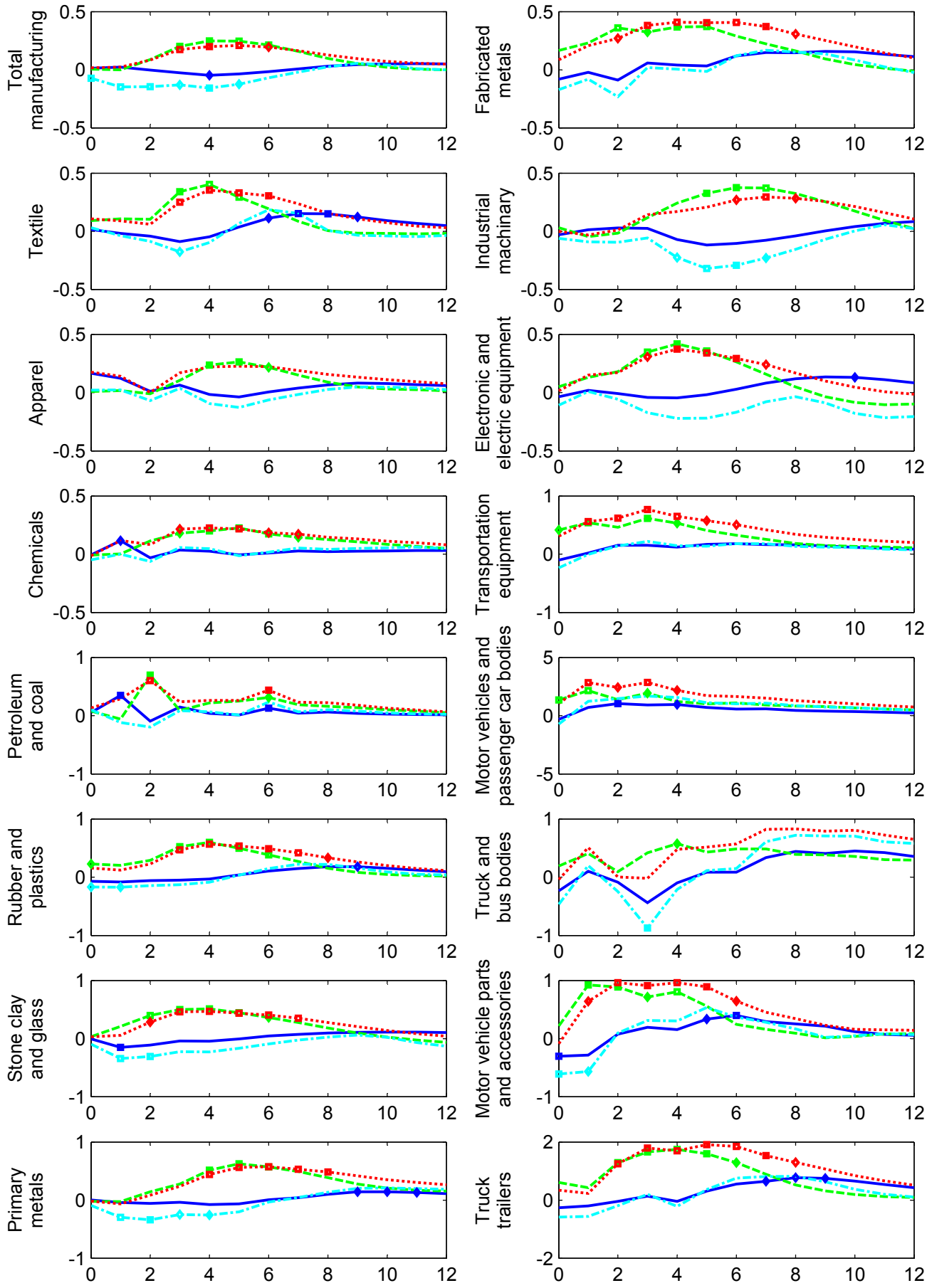
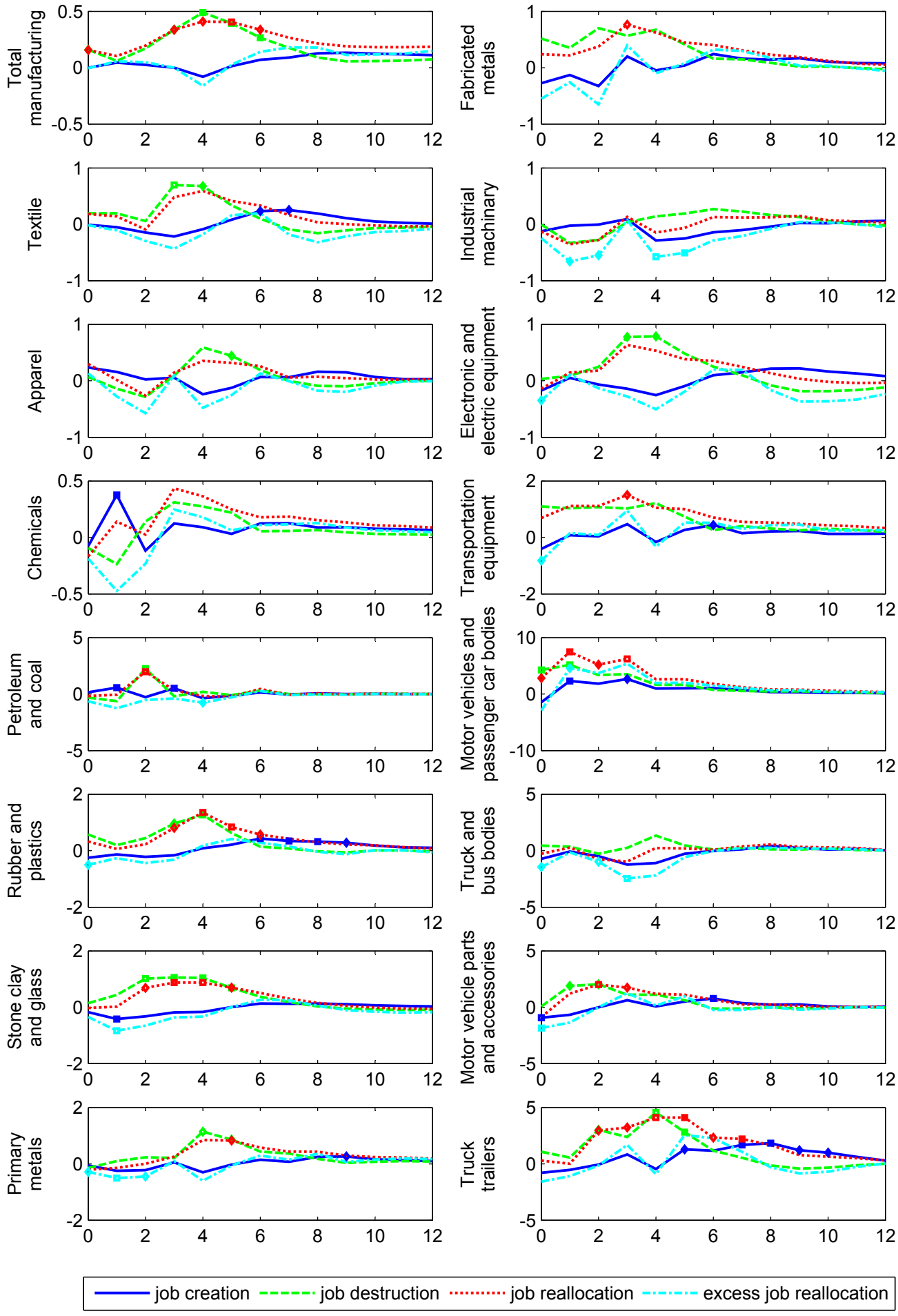
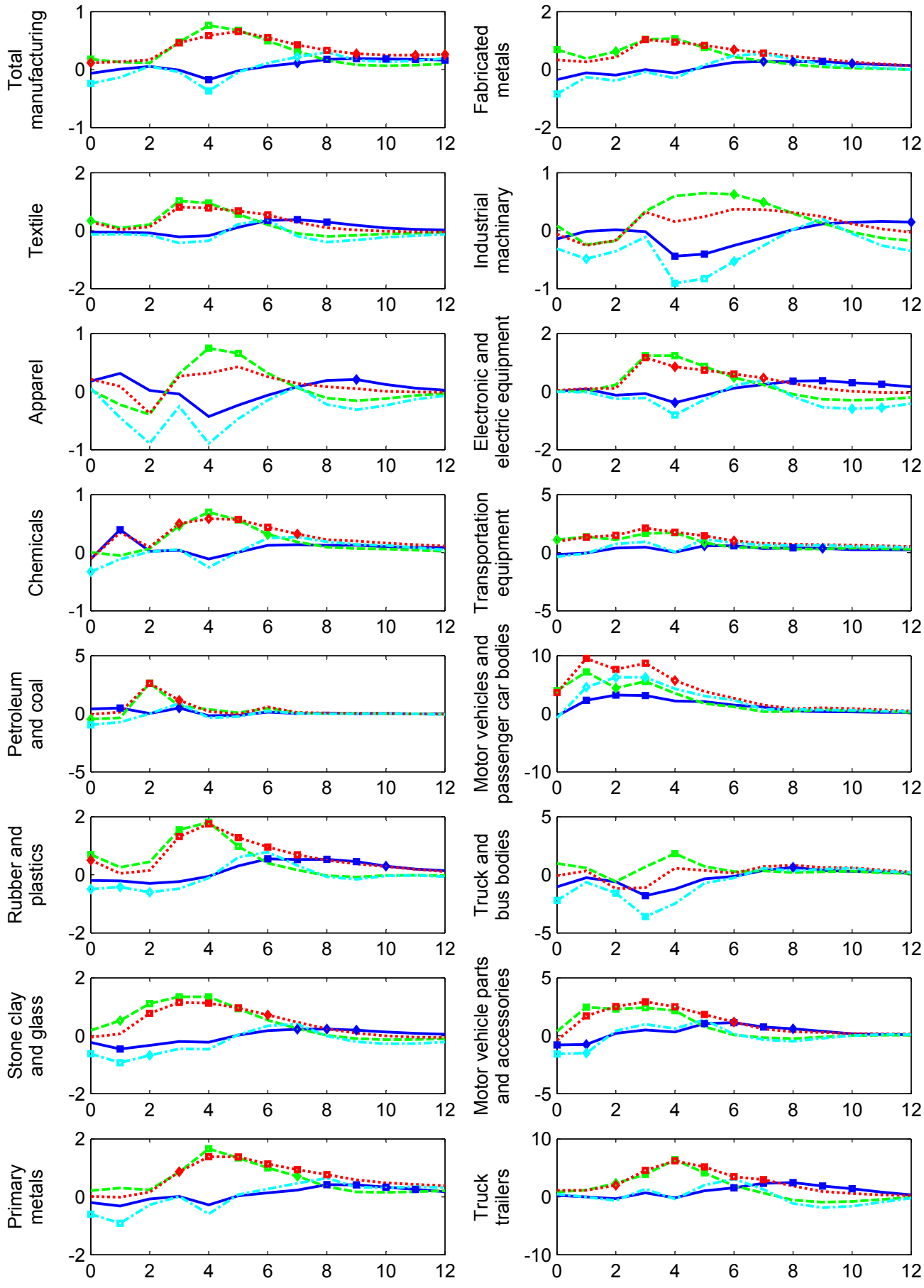


Figure A.7a: Job creation and job destruction responses to a positive oil price shock of 2 s.d. ($x_t^{\#} = x_t^1$)



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A7b: Job creation and job destruction responses to a positive oil price shock of 2 s.d. ($x_t^{\#} = x_t^4$)



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A7c: Job creation and job destruction responses to a positive oil price shock of 2 s.d. ($x_t^{\#} = x_t^{abs}$)

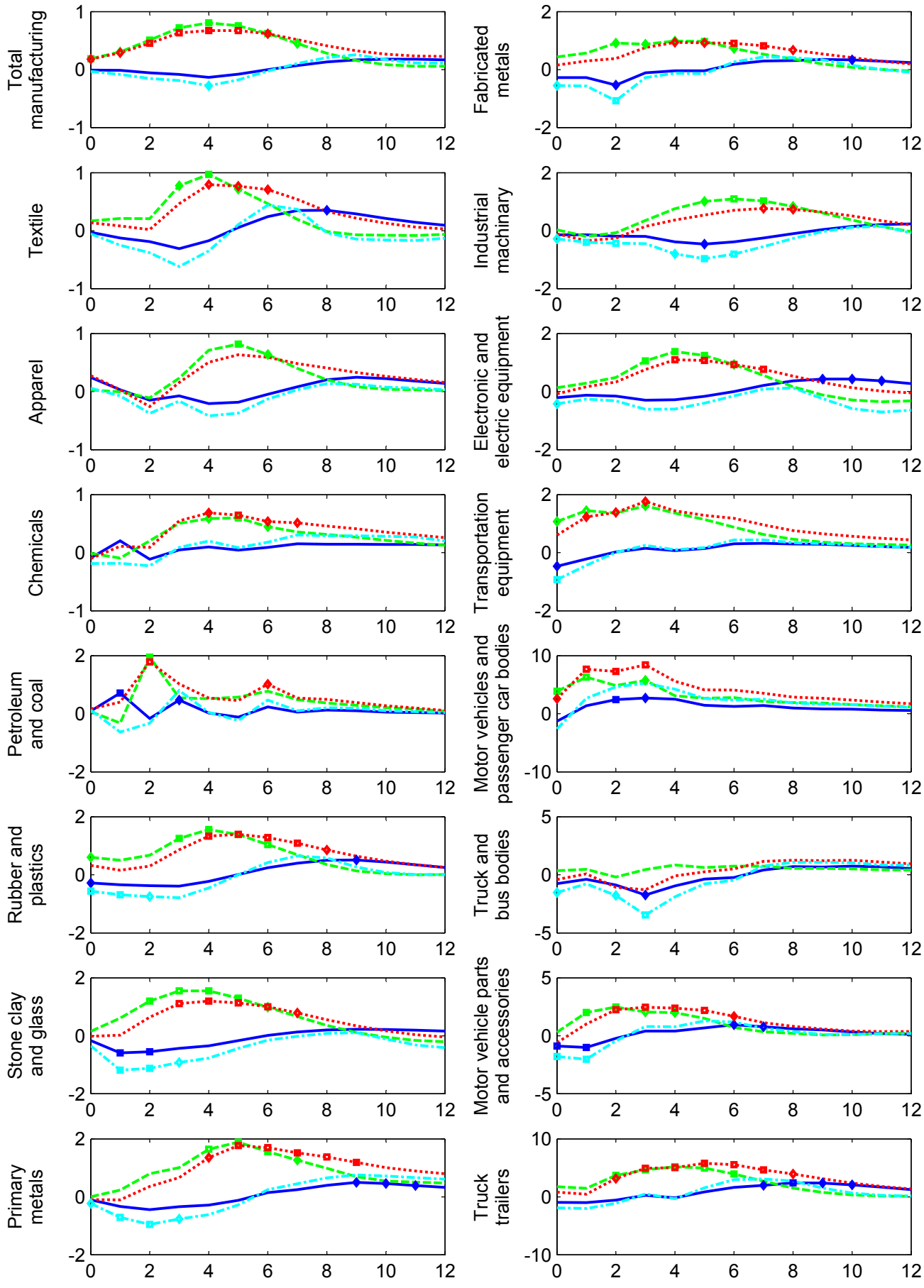
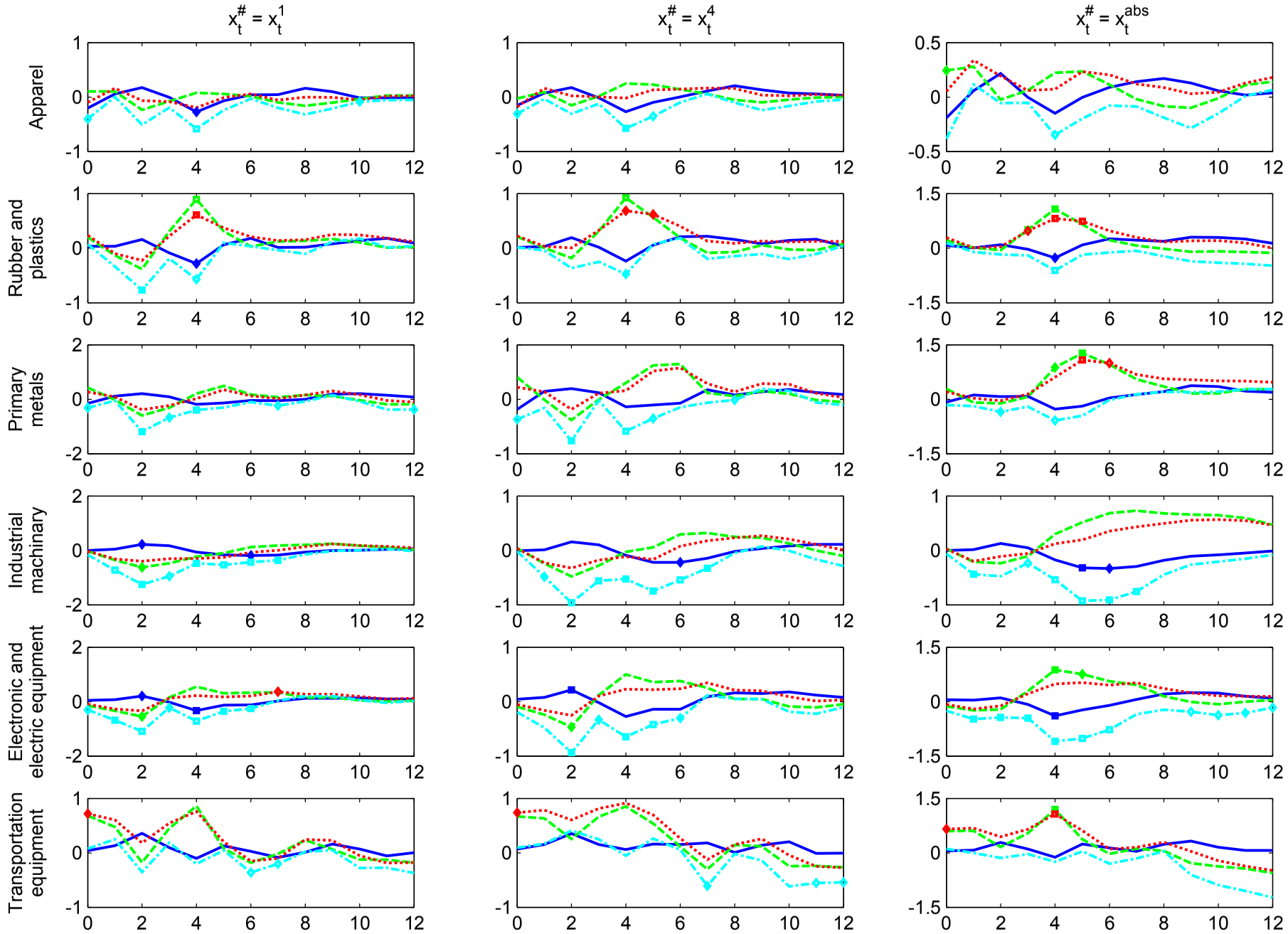
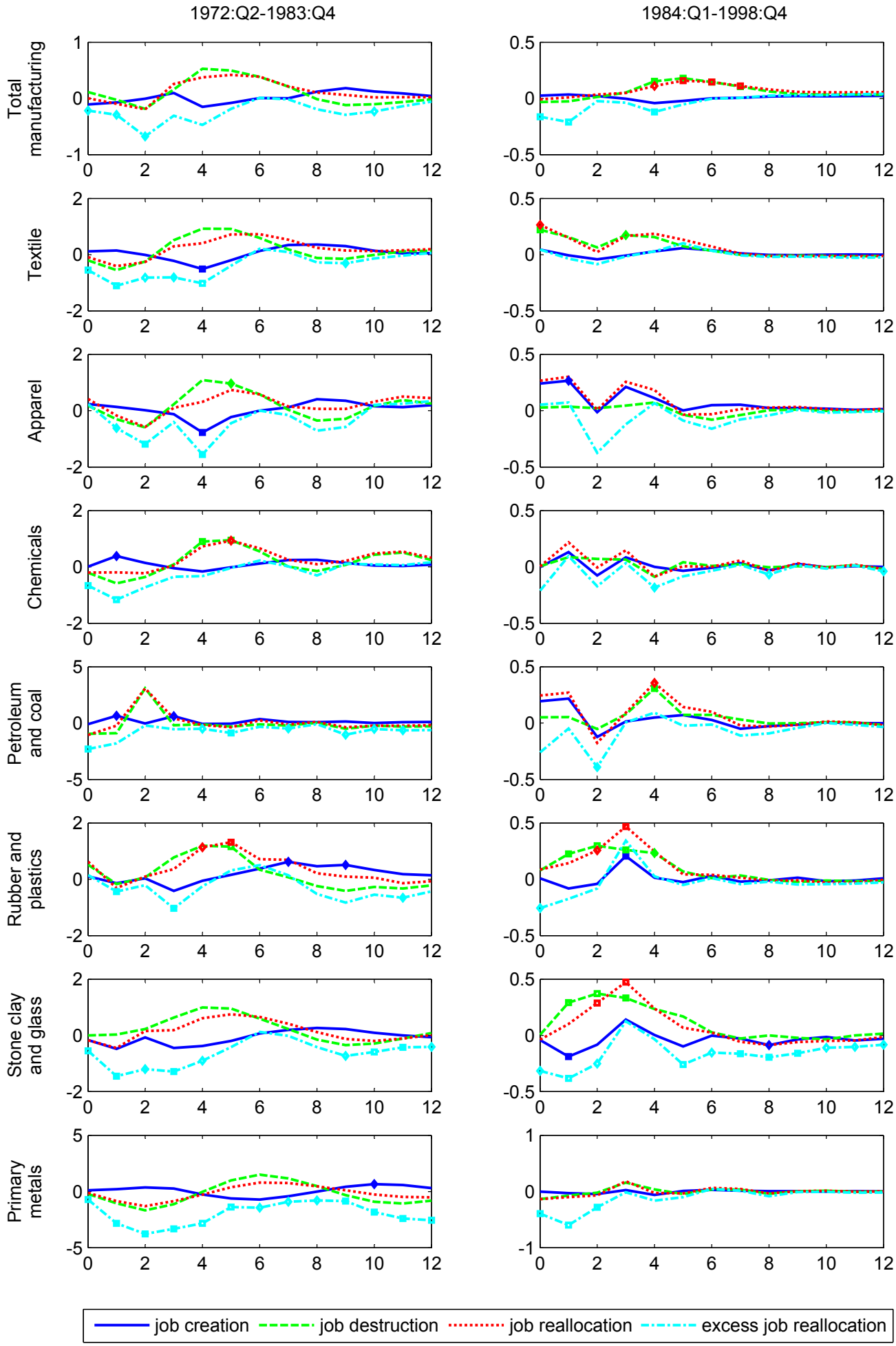


Figure A.8: Job creation and job destruction responses to a positive oil price shock à la DH



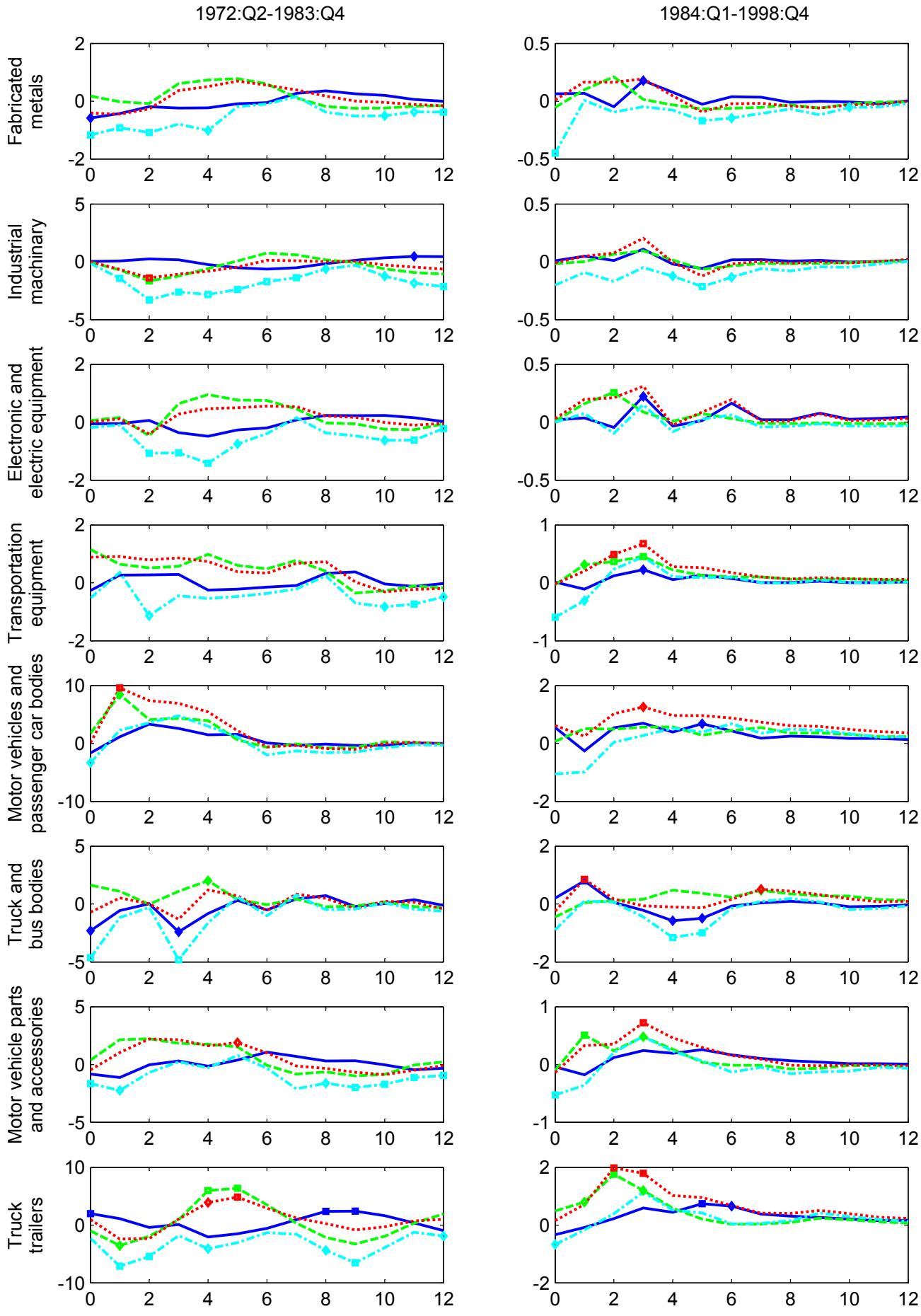
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A9a: Job creation and job destruction responses to a positive oil price shock of 1 s.d., using $x_t^{\#} = x_t^4$



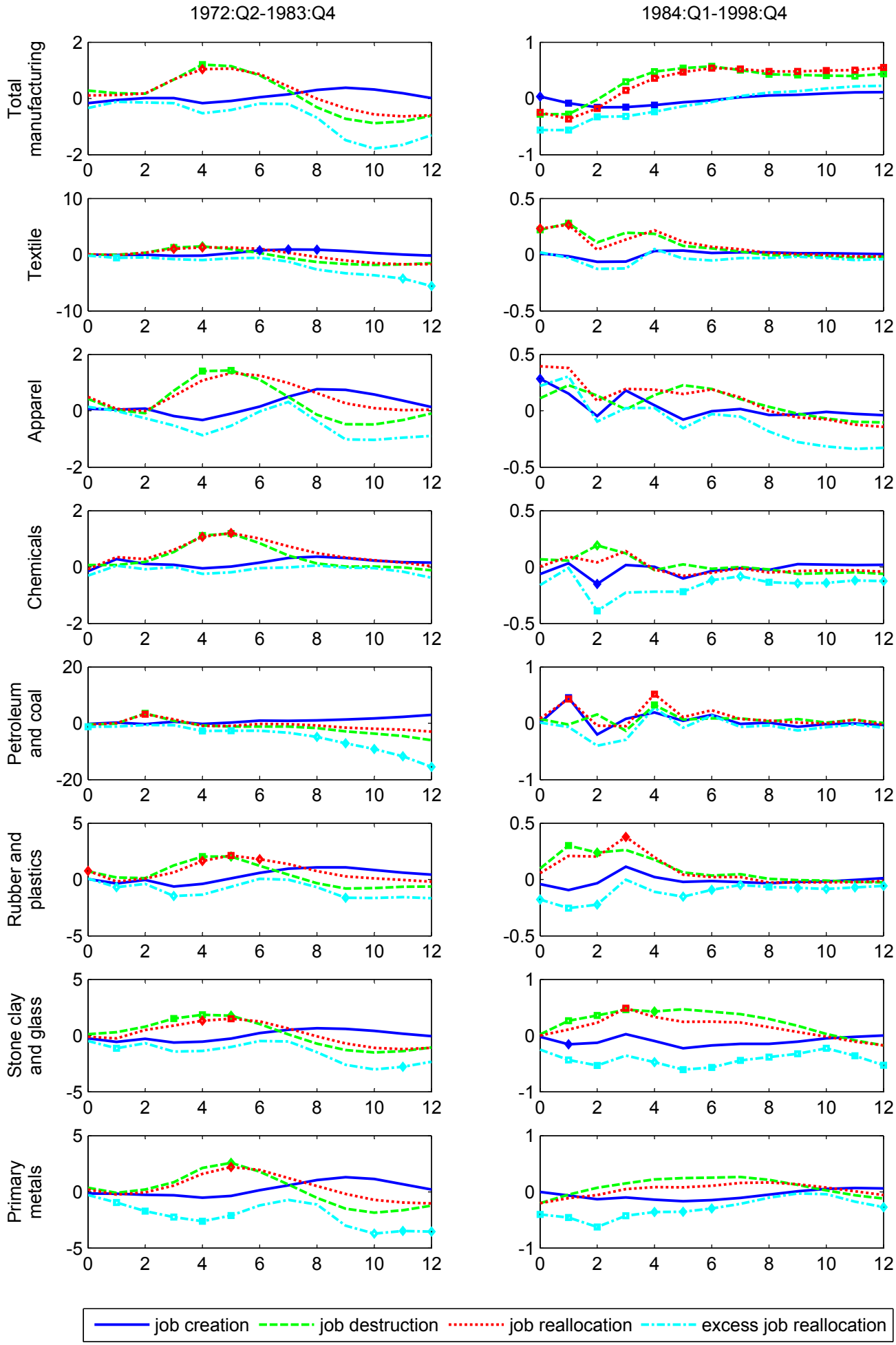
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A9b: Job creation and job destruction responses to a positive oil price shock of 1 s.d., using $x_t^{\#} = x_t^4$



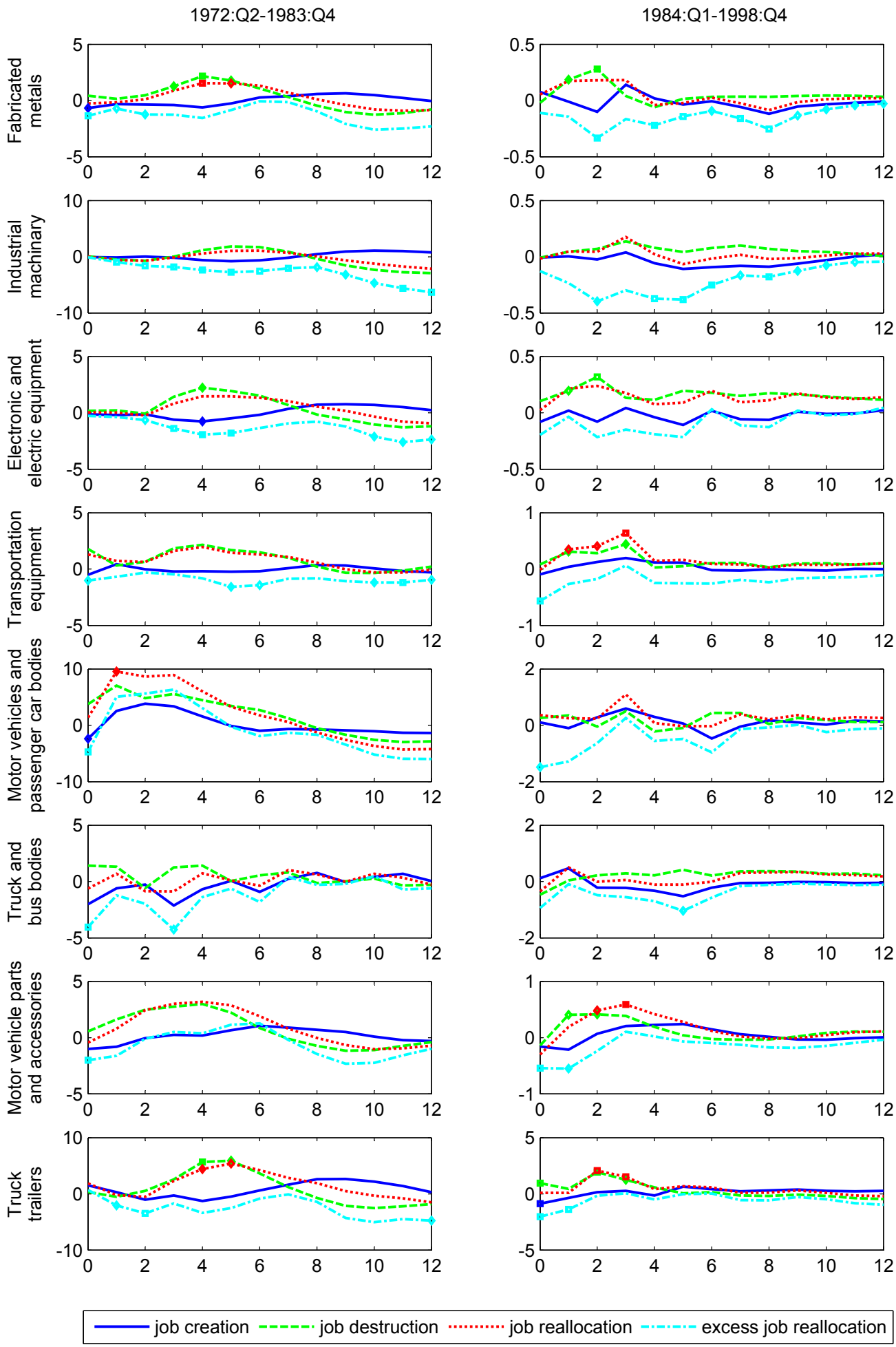
Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A10a: Job creation and job destruction responses to a positive oil price shock of 1 s.d., using $x_t^{\#} = x_t^{abs}$



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.

Figure A10b: Job creation and job destruction responses to a positive oil price shock of 1 s.d., using $x_t^{\#} = x_t^{abs}$



Notes: Squares and diamonds represent significance at the 5% and 10%, respectively.
Computations are based on 10,000 simulations.