

# Appendix (not for publication)

## Oil Price Shocks and the U.S. Stock Market:

### Do Sign and Size Matter?\*

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#### Abstract

We investigate the effect of oil price innovations on the U.S. stock market using a model that nests symmetric and asymmetric responses to positive and negative oil price innovations. We find no evidence of asymmetry for aggregate stock returns, and only very limited evidence for 49 industry-level portfolios. Moreover, these asymmetries do not match up well with conventional views regarding energy-dependent sectors of the economy. Instead, asymmetries are more likely driven by the effect of oil price innovations on expected and/or realized demand. We inquire whether the size of the shock matters in that doubling the size of the shock more (or less) than doubles the size of the response, finding that the effect of a 2.s.d innovation is just about double the magnitude of the impact of a 1.s.d innovation. Furthermore, we find no support for the conjecture that shocks that exceed a threshold have an asymmetric effect on stock returns.

*Key words: oil prices, U.S. stock returns, asymmetric responses.*

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\*The on-line appendix is available at <http://gatton.uky.edu/faculty/herrera/documents/AHappendix.pdf>. We thank Jim Hamilton, Lutz Kilian, and seminar participants at the 2013 American Economic Association Meetings for helpful comments and suggestions.

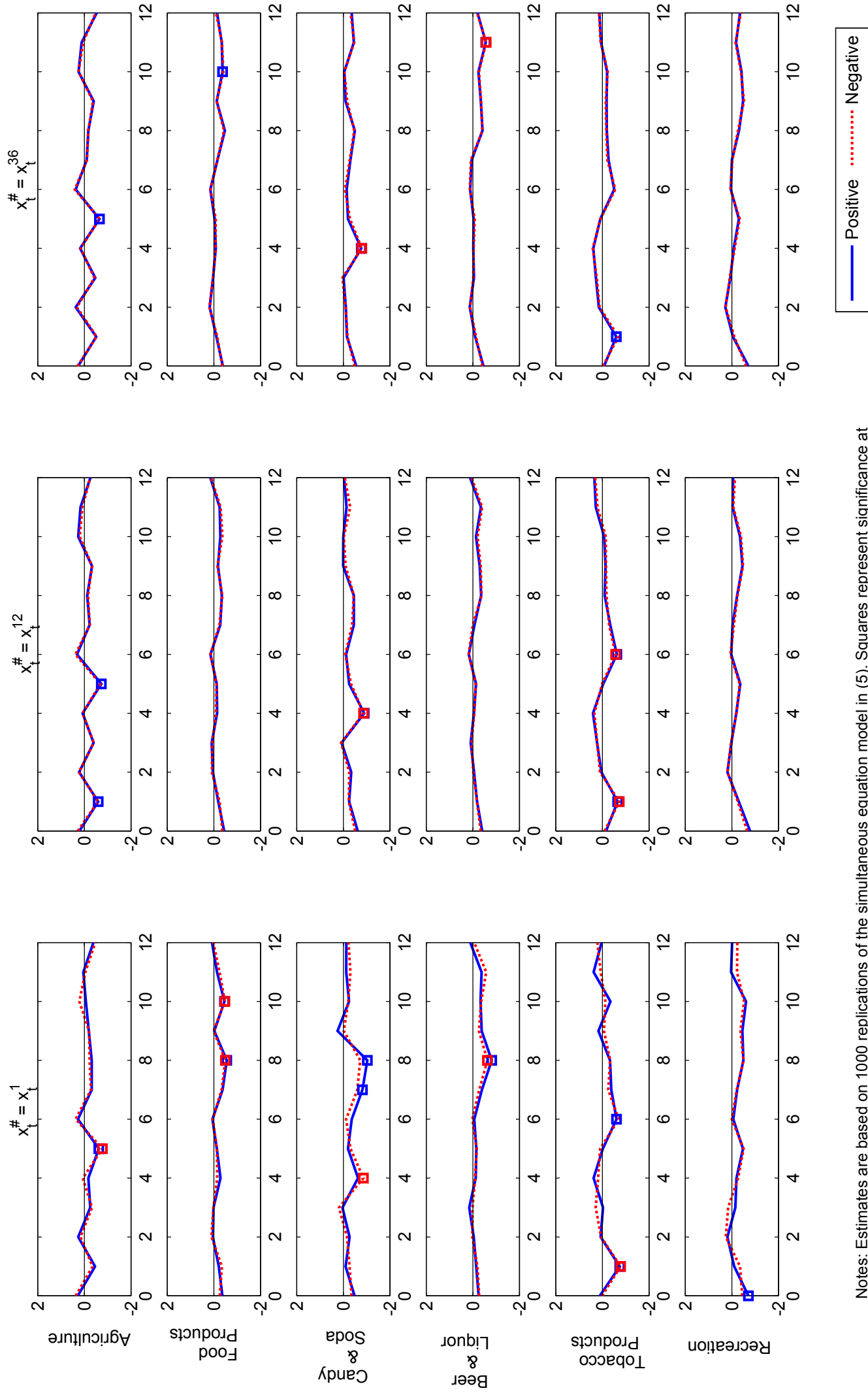
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## **Part A. Additional Figures and Test Results**

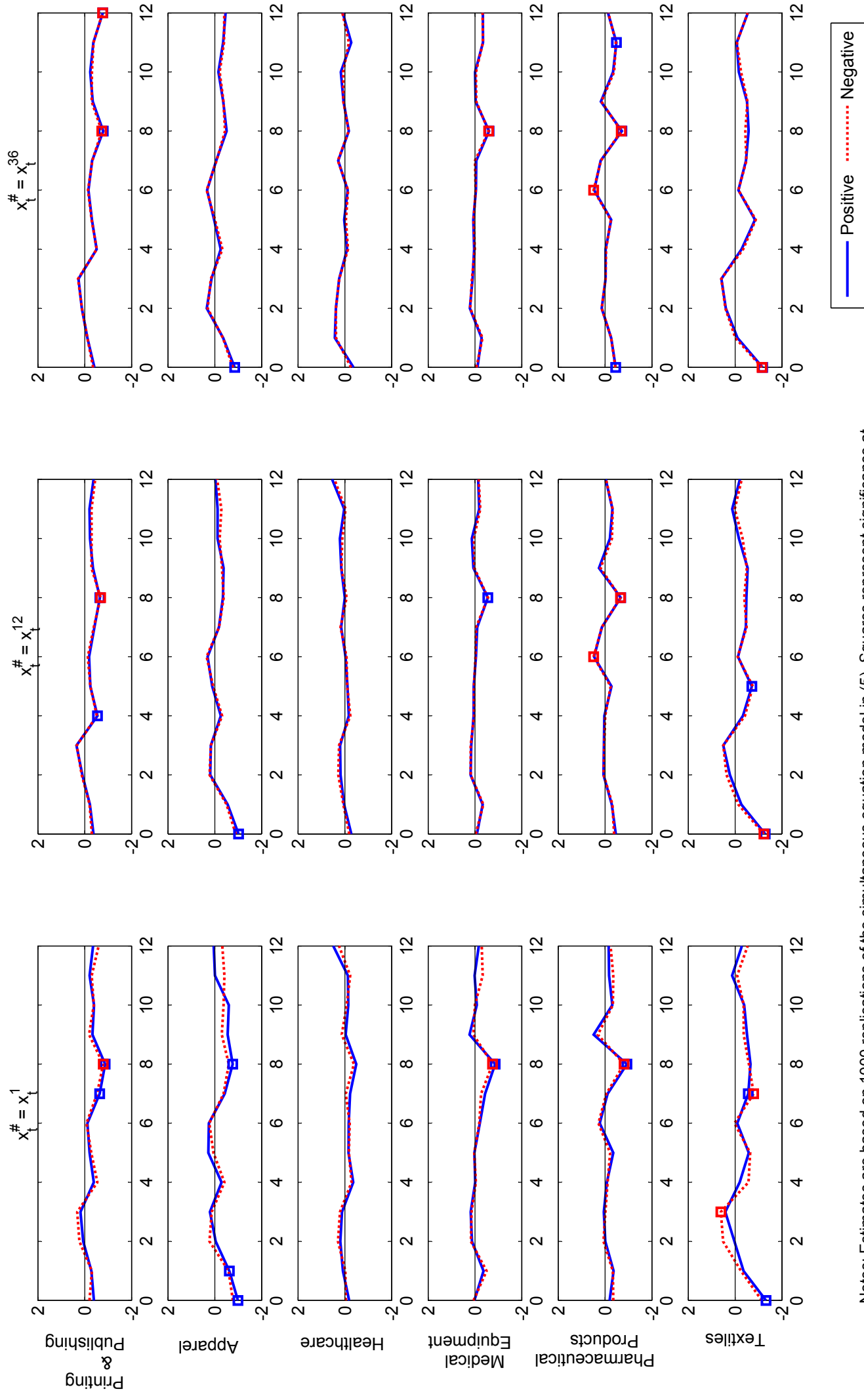
This section contains impulse response functions to positive and negative innovations in the real oil price of 1 s.d. (Figures A.1a-A1.f) and 2 s.d. (Figure A.2a-A2.f) for the industry-level portfolios not reported in the main text. It also reports the impulse response based tests of symmetry using the full sample for real oil price innovations in Table A.1.

Figure A.1a: Response to one standard deviation positive and negative innovation in the real oil price change



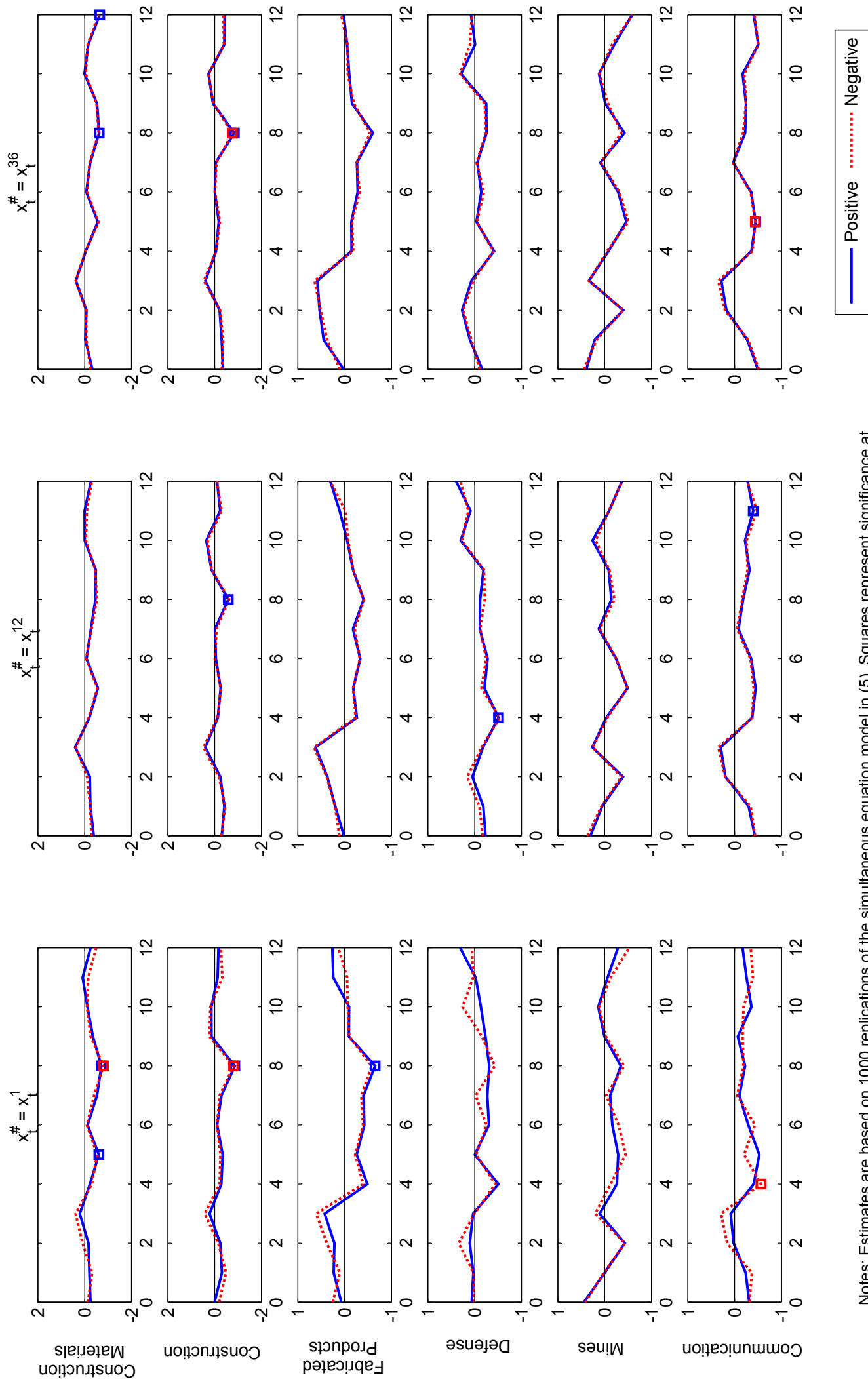
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.1b: Response to one standard deviation positive and negative innovation in the real oil price change



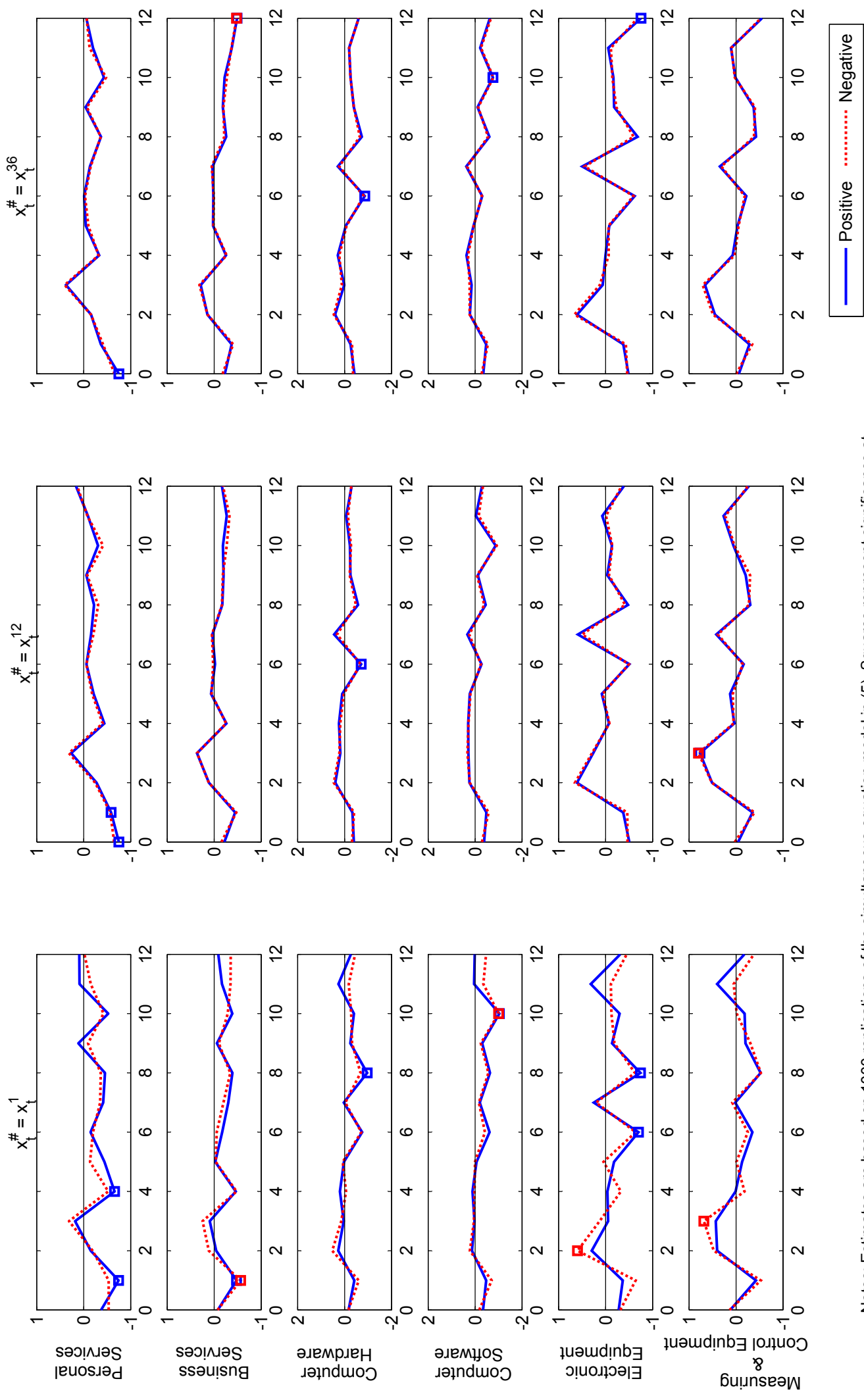
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.1c: Response to one standard deviation positive and negative innovation in the real oil price change



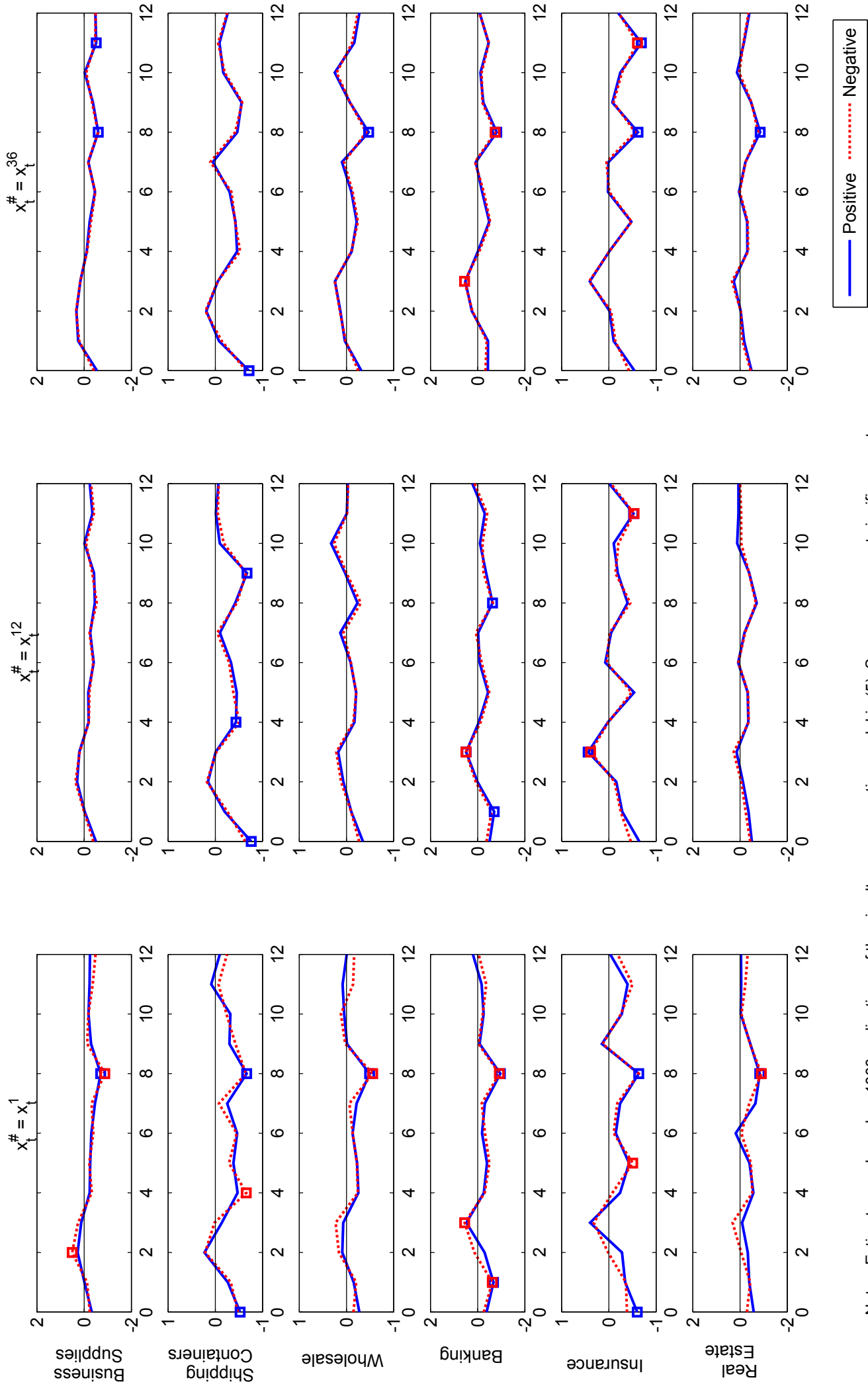
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.1d: Response to one standard deviation positive and negative innovation in the real oil price change



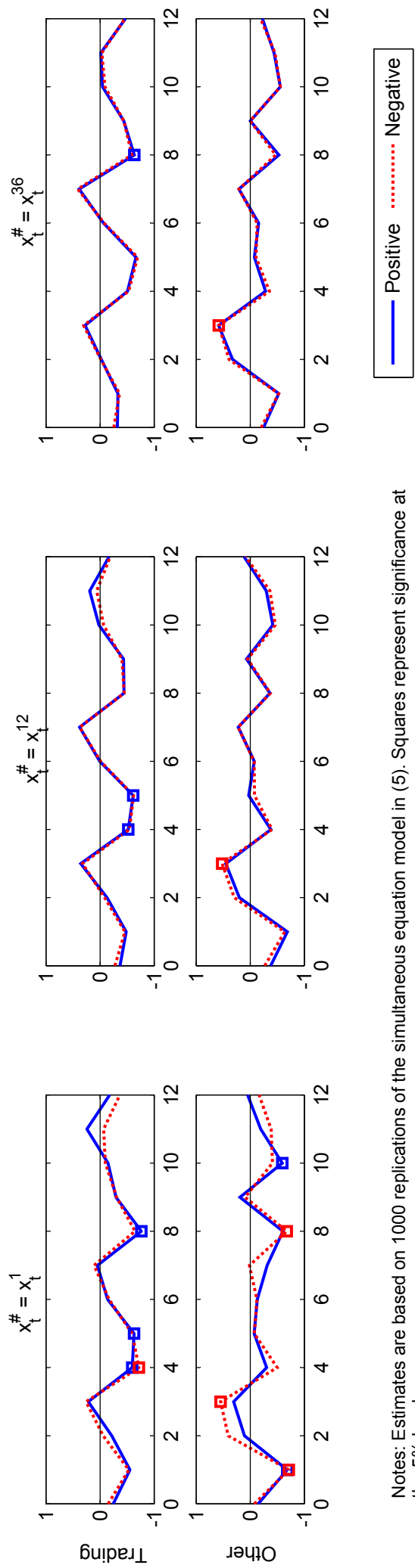
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.1e: Response to one standard deviation positive and negative innovation in the real oil price change



Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.1f: Response to one standard deviation positive and negative innovation in the real oil price change

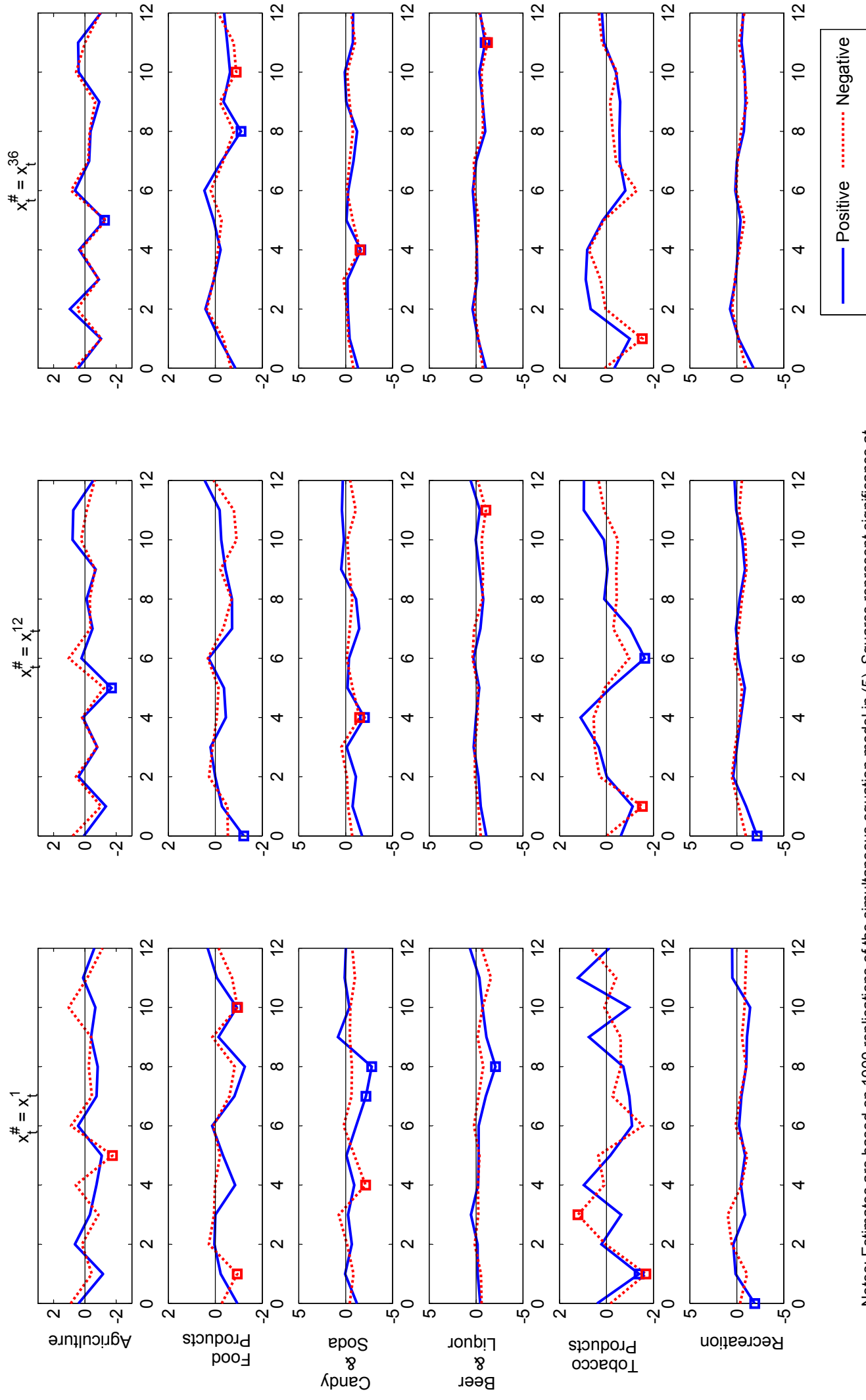


Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level .

- Other: -Sanitary services
- Steam, air conditioning supplies
- Irrigation systems
- Cogeneration - SM power producer

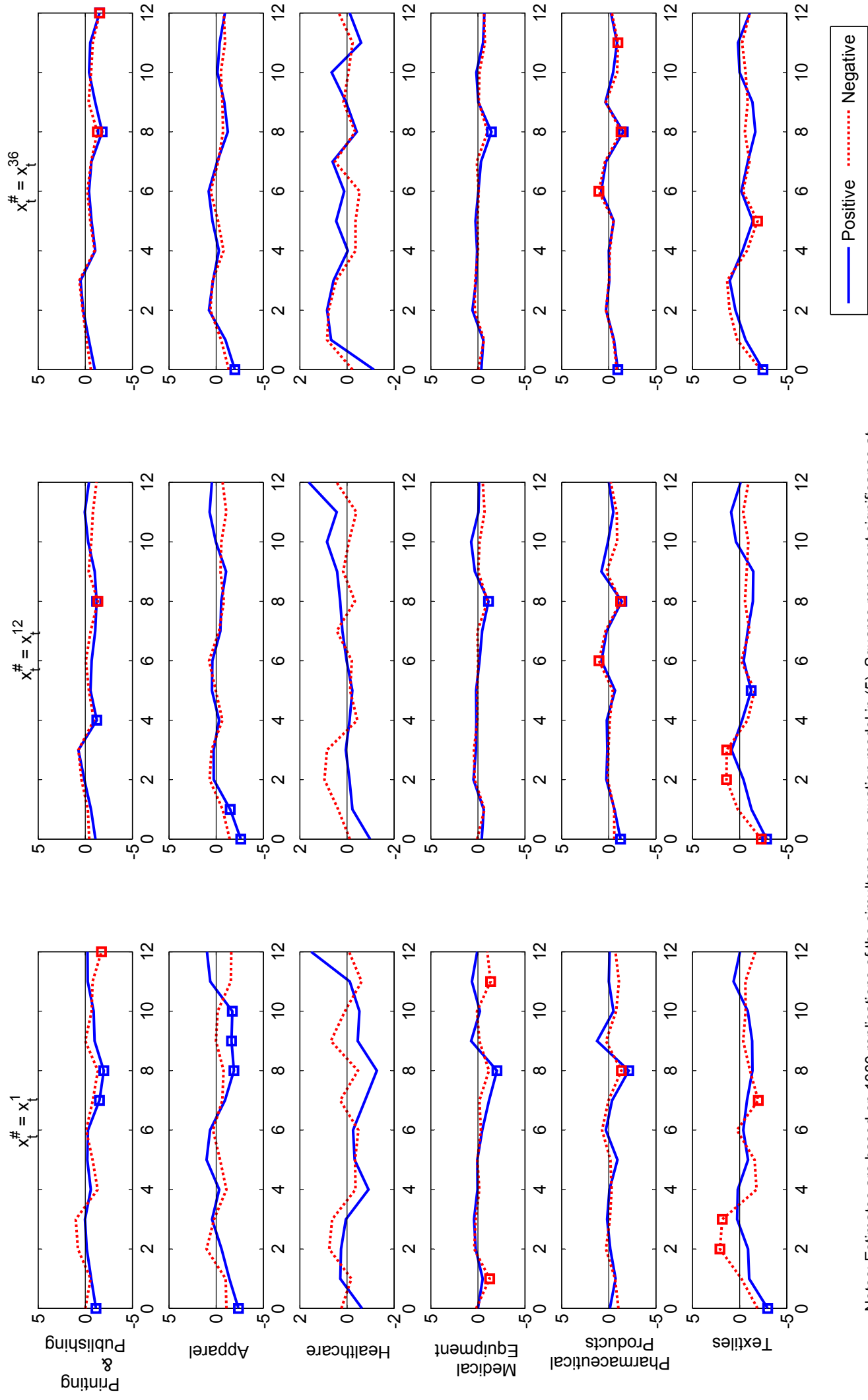


Figure A.2a: Response to two standard deviation positive and negative innovation in the real oil price change



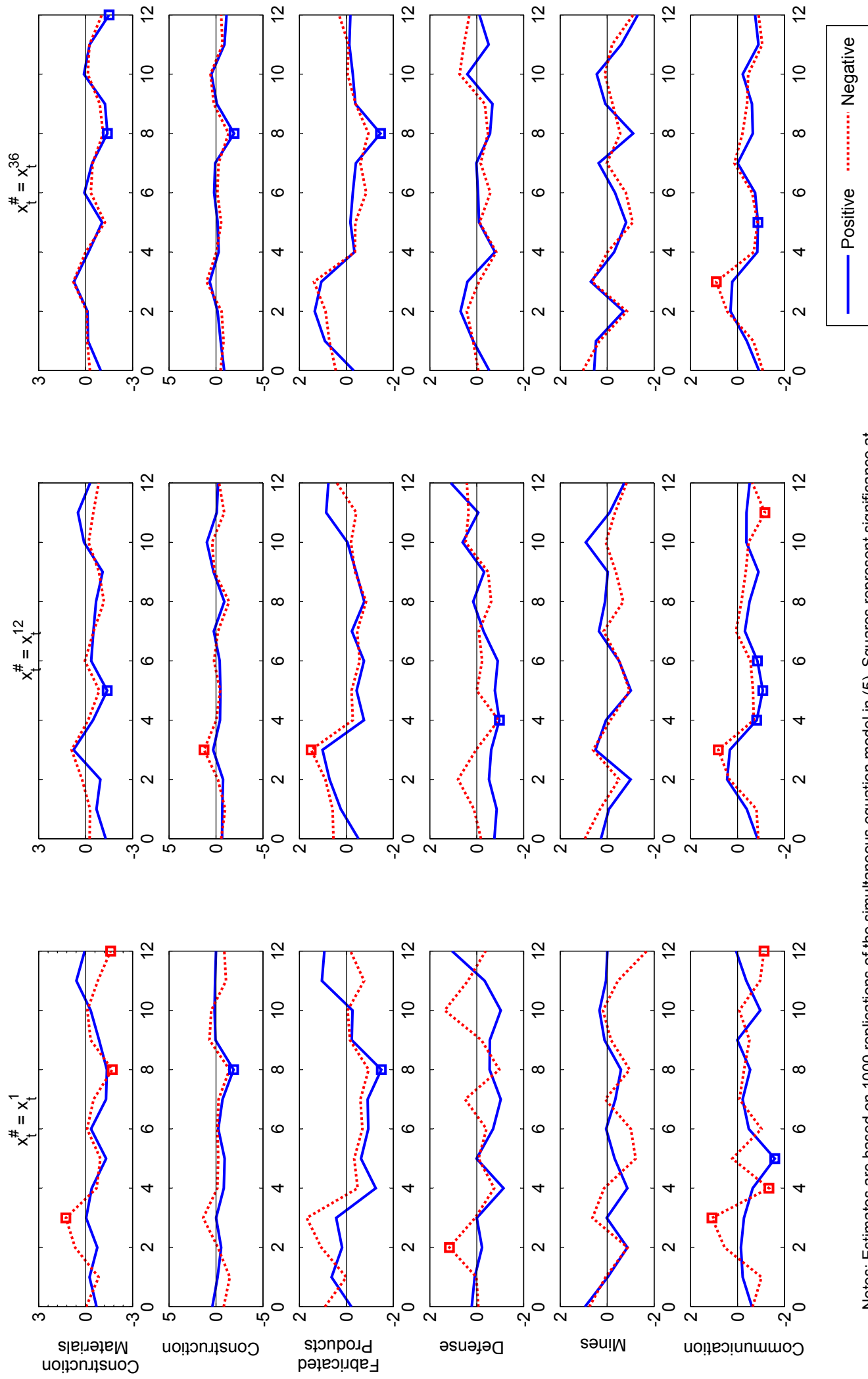
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.2b: Response to two standard deviation positive and negative innovation in the real oil price change



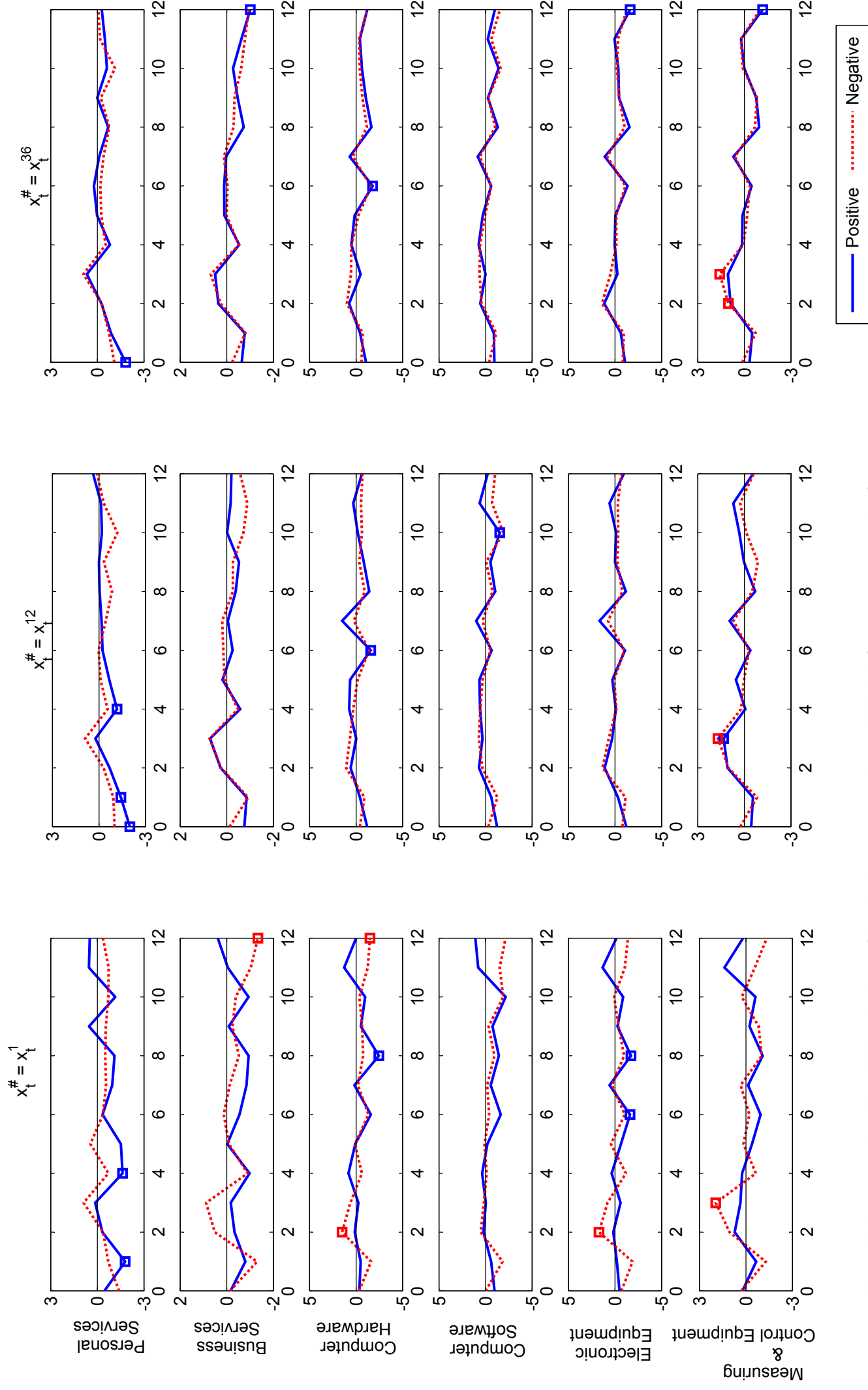
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.2c: Response to two standard deviation positive and negative innovation in the real oil price change



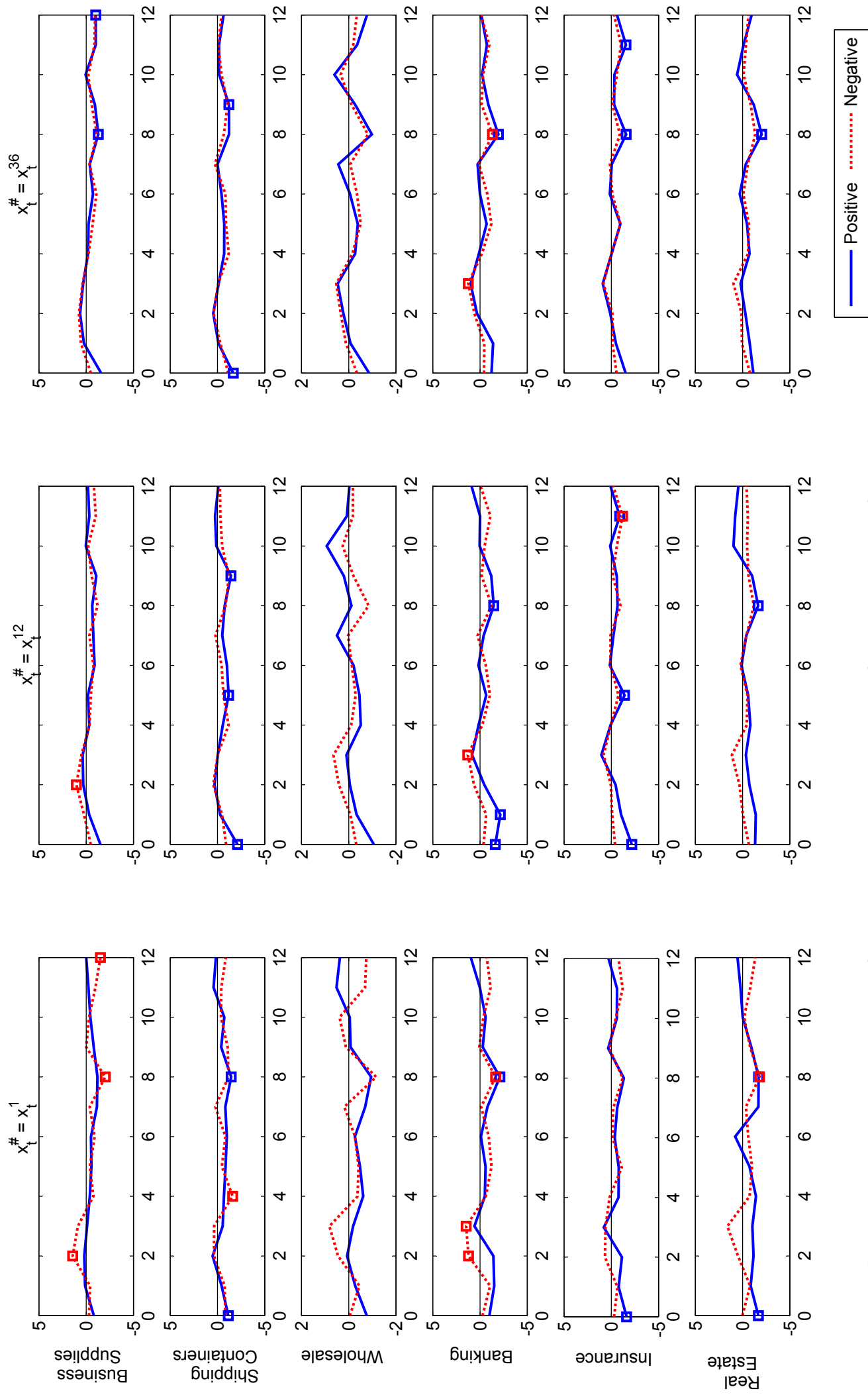
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.2d: Response to two standard deviation positive and negative innovation in the real oil price change



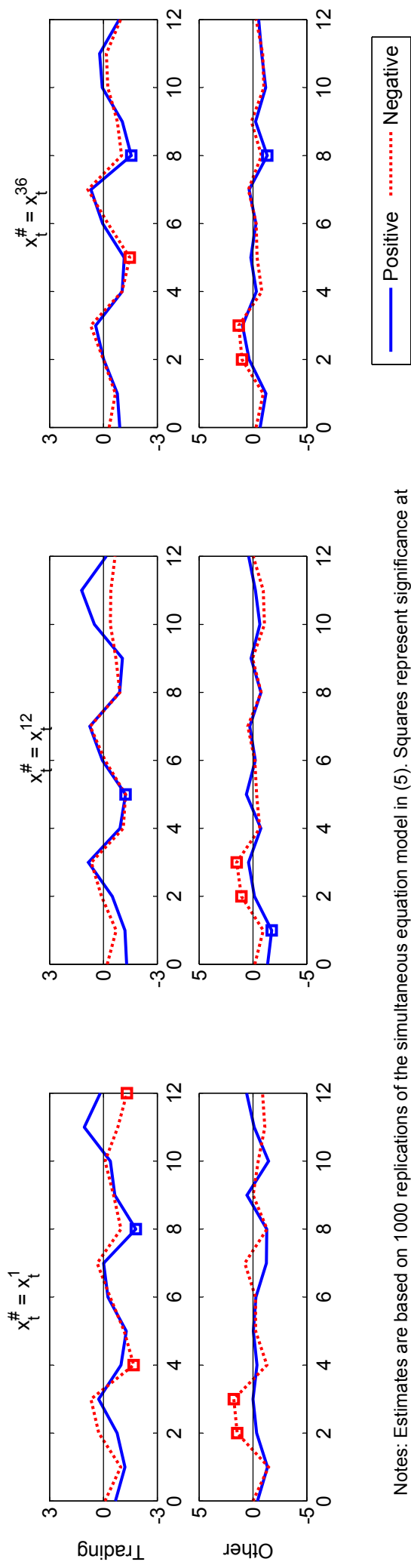
Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.2e: Response to two standard deviation positive and negative innovation in the real oil price change



Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level.

Figure A.2f: Response to two standard deviation positive and negative innovation in the real oil price change



Notes: Estimates are based on 1000 replications of the simultaneous equation model in (5). Squares represent significance at the 5% level .

- Other:
- Sanitary services
  - Steam, air conditioning supplies
  - Irrigation systems
  - Cogeneration - SIM power producer

Table A.1 Test of symmetry in the response to positive and negative innovations in the real oil price for H=12 (1947-2013 sample)

Sector	1sd				2sd			
	$x_t^\# = x_t^1$	$x_t^\# = x_t^{12}$	$x_t^\# = x_t^{36}$	$x_t^\# = x_t^{sd}$	$x_t^\# = x_t^1$	$x_t^\# = x_t^{12}$	$x_t^\# = x_t^{36}$	$x_t^\# = x_t^{sd}$
Aggregate	<b>0.04</b>	<b>0.01</b>	0.27	1.00	<i>0.09</i>	<b>0.00</b>	<b>0.00</b>	0.99
Agriculture	0.12	<b>0.00</b>	0.60	1.00	0.17	<b>0.01</b>	0.20	0.98
Food Products	0.43	<b>0.00</b>	0.25	1.00	0.62	<b>0.00</b>	<b>0.00</b>	1.00
Candy & Soda	<b>0.03</b>	<b>0.00</b>	0.50	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>	1.00
Beer & Liquor	<b>0.01</b>	<b>0.00</b>	0.13	1.00	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	1.00
Tobacco Products	<b>0.01</b>	<b>0.00</b>	0.20	1.00	<b>0.01</b>	<b>0.00</b>	<b>0.03</b>	0.95
Recreation	<i>0.09</i>	0.11	0.69	1.00	0.19	0.13	<i>0.07</i>	1.00
Entertainment	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.99
Printing and Publishing	<b>0.01</b>	<b>0.00</b>	0.71	1.00	<b>0.02</b>	<b>0.00</b>	<b>0.04</b>	1.00
Consumer Goods	<b>0.03</b>	<b>0.00</b>	0.30	1.00	<i>0.08</i>	<b>0.00</b>	<b>0.00</b>	1.00
Apparel	<b>0.00</b>	<b>0.01</b>	0.44	1.00	<b>0.00</b>	<b>0.01</b>	<i>0.10</i>	0.98
Healthcare	0.86	<b>0.01</b>	0.20	1.00	0.90	<b>0.01</b>	<b>0.00</b>	1.00
Medical Equipment	<b>0.05</b>	0.68	0.72	0.93	<i>0.10</i>	<i>0.08</i>	0.57	1.00
Pharmaceutical Products	0.30	<b>0.00</b>	<i>0.08</i>	1.00	0.46	<b>0.00</b>	<b>0.00</b>	0.99
Chemicals	<b>0.03</b>	<b>0.01</b>	0.22	1.00	<b>0.03</b>	<b>0.00</b>	<b>0.01</b>	1.00
Rubber and Plastic Products	<b>0.01</b>	<b>0.01</b>	0.26	1.00	<b>0.02</b>	<b>0.00</b>	<b>0.02</b>	0.98
Textiles	<b>0.00</b>	<b>0.00</b>	0.13	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	0.99
Construction Materials	<b>0.01</b>	<b>0.04</b>	0.41	1.00	<b>0.01</b>	<b>0.01</b>	<b>0.05</b>	1.00
Construction	0.52	<i>0.07</i>	0.19	1.00	0.74	<b>0.01</b>	<b>0.01</b>	0.98
Steel Works Etc.	<b>0.01</b>	<b>0.03</b>	0.23	1.00	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>	0.99
Fabricated Products	0.77	<b>0.00</b>	0.32	1.00	0.73	0.22	<b>0.01</b>	0.99
Machinery	<b>0.00</b>	<b>0.00</b>	0.53	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	1.00
Electrical Equipment	<i>0.09</i>	0.68	0.97	1.00	0.20	<b>0.02</b>	0.14	1.00
Automobiles and Trucks	<b>0.00</b>	<b>0.00</b>	0.37	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	0.99
Aircraft	<b>0.02</b>	<b>0.01</b>	0.77	1.00	<i>0.06</i>	<b>0.01</b>	0.13	0.99
Shipbuilding, Railroad Equipment	0.27	<i>0.10</i>	<i>0.07</i>	1.00	0.36	<i>0.09</i>	<b>0.00</b>	1.00
Defense	0.51	0.57	<b>0.03</b>	1.00	0.48	0.50	<b>0.00</b>	1.00
Precious Metals	0.88	<b>0.00</b>	<b>0.00</b>	0.99	0.95	<b>0.00</b>	<b>0.00</b>	0.97
Mines	0.71	<b>0.02</b>	<b>0.02</b>	1.00	0.87	<b>0.00</b>	<b>0.00</b>	0.99
Coal	0.64	0.20	0.70	0.97	0.80	<b>0.04</b>	<b>0.02</b>	1.00
Petroleum and Natural Gas	0.92	0.31	0.87	0.45	0.96	<b>0.03</b>	<i>0.07</i>	1.00
Utilities	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	1.00	<b>0.04</b>	<b>0.00</b>	<b>0.00</b>	1.00
Communication	<b>0.00</b>	<b>0.00</b>	0.10	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	0.99
Personal Services	0.13	<b>0.02</b>	0.28	1.00	0.21	<b>0.00</b>	<b>0.05</b>	1.00
Business Services	<i>0.06</i>	<b>0.01</b>	0.32	1.00	0.14	<b>0.05</b>	<b>0.01</b>	0.99
Computer Hardware	<b>0.03</b>	<b>0.00</b>	<i>0.07</i>	1.00	<b>0.04</b>	<b>0.00</b>	<b>0.00</b>	1.00
Computer Software	0.63	<b>0.00</b>	0.22	1.00	0.41	<b>0.00</b>	<b>0.01</b>	1.00
Electronic Equipment	<b>0.01</b>	<b>0.00</b>	0.35	1.00	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	0.83
Measuring and Control Equipment	<b>0.05</b>	<b>0.01</b>	0.12	1.00	<i>0.09</i>	<b>0.01</b>	<b>0.02</b>	1.00
Business Supplies	0.15	<b>0.00</b>	<i>0.08</i>	1.00	0.26	<b>0.00</b>	<b>0.00</b>	0.99
Shipping Containers	0.30	<b>0.01</b>	0.37	1.00	0.45	<b>0.00</b>	<b>0.02</b>	1.00
Transportation	<b>0.01</b>	0.73	0.88	0.99	<b>0.02</b>	0.15	0.40	1.00
Wholesale	0.20	0.16	0.78	1.00	0.41	0.42	0.19	0.99
Retail	<b>0.00</b>	<b>0.00</b>	0.25	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	1.00
Restaraunts, Hotels, Motels	<b>0.01</b>	<b>0.00</b>	0.23	1.00	<b>0.01</b>	<b>0.00</b>	<b>0.01</b>	1.00
Banking	<b>0.00</b>	<b>0.01</b>	<i>0.08</i>	1.00	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	1.00
Insurance	<b>0.02</b>	<b>0.00</b>	0.14	1.00	<b>0.04</b>	<b>0.00</b>	<b>0.00</b>	1.00
Real Estate	<b>0.02</b>	<b>0.00</b>	0.25	1.00	<b>0.05</b>	<b>0.00</b>	<b>0.02</b>	1.00
Trading	<i>0.06</i>	<b>0.01</b>	0.15	1.00	<i>0.08</i>	<b>0.00</b>	<b>0.00</b>	1.00
Other	<b>0.01</b>	<b>0.01</b>	0.27	1.00	<b>0.02</b>	<b>0.00</b>	<b>0.01</b>	1.00

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

## Part B. Industry-Level Portfolios and Corresponding SIC Codes

### Agric - Agriculture

- 0100-0199 Agricultural production - crops
- 0200-0299 Agricultural production - livestock
- 0700-0799 Agricultural services
- 0910-0919 Commercial fishing
- 2048-2048 Prepared feeds for animals

### Food - Food Products

- 2000-2009 Food and kindred products
- 2010-2019 Meat products
- 2020-2029 Dairy products
- 2030-2039 Canned-preserved fruits-vegetables
- 2040-2046 Flour and other grain mill products
- 2050-2059 Bakery products
- 2060-2063 Sugar and confectionery products
- 2070-2079 Fats and oils
- 2090-2092 Miscellaneous food preparations
- 2095-2095 Roasted coffee
- 2098-2099 Miscellaneous food preparations

### Soda - Candy & Soda

- 2064-2068 Candy and other confectionery
- 2086-2086 Bottled-canned soft drinks
- 2087-2087 Flavoring syrup
- 2096-2096 Potato chips
- 2097-2097 Manufactured ice

### Beer - Beer & Liquor

- 2080-2080 Beverages
- 2082-2082 Malt beverages
- 2083-2083 Malt
- 2084-2084 Wine
- 2085-2085 Distilled and blended liquors

### Smoke - Tobacco Products

- 2100-2199 Tobacco products

### Toys - Recreation

- 0920-0999 Fishing, hunting & trapping
- 3650-3651 Household audio visual equip
- 3652-3652 Phonographic records
- 3732-3732 Boat building and repair
- 3930-3931 Musical instruments
- 3940-3949 Toys

### Fun - Entertainment



7800-7829 Services - motion picture production and distribution  
7830-7833 Services - motion picture theatres  
7840-7841 Services - video rental  
7900-7900 Services - amusement and recreation  
7910-7911 Services - dance studios  
7920-7929 Services - bands, entertainers  
7930-7933 Services - bowling centers  
7940-7949 Services - professional sports  
7980-7980 Amusement and recreation services  
7990-7999 Services - Miscellaneous entertainment

#### Books - Printing and Publishing

2700-2709 Printing publishing and allied  
2710-2719 Newspapers: publishing-printing  
2720-2729 Periodicals: publishing-printing  
2730-2739 Books: publishing-printing  
2740-2749 Miscellaneous publishing  
2770-2771 Greeting card publishing  
2780-2789 Book binding  
2790-2799 Service industries for print trade

#### Hshld - Consumer Goods

2047-2047 Dog and cat food  
2391-2392 Curtains, home furnishings  
2510-2519 Household furniture  
2590-2599 Miscellaneous furniture and fixtures  
2840-2843 Soap & other detergents  
2844-2844 Perfumes cosmetics  
3160-3161 Luggage  
3170-3171 Handbags and purses  
3172-3172 Personal leather goods, except handbags  
3190-3199 Leather goods  
3229-3229 Pressed and blown glass  
3260-3260 Pottery and related products  
3262-3263 China and earthenware table articles  
3269-3269 Pottery products  
3230-3231 Glass products  
3630-3639 Household appliances  
3750-3751 Motorcycles, bicycles and parts (Harley & Huffy)  
3800-3800 Miscellaneous instrument, photo goods, watches  
3860-3861 Photographic equipment (Kodak etc., but also Xerox)  
3870-3873 Watches clocks and parts  
3910-3911 Jewelry-precious metals  
3914-3914 Silverware  
3915-3915 Jewelers' findings, materials  
3960-3962 Costume jewelry and notions  
3991-3991 Brooms and brushes

3995-3995 Burial caskets

Clths - Apparel

2300-2390 Apparel and other finished products  
3020-3021 Rubber and plastics footwear  
3100-3111 Leather tanning and finishing  
3130-3131 Boot, shoe cut stock, findings  
3140-3149 Footwear except rubber  
3150-3151 Leather gloves and mittens  
3963-3965 Fasteners, buttons, needles, pins

Hlth - Healthcare

8000-8099 Services - health

MedEq - Medical Equipment

3693-3693 X-ray, electromedical appliances  
3840-3849 Surgery & medical instruments  
3850-3851 Ophthalmic goods

Drugs - Pharmaceutical Products

2830-2830 Drugs  
2831-2831 Biological products  
2833-2833 Medicinal chemicals  
2834-2834 Pharmaceutical preparations  
2835-2835 In vitro, in vivo diagnostics  
2836-2836 Biological products, except diagnostics

Chems - Chemicals

2800-2809 Chemicals and allied products  
2810-2819 Industrial inorganic chemicals  
2820-2829 Plastic material & synthetic resin  
2850-2859 Paints  
2860-2869 Industrial organic chemicals  
2870-2879 Agriculture chemicals  
2890-2899 Miscellaneous chemical products

Rubbr - Rubber and Plastic Products

3031-3031 Reclaimed rubber  
3041-3041 Rubber & plastic hose and belting  
3050-3053 Gaskets, hoses, etc.  
3060-3069 Fabricated rubber products  
3070-3079 Miscellaneous rubber products  
3080-3089 Miscellaneous plastic products  
3090-3099 Miscellaneous rubber and plastic products

Txtls -Textiles

2200-2269 Textile mill products

2270-2279 Floor covering mills  
2280-2284 Yarn and thread mills  
2290-2295 Miscellaneous textile goods  
2297-2297 Nonwoven fabrics  
2298-2298 Cordage and twine  
2299-2299 Miscellaneous textile products  
2393-2395 Textile bags, canvas products  
2397-2399 Miscellaneous textile products

BldMt - Construction Materials

0800-0899 Forestry  
2400-2439 Lumber and wood products  
2450-2459 Wood buildings-mobile homes  
2490-2499 Miscellaneous wood products  
2660-2661 Building paper and board mills  
2950-2952 Paving & roofing materials  
3200-3200 Stone, clay, glass, concrete etc.  
3210-3211 Flat glass  
3240-3241 Cement hydraulic  
3250-3259 Structural clay prods  
3261-3261 Vitreous china plumbing fixtures  
3264-3264 Porcelain electrical supply  
3270-3275 Concrete gypsum & plaster  
3280-3281 Cut stone and stone products  
3290-3293 Abrasive and asbestos products  
3295-3299 Non-metallic mineral products  
3420-3429 Handtools and hardware  
3430-3433 Heating equipment & plumbing fix  
3440-3441 Fabricated structural metal products  
3442-3442 Metal doors, frames  
3446-3446 Architectural or ornamental metal work  
3448-3448 Pre-fab metal buildings  
3449-3449 Miscellaneous structural metal work  
3450-3451 Screw machine products  
3452-3452 Bolts, nuts screws  
3490-3499 Miscellaneous fabricated metal products  
3996-3996 Hard surface floor cover

Cnstr - Construction

1500-1511 Build construction - general contractors  
1520-1529 General building contractors - residential  
1530-1539 Operative builders  
1540-1549 General building contractors - non-residential  
1600-1699 Heavy Construction - not building contractors  
1700-1799 Construction - special contractors

Steel - Steel Works Etc.

3300-3300 Primary metal industries  
3310-3317 Blast furnaces & steel works  
3320-3325 Iron & steel foundries  
3330-3339 Primary smelt-refin nonfer metals  
3340-3341 Secondary smelt-refin nonfer metals  
3350-3357 Rolling & drawing nonferrous metals  
3360-3369 Non-ferrous foundries and casting  
3370-3379 Steel works etc.  
3390-3399 Miscellaneous primary metal products

FabPr - Fabricated Products

3400-3400 Fabricated metal, except machinery and trans equipment  
3443-3443 Fabricated plate work  
3444-3444 Sheet metal work  
3460-3469 Metal forgings and stamping  
3470-3479 Coating and engraving

Mach - Machinery

3510-3519 Engines & turbines  
3520-3529 Farm and garden machinery  
3530-3530 Construction, mining material handling machinery  
3531-3531 Construction machinery  
3532-3532 Mining machinery, except oil field  
3533-3533 Oil field machinery  
3534-3534 Elevators  
3535-3535 Conveyors  
3536-3536 Cranes, hoists  
3538-3538 Machinery  
3540-3549 Metalworking machinery  
3550-3559 Special industry machinery  
3560-3569 General industrial machinery  
3580-3580 Refrigeration & service industry machines  
3581-3581 Automatic vending machines  
3582-3582 Commercial laundry and dry-cleaning machines  
3585-3585 Air conditioning, heating, refrigerations equipment  
3586-3586 Measuring and dispensing pumps  
3589-3589 Service industry machinery  
3590-3599 Miscellaneous industrial and commercial equipment and machinery

ElcEq - Electrical Equipment

3600-3600 Electrical machinery equipment & supply  
3610-3613 Electrical transmission  
3620-3621 Electrical industrial apparatus  
3623-3629 Electrical industrial apparatus  
3640-3644 Electric lighting, wiring  
3645-3645 Residential lighting fixtures  
3646-3646 Commercial lighting

3648-3649 Lighting equipment  
3660-3660 Communication equipment  
3690-3690 Miscellaneous electrical machinery and equipment  
3691-3692 Storage batteries  
3699-3699 Electrical machinery and equipment

Autos - Automobiles and Trucks

2296-2296 Tire cord and fabric  
2396-2396 Auto trim  
3010-3011 Tires and inner tubes  
3537-3537 Trucks, tractors, trailers  
3647-3647 Vehicular lighting  
3694-3694 Electric equipment, internal combustion engines  
3700-3700 Transportation equipment  
3710-3710 Motor vehicles and motor vehicle equipment  
3711-3711 Motor vehicles & car bodies  
3713-3713 Truck & bus bodies  
3714-3714 Motor vehicle parts  
3715-3715 Truck trailers  
3716-3716 Motor homes  
3792-3792 Travel trailers and campers  
3790-3791 Miscellaneous transportation equipment  
3799-3799 Miscellaneous transportation equipment

Aero - Aircraft

3720-3720 Aircraft & parts  
3721-3721 Aircraft  
3723-3724 Aircraft engines, engine parts  
3725-3725 Aircraft parts  
3728-3729 Aircraft parts

Ships - Shipbuilding, Railroad Equipment

3730-3731 Ship building and repair  
3740-3743 Railroad Equipment

Guns - Defense

3760-3769 Guided missiles and space vehicles  
3795-3795 Tanks and tank components  
3480-3489 Ordnance & accessories

Gold - Precious Metals

1040-1049 Gold & silver ores

Mines - Non-Metallic and Industrial Metal Mining

1000-1009 Metal mining  
1010-1019 Iron ores  
1020-1029 Copper ores

1030-1039 Lead and zinc ores  
1050-1059 Bauxite and other aluminum ores  
1060-1069 Ferroalloy ores  
1070-1079 Mining  
1080-1089 Mining services  
1090-1099 Miscellaneous metal ores  
1100-1119 Anthracite mining  
1400-1499 Mining and quarrying non-metallic minerals

#### Coal Coal

1200-1299 Bituminous coal

#### Oil Petroleum and Natural Gas

1300-1300 Oil and gas extraction  
1310-1319 Crude petroleum & natural gas  
1320-1329 Natural gas liquids  
1330-1339 Petroleum and natural gas  
1370-1379 Petroleum and natural gas  
1380-1380 Oil and gas field services  
1381-1381 Drilling oil & gas wells  
1382-1382 Oil-gas field exploration  
1389-1389 Oil and gas field services  
2900-2912 Petroleum refining  
2990-2999 Miscellaneous petroleum products

#### Util Utilities

4900-4900 Electric, gas, sanitary services  
4910-4911 Electric services  
4920-4922 Natural gas transmission  
4923-4923 Natural gas transmission-distribution  
4924-4925 Natural gas distribution  
4930-4931 Electric and other services combined  
4932-4932 Gas and other services combined  
4939-4939 Combination utilities  
4940-4942 Water supply

#### Telcm Communication

4800-4800 Communications  
4810-4813 Telephone communications  
4820-4822 Telegraph and other message communication  
4830-4839 Radio-TV Broadcasters  
4840-4841 Cable and other pay TV services  
4880-4889 Communications  
4890-4890 Communication services (Comsat)  
4891-4891 Cable TV operators  
4892-4892 Telephone interconnect  
4899-4899 Communication services

PerSv Personal Services

7020-7021 Rooming and boarding houses  
7030-7033 Camps and recreational vehicle parks  
7200-7200 Services - personal  
7210-7212 Services - laundry, cleaners  
7214-7214 Services - diaper service  
7215-7216 Services - coin-op cleaners, dry cleaners  
7217-7217 Services - carpet, upholstery cleaning  
7219-7219 Services - laundry, cleaners  
7220-7221 Services - photo studios, portrait  
7230-7231 Services - beauty shops  
7240-7241 Services - barber shops  
7250-7251 Services - shoe repair  
7260-7269 Services - funeral  
7270-7290 Services - miscellaneous  
7291-7291 Services - tax return  
7292-7299 Services - miscellaneous  
7395-7395 Services - photo-finishing labs (School pictures)  
7500-7500 Services - auto repair, services  
7520-7529 Services - automobile parking  
7530-7539 Services - auto repair shops  
7540-7549 Services - auto services, except repair (car washes)  
7600-7600 Services - Miscellaneous repair services  
7620-7620 Services - Electrical repair shops  
7622-7622 Services - Radio and TV repair shops  
7623-7623 Services - Refrigerator and air conditioner repair  
7629-7629 Services - Electrical repair shops  
7630-7631 Services - Watch, clock and jewelry repair  
7640-7641 Services - Reupholster, furniture repair  
7690-7699 Services - Miscellaneous repair shops  
8100-8199 Services - legal  
8200-8299 Services - educational  
8300-8399 Services - social services  
8400-8499 Services - museums, galleries, botanic gardens  
8600-8699 Services - membership organizations  
8800-8899 Services - private households  
7510-7515 Services - truck, auto rental and leasing

BusSv Business Services

2750-2759 Commercial printing  
3993-3993 Signs, advertising specialty  
7218-7218 Services - industrial launderers  
7300-7300 Services - business services  
7310-7319 Services - advertising  
7320-7329 Services - credit reporting agencies, collection services  
7330-7339 Services - mailing, reproduction, commercial art

7340-7342 Services - services to dwellings, other buildings  
7349-7349 Services - cleaning and building maintenance  
7350-7351 Services - miscellaneous equip rental and leasing  
7352-7352 Services - medical equip rental  
7353-7353 Services - heavy construction equip rental  
7359-7359 Services - equip rental and leasing  
7360-7369 Services - personnel supply services  
7374-7374 Services - computer processing, data prep  
7376-7376 Services - computer facilities management service  
7377-7377 Services - computer rental and leasing  
7378-7378 Services - computer maintenance and repair  
7379-7379 Services - computer related services  
7380-7380 Services - miscellaneous business services  
7381-7382 Services - security  
7383-7383 Services - news syndicates  
7384-7384 Services - photo-finishing labs  
7385-7385 Services - telephone interconnections  
7389-7390 Services - miscellaneous business services  
7391-7391 Services - R&D labs  
7392-7392 Services - management consulting & P.R.  
7393-7393 Services - detective and protective (ADT)  
7394-7394 Services - equipment rental & leasing  
7396-7396 Services - trading stamp services  
7397-7397 Services - commercial testing labs  
7399-7399 Services - business services  
7519-7519 Services - trailer rental and leasing  
8700-8700 Services - engineering, accounting, research, management  
8710-8713 Services - engineering, accounting, surveying  
8720-8721 Services - accounting, auditing, bookkeeping  
8730-8734 Services - research, development, testing labs  
8740-8748 Services - management, public relations, consulting  
8900-8910 Services - miscellaneous  
8911-8911 Services - engineering & architect  
8920-8999 Services - miscellaneous  
4220-4229 Warehousing and storage

#### Hardw Computers

3570-3579 Office computers  
3680-3680 Computers  
3681-3681 Computers - mini  
3682-3682 Computers - mainframe  
3683-3683 Computers - terminals  
3684-3684 Computers - disk & tape drives  
3685-3685 Computers - optical scanners  
3686-3686 Computers - graphics  
3687-3687 Computers - office automation systems



3688-3688 Computers - peripherals  
3689-3689 Computers - equipment  
3695-3695 Magnetic and optical recording media

Softw Computer Software

7370-7372 Services - computer programming and data processing  
7375-7375 Services - information retrieval services  
7373-7373 Computer integrated systems design

Chips Electronic Equipment

3622-3622 Industrial controls  
3661-3661 Telephone and telegraph apparatus  
3662-3662 Communications equipment  
3663-3663 Radio TV comm equip & apparatus  
3664-3664 Search, navigation, guidance systems  
3665-3665 Training equipment & simulators  
3666-3666 Alarm & signaling products  
3669-3669 Communication equipment  
3670-3679 Electronic components  
3810-3810 Search, detection, navigation, guidance  
3812-3812 Search, detection, navigation, guidance

LabEq Measuring and Control Equipment

3811-3811 Engineering lab and research equipment  
3820-3820 Measuring and controlling equipment  
3821-3821 Lab apparatus and furniture  
3822-3822 Automatic controls - Environment and application  
3823-3823 Industrial measurement instrument  
3824-3824 Totalizing fluid meters  
3825-3825 Elec measurement & test instrument  
3826-3826 Lab analytical instruments  
3827-3827 Optical instrument and lenses  
3829-3829 Measurement and control devices  
3830-3839 Optical instrument and lenses

Paper Business Supplies

2520-2549 Office furniture and fixtures  
2600-2639 Paper and allied products  
2670-2699 Paper and allied products  
2760-2761 Manifold business forms  
3950-3955 Pens pencils and office supplies

Boxes Shipping Containers

2440-2449 Wood containers  
2640-2659 Paperboard containers, boxes, drums, tubs  
3220-3221 Glass containers  
3410-3412 Metal cans and shipping containers

## Trans Transportation

- 4000-4013 Railroads-line haul
- 4040-4049 Railway express service
- 4100-4100 Transit and passenger transportation
- 4110-4119 Local passenger transportation
- 4120-4121 Taxicabs
- 4130-4131 Intercity bus transportation (Greyhound)
- 4140-4142 Bus charter
- 4150-4151 School buses
- 4170-4173 Motor vehicle terminals, service facilities
- 4190-4199 Miscellaneous transit and passenger transportation
- 4200-4200 Motor freight transportation, warehousing
- 4210-4219 Trucking
- 4230-4231 Terminal facilities - motor freight
- 4240-4249 Transportation
- 4400-4499 Water transport
- 4500-4599 Air transportation
- 4600-4699 Pipelines, except natural gas
- 4700-4700 Transportation services
- 4710-4712 Freight forwarding
- 4720-4729 Travel agencies, etc.
- 4730-4739 Arrange transportation - freight and cargo
- 4740-4749 Rental of railroad cars
- 4780-4780 Miscellaneous services incidental to transportation
- 4782-4782 Inspection and weighing services
- 4783-4783 Packing and crating
- 4784-4784 Fixed facilities for vehicles, not elsewhere classified
- 4785-4785 Motor vehicle inspection
- 4789-4789 Transportation services

## Whlsl Wholesale

- 5000-5000 Wholesale - durable goods
- 5010-5015 Wholesale - autos and parts
- 5020-5023 Wholesale - furniture and home furnishings
- 5030-5039 Wholesale - lumber and construction materials
- 5040-5042 Wholesale - professional and commercial equipment and supplies
- 5043-5043 Wholesale - photographic equipment
- 5044-5044 Wholesale - office equipment
- 5045-5045 Wholesale - computers
- 5046-5046 Wholesale - commercial equipment
- 5047-5047 Wholesale - medical, dental equipment
- 5048-5048 Wholesale - ophthalmic goods
- 5049-5049 Wholesale - professional equip and supplies
- 5050-5059 Wholesale - metals and minerals
- 5060-5060 Wholesale - electrical goods
- 5063-5063 Wholesale - electrical apparatus and equipment

5064-5064 Wholesale - electrical appliance TV and radio  
 5065-5065 Wholesale - electronic parts  
 5070-5078 Wholesale - hardware, plumbing, heating equipment  
 5080-5080 Wholesale - machinery and equipment  
 5081-5081 Wholesale - machinery and equipment (?)  
 5082-5082 Wholesale - construction and mining equipment  
 5083-5083 Wholesale - farm and garden machinery  
 5084-5084 Wholesale - industrial machinery and equipment  
 5085-5085 Wholesale - industrial supplies  
 5086-5087 Wholesale - machinery and equipment (?)  
 5088-5088 Wholesale - transportation equipment except motor vehicles  
 5090-5090 Wholesale - miscellaneous durable goods  
 5091-5092 Wholesale - sporting goods, toys  
 5093-5093 Wholesale - scrap and waste materials  
 5094-5094 Wholesale - jewelry and watches  
 5099-5099 Wholesale - durable goods  
 5100-5100 Wholesale - nondurable goods  
 5110-5113 Wholesale - paper and paper products  
 5120-5122 Wholesale - drugs & proprietary  
 5130-5139 Wholesale - apparel  
 5140-5149 Wholesale - groceries & related products  
 5150-5159 Wholesale - farm products  
 5160-5169 Wholesale - chemicals & allied products  
 5170-5172 Wholesale - petroleum and petroleum products  
 5180-5182 Wholesale - beer, wine  
 5190-5199 Wholesale - non-durable goods

#### Rtail Retail

5200-5200 Retail - building material, hardware, garden  
 5210-5219 Retail - lumber & other building mat  
 5220-5229 Retail  
 5230-5231 Retail - paint, glass, wallpaper  
 5250-5251 Retail - hardware stores  
 5260-5261 Retail - nurseries, lawn, garden stores  
 5270-5271 Retail - mobile home dealers  
 5300-5300 Retail - general merchandise stores  
 5310-5311 Retail - department stores  
 5320-5320 Retail - general merchandise stores (?)  
 5330-5331 Retail - variety stores  
 5334-5334 Retail - catalog showroom  
 5340-5349 Retail  
 5390-5399 Retail - Miscellaneous general merchandise stores  
 5400-5400 Retail - food stores  
 5410-5411 Retail - grocery stores  
 5412-5412 Retail - convenience stores  
 5420-5429 Retail - meat, fish market

5430-5439 Retail - fruit and vegetable markets  
5440-5449 Retail - candy, nut, confectionery stores  
5450-5459 Retail - dairy product stores  
5460-5469 Retail - bakeries  
5490-5499 Retail - miscellaneous food stores  
5500-5500 Retail - auto dealers and gas stations  
5510-5529 Retail - auto dealers  
5530-5539 Retail - auto and home supply stores  
5540-5549 Retail - gasoline service stations  
5550-5559 Retail - boat dealers  
5560-5569 Retail - recreational vehicle dealers  
5570-5579 Retail - motorcycle dealers  
5590-5599 Retail - automotive dealers  
5600-5699 Retail - apparel & accessories  
5700-5700 Retail - home furniture and equipment stores  
5710-5719 Retail - home furnishings stores  
5720-5722 Retail - household appliance stores  
5730-5733 Retail - radio, TV and consumer electronic stores  
5734-5734 Retail - computer and computer software stores  
5735-5735 Retail - record and tape stores  
5736-5736 Retail - musical instrument stores  
5750-5799 Retail  
5900-5900 Retail - miscellaneous  
5910-5912 Retail - drug & proprietary stores  
5920-5929 Retail - liquor stores  
5930-5932 Retail - used merchandise stores  
5940-5940 Retail - miscellaneous  
5941-5941 Retail - sporting goods stores, bike shops  
5942-5942 Retail - book stores  
5943-5943 Retail - stationery stores  
5944-5944 Retail - jewelry stores  
5945-5945 Retail - hobby, toy and game shops  
5946-5946 Retail - camera and photo shop  
5947-5947 Retail - gift, novelty  
5948-5948 Retail - luggage  
5949-5949 Retail - sewing & needlework stores  
5950-5959 Retail  
5960-5969 Retail - non-store retailers (catalogs, etc.)  
5970-5979 Retail  
5980-5989 Retail - fuel & ice stores (Penn Central Co)  
5990-5990 Retail - retail stores  
5992-5992 Retail - florists  
5993-5993 Retail - tobacco stores  
5994-5994 Retail - newsdealers  
5995-5995 Retail - computer stores  
5999-5999 Retail stores

Meals Restaurants, Hotels, Motels

- 5800-5819 Retail - eating places
- 5820-5829 Restaurants, hotels, motels
- 5890-5899 Eating and drinking places
- 7000-7000 Hotels, other lodging places
- 7010-7019 Hotels motels
- 7040-7049 Membership hotels and lodging
- 7213-7213 Services - linen

Banks Banking

- 6000-6000 Depository institutions
- 6010-6019 Federal reserve banks
- 6020-6020 Commercial banks
- 6021-6021 National commercial banks
- 6022-6022 State banks - Fed Reserve System
- 6023-6024 State banks - not Fed Reserve System
- 6025-6025 National banks - Fed Reserve System
- 6026-6026 National banks - not Fed Reserve System
- 6027-6027 National banks, not FDIC
- 6028-6029 Banks
- 6030-6036 Savings institutions
- 6040-6059 Banks (?)
- 6060-6062 Credit unions
- 6080-6082 Foreign banks
- 6090-6099 Functions related to deposit banking
- 6100-6100 Nondepository credit institutions
- 6110-6111 Federal credit agencies
- 6112-6113 FNMA
- 6120-6129 S&Ls
- 6130-6139 Agricultural credit institutions
- 6140-6149 Personal credit institutions (Beneficial)
- 6150-6159 Business credit institutions
- 6160-6169 Mortgage bankers
- 6170-6179 Finance lessors
- 6190-6199 Financial services

Insur Insurance

- 6300-6300 Insurance
- 6310-6319 Life insurance
- 6320-6329 Accident and health insurance
- 6330-6331 Fire, marine, property-casualty insurance
- 6350-6351 Surety insurance
- 6360-6361 Title insurance
- 6370-6379 Pension, health, welfare funds
- 6390-6399 Insurance carriers
- 6400-6411 Insurance agents

#### REst Real Estate

- 6500-6500 Real estate
- 6510-6510 Real estate operators
- 6512-6512 Operators - non-resident buildings
- 6513-6513 Operators - apartment buildings
- 6514-6514 Operators - other than apartment
- 6515-6515 Operators - residential mobile home
- 6517-6519 Lessors of real property
- 6520-6529 Real estate
- 6530-6531 Real estate agents and managers
- 6532-6532 Real estate dealers
- 6540-6541 Title abstract offices
- 6550-6553 Real estate developers
- 6590-6599 Real estate
- 6610-6611 Combined real estate, insurance, etc.

#### Fin Trading

- 6200-6299 Security and commodity brokers
- 6700-6700 Holding, other investment offices
- 6710-6719 Holding offices
- 6720-6722 Investment offices
- 6723-6723 Management investment, closed-end
- 6724-6724 Unit investment trusts
- 6725-6725 Face-amount certificate offices
- 6726-6726 Unit investment trusts, closed-end
- 6730-6733 Trusts
- 6740-6779 Investment offices
- 6790-6791 Miscellaneous investing
- 6792-6792 Oil royalty traders
- 6793-6793 Commodity traders
- 6794-6794 Patent owners & lessors
- 6795-6795 Mineral royalty traders
- 6798-6798 REIT
- 6799-6799 Investors, NEC

#### Other Almost Nothing

- 4950-4959 Sanitary services
- 4960-4961 Steam, air conditioning supplies
- 4970-4971 Irrigation systems
- 4990-4991 Cogeneration - SM power producer