

For Online Publication

Supplementary Appendix A

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1. Excluding top ten oil producers and consumers

Figure A.I presents the impulse responses of key macro variables to the two types of oil shocks for the sample without the top ten oil producers and consumers.

2. Excluding member countries in OPEC

Figure A.II presents the impulse responses of key macro variables to the two types of oil shocks for the sample excluding member countries in OPEC.

3. Excluding countries in the Middle East and North Africa

Figure A.III presents the impulse responses of key macro variables to the two types of oil shocks for the sample without countries in the Middle East and North Africa.

4. Post-oil crisis period

Figure A.IV presents the impulse responses of key macro variables to the two types of oil shocks for the sample in a shorter period (1984 – 2011).

5. Additional control variables

Figure A.V presents the impulse responses of key macro variables to the two types of oil shocks from the regression which includes additional control variables such as log GDP per capita, the GDP growth rate, inflation rate, terms of trade, exchange rates, and the global demand factor.

6. Control for country-specific linear trends

Figure A.VI presents the impulse responses of key macro variables to the two types of oil shocks, with controls of country-specific linear trends.

7. An alternative measure of oil discovery shocks

Figure A.VII presents the impulse responses of key macro variables to the two types of oil shocks by using a simple dummy of oil discovery event for discovery shocks.

8. Alternative measures of oil revenue shocks

Figure A.VIII and Figure A.IX present the impulse responses of key macro variables to the two types of oil shocks by using the alternative measures of oil revenue shocks. The oil revenue shocks are constructed by using the total export of oil and gas (in Figure A.VIII) or the total production of oil and gas (in Figure A.IX), instead of the net export of oil and gas.

We also use the average GDP share of the net exports of oil and gas during the sample period or in the past three years as weights to construct the oil revenue shocks, and the estimated IRFs are presented in Figure A.X and Figure A.XI, respectively.

9. Sample of oil exporters

Figure A.XII presents the IRFs for the sample of oil exporters, which are defined as the country's average exports of oil and gas during the sample period above the median value.

Figure A.XIII presents the IRFs for the sample of countries with at least one giant oil discovery.

10. Different dynamic specifications

a. Including higher-order lags for dependent variables:

Figure A.XIV presents the results for different dynamic specifications: $p=2$ and $q=10$.

b. Using different orders in the lags for two types of oil shocks:

Figure A.XV presents the results for different specifications: $p=1$, $q=11$ for oil discovery shocks, and $q=8$ for oil revenue shocks.

11. Results using Chang and Sakata (2007)'s estimation method

Figure A.XVI presents the results of Chang and Sakata (2007)'s estimation method. See more discussion for this alternative method in the Supplementary Appendix of Arezki, Ramey, and Sheng (2017).

12. Table: Estimated IRFs for oil discovery news and oil revenue shocks

Table A.I and A.II present the estimated IRFs of oil discovery news and oil revenue shocks, respectively.

1. Excluding top ten oil producers and consumers

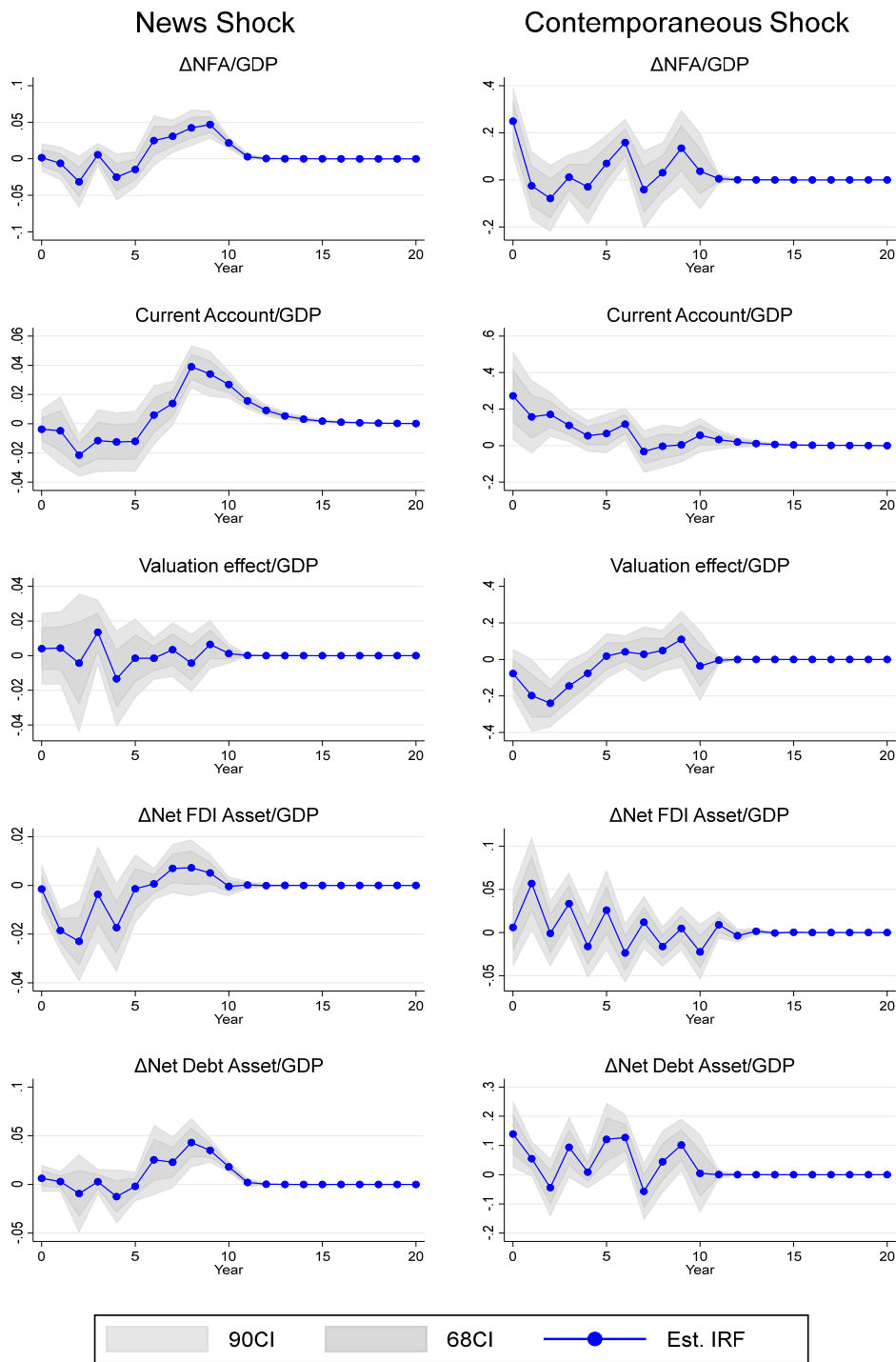


Figure A.I: Excluding Top Ten Oil Producers and Consumers

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

2. Excluding member countries in OPEC

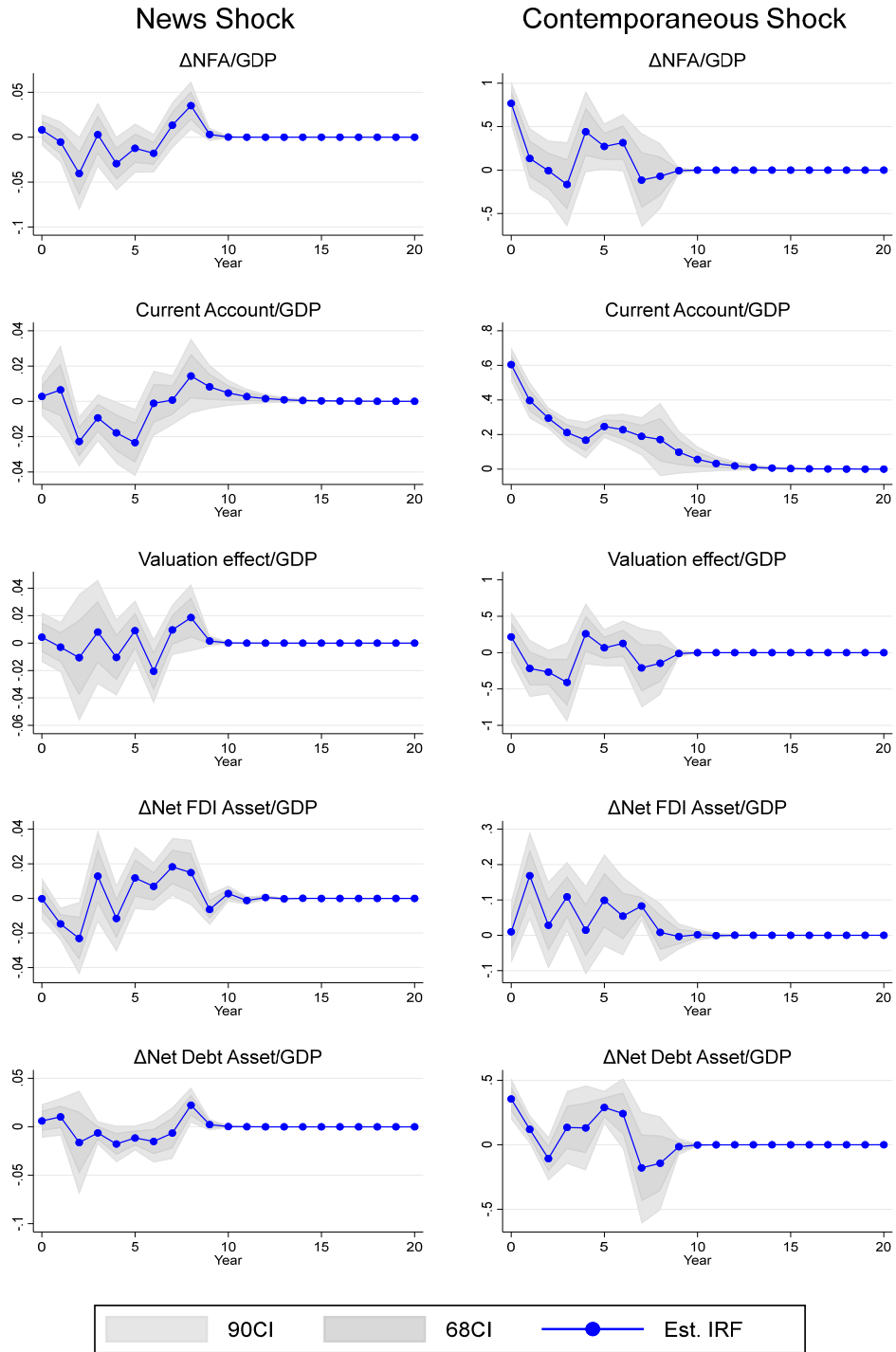


Figure A.II: Excluding Member Countries in OPEC

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

3. Excluding countries in the Middle East and North Africa

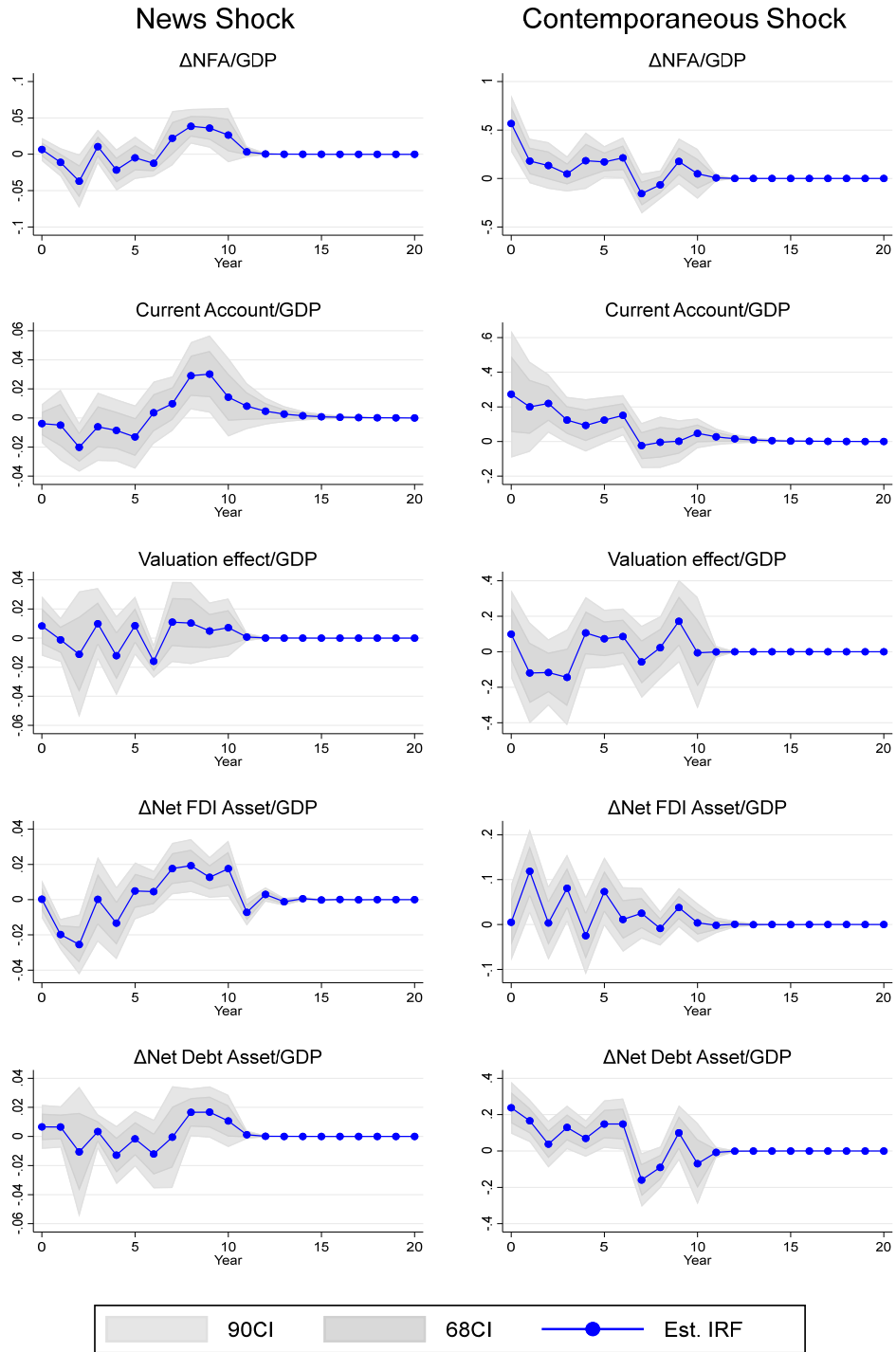


Figure A.III: Excluding Countries in the Middle East and North Africa

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

4. Post first oil crisis period (1984-2011)

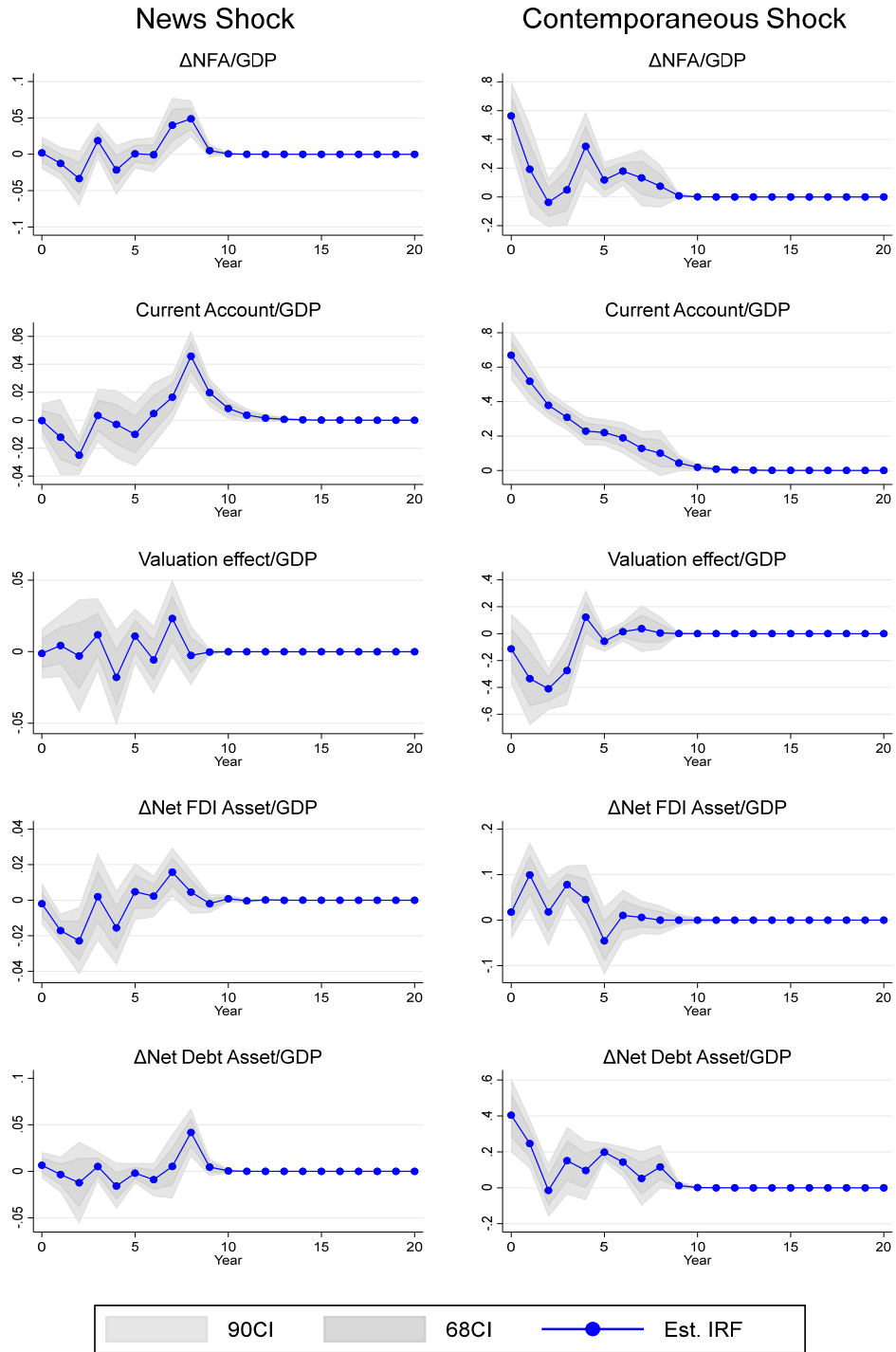


Figure A.IV: Post-Oil Crisis

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

5. Additional control variables

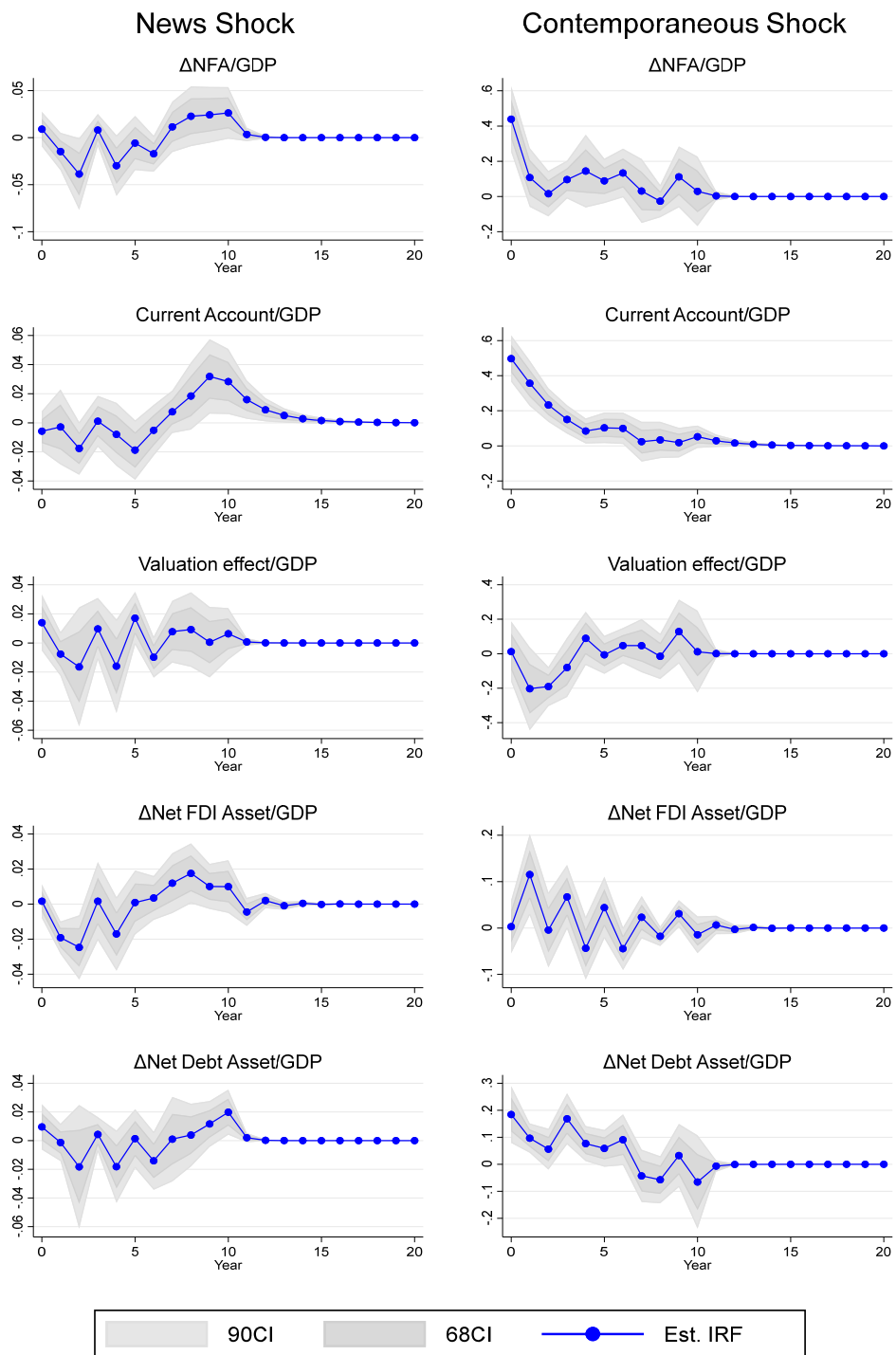


Figure A.V: Additional control variables

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export revenue shock equal to 1% of GDP. The regression includes additional control variables such as log GDP per capita, the GDP growth rate, inflation rate, terms of trade, exchange rates, and the global demand factor. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

6. Control for country-specific linear trends

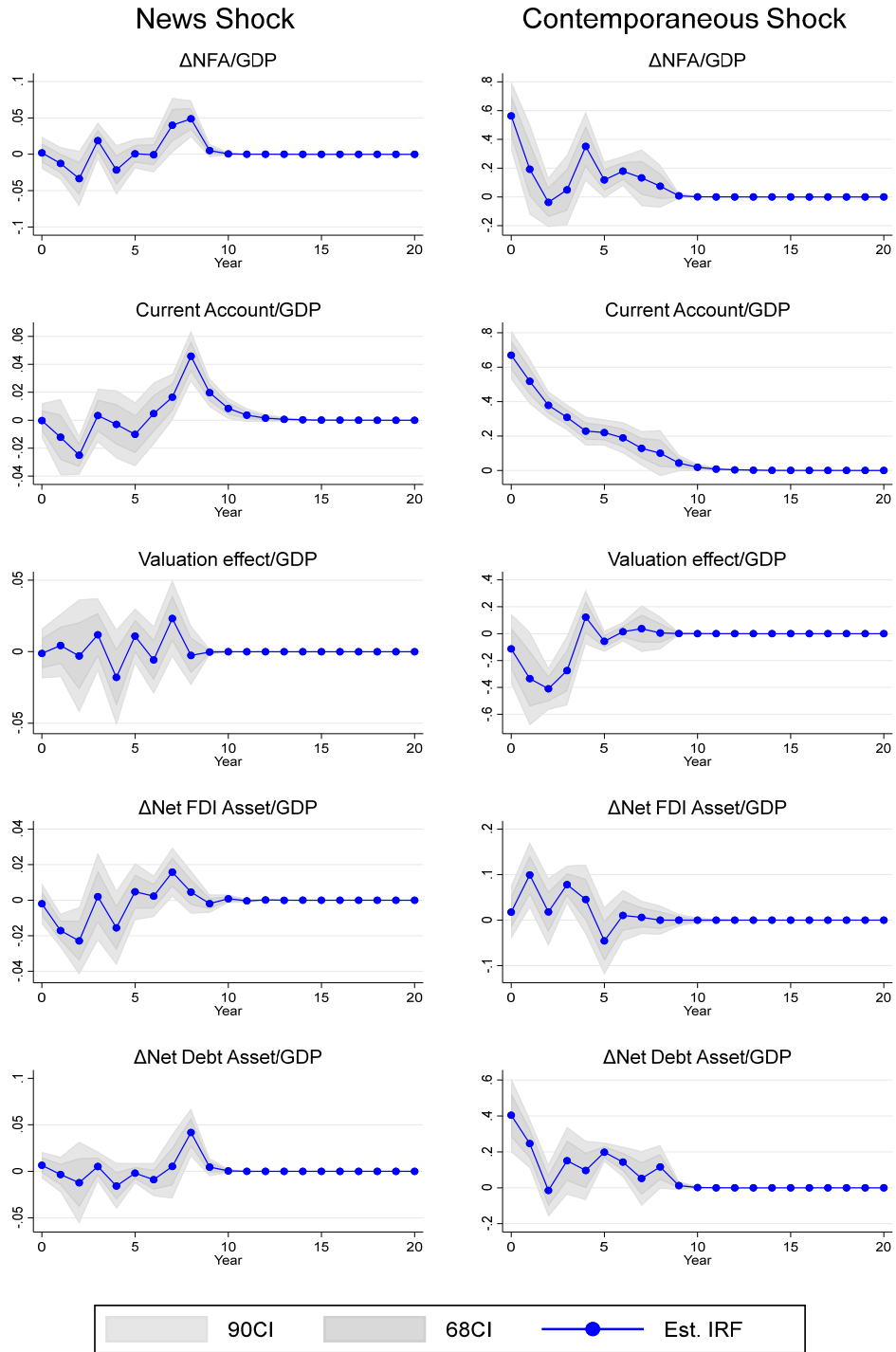


Figure A.VI: Control for Country-specific Linear Trends

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP, with controls for country-specific linear trends of the external balance and international portfolio. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

7. An alternative measure of oil discovery shocks

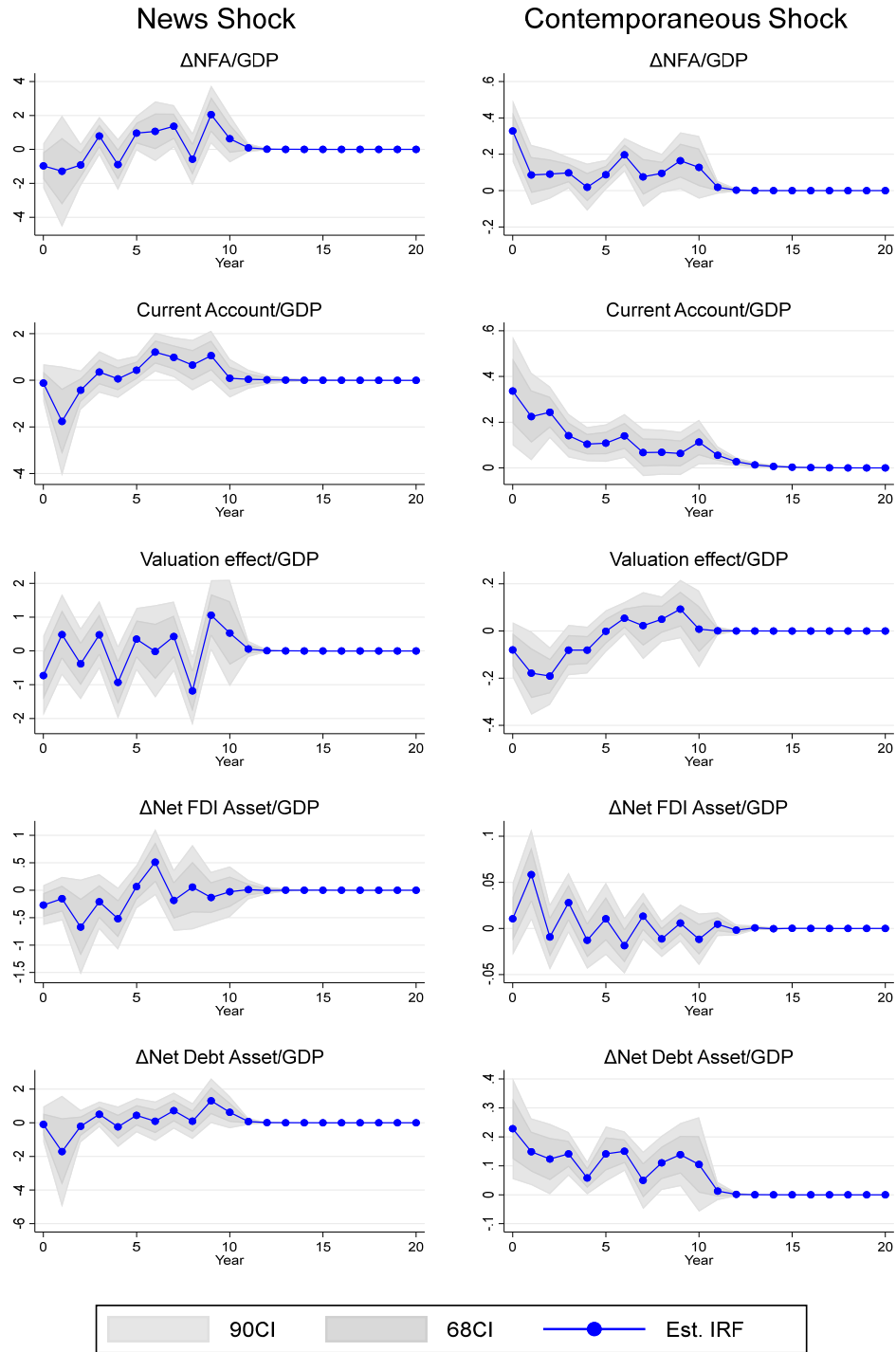


Figure A.VII: Alternative Measure of Oil Discovery Shocks

Note: The left column presents the impulse response of an oil discovery event dummy, and the right column displays the impulse response of an oil net export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

8. Alternative measures of oil revenue shocks

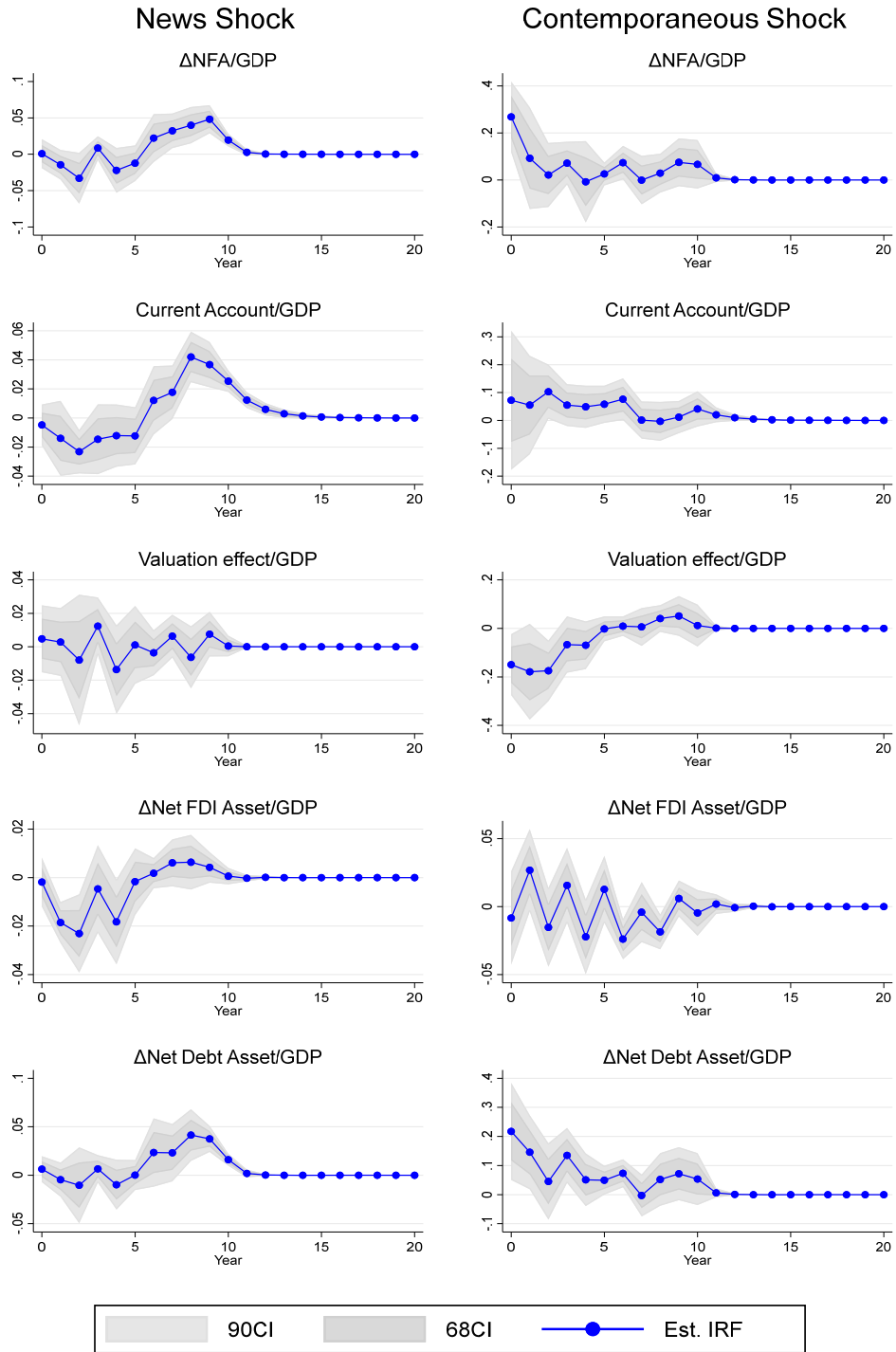


Figure A.VIII: Alternative Measure of Oil Revenue Shocks – Total Exports

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of a total oil export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

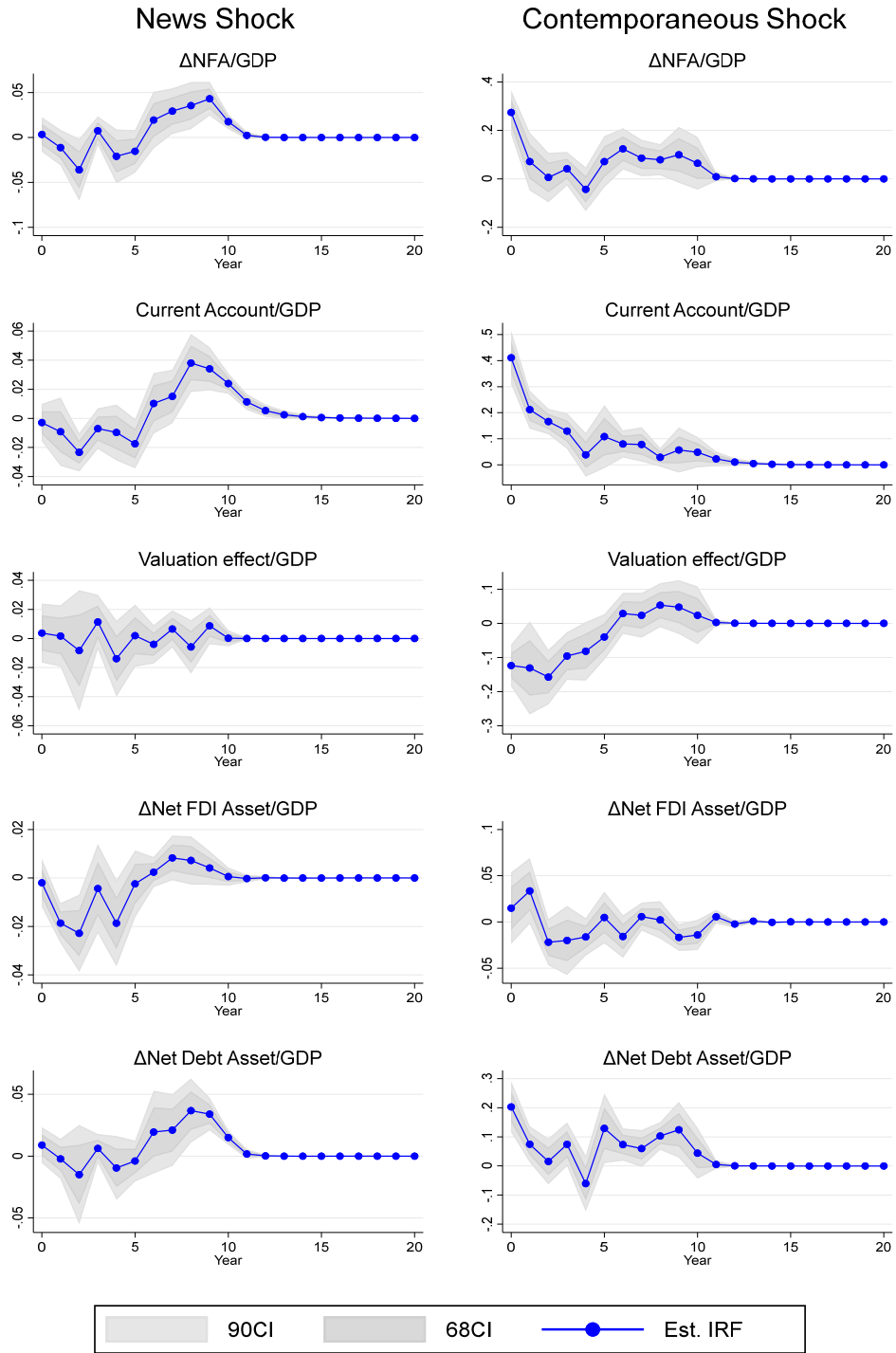
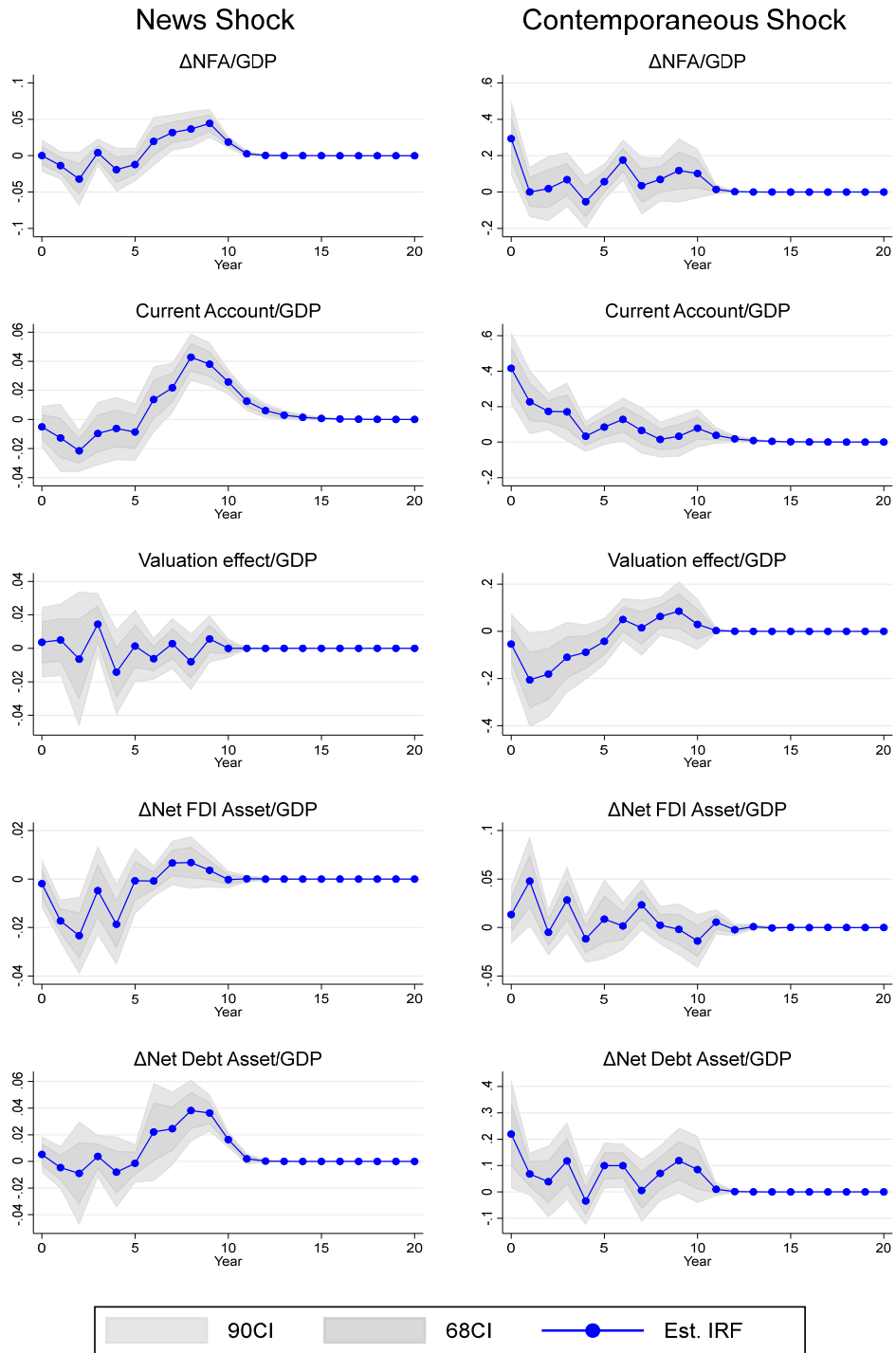


Figure A.IX: Alternative Measure of Oil Revenue Shocks – Total Production

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of a total oil production revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.



**Figure A.X: Alternative Measure of Oil Revenue Shocks –
Average GDP Share of Net Exports of Oil and Gas**

Note: The oil revenue shocks are based on the average GDP share of the net exports of oil and gas during the sample period. The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

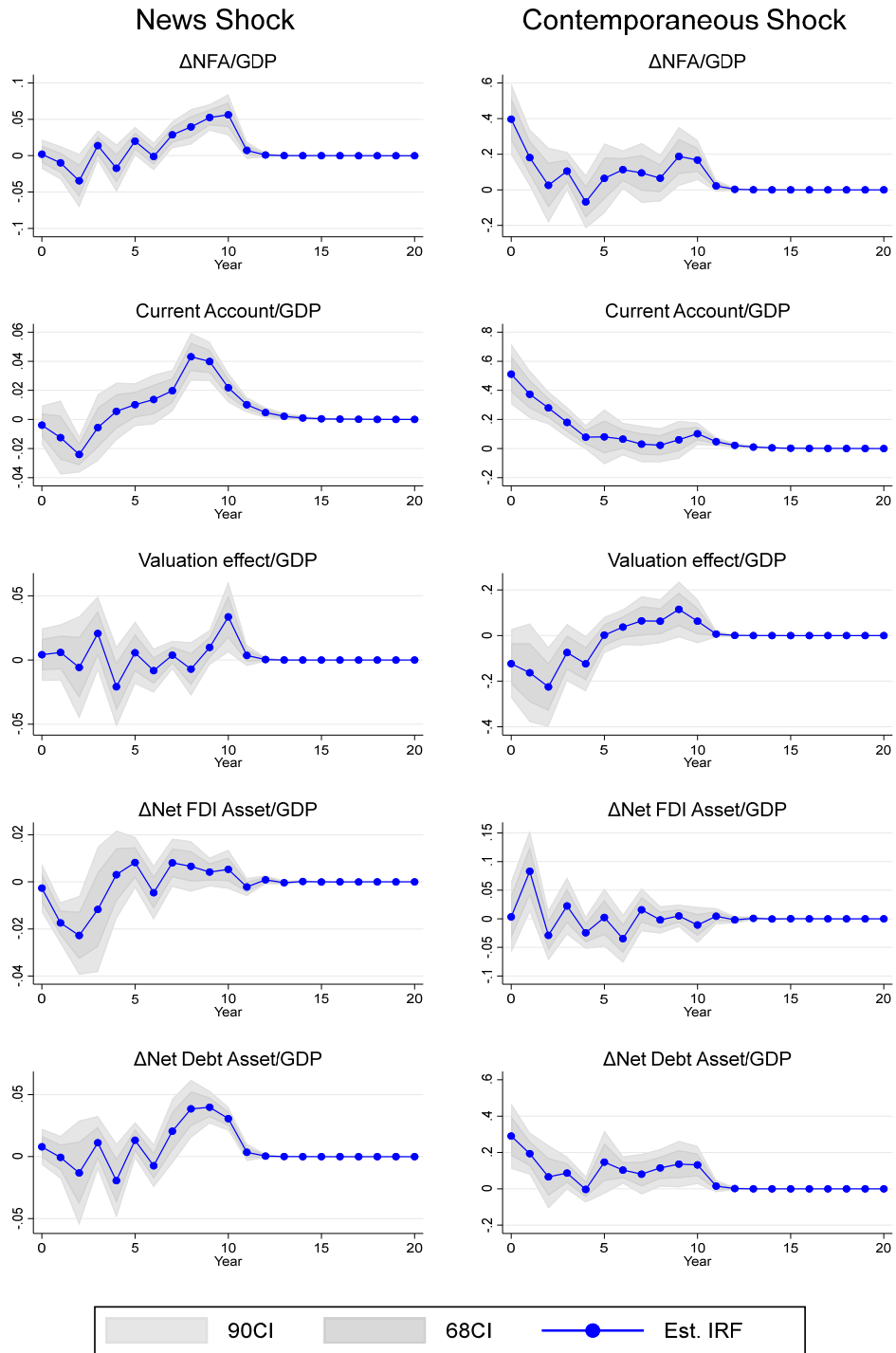


Figure A.XI: Alternative Measure of Oil Revenue Shocks – Three-Year Lagged Average

Note: The oil revenue shocks are based on the average of the net exports of oil and gas as a percent of GDP in the past three years. The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

9. Sample of oil exporters

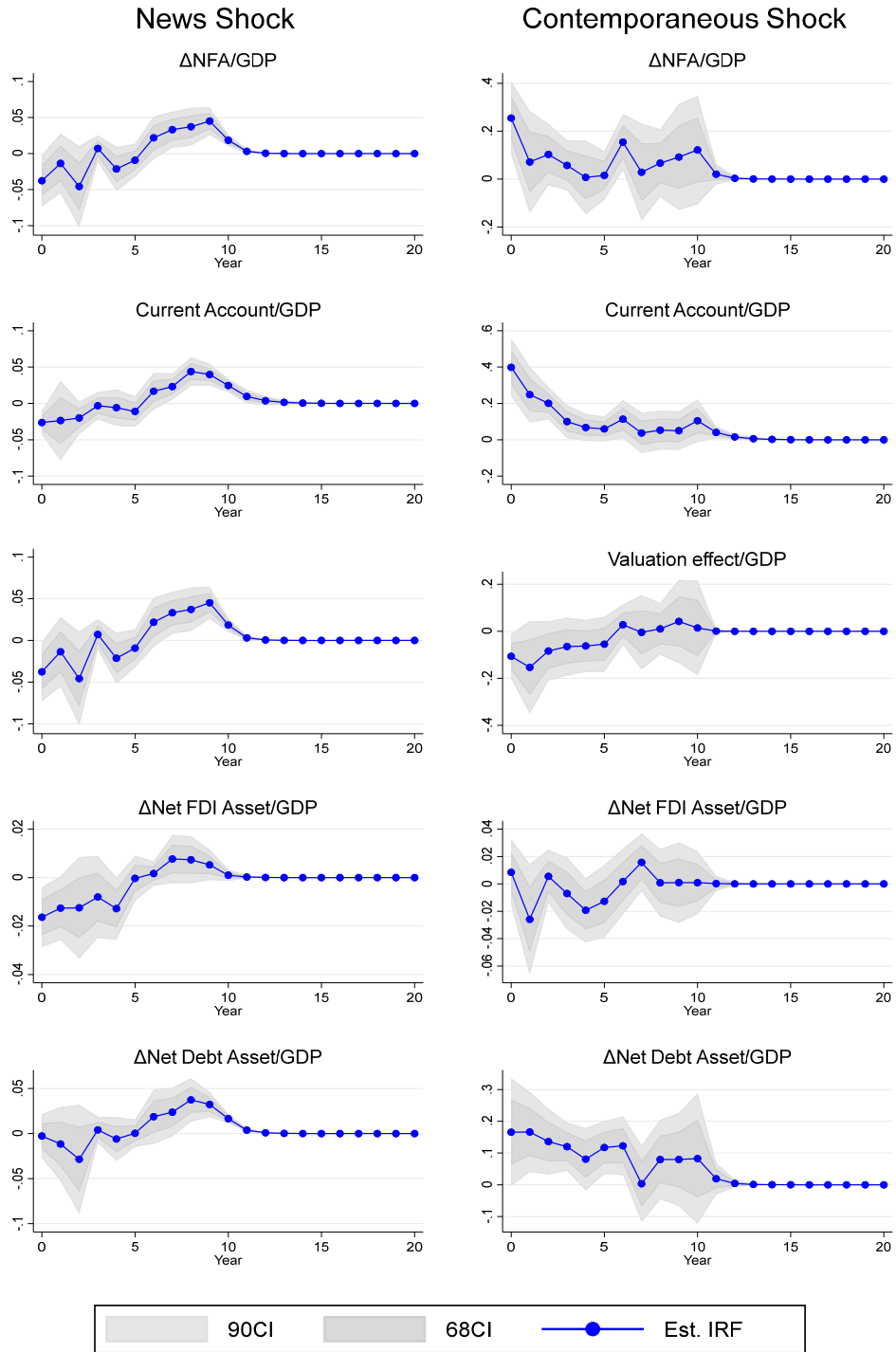


Figure A.XII: Sample of Oil Exporters

Note: The sample only covers 86 oil exporters. The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

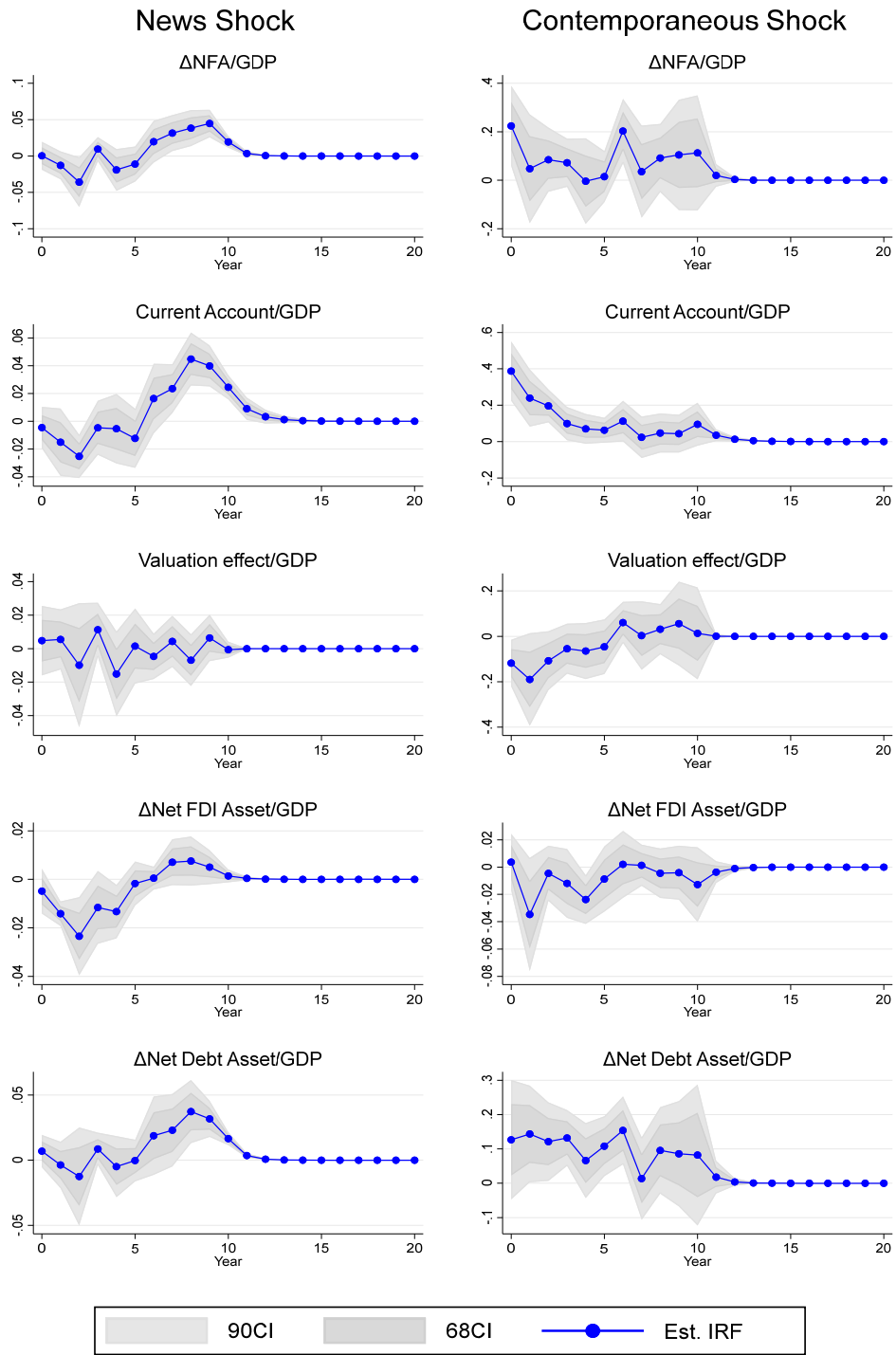


Figure A.XIII: Sample of Countries with Oil Discoveries

Note: The sample only covers countries with at least one giant oil discovery. The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export revenue shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

10. Different dynamic specifications

(a) $p=2; q=10$

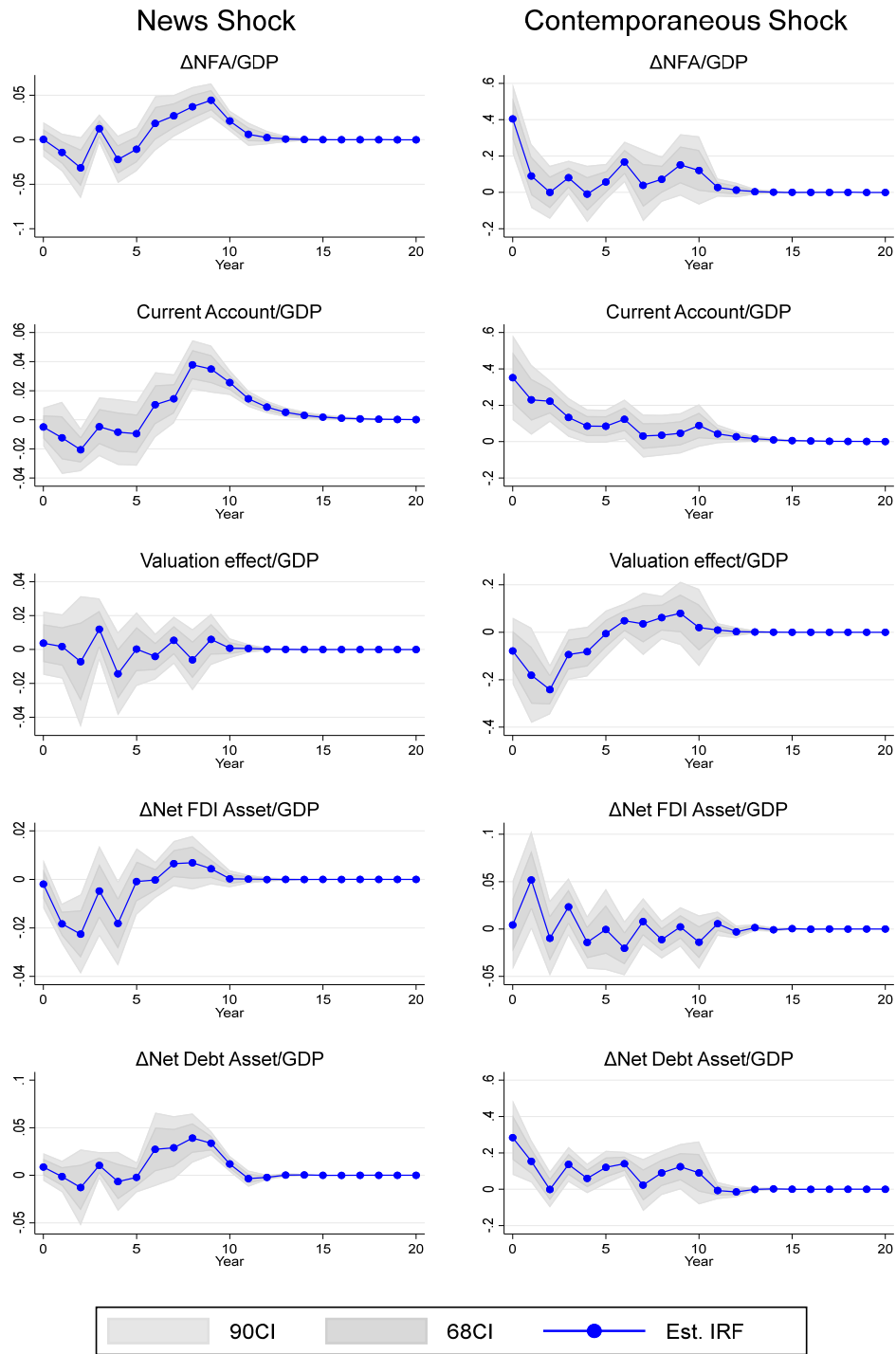


Figure A.XIV: Higher Order Lags for Dependent Variables

(b) $p=1; q=11$ for discovery shock; $q=8$ for revenue shocks

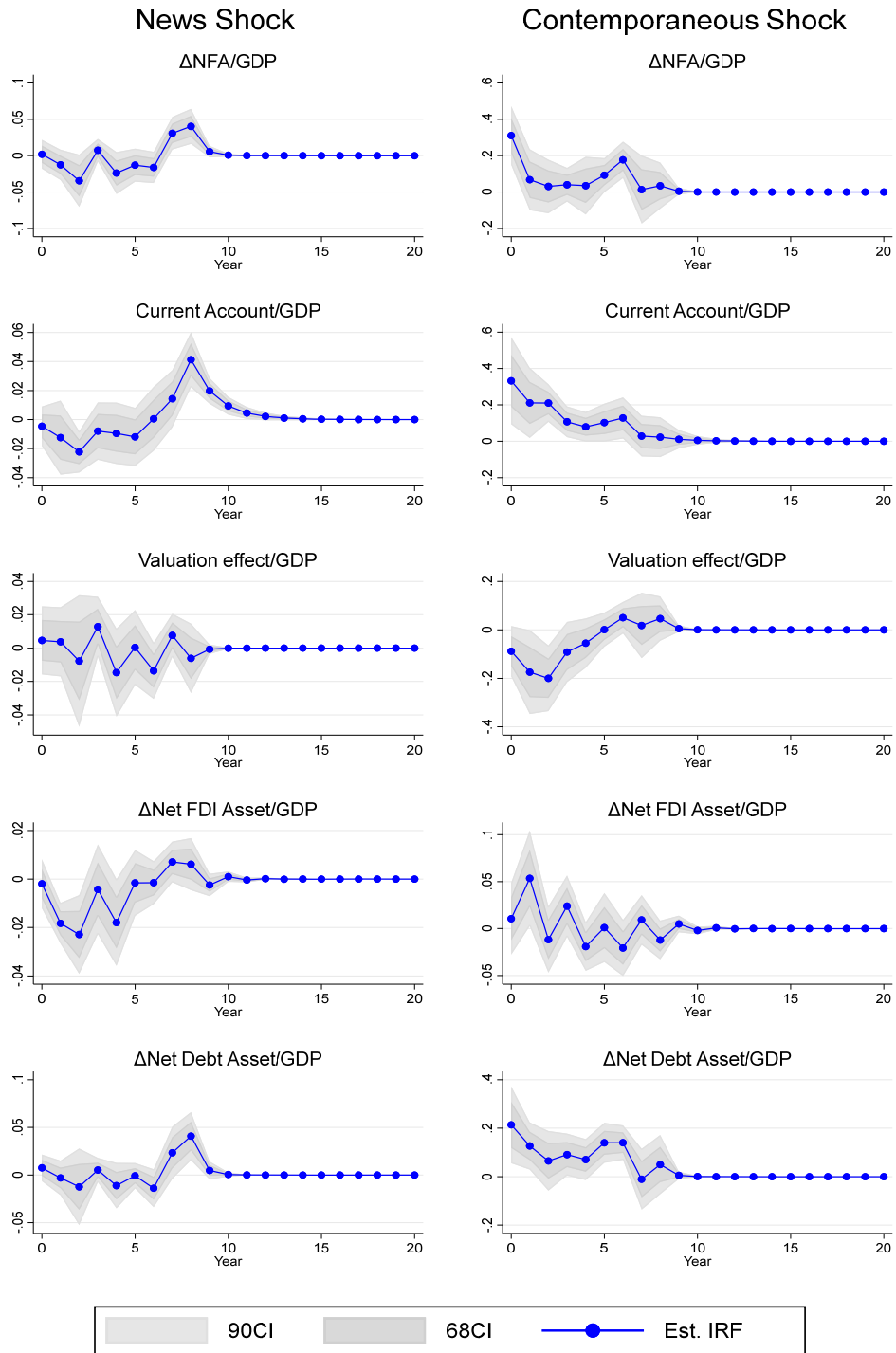


Figure A.XV: Different Orders in the Lags for Two Types of Oil Shocks

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The line with circles indicates point estimates, and gray areas are 90% and 68% confidence intervals. The vertical axis shows percentage changes.

11. Results using Chang and Sakata (2007)'s estimation method

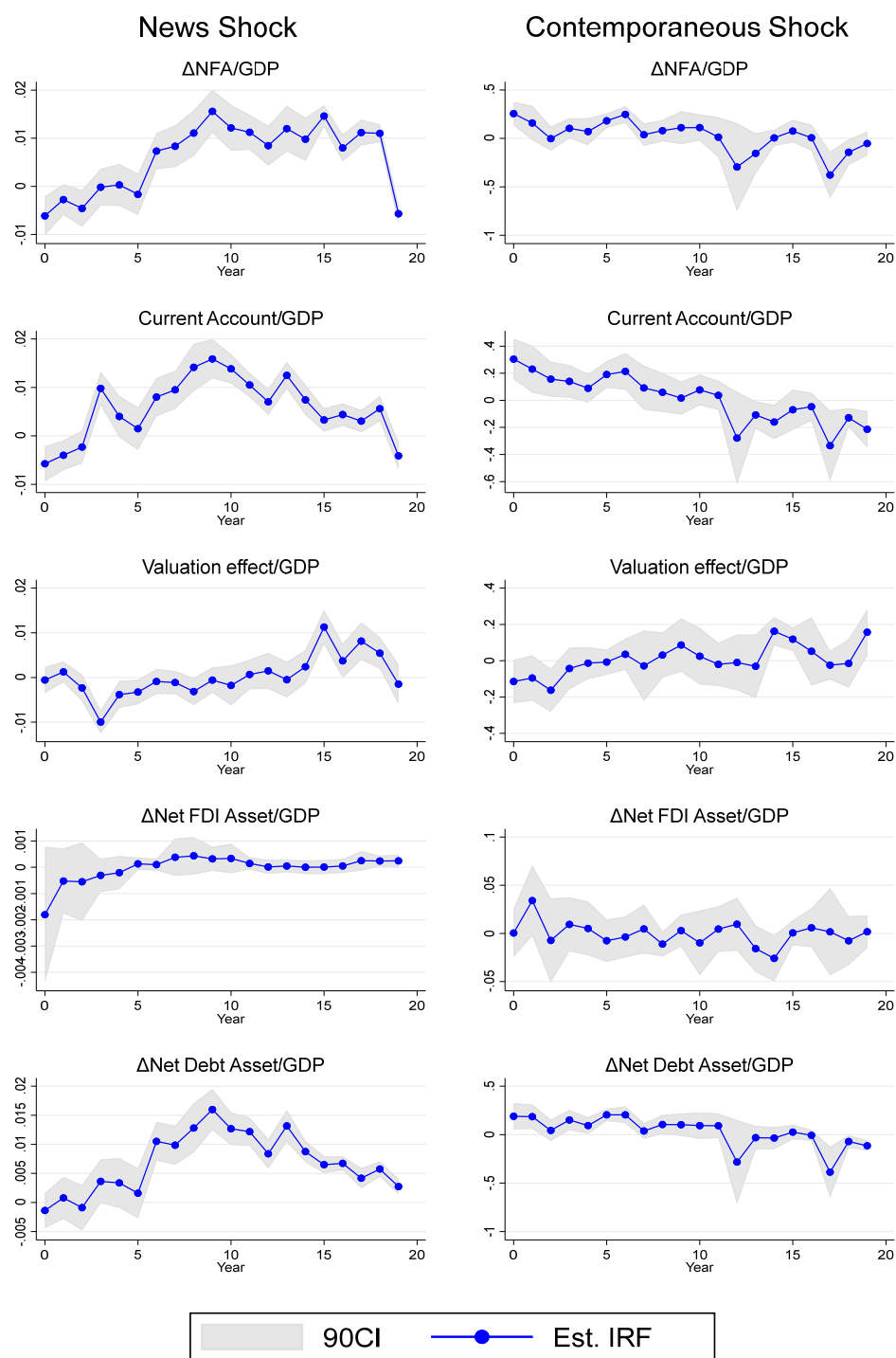


Figure A.XVI: Estimation results using Chang-Sakata (2007)'s Method

Note: The left column presents the impulse response of an oil discovery with NPV equal to 1% of GDP, and the right column displays the impulse response of an oil net export shock equal to 1% of GDP. The vertical scale is in percentage points. Gray areas are 90 percent confidence intervals.

12. Estimated IRFs for Oil Shocks

Table A.I: Estimated IRFs for Oil Discovery News

Year	Δ NFA/ GDP	Δ Total foreign asset/GDP	Δ Total foreign liability/GDP	CA/ GDP	Valuation effect/GDP	Δ Net FDI asset/GDP	Δ FDI asset/GDP	Δ FDI liability/ GDP	Δ Net foreign debt asset/GDP	Δ Foreign debt asset/GDP	Δ Foreign debt liability/GDP	Δ Net foreign equity asset/GDP	Δ Foreign equity asset/GDP	Δ Foreign equity liability/GDP
0	0.001	-0.026	-0.027	-0	0.005	-0.002	-0.011	-0.01	0.007	-0.008	-0.013	-0.004	-0.006	-0.002
1	-0.013	0.011	0.023	-0	0.003	-0.018	0	0.015	-0.004	0.002	0.005	0.008	0.009	0.001
2	-0.033	0.019	0.051	-0	-0.007	-0.023	-0.002	0.021	-0.011	0.013	0.022	0.001	0.006	0.006
3	0.011	0.01	0	-0	0.014	-0.004	-0.001	0.01	0.008	0.002	-0.006	0.005	-0.001	-0.007
4	-0.021	-0.003	0.019	-0	-0.014	-0.018	0.001	0.015	-0.008	-0.002	0.007	-0.003	-0.006	-0.002
5	-0.011	0.007	0.017	-0	0.001	-0.002	0.012	0.015	0	0.002	0	-0.005	-0.005	0
6	0.02	0.018	-0.001	0.01	-0.004	0.001	0.005	0.003	0.021	0.014	-0.001	-0.003	-0.006	-0.003
7	0.029	0.003	-0.024	0.02	0.005	0.006	0.004	-0.003	0.022	0.001	-0.018	-0.002	-0.006	-0.003
8	0.037	0.022	-0.015	0.04	-0.006	0.007	0.003	-0.005	0.038	0.024	-0.013	-0.012	-0.009	0.003
9	0.045	0.04	-0.006	0.04	0.007	0.004	0.004	-0.002	0.035	0.025	-0.009	0.003	0.008	0.004
10	0.019	0.015	-0.005	0.03	0.001	0	0	-0.003	0.016	0.014	-0.005	0	-0.001	0
11	0.003	0.003	-0.001	0.01	0	0	0	0	0.002	0.004	-0.002	0	0	0
12	0	0.001	0	0.01	0	0	0	0	0	0.001	-0.001	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A.II : Estimated IRFs for Oil Revenue Shocks

Year	Δ NFA/ GDP	Δ Total foreign asset/GDP	Δ Total foreign liability/GDP	CA/ GDP	Valuation effect/GDP	Δ Net FDI asset/GDP	Δ FDI asset/GDP	Δ FDI liability/ GDP	Δ Net foreign debt asset/GDP	Δ Foreign debt asset/GDP	Δ Foreign debt liability/GDP	Δ Net foreign equity asset/GDP	Δ Foreign equity asset/GDP	Δ Foreign equity liability/GDP
0	0.334	0.575	0.249	0.34	-0.079	0.008	0.148	0.122	0.231	0.286	0.058	-0.021	0.044	0.029
1	0.083	-0.044	-0.125	0.22	-0.174	0.053	-0.035	-0.092	0.139	0.1	-0.044	-0.124	-0.128	-0.004
2	0.045	0.067	0.024	0.22	-0.191	-0.012	0.016	0.034	0.076	0.086	0.012	-0.044	-0.064	-0.024
3	0.087	-0.009	-0.093	0.13	-0.079	0.024	-0.065	-0.084	0.133	0.099	-0.017	-0.071	-0.064	0.012
4	-0.001	-0.066	-0.061	0.08	-0.081	-0.02	-0.055	-0.042	0.04	0.013	-0.03	0.001	0.006	0.004
5	0.069	-0.047	-0.115	0.09	0.002	0.006	-0.077	-0.067	0.123	0.074	-0.053	-0.039	-0.034	0.013
6	0.177	0.115	-0.059	0.12	0.05	-0.024	-0.037	-0.015	0.14	0.083	-0.055	0.033	0.047	0.009
7	0.025	-0.017	-0.041	0.03	0.023	0.01	-0.025	-0.029	-0.001	-0.013	-0.02	0.055	0.059	-0.002
8	0.073	0.135	0.063	0.04	0.055	-0.011	0.03	0.044	0.087	0.061	-0.03	0.023	0.072	0.046
9	0.15	0.22	0.068	0.05	0.09	0.004	0.005	0.007	0.127	0.173	0.046	0.057	0.067	0.006
10	0.113	0.138	0.026	0.09	0.014	-0.016	0.002	0.015	0.087	0.102	0.015	0.061	0.052	-0.012
11	0.016	0.026	0.005	0.04	0.002	0.006	0.001	0.002	0.01	0.031	0.005	0.006	-0.004	0.002
12	0.002	0.005	0.001	0.02	0	-0.003	0	0	0.001	0.009	0.002	0.001	0	0
13	0	0.001	0	0.01	0	0.001	0	0	0	0.003	0.001	0	0	0
14	0	0	0	0.01	0	0	0	0	0	0.001	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0