

For Online Publication

Supplementary Appendix A

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1. Alternative measure of oil discovery shocks

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

2. Alternative measures of oil revenue shocks

Figure A.II and Figure A.III 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.II) or the total production of oil and gas (in Figure A.III), instead of the net export of oil and gas. Figure A.IV uses the average of the net exports of oil and gas as a percent of GDP in the past three years to construct the oil revenue shocks.

3. Control for country-specific linear trends

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

4. Excluding top ten oil producers and consumers

Figure A.VI 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.

5. Excluding member countries in OPEC

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

6. Excluding countries in Middle East and North Africa

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

7. Excluding the sample before first oil crisis in 1973

Figure A.IX presents the impulse responses of key macro variables to the two types of oil shocks for the sample in a shorter period (1984 – 2012).

8. Different dynamic specifications

a. Including higher order lags for dependent variables:

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

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

Figure A.XII 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).

10. Sub-Saharan African countries

Figure A.XIII presents the impulse responses of key macro variables for the sample with Sub-Saharan African countries only.

11. Estimated IRFs for oil discovery news and oil revenue shocks

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

1. Alternative measure of oil discovery shocks

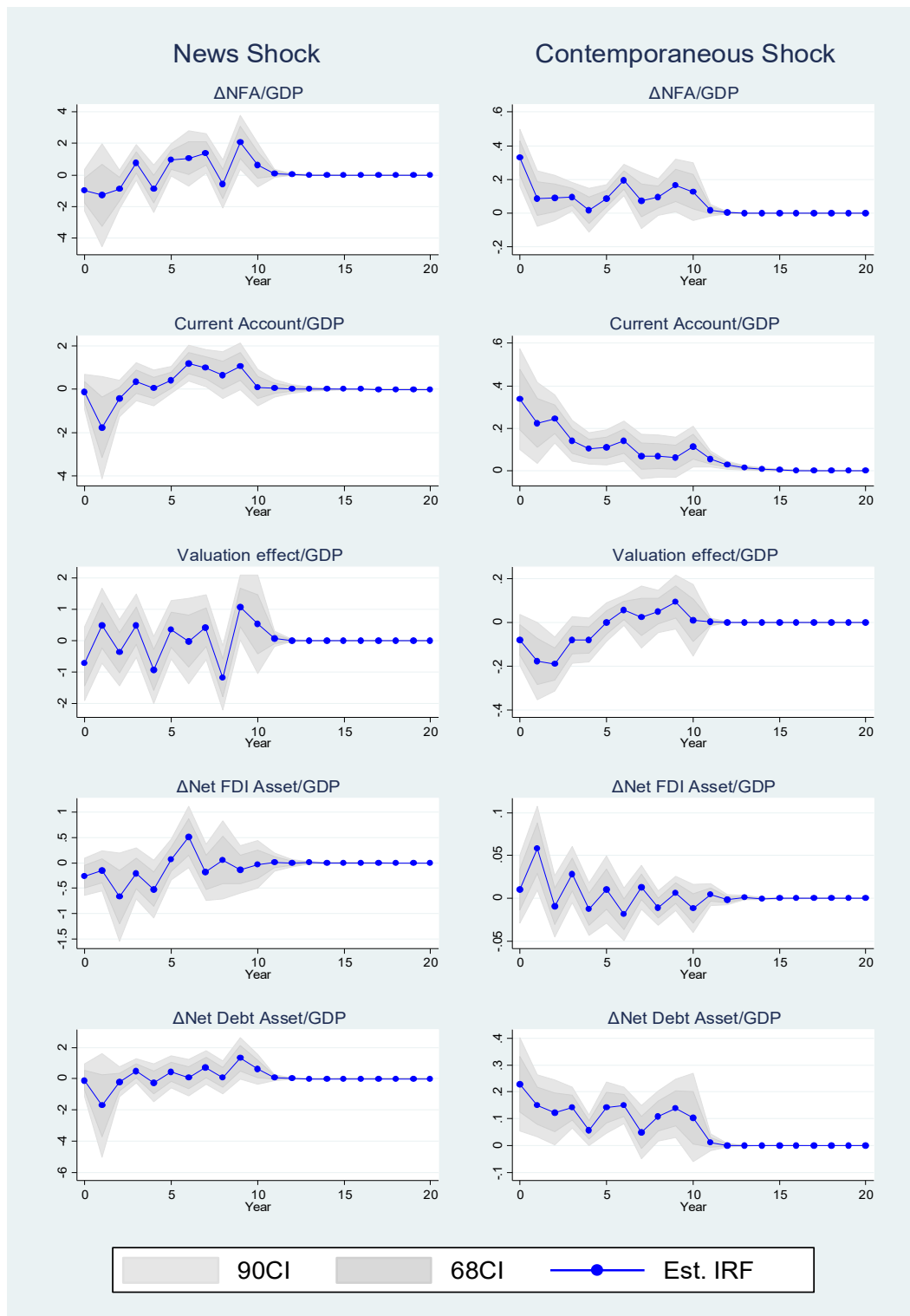


Figure A.I: Alternative Measure of Oil Discovery Shocks

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.

2. Alternative measures of oil revenue shocks

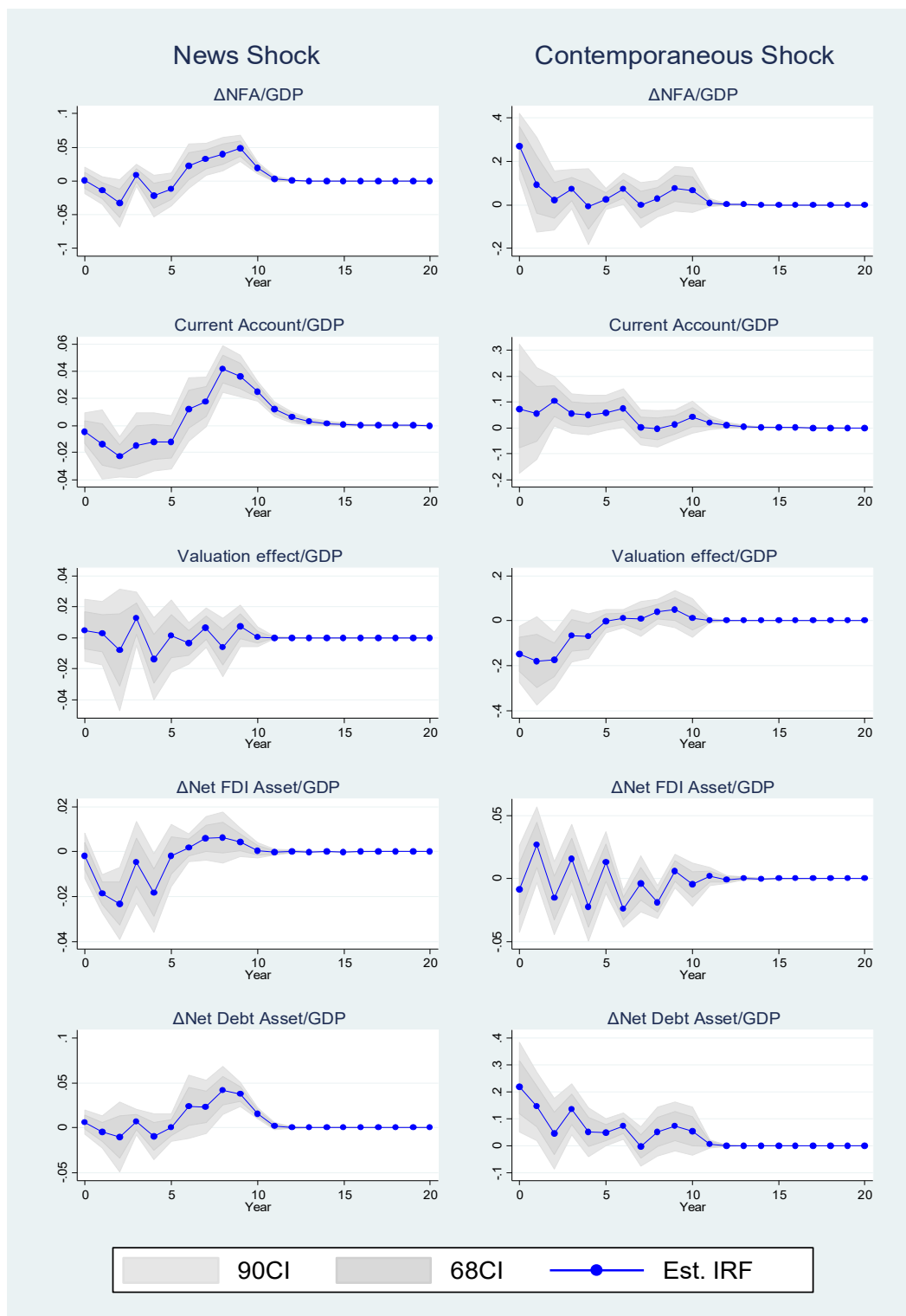


Figure A.II: Alternative Measure of Oil Revenue Shocks – Total Exports

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.

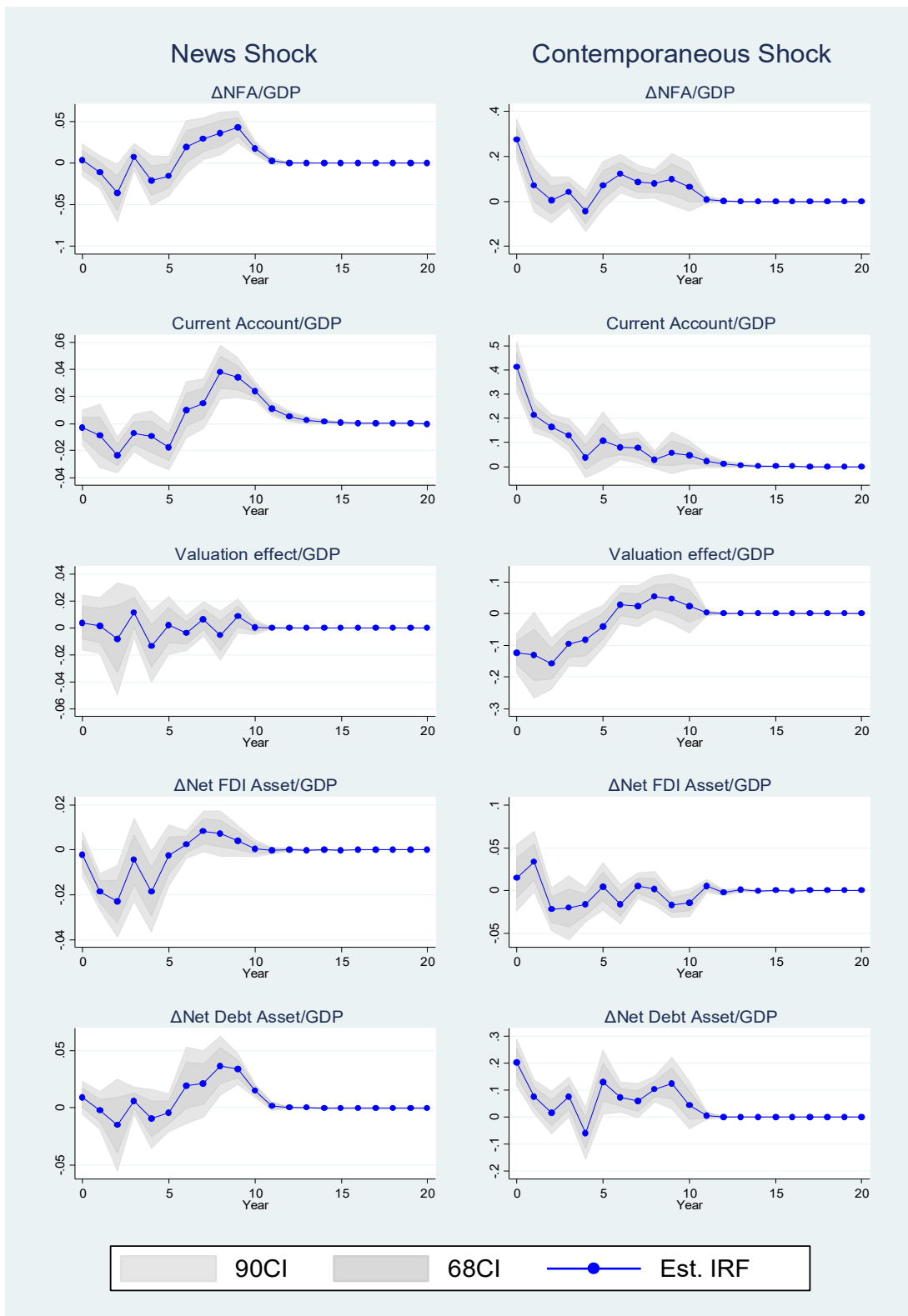


Figure A.III: Alternative Measure of Oil Revenue Shocks – Total Production

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.

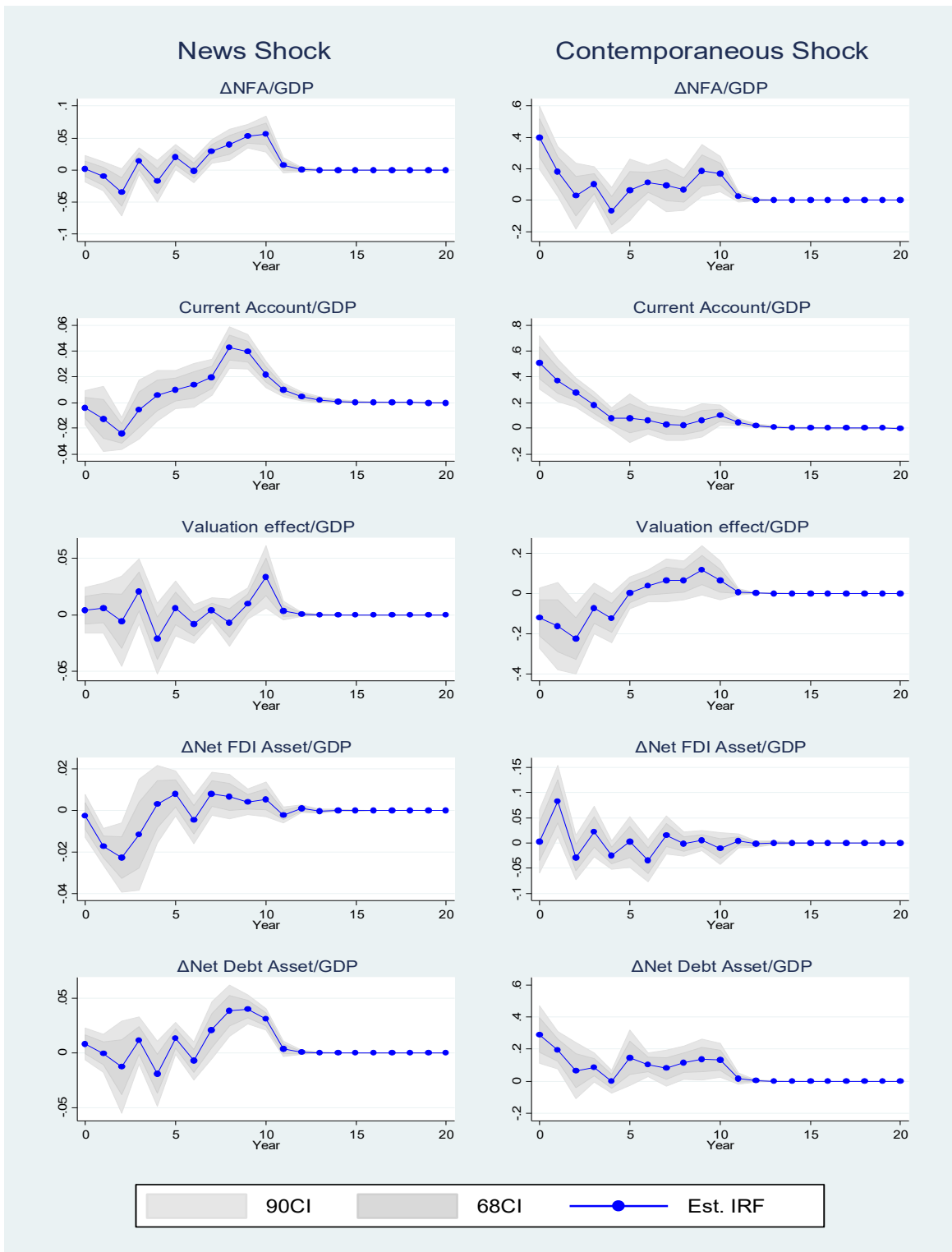


Figure A.IV: Alternative Measure of Oil Revenue Shocks – Three Years Lagged Average

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.

3. Control for country-specific linear trends

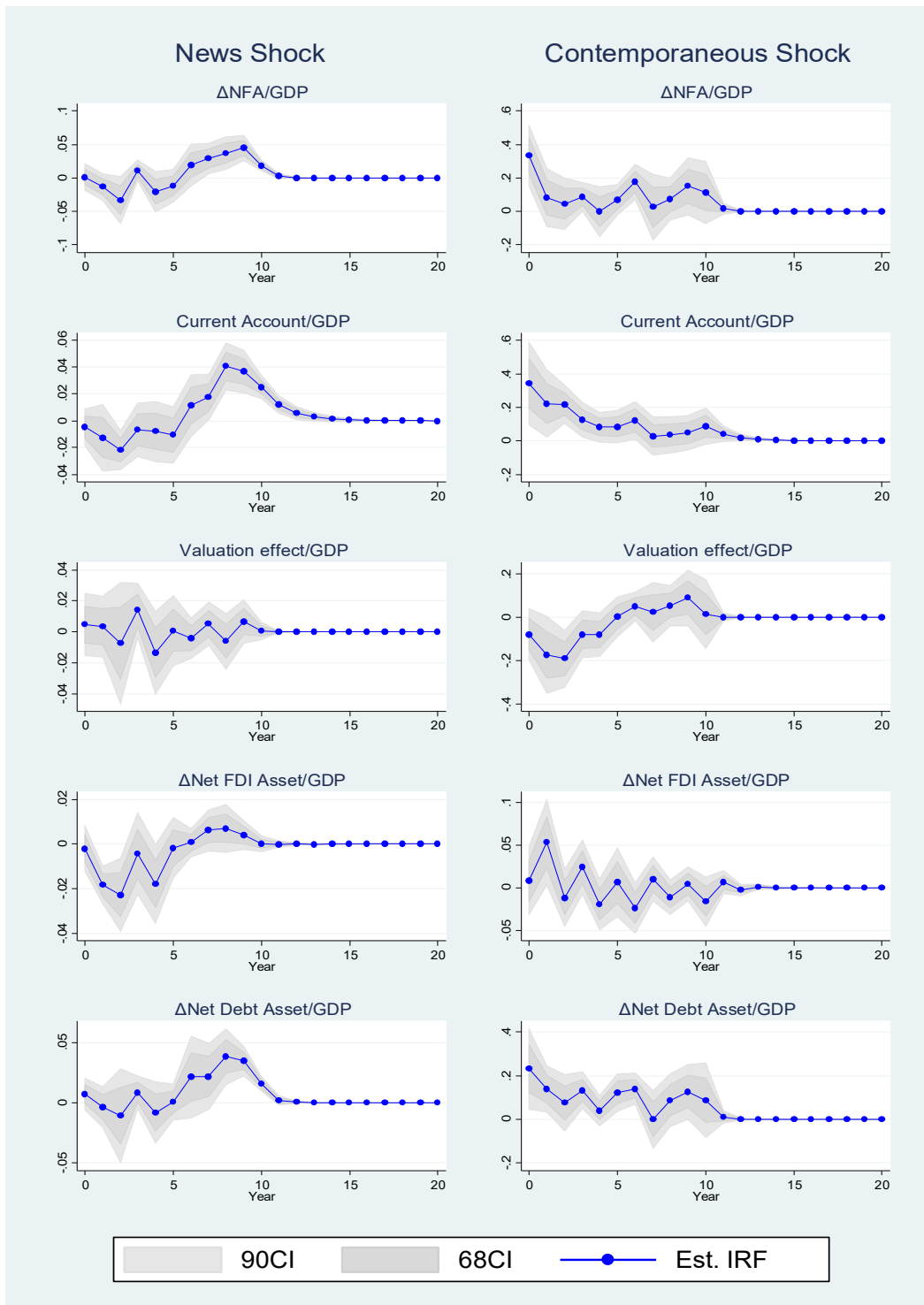


Figure A.V: Control for Country-specific Linear Trends

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.

4. Excluding top ten oil producers and consumers

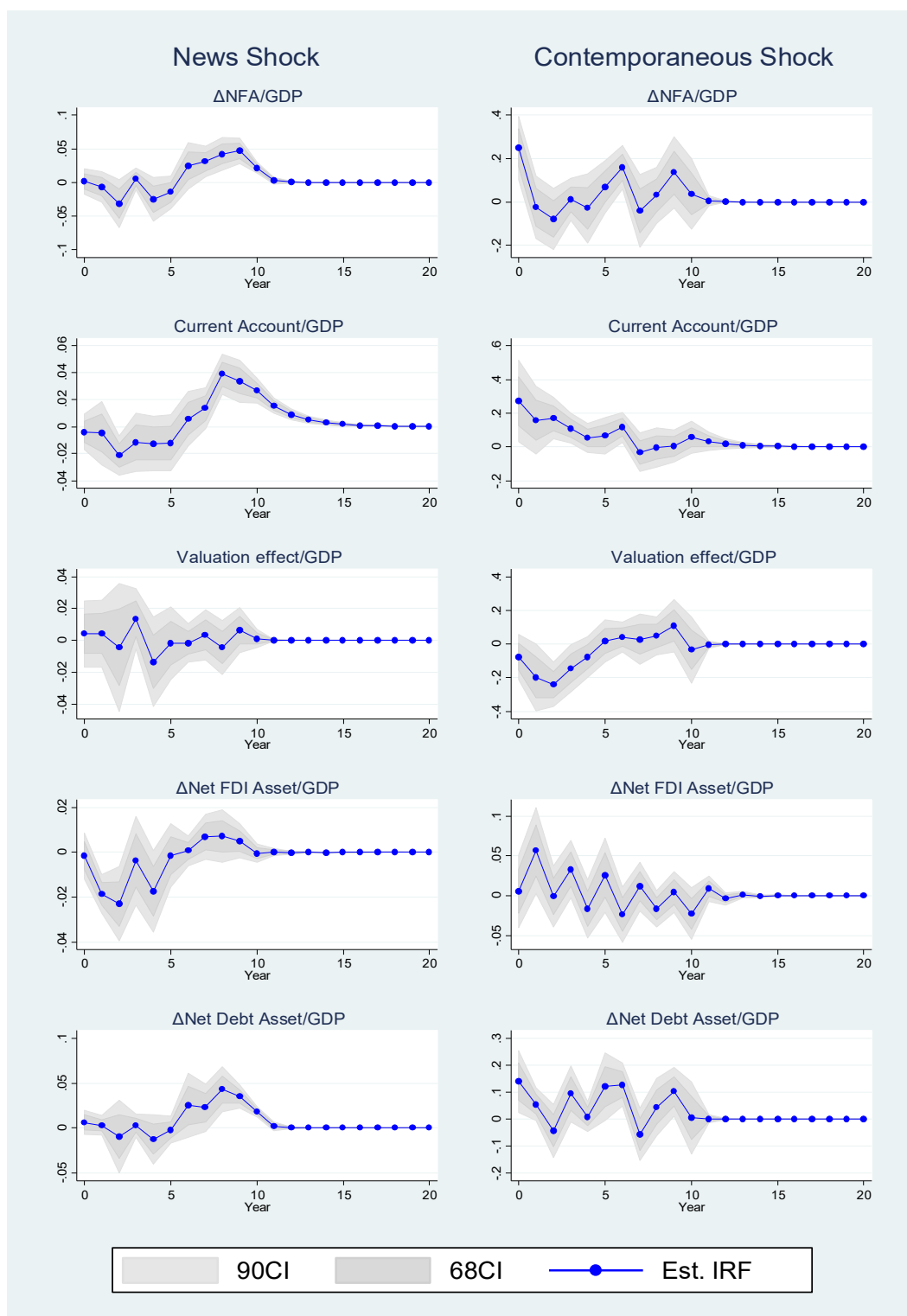


Figure A.VI: Excluding Top Ten Oil Producers and Consumers

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.

5. Excluding member countries in OPEC

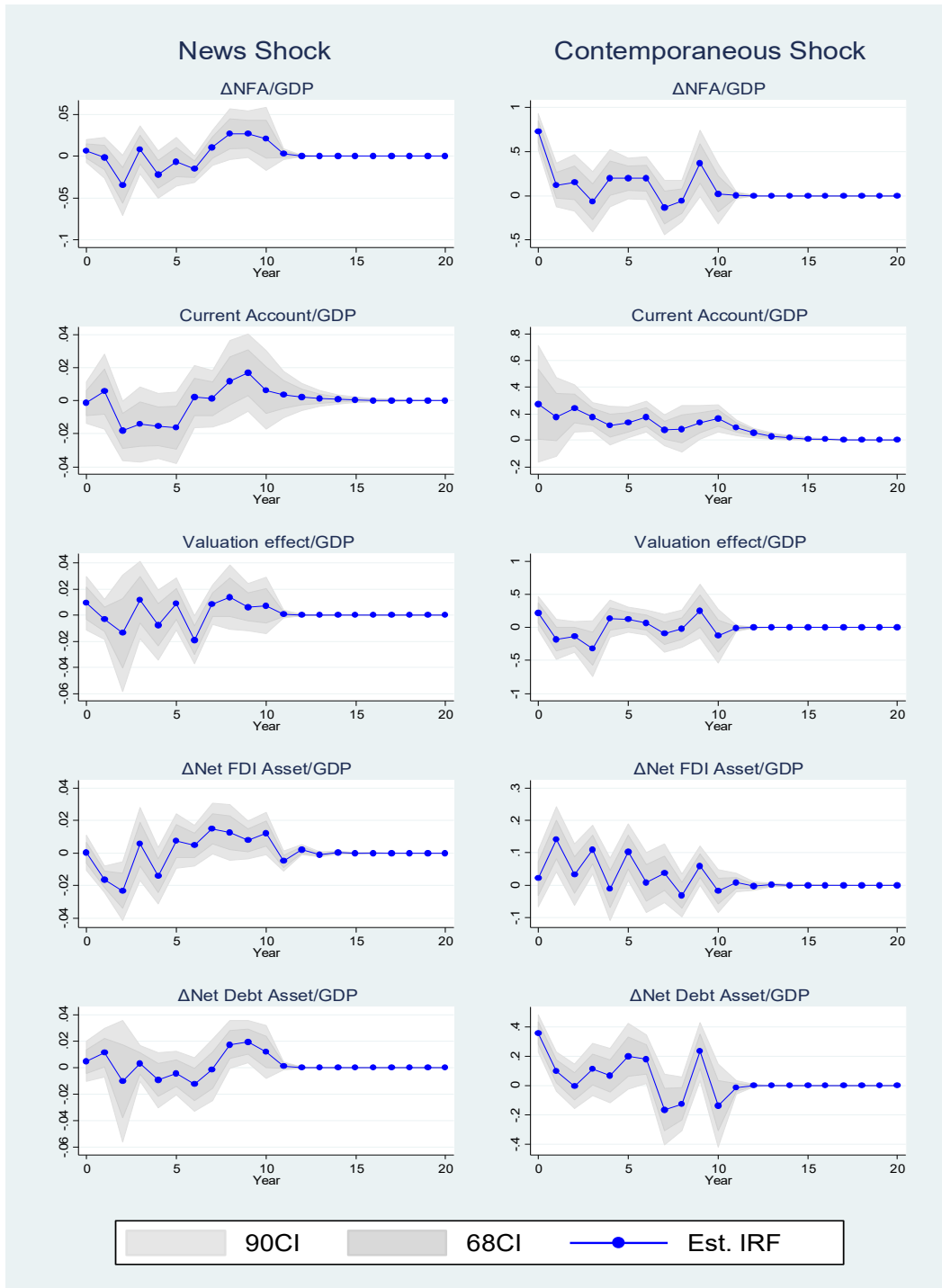


Figure A.VII: Excluding Member Countries in OPEC

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.

6. Excluding countries in Middle East and North Africa

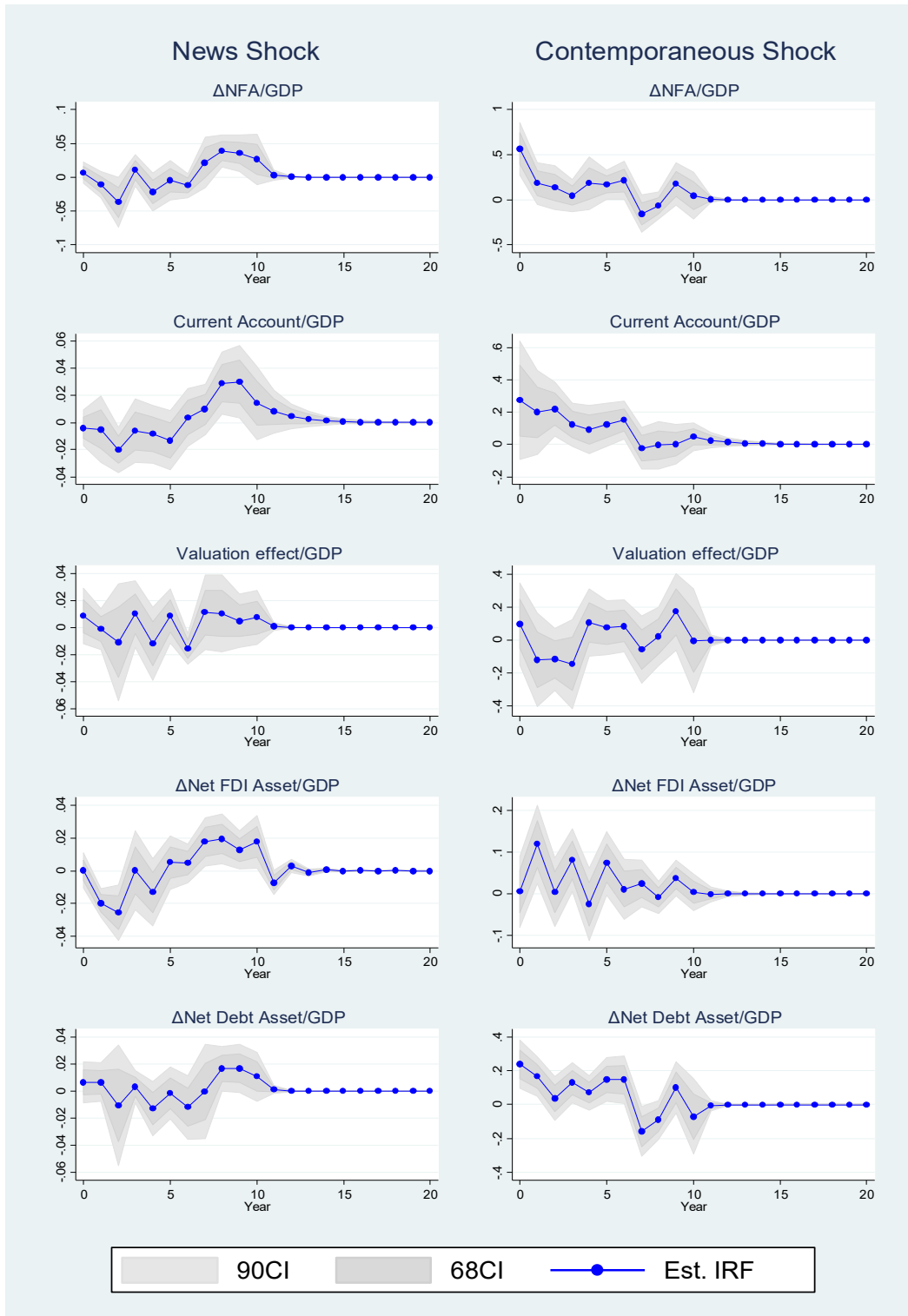


Figure A.VIII: Excluding Countries in the Middle East and North Africa

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.

7. Shorter sample period to exclude the first oil crisis in 1973

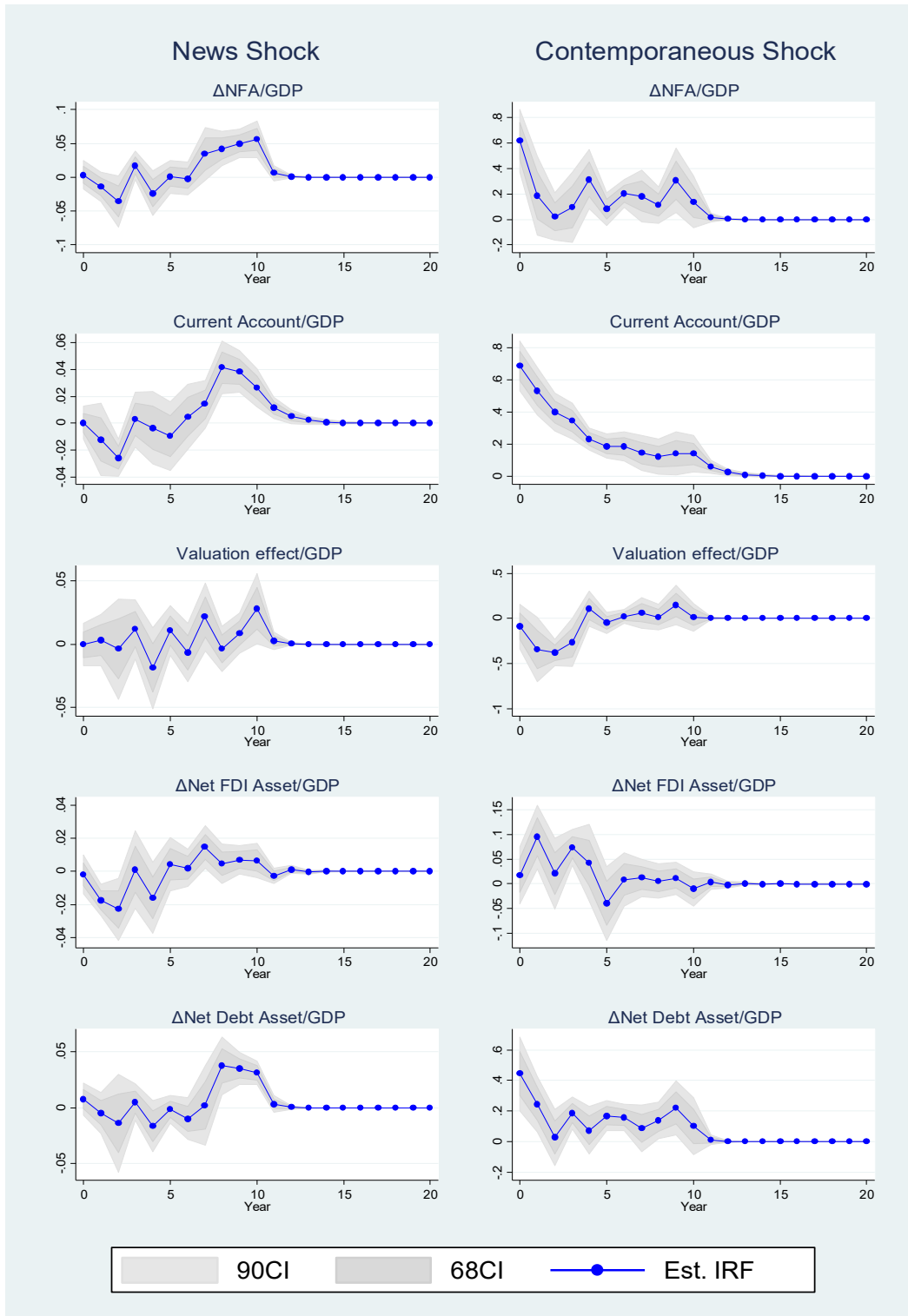


Figure A.IX: Shorter Sample Period (1984 – 2012)

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.

8. Different dynamic specifications

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

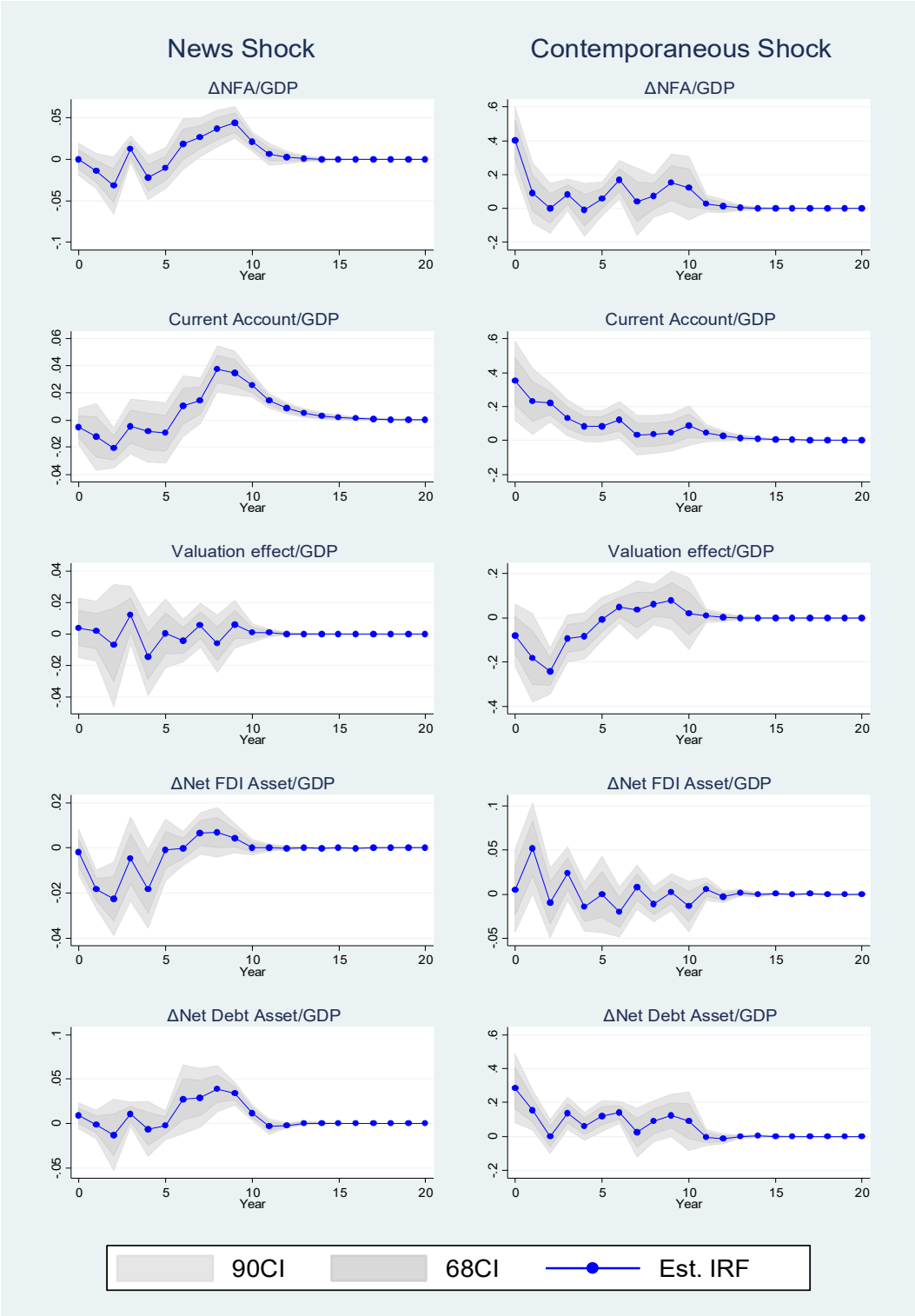


Figure A.X: Higher Order Lags for Dependent Variables

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

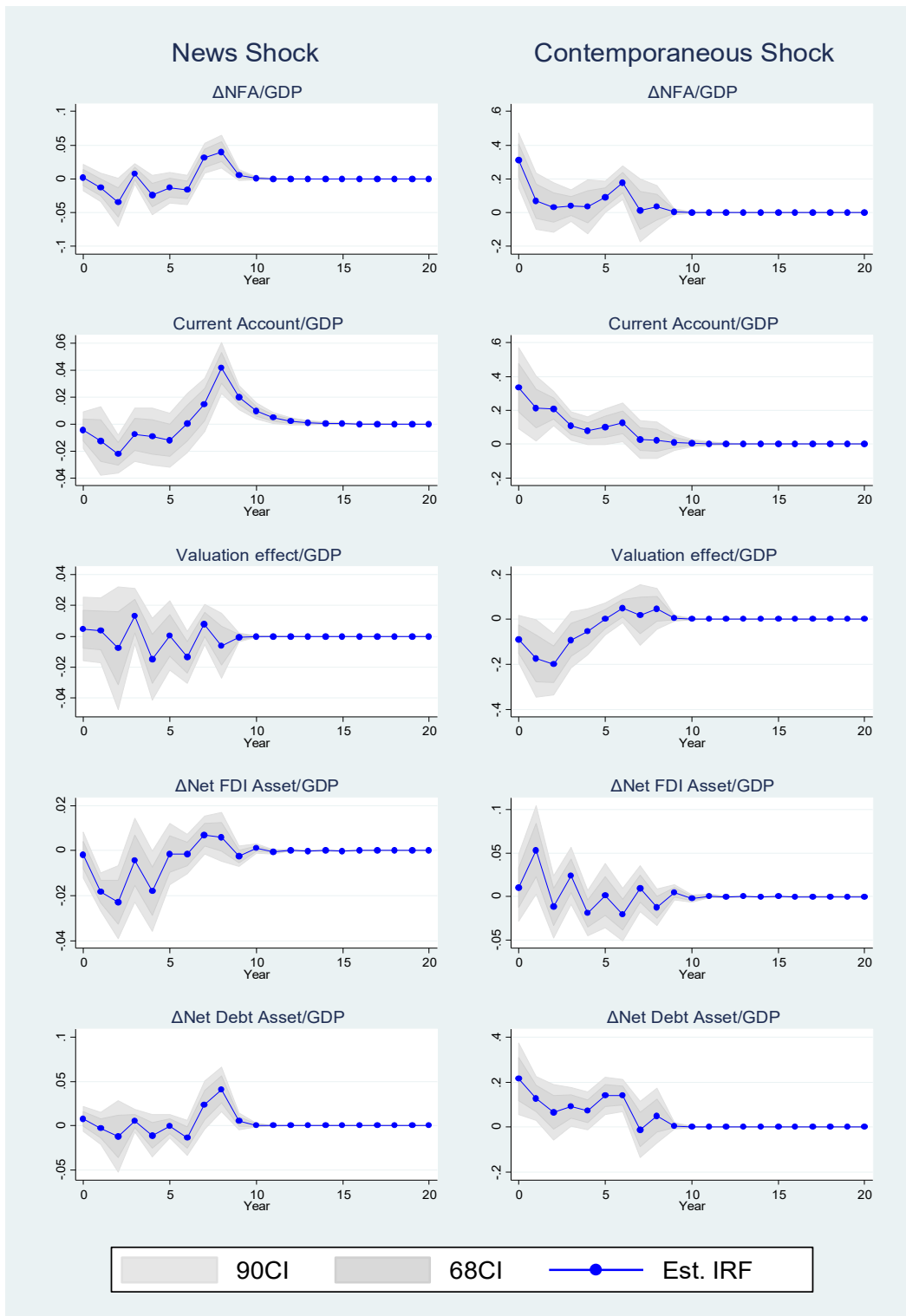


Figure A.XI: Different Orders in the Lags for Two Types of Oil Shocks

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.

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

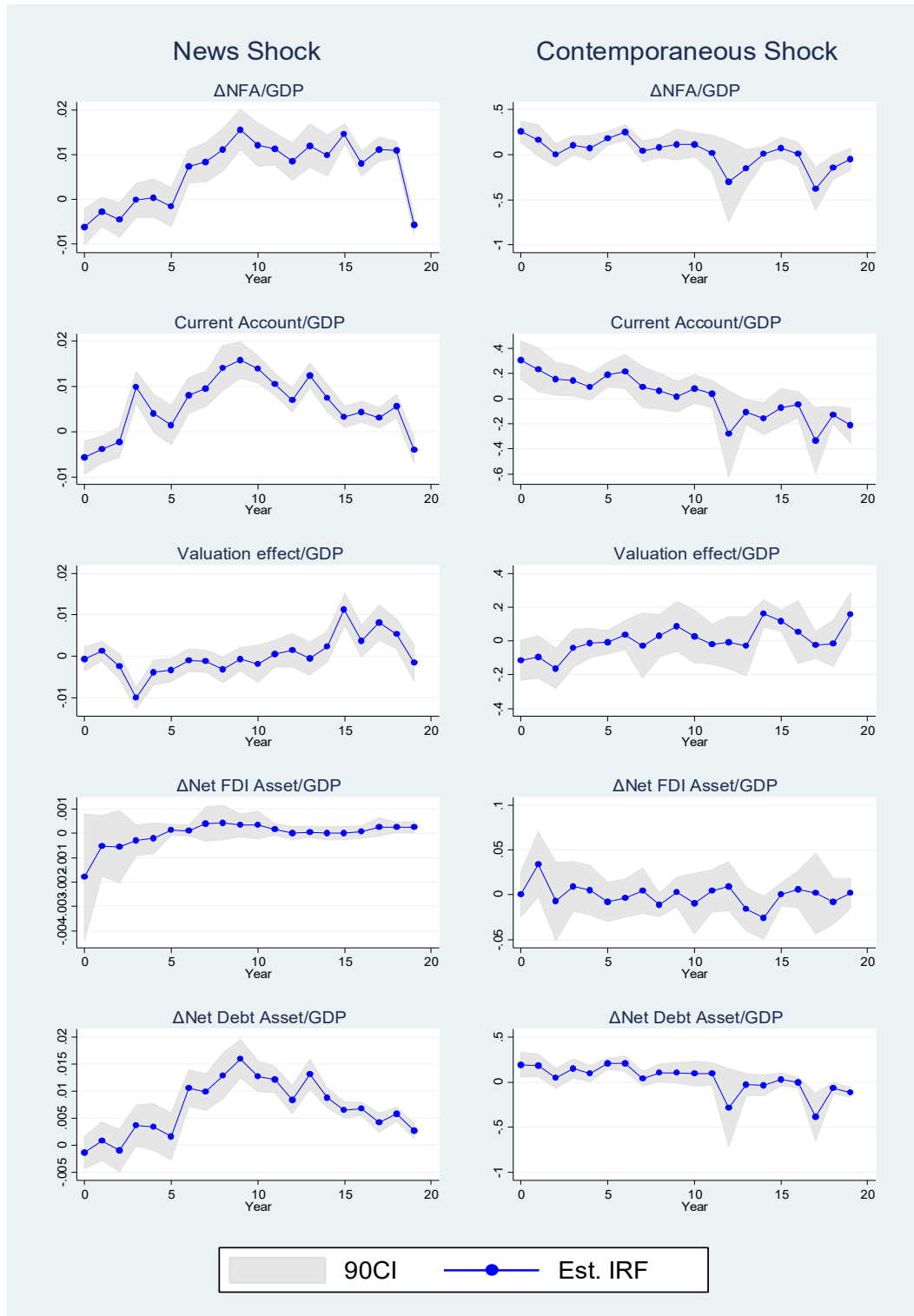


Figure A.XII: Estimation results using Chang-Sakata (2007)'s Method

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.

10. Sub-Saharan African countries

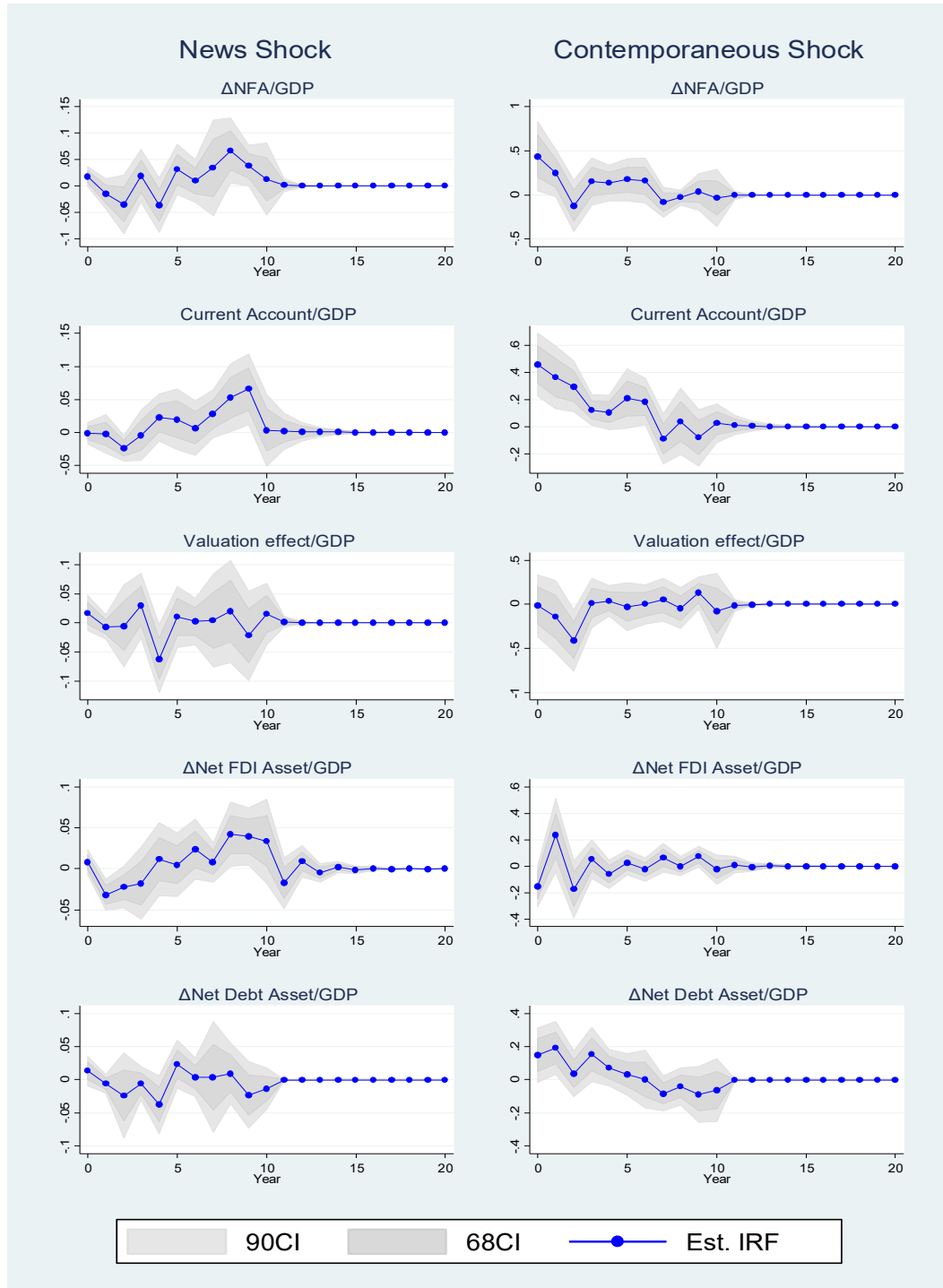


Figure A.XIII: Sub-Saharan African Countries

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. 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
0	0.001	-0.026	-0.027	-0.005	0.005	-0.002	-0.011	-0.01	0.007	-0.008	-0.013
1	-0.013	0.011	0.023	-0.012	0.003	-0.018	0	0.015	-0.004	0.002	0.005
2	-0.033	0.019	0.051	-0.022	-0.007	-0.023	-0.002	0.021	-0.011	0.013	0.022
3	0.011	0.01	0	-0.007	0.014	-0.004	-0.001	0.01	0.008	0.002	-0.006
4	-0.021	-0.003	0.019	-0.008	-0.014	-0.018	0.001	0.015	-0.008	-0.002	0.007
5	-0.011	0.007	0.017	-0.011	0.001	-0.002	0.012	0.015	0	0.002	0
6	0.02	0.018	-0.001	0.011	-0.004	0.001	0.005	0.003	0.021	0.014	-0.001
7	0.029	0.003	-0.024	0.018	0.005	0.006	0.004	-0.003	0.022	0.001	-0.018
8	0.037	0.022	-0.015	0.041	-0.006	0.007	0.003	-0.005	0.038	0.024	-0.013
9	0.045	0.04	-0.006	0.037	0.007	0.004	0.004	-0.002	0.035	0.025	-0.009
10	0.019	0.015	-0.005	0.025	0.001	0	0	-0.003	0.016	0.014	-0.005
11	0.003	0.003	-0.001	0.012	0	0	0	0	0.002	0.004	-0.002
12	0	0.001	0	0.006	0	0	0	0	0	0.001	-0.001
13	0	0	0	0.003	0	0	0	0	0	0	0
14	0	0	0	0.001	0	0	0	0	0	0	0
15	0	0	0	0.001	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0
20	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
0	0.334	0.575	0.249	0.343	-0.079	0.008	0.148	0.122	0.231	0.286	0.058
1	0.083	-0.044	-0.125	0.224	-0.174	0.053	-0.035	-0.092	0.139	0.1	-0.044
2	0.045	0.067	0.024	0.219	-0.191	-0.012	0.016	0.034	0.076	0.086	0.012
3	0.087	-0.009	-0.093	0.127	-0.079	0.024	-0.065	-0.084	0.133	0.099	-0.017
4	-0.001	-0.066	-0.061	0.082	-0.081	-0.02	-0.055	-0.042	0.04	0.013	-0.03
5	0.069	-0.047	-0.115	0.085	0.002	0.006	-0.077	-0.067	0.123	0.074	-0.053
6	0.177	0.115	-0.059	0.123	0.05	-0.024	-0.037	-0.015	0.14	0.083	-0.055
7	0.025	-0.017	-0.041	0.029	0.023	0.01	-0.025	-0.029	-0.001	-0.013	-0.02
8	0.073	0.135	0.063	0.036	0.055	-0.011	0.03	0.044	0.087	0.061	-0.03
9	0.15	0.22	0.068	0.047	0.09	0.004	0.005	0.007	0.127	0.173	0.046
10	0.113	0.138	0.026	0.087	0.014	-0.016	0.002	0.015	0.087	0.102	0.015
11	0.016	0.026	0.005	0.042	0.002	0.006	0.001	0.002	0.01	0.031	0.005
12	0.002	0.005	0.001	0.02	0	-0.003	0	0	0.001	0.009	0.002
13	0	0.001	0	0.01	0	0.001	0	0	0	0.003	0.001
14	0	0	0	0.005	0	0	0	0	0	0.001	0
15	0	0	0	0.002	0	0	0	0	0	0	0
16	0	0	0	0.001	0	0	0	0	0	0	0
17	0	0	0	0.001	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0