## Online Appendix for On Target? Sanctions and the Economic Interests of Elite Policymakers in Iran

Mirko Draca<sup>\*</sup> Jason Garred<sup>†</sup> Leanne Stickland<sup>‡</sup> Nele Warrinnier<sup>§</sup>

March 30, 2022

<sup>\*</sup>Department of Economics, University of Warwick

<sup>&</sup>lt;sup>†</sup>Department of Economics, University of Ottawa

<sup>&</sup>lt;sup>‡</sup>Deloitte UK

<sup>&</sup>lt;sup>§</sup>School of Economics and Finance, Queen Mary University of London and LICOS Centre for Institutions and Economic Performance, KU Leuven



FIGURE A1: Outline of Firm Classification Procedure

This diagram outlines our procedure for classifying listed firms into the target and non-target portfolios used in our empirical analysis.



Figure A2: Daily Price of Intrade Contract and Implied Airstrike Arrival Probability, April 14, 2012 to December 22, 2012

This figure shows the evolution of Intrade contract prices (in current US dollars) for the betting contract specified as "US and/or Israel execute an overt airstrike against Iran by December 31, 2012", and the implied daily arrival probability (in percent) of an airstrike, as discussed in Section 4.4. The contract was to have paid \$10 if an airstrike occurred before December 31, 2012, and zero otherwise. The period plotted is April 14, 2012 to December 22, 2012 (the day before US Intrade trading was suspended).





This figure relates to the seven events of diplomatic progress used in the specifications of Table 4 column (7), other than the Geneva deal. We pool data from estimation windows of 60 trading days before each event and the subsequent ten trading days to estimate a series of models. Each model includes a dummy for a different day relative to an event (e.g. a dummy for the last trading day before each event), the interaction of this dummy with our target portfolio dummy, and firm fixed effects. The figure reports the estimated coefficient on the interaction term and its 95% confidence interval for the last twenty pre-event days and the ten subsequent days. A vertical line is drawn immediately to the left of the estimate for the pooled event days. Standard errors are clustered by firm.



G. Vienna deal - July 14, 2015

Figure A4: Daily Estimated Target-Day Interaction Coefficients for Other Events

Each panel of this figure relates to one of the seven events of diplomatic progress used in the specifications of Table 4 column (7), other than the Geneva deal. In each panel, we use data for an estimation window of 60 days before the event and the subsequent two weeks to estimate a series of models. Each model includes a dummy for a different day, the interaction of this day dummy with our target portfolio dummy, and firm fixed effects. The figure reports the estimated coefficient on the interaction term and its 95% confidence interval for each trading day in the last four weeks of the 60-day estimation window and the following two weeks. A vertical line is drawn immediately to the left of the day of the event. A second vertical line appears in cases where events are in close proximity and so the same event date is visible in more than one panel. Standard errors are clustered by firm.

Table A1: Top Fifteen Peaks in Sanctions News Coverage

| Date              | Value    | Sanctions negotiations event                              |
|-------------------|----------|---|
| Panel A - Factiva | a measur | e   |
| Apr 4 2015*       | 11.76    | Framework agreement reached in Lausanne                   |
| Jul 14 2015       | 7.58     | Final agreement reached in Vienna                         |
| Jul 15 2015       | 7.03     | Final agreement reached on previous day in Vienna         |
| Mar 25 2015*      | 5.60     | Negotiation round ends in Lausanne                        |
| Jul 11 2015*      | 5.20     | Negotiation round in progress in Vienna                   |
| Nov 25 2013       | 5.07     | Interim agreement reached on previous day in Geneva       |
| Apr 11 $2015^*$   | 4.26     | Framework agreement reached in previous week in Lausanne  |
| Nov 9 2013*       | 3.74     | Negotiation round ends in Geneva                          |
| Nov 23 2013*      | 3.40     | Negotiation round in progress in Geneva                   |
| Sep 2 2012*       | 3.23     | France calls for stronger sanctions after IAEA report     |
| Sep 28 2013*      | 3.23     | Presidents of Iran and US speak by phone                  |
| Nov 16 $2013^*$   | 3.13     | Negotiation round forthcoming in Geneva                   |
| Apr 18 $2015^*$   | 3.13     | Framework agreement reached two weeks earlier in Lausanne |
| Mar 25 2014 $*$   | 3.09     | Negotiation round ends in Vienna                          |
| Nov 26 2013       | 2.85     | Interim agreement reached two days earlier in Geneva      |
| Panel B - GDEL    | T measur | re  |
| Jul 14 2015       | 10.66    | Final agreement reached in Vienna                         |
| Mar 25 2015*      | 9.07     | Negotiation round ends in Lausanne                        |
| Apr 4 2015*       | 5.16     | Framework agreement reached in Lausanne                   |
| Jun 19 2012*      | 4.97     | Negotiation round ends in Moscow                          |
| Jul 11 2015*      | 4.67     | Negotiation round in progress in Vienna                   |
| Nov 24 2013       | 4.55     | Interim agreement reached in Geneva                       |
| Nov 9 2013*       | 4.22     | Negotiation round ends in Geneva                          |
| Nov 23 2013*      | 3.55     | Negotiation round in progress in Geneva                   |
| Nov 18 2013       | 3.33     | Negotiation round about to begin in Geneva                |
| Jul 15 2015       | 3.26     | Final agreement reached on previous day in Vienna         |
| Sep 28 2013*      | 3.23     | Presidents of Iran and US speak by phone                  |
| Jul 4 2015*       | 3.21     | Negotiation round in progress in Vienna                   |
| Mar 31 2015       | 3.17     | Negotiation deadline extended in Lausanne                 |
| Mar 7 2015*       | 2.95     | Several P5+1 members discuss negotiations                 |
| Mar 28 2015*      | 2.89     | Negotiation round in progress in Lausanne                 |

This table displays the top fifteen observations, within the sample period April 14, 2012 to July 15, 2015, of a standardised count of the number of articles on relevant events identified in the Factiva (Panel A) and GDELT (Panel B) datasets, as discussed in Section 4.3. For each of these observations, the table shows the relevant date, the value of the variable, and an event of that day that is relevant to diplomatic negotiations for sanctions relief. Entries that are among the top fifteen observations for both of the two measures are highlighted in bold. Dates are marked with stars when the observation also includes events from prior days because of weekends or holidays on the TSE.

|   | ${{\rm (1)}\atop{ m Firm}}$                                  | (2)<br>Day-by-day<br>estimates                               | (3)<br>Firm-day-<br>of-week FEs                              | (4)<br>Industry<br>controls                                  | (5)<br>Market cap<br>controls                                | (6)<br>Size data<br>subsample                                | (7)<br>All size<br>controls                                  |
|---|--|--|--|--|--|--|--|
| Geneva                                  | $\begin{array}{c} 0.648 \\ [0.021] \\ \{0.176\} \end{array}$ |  | $\begin{array}{c} 0.731 \\ [0.012] \\ \{0.154\} \end{array}$ |  | $\begin{array}{c} 0.649 \\ [0.022] \\ \{0.185\} \end{array}$ | $\begin{array}{c} 0.212 \\ [0.553] \\ \{0.731\} \end{array}$ | $\begin{array}{c} 0.221 \\ [0.532] \\ \{0.762\} \end{array}$ |
| Day 1                                   |  | $\begin{array}{c} 0.548 \\ [0.073] \\ \{0.176\} \end{array}$ |  |  |  |  |  |
| Day 2                                   |  | $\begin{array}{c} 0.748 \\ [0.030] \\ \{0.205\} \end{array}$ |  |  |  |  |  |
| Target * Geneva                         | $\begin{array}{c} 1.256 \\ [0.001] \\ \{0.039\} \end{array}$ |  | $\begin{array}{c} 1.212 \\ [0.002] \\ \{0.079\} \end{array}$ | $\begin{array}{c} 1.306 \\ [0.002] \\ \{0.100\} \end{array}$ | $\begin{array}{c} 1.260 \\ [0.001] \\ \{0.027\} \end{array}$ | $\begin{array}{c} 1.962 \\ [0.000] \\ \{0.019\} \end{array}$ | $\begin{array}{c} 1.927 \\ [0.000] \\ \{0.083\} \end{array}$ |
| Target * Day 1                          |  | $\begin{array}{c} 1.415 \\ [0.001] \\ \{0.032\} \end{array}$ |  |  |  |  |  |
| Target * Day 2                          |  | $\begin{array}{c} 1.099 \\ [0.015] \\ \{0.095\} \end{array}$ |  |  |  |  |  |
| Observations                            | 6,586  | 6,586  | 6,580  | 6,497  | 6,586  | 4,017  | 4,017  |
| Number of firms<br>Number of industries | 128<br>15  | 128<br>15  | 127  | $\frac{127}{14}$   | 158<br>15  | 77<br>15   | 77<br>15   |

This table reproduces the point estimates from Table 2, along with p-values based on two different clustering strategies. The p-values in square brackets are based on clustering by industry, using the wild bootstrap approach of Cameron *et al.* (2008) due to the small number of clusters, calculated with the boottest Stata package of Roodman *et al.* (2019). See the notes for Table 2 for other information on these specifications.

-È Č -F -. 4 έ Table A9.

|                                 | (1)              | (2)              | (3)                 | (4)              | (5)              | (6)                |
|---------------------------------|------------------|------------------|---------------------|------------------|------------------|--------------------|
|                                 | West 7           | Texas Interm.    | $\operatorname{Br}$ | ent Crude        | OP               | EC Basket          |
|                                 | Firm             | Firm-qtr-day-    | Firm                | Firm-qtr-day-    | Firm             | Firm-qtr-day-      |
|                                 | FEs              | of-week FEs      | FEs                 | of-week FEs      | FEs              | of-week FEs        |
| Price change                    | 0.039<br>(0.006) | 0.042<br>(0.006) | 0.034<br>(0.006)    | 0.032<br>(0.006) | 0.038<br>(0.007) | $0.038 \\ (0.007)$ |
| Observations<br>Number of firms | $21,055 \\ 133$  | $20,\!486$ $133$ | $20,516 \\ 133$     | $19,949\\133$    | $22,707 \\ 133$  | $22,142 \\ 133$    |

Table A3: Responses of TSE Returns to Oil Price Changes

This table displays estimated effects of oil price changes on returns of sample firms. The dependent variable is daily stock return in percent. The regressor is the difference between the current and the previous TSE trading day in the West Texas Intermediate (columns (1) and (2)), Brent Crude (columns (3) and (4)) or OPEC Basket price (columns (5) and (6)). The sample period includes all trading days in 2010 and 2011. Columns (1), (3) and (5) include firm fixed effects, and columns (2), (4) and (6) include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. Standard errors, clustered by firm, are in parentheses.

|                 | (1)                | (2)                | (3)              | (4)                | (5)                | (6)              |
|-----------------|--------------------|--------------------|------------------|--------------------|--------------------|------------------|
|                 |                    | Sample             | e firms          |                    | All f              | irms             |
|                 | Winse              | orised             | Wins             | orised             | Wins               | orised           |
|                 | top/bot            | tom $1\%$          | top/bot          | tom $5\%$          | top/bot            | tom $1\%$        |
| Market-to-book  | $0.019 \\ (0.021)$ | 0.017<br>(0.019)   | 0.044<br>(0.021) | $0.032 \\ (0.018)$ | $0.034 \\ (0.015)$ | 0.024<br>(0.014) |
| Cashflow        |                    | $0.050 \\ (0.016)$ |                  | 0.089<br>(0.017)   |                    | 0.064<br>(0.012) |
| Observations    | 473                | 473                | 473              | 473                | 1,239              | 1,239            |
| Number of firms | 80                 | 80                 | 80               | 80                 | 209                | 209              |

Table A4: Estimates of Capital Adjustment Costs for Investment Projections

This table displays estimates of capital adjustment costs to be used in our projections of the effect of the Geneva deal on investment by target firms. The dependent variable is the ratio of investment in fixed assets for a given year to total fixed assets as of the previous year. 'Market-to-book' is defined as the previous year's market-to-book ratio. 'Cashflow' is the ratio of current cashflow to the previous year's level of fixed assets. In columns (1), (2), (5) and (6), the top and bottom 1% of observed values are winsorised for all variables. In columns (3) and (4), the top and bottom 5% of observed values are winsorised for all variables. In columns (1) to (4), the sample includes only the firms from the target and non-target portfolios with available data on Orbis. In columns (5) and (6), the sample includes all Iranian firms with available Orbis data. The sample period is from 2012 to 2018 (since the number of firms with available data is much smaller in earlier and subsequent years). All columns include firm fixed effects and year fixed effects. Standard errors, clustered by firm, are in parentheses.

|                       | (1)<br>Contin      | (2)<br>uous measure          | $\begin{array}{c} (3) \\ \mathrm{Top} \ 10\% \end{array}$ | $\begin{array}{c} (4) \\ 2 \text{ SD} \end{array}$ | (5)<br>Spaced         | (6)<br>Negotiations    | (7)<br>Positive       |
|-----------------------|--------------------|------------------------------|---|--|-----------------------|------------------------|-----------------------|
|                       | Firm<br>FEs        | Firm-qtr-day-<br>of-week FEs | dummy   | dummy  | 2  SD dummy           | only<br>dumny          | negotiations<br>dummy |
| Panel A - Factiva mea | sure               |                              |   |  |                       |                        |                       |
| Coverage              | 0.055<br>[0.000]   | 0.077<br>[0 000]             | 0.145<br>[0.001]  | 0.405<br>[0.000]                                   | 0.439<br>[0.000]      | 0.483<br>[0_000]       | 0.679<br>[0.000]      |
|                       | [0000.0]           | $\{0.000\}$                  | $\{0.005\}$   | [000.0]  | $\{0.000\}$           | $\{0.001\}$            | {0000.0}              |
| Target $*$ coverage   | 0.065              | 0.092                        | 0.196   | 0.418  | 0.363                 | 0.654                  | 0.856                 |
|                       | [000.0]<br>{00000} | $[0.000]$ $\{0.005\}$        | $[0.002]$ $\{0.041\}$                                     | $[0.000]$ $\{0.010\}$                              | $[0.001]$ $\{0.043\}$ | [0.000]<br>$\{0.002\}$ | $[0.000]$ $\{0.001\}$ |
| Observations          | 75,021             | 74, 775                      | 74,775  | 74,775   | 74,094                | 73,335                 | 72,853                |
| Number of firms       | 138                | 136                          | 136   | 136  | 136                   | 136                    | 136                   |
| Number of industries  | 15                 | 15                           | 15  | 15   | 15                    | 15                     | 15                    |
| Panel B - GDELT me    | asure              |                              |   |  |                       |                        |                       |
| Coverage              | 0.069              | 0.065                        | 0.072   | 0.256  | 0.235                 | 0.340                  | 0.679                 |
|                       | [0.00]             | [0.000]                      | [0.031]   | [0.000]  | [0.000]               | [0.000]                | [0.000]               |
|                       | $\{0.000\}$        | $\{0.003\}$                  | $\{0.117\}$   | $\{0.001\}$  | $\{0.006\}$           | $\{0.001\}$            | $\{0.002\}$           |
| Target * coverage     | 0.064              | 0.066                        | 0.153   | 0.282  | 0.303                 | 0.352                  | 0.594                 |
|                       | [0.000]            | [0.00]                       | [0.003]   | [0.001]  | [0.003]               | [0.003]                | [0.001]               |
|                       | $\{0.000\}$        | $\{0.017\}$                  | $\{0.038\}$   | $\{0.026\}$  | $\{0.019\}$           | $\{0.013\}$            | $\{0.012\}$           |
| Observations          | 62, 128            | 61,843                       | 61,843  | 61,843   | 60,763                | 60,266                 | 59, 597               |
| Number of firms       | 137                | 136                          | 136   | 136  | 136                   | 136                    | 136                   |
| Number of industries  | 15                 | 15                           | 15  | 15   | 15                    | 15                     | 15                    |

Table A5: Clustering by Industry – News Coverage

This table reproduces the point estimates from Table 4, along with p-values based on two different clustering strategies. The p-values in square brackets are based on clustering by industry, using the wild bootstrap approach of Cameron *et al.* (2008) due to the small number of clusters, calculated with the boottest Stata package of Roodman *et al.* (2019). See the notes for Table 4 for other information on these specifications.

Table A6: Timeline of Event Days Identified by Spaced 2 SD Dummy Variables

| Date  | Dataset | Sanctions negotiations event                              |
|---|---------|---|
| Apr 14 2012 <sup>†</sup>                    | Both    | Negotiation round held in Istanbul                        |
| Jun 19 $2012^{\dagger}$                     | GDELT   | Negotiation round ends in Moscow                          |
| Jul 14 2012                                 | Factiva | US imposes sanctions on Iranian firms and individuals     |
| Aug 11 2012                                 | Factiva | US imposes sanctions on firm for selling to Iran          |
| Sep 2 2012                                  | Factiva | France calls for stronger sanctions after IAEA report     |
| Mar 25 2013                                 | Factiva | US grants importers waiver on oil sanctions               |
| $\mathrm{Sep}\ 28\ 2013^\dagger$            | Both    | Presidents of Iran and US speak by phone                  |
| Oct 19 $2013^\dagger$                       | Both    | Negotiation round ends in Geneva                          |
| Nov 9 2013 <sup><math>\dagger</math></sup>  | Both    | Negotiation round ends in Geneva                          |
| Nov 16 2013                                 | Factiva | Negotiation round forthcoming in Geneva                   |
| Nov $24/25 \ 2013^{\dagger}$                | Both    | Interim agreement reached in Geneva                       |
| Dec 14 2013                                 | Factiva | US imposes penalties on sanctions violators               |
| Mar 25 $2014^\dagger$                       | Factiva | Negotiation round ends in Vienna                          |
| Jun 16 $2014^\dagger$                       | GDELT   | Negotiation round begins in Vienna                        |
| Sep $6\ 2014$                               | GDELT   | Iran misses IAEA deadline                                 |
| $\mathrm{Sep}~27~2014^\dagger$              | GDELT   | Negotiation round ends in New York                        |
| Nov 22 $2014^{\dagger}$                     | GDELT   | Negotiation round in progress in Vienna                   |
| Feb 24 2015 <sup><math>\dagger</math></sup> | GDELT   | Negotiations between Iran and US end in Geneva            |
| Mar 7 2015                                  | GDELT   | Several P5+1 members discuss negotiations                 |
| Mar 14 2015                                 | GDELT   | US Secretary of State holds press conference              |
| Mar 25 $2015^\dagger$                       | Both    | Negotiation round ends in Lausanne                        |
| Apr 4 2015 <sup>†</sup>                     | Both    | Framework agreement reached in Lausanne                   |
| Apr 11 2015                                 | Both    | Framework agreement reached in previous week in Lausanne  |
| Apr 18 2015                                 | Factiva | Framework agreement reached two weeks earlier in Lausanne |
| May 30 2015 <sup><math>\dagger</math></sup> | GDELT   | Negotiations between Iran and US held in Geneva           |
| Jun 6 2015 <sup>†</sup>                     | Factiva | Negotiation round ends in Vienna                          |
| Jun 13 2015                                 | GDELT   | President of Iran holds press conference                  |
| Jun 27 2015 <sup>†</sup>                    | Factiva | Negotiation round in progress in Vienna                   |
| Jul 4 2015 <sup>†</sup>                     | Both    | Negotiation round in progress in Vienna                   |
| Jul 14 2015 $^\dagger$                      | Both    | Final agreement reached in Vienna                         |

This table lists the event days used in our specifications in Table 4 column (5). For each of our coverage measures (from Factiva and GDELT), these days are identified by listing values that are at least two standard deviations greater than the mean, and then excluding cases that are within one week of larger peaks in news coverage, as explained in Section 5.2.1. For each of these days, the table shows the dataset(s) from which the day is sourced, and an event of that day that is relevant to diplomatic negotiations for sanctions relief. For the Geneva deal event, the two datasets (Factiva and GDELT) identify different days, but these are combined into one entry here. Event days involving direct negotiations between Iran and P5+1 countries, and therefore used in our specifications in Table 4 column (6), are marked with a dagger symbol.

| ate                              | $\mathbf{Site}$ | Reuters headline   |
|----------------------------------|-----------------|--|
| $pr \ 14 \ 2012^{\ddagger}$      | Istanbul        | "Iran, big powers agree - to keep talking"                                       |
| m 19 2012                        | Moscow          | "Iran, world powers fail to settle nuclear dispute"                              |
| $p  28  2013^{\ddagger}$         | Phone           | "Tranians cheer, protest over Rouhani's historic phone call with Obama"          |
| $t t 19 2013^{\ddagger}$         | Geneva          | "U.S. says talks intense, serious after Iran hints at atomic concessions"        |
| ov 9 2013                        | Geneva          | "Iran nuclear talks fail to reach deal, France pushes back"                      |
| $ov 24/25 2013^{\ddagger}$       | Geneva          | "Breakthrough deal curbs Iran's nuclear activity"                                |
| ar 25 2014                       | Vienna          | "Senators urge Obama to push for strict Iran nuclear curbs deal"                 |
| n 16 2014                        | Vienna          | "Iran and six powers seek to recover momentum for nuclear deal"                  |
| $p \ 27 \ 2014$                  | New York        | "No breakthrough in Iran nuclear talks, sides agree to keep talking"             |
| ov 22 2014                       | Vienna          | "Iran nuclear talks may be extended as U.S. sees 'big gaps'"                     |
| ${ m eb} \ 24 \ 2015^{\ddagger}$ | Geneva          | "U.S., Iran positive after nuclear talks, say much left to do"                   |
| lar 25 2015                      | Lausanne        | "Facing resistance, U.S. pushes to meet deadline"                                |
| ${ m pr}~4~2015^{\ddagger}$      | Lausanne        | "Iran, world powers reach initial deal on reining in Tehran's nuclear programme" |
| lay 30 2015                      | Geneva          | "U.S. and Iran address obstacles to nuclear deal as deadline nears"              |
| $nn \ 6 \ 2015$                  | Vienna          | "Iran rejects limited international access to military sites - agency"           |
| $nn \ 27 \ 2015$                 | Vienna          | "Disputes linger as Iran, powers push for nuclear deal"                          |
| $_{11} 4  2015^{\ddagger}$       | Vienna          | "Iran nuclear talks in endgame, negotiators push on sticking points"             |
| $_{ m ll} 14 \ 2015^{\ddagger}$  | Vienna          | "Iran deal reached, Obama hails step towards 'more hopeful world",               |

,ch ihe ind a double-dagger symbol) is used to mark negotiations episodes classified as making forward progress, using reports from media organisations based in each of the negotiating countries: Reuters, Associated Press, Agence France Presse, Deutsche Welle, ITAR-TASS, Xinhua, Fars News Agency and Mehr News Agency. This subset of event days is used in our specifications in Table 4 column (7). of these day Geneva dea This table

| Measure      |
|--------------|
| Factiva      |
| Days -       |
| ) Event      |
| 2  SL        |
| Spaced       |
| for          |
| Coefficients |
| vent         |
| oy-E         |
| Event-l      |
| A8:          |
| Table        |

|                                  | i   |                   |                        |
|----------------------------------|---|-------------------|------------------------|
| $\operatorname{Date}$            | Sanctions negotiations event                              | Event dummy       | Target $*$ event dummy |
| Apr 14 $2012^{\ddagger}$         | Negotiation round held in Istanbul                        | $0.396\ (0.251)$  | 0.223(0.391)           |
| Jul 14 2012                      | US imposes sanctions on Iranian firms and individuals     | 0.120(0.341)      | -0.059(0.426)          |
| Aug 11 2012                      | US imposes sanctions on firm for selling to Iran          | $0.756\ (0.365)$  | -0.826(0.446)          |
| $\operatorname{Sep} 2 2012$      | France calls for stronger sanctions after IAEA report     | $0.502 \ (0.293)$ | -0.117(0.359)          |
| $Mar \ 25 \ 2013$                | US grants importers waiver on oil sanctions               | 1.828(0.265)      | -0.598(0.361)          |
| $Sep 28 2013^{\ddagger}$         | Presidents of Iran and US speak by phone                  | $0.367 \ (0.228)$ | 1.910(0.384)           |
| Oct 19 $2013^{\ddagger}$         | Negotiation round ends in Geneva                          | -0.040(0.323)     | $1.033\ (0.461)$       |
| Nov 9 $2013^{\dagger}$           | Negotiation round ends in Geneva                          | -0.046(0.294)     | $0.563\ (0.429)$       |
| Nov 16 2013                      | Negotiation round forthcoming in Geneva                   | $0.748 \ (0.246)$ | 0.375(0.367)           |
| Nov $25 \ 2013^{\ddagger}$       | Interim agreement reached in Geneva                       | $0.829\ (0.283)$  | 1.138(0.471)           |
| $Dec \ 14 \ 2013$                | US imposes penalties on sanctions violators               | -0.441(0.341)     | $-0.182\ (0.540)$      |
| Mar $25 2014^{\dagger}$          | Negotiation round ends in Vienna                          | $0.621 \ (0.276)$ | 0.283(0.428)           |
| $Mar 25 2015^{\dagger}$          | Negotiation round ends in Lausanne                        | $0.409 \ (0.172)$ | $0.164\ (0.315)$       |
| ${ m Apr} \ 4 \ 2015^{\ddagger}$ | Framework agreement reached in Lausanne                   | $2.094 \ (0.259)$ | $0.611 \ (0.407)$      |
| Apr 11 $2015$                    | Framework agreement reached in previous week in Lausanne  | -0.632(0.181)     | -0.128(0.351)          |
| Apr $18 \ 2015$                  | Framework agreement reached two weeks earlier in Lausanne | -0.376(0.248)     | $0.942 \ (0.420)$      |
| $Jun 6 2015^{\dagger}$           | Negotiation round ends in Vienna                          | $0.139\ (0.191)$  | $0.044 \ (0.224)$      |
| $Jun 27 2015^{\dagger}$          | Negotiation round in progress in Vienna                   | $0.030\ (0.181)$  | 0.238(0.308)           |
| $Jul 4 2015^{\ddagger}$          | Negotiation round in progress in Vienna                   | $0.914 \ (0.268)$ | 0.210(0.393)           |
| Jul 14 $2015^{\ddagger}$         | Final agreement reached in Vienna                         | $0.093 \ (0.295)$ | $0.442\ (0.432)$       |
|                                  |   |                   |                        |

of our Factiva news coverage measure that are at least two standard deviations greater than the mean, and then excluding cases that are within one week of larger peaks in news coverage, as explained in Section 5.2.1. Event days involving direct negotiations between Iran and P5+1 countries, and therefore used in our specification in Table 4 Panel A column (6), are highlighted in light or dark blue (and a dagger or This table displays estimated effects on returns of target and non-target firms of the events used in our specification in Panel A column (5) of refers to a unique quarter and year. The dependent variable is daily stock return in percent. The event days are identified by listing values Table 4. The table displays the results of a single regression, including dummies for each event day and interactions between these dummies and an indicator variable for firms in the target portfolio. The specification also includes firm-quarter-day-of-week fixed effects, where 'quarter' double-dagger symbol). Dark blue (and the double-dagger symbol) is used to mark negotiations episodes classified as making forward progress, which are also used in Table 4 Panel A column (7). The sample period is from April 14, 2012 to July 15, 2015. The regression includes 74,094 observations and 136 firms. Standard errors, clustered by firm, are in parentheses.

| Measure        |
|----------------|
| GDELT          |
| 1              |
| Days           |
| Event          |
| Ū<br>Ū         |
| 0              |
| 3              |
| Spaced         |
| $\mathrm{for}$ |
| Coefficients   |
| ÷              |
| y-Even         |
| -p-            |
| : Event-       |
| A9:            |
| Table          |

| Date                               | Sanctions negotiations event                             | Event dummy      | Target * event dummy |
|------------------------------------|--|------------------|----------------------|
| Apr 14 $2012^{\ddagger}$           | Negotiation round held in Istanbul                       | $0.396\ (0.251)$ | 0.223(0.391)         |
| $Jun 19 2012^{\dagger}$            | Negotiation round ends in Moscow                         | -0.303(0.225)    | -0.006(0.254)        |
| ${ m Sep}  28  2013^{\ddagger}$    | Presidents of Iran and US speak by phone                 | 0.722(0.226)     | $1.771 \ (0.367)$    |
| Oct 19 $2013^{\ddagger}$           | Negotiation round ends in Geneva                         | -0.138(0.313)    | 0.907 (0.460)        |
| Nov 9 2013 $^{\dagger}$            | Negotiation round ends in Geneva                         | -0.141(0.287)    | 0.429 $(0.452)$      |
| Nov 24 $2013^{\ddagger}$           | Interim agreement reached in Geneva                      | $0.615\ (0.367)$ | 1.199(0.481)         |
| $Jun 16 2014^{\dagger}$            | Negotiation round begins in Vienna                       | $0.534\ (0.233)$ | $0.059\ (0.338)$     |
| ${ m Sep} \ 6 \ 2014$              | Iran misses IAEA deadline                                | -0.706(0.292)    | $0.517\ (0.399)$     |
| ${ m Sep}  27  2014^{\dagger}$     | Negotiation round ends in New York                       | -0.274(0.202)    | -0.156(0.312)        |
| Nov 22 $2014^{\dagger}$            | Negotiation round in progress in Vienna                  | -0.353(0.247)    | $0.011 \ (0.402)$    |
| Feb 24 $2015^{\ddagger}$           | Negotiations between Iran and US end in Geneva           | $0.327\ (0.296)$ | -0.342(0.417)        |
| Mar 7 2015                         | Several P5+1 members discuss negotiations                | -0.219(0.253)    | $0.227\ (0.367)$     |
| Mar 14 2015                        | US Secretary of State holds press conference             | $0.897\ (0.223)$ | -0.173(0.343)        |
| $Mar 25 2015^{\dagger}$            | Negotiation round ends in Lausanne                       | 0.409(0.172)     | $0.164\ (0.315)$     |
| ${ m Apr} \; 4 \; 2015^{\ddagger}$ | Framework agreement reached in Lausanne                  | 2.211(0.257)     | $0.459\ (0.415)$     |
| Apr 11 $2015$                      | Framework agreement reached in previous week in Lausanne | -0.516(0.195)    | -0.279 (0.348)       |
| May 30 $2015^{\dagger}$            | Negotiations between Iran and US held in Geneva          | $0.138\ (0.216)$ | $0.101 \ (0.334)$    |
| Jun 13 2015                        | President of Iran holds press conference                 | $0.765\ (0.215)$ | -0.163(0.291)        |
| $Jul 4 2015^{\ddagger}$            | Negotiation round in progress in Vienna                  | $1.029\ (0.270)$ | 0.066(0.407)         |
| $Jul 14 2015^{\ddagger}$           | Final agreement reached in Vienna                        | $0.145\ (0.291)$ | 0.414(0.431)         |

refers to a unique quarter and year. The dependent variable is daily stock return in percent. The event days are identified by listing values of our GDELT news coverage measure that are at least two standard deviations greater than the mean, and then excluding cases that are within one week of larger peaks in news coverage, as explained in Section 5.2.1. Event days involving direct negotiations between Iran and This table displays estimated effects on returns of target and non-target firms of the events used in our specification in Panel B column (5) of Table 4. The table displays the results of a single regression, including dummies for each event day and interactions between these dummies P5+1 countries, and therefore used in our specification in Table 4 Panel B column (6), are highlighted in light or dark blue (and a dagger or and an indicator variable for firms in the target portfolio. The specification also includes firm-quarter-day-of-week fixed effects, where 'quarter' which are also used in Table 4 Panel B column (7). The sample period is from April 14, 2012 to July 15, 2015, excluding February to August double-dagger symbol). Dark blue (and the double-dagger symbol) is used to mark negotiations episodes classified as making forward progress, 2013. The regression includes 60,763 observations and 136 firms. Standard errors, clustered by firm, are in parentheses.

|                     | (1)       | (2)     | (3)      | (4)        | (5)       | (6)      |
|---------------------|-----------|---------|----------|------------|-----------|----------|
|                     | Excluding | Post-   | Industry | Market cap | Size data | All size |
|                     | Geneva    | Geneva  | controls | controls   | subsample | controls |
| Panel A - Factiva r | neasure   |         |          |            |           |          |
|                     |           |         |          |            |           |          |
| Coverage            | 0.070     | 0.062   |          | 0.083      | 0.071     | 0.076    |
|                     | (0.012)   | (0.013) |          | (0.013)    | (0.016)   | (0.017)  |
| <b>—</b> • •        | (0.011)   | (0.010) | 0 1 1 1  | (0.010)    | (0.010)   | (0.011)  |
| Target * coverage   | 0.055     | 0.067   | 0.111    | 0.084      | 0.073     | 0.062    |
|                     | (0.018)   | (0.021) | (0.021)  | (0.020)    | (0.024)   | (0.027)  |
|                     |           |         |          |            |           |          |
| Observations        | 68.166    | 39.596  | 73.247   | 74,775     | 44.954    | 44.954   |
| Number of firms     | 136       | 130     | 135      | 136        | 79        | 79       |
| Panel B - GDELT     | measure   | 100     | 100      | 100        | 10        | 10       |
| Tanei D - ODEEI     | measure   |         |          |            |           |          |
| Covoraço            | 0.062     | 0.064   |          | 0.071      | 0.051     | 0.054    |
| Coverage            | (0.002)   | (0.004) |          | (0.071)    | (0.051)   | (0.034)  |
|                     | (0.012)   | (0.013) |          | (0.012)    | (0.010)   | (0.016)  |
| Target * coverage   | 0.045     | 0.048   | 0.077    | 0.055      | 0.071     | 0.068    |
|                     | (0.018)   | (0.020) | (0.019)  | (0.018)    | (0.022)   | (0.022)  |
|                     | ( )       | · /     | × ,      | × /        | · · · ·   | × /      |
| Observations        | 55 674    | 20 506  | 60 524   | 61 949     | 27 006    | 27 00F   |
| Vuservations        | 33,074    | 39,390  | 105      | 01,845     | 37,090    | 37,090   |
| Number of firms     | 136       | 130     | 135      | 136        | 79        | 79       |

Table A10: Robustness Checks – Continuous News Coverage Measure

This table displays robustness checks of the results in Table 4 column (2). The dependent variable is daily stock return in percent. The variable 'coverage' is a standardised count of the number of articles on a relevant event identified in the Factiva (Panel A) or GDELT (Panel B) data, as discussed in Section 4.3. In Panel A, the sample period in column (1) is from April 14, 2012 to July 15, 2015 excluding August 26, 2013 to November 24, 2013, in column (2) it is from and November 25, 2013 to July 15, 2015, and in columns (3) to (6) it is from April 14, 2012 to July 15, 2015. In Panel B, the sample period in all columns excludes February to August 2013. Column (3) includes interactions of industry dummies with dummies for each day of the sample period. Column (4) includes interactions of de-meaned log market capitalisation as of March 10, 2014 with dummies for each day of the sample period. Column (5) reproduces the baseline estimate in Table 4 column (2) for the subsample of firms (those with available data on turnover, assets and employees in 2012) used in column (6), for purposes of comparison. Column (6) includes interactions of log market capitalisation as of March 10, 2014, and log turnover, log assets and log employees from 2012 (if this data is available from Orbis), all de-meaned, with dummies for each day of the sample period. All columns include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. Standard errors, clustered by firm, are in parentheses.

|   | (1)                   | $(\mathbf{a})$      | (2)          | (4)        | (٣)            | (C)     |
|---|-----------------------|---------------------|--------------|------------|----------------|---------|
|   | (1)<br>Direct targets | (2)<br>Portfolio of | (3)<br>Other | (4)        | (0)<br>Matched | (0)     |
|   | and assets            | other firms         | Sources      | shares     | sample         | firms   |
| Panel A - Factiva measure   | 2                     | other mms           | sources      | 51141 05   | Sample         | 111115  |
|   |                       |                     |              |            |                |         |
| Coverage  | 0.077                 | 0.077               | 0.077        | 0.080      | 0.068          | 0.080   |
| Coverage  | (0.013)               | (0.017)             | (0.013)      | (0.089)    | (0.003)        | (0.030) |
| and the second se | (0.010)               | (0.010)             | (0.010)      | (0.001)    | (0.010)        | (0.001) |
| Target * coverage   |                       | (0.092)             | (0.049)      | 0.124      | (0.063)        | (0.083) |
|   |                       | (0.019)             | (0.019)      | (0.035)    | (0.023)        | (0.015) |
| Direct target * coverage  | 0.102                 |                     |              |            |                |         |
|   | (0.042)               |                     |              |            |                |         |
| Target asset * coverage   | 0.090                 |                     |              |            |                |         |
|   | (0.020)               |                     |              |            |                |         |
| Other * coverage  |                       | -0.001              |              |            |                |         |
|   |                       | (0.015)             |              |            |                |         |
|   |                       | × ,                 |              |            |                |         |
| Observations  | 74,775                | 169.028             | 76.186       | 152.414    | 75.483         | 178.879 |
| Target firms  | 50                    | 50                  | 51           | N/A        | 23             | 53      |
| Non-target firms  | 86                    | 86                  | 86           | N/A        | 110            | 268     |
| Total number of firms   | 136                   | 306                 | 137          | 279        | 133            | 321     |
| Panel B - GDELT measur  | re                    |                     |              |            |                |         |
|   |                       |                     |              |            |                |         |
| Coverage  | 0.065                 | 0.065               | 0.065        | 0.067      | 0.036          | 0.061   |
|   | (0.013)               | (0.013)             | (0.013)      | (0.007)    | (0.013)        | (0.007) |
| Target * coverage   |                       | 0.066               | 0.040        | 0.100      | 0.081          | 0.069   |
|   |                       | (0.017)             | (0.018)      | (0.032)    | (0.021)        | (0.014) |
| Direct target * coverage  | 0.071                 | · · · ·             | · /          | × ,        | . ,            | . ,     |
| Direct target Coverage  | (0.042)               |                     |              |            |                |         |
| <b>—</b> , , *  | (0.012)               |                     |              |            |                |         |
| Target asset * coverage   | (0.066)               |                     |              |            |                |         |
|   | (0.018)               |                     |              |            |                |         |
| Other * coverage  |                       | -0.009              |              |            |                |         |
|   |                       | (0.015)             |              |            |                |         |
|   |                       |                     |              |            |                |         |
| Observations  | 61,843                | 139,892             | 62,968       | 126,131    | 62,412         | 148,009 |
| Target firms  | 50                    | 50                  | 51           | N/A        | 23             | 53      |
| Non-target firms  | 86                    | 86                  | 86           | N/A<br>270 | 110            | 268     |
| Lotal number of firms   | 130                   | 300                 | 137          | 219        | 133            | 321     |

## Table A11: Alternative Portfolio Definitions – Continuous News Coverage Measure

This table displays robustness checks of the results in Table 4 column (2), displaying estimated effects on returns of various firm portfolios. The dependent variable is daily stock return in percent. The variable 'coverage' is a standardised count of the number of articles on a relevant event identified in the Factiva (Panel A) or GDELT (Panel B) data, as discussed in Section 4.3. Column (1) separates the target portfolio into two parts: firms identified directly from smart sanctions documents ('direct target') and firms in which targeted entities have a direct ownership stake ('target asset'). There are six direct target firms and 44 target asset firms in these regressions. Column (2) includes firms dropped from the baseline sample, excluding firms involved in the nuclear programme, as a separate portfolio ('other'); 170 of these other firms are included in these regressions. Column (3) defines the target portfolio as the set of firms identified as IRGC or Setad assets in smart sanctions documents, Alfoneh (2010) or Reuters (2013). This adds 20 additional target firms to the regressions, while dropping 19 firms from the baseline target portfolio. In column (4), the variable 'target' is the observed share of a firm that is owned by firms identified as IRGC or Setad assets in smart sanctions documents, rather than a dummy variable for portfolio membership. In column (5), the sample of firms is selected using coarsened exact matching on industry, market capitalisation, turnover, assets and employees, among firms for which this data is available. In column (6), the sample of firms is widened to include all firms listed on the TSE as of April 14, 2012, and all firms not satisfying the baseline target definition are classified into the non-target portfolio. This also adds three target firms that had been dropped due to involvement in Iran's nuclear programme. The sample period is from April 14, 2012 to July 15, 2015 (excluding February to August 2013 in Panel B). All columns include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. Standard errors, clustered by firm, are in parentheses.

|                     | ()         | (-)        | (-)       | (        |
|---------------------|------------|------------|-----------|----------|
|                     | (1)        | (2)        | (3)       | (4)      |
|                     | Industry   | Market cap | Size data | All size |
|                     | controls   | controls   | subsample | controls |
| Panel A - Factiva r | neasure    |            |           |          |
|                     |            |            |           |          |
| Coverage            |            | 0.738      | 0.625     | 0.653    |
| 0                   |            | (0.115)    | (0.156)   | (0.148)  |
| m / *               | 0.045      | 0.710      | 0 700     | 0.001    |
| Target * coverage   | 0.945      | 0.713      | 0.769     | 0.681    |
|                     | (0.190)    | (0.172)    | (0.226)   | (0.230)  |
|                     |            |            |           |          |
| Observations        | $71,\!359$ | 72,853     | 43,790    | 43,790   |
| Number of firms     | 135        | 136        | 79        | 79       |
| Panel B - GDELT     | measure    |            |           |          |
|                     |            |            |           |          |
| Coverage            |            | 0.727      | 0.528     | 0.583    |
|                     |            | (0.112)    | (0.149)   | (0.144)  |
|                     | 0.000      | (0.112)    | (0.110)   | (0.111)  |
| Target * coverage   | 0.689      | 0.475      | 0.691     | 0.538    |
|                     | (0.185)    | (0.169)    | (0.216)   | (0.209)  |
|                     |            |            |           |          |
| Observations        | 58,322     | 59,597     | 35,723    | 35,723   |
| Number of firms     | 135        | 136        | 79        | 79       |

Table A12: Robustness Checks – Positive Negotiations Dummy

This table displays robustness checks of the results in Table 4 column (7). The dependent variable is daily stock return in percent. The variable 'coverage' is a dummy for episodes where progress in direct international negotiations is apparent from media articles on relevant events identified in the Factiva (Panel A) or GDELT (Panel B) data, as discussed in Section 5.2.1. Column (1) includes interactions of industry dummies with dummies for each day of the sample period. Column (2) includes interactions of de-meaned log market capitalisation as of March 10, 2014 with dummies for each day of the sample period. Column (3) reproduces the baseline estimate in Table 4 column (7) for the subsample of firms (those with available data on turnover, assets and employees in 2012) used in column (4), for purposes of comparison. Column (4) includes interactions of log market capitalisation as of March 10, 2014, and log turnover, log assets and log employees from 2012 (if this data is available from Orbis), all de-meaned, with dummies for each day of the sample period. All columns include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. The sample period is from April 14, 2012 to July 15, 2015 (excluding February to August 2013 in Panel B). Standard errors, clustered by firm, are in parentheses.

|                             | (1)            | (2)          | (3)        | (4)              | (5)            | (6)         |
|-----------------------------|----------------|--------------|------------|------------------|----------------|-------------|
|                             | Direct targets | Portfolio of | Other      | (±)<br>Ownership | (5)<br>Matched | (0)<br>All  |
|                             | and assets     | other firms  | sources    | shares           | sample         | firms       |
| Panel A - Factiva measure   | 2              | other mins   | bourceb    | Silaros          | sample         |             |
|                             |                |              |            |                  |                |             |
| Courses                     | 0.670          | 0.670        | 0.670      | 0.919            | 0.604          | 0.901       |
| Coverage                    | (0.122)        | (0.122)      | (0.122)    | (0.010)          | (0.152)        | (0.001)     |
|                             | (0.122)        | (0.122)      | (0.122)    | (0.075)          | (0.155)        | (0.070)     |
| Target * coverage           |                | 0.856        | 0.597      | 1.140            | 0.603          | 0.697       |
|                             |                | (0.179)      | (0.175)    | (0.294)          | (0.229)        | (0.145)     |
| Direct target * coverage    | 0.931          |              |            |                  |                |             |
| 0                           | (0.357)        |              |            |                  |                |             |
| Tangat agast * asymptot     | 0.845          |              |            |                  |                |             |
| Target asset Coverage       | (0.188)        |              |            |                  |                |             |
|                             | (0.100)        |              |            |                  |                |             |
| Other * coverage            |                | 0.127        |            |                  |                |             |
|                             |                | (0.151)      |            |                  |                |             |
|                             |                |              |            |                  |                |             |
| Observations                | 72,853         | $164,\!684$  | $74,\!235$ | $148,\!482$      | 73,563         | $174,\!274$ |
| Target firms                | 50             | 50           | 51         | N/A              | 23             | 53          |
| Non-target firms            | 86             | 86           | 86         | N/A              | 110            | 268         |
| Total number of firms       | 136            | 306          | 137        | 279              | 133            | 321         |
| Panel B - GDELT measur      | re             |              |            |                  |                |             |
|                             |                |              |            |                  |                |             |
| Coverage                    | 0.679          | 0.679        | 0.679      | 0.713            | 0.560          | 0.751       |
|                             | (0.120)        | (0.119)      | (0.120)    | (0.072)          | (0.149)        | (0.072)     |
| Target * coverage           |                | 0.594        | 0.481      | 1.204            | 0.517          | 0.532       |
|                             |                | (0.177)      | (0.171)    | (0.245)          | (0.223)        | (0.144)     |
| Direct torrest * correspond | 1 144          | ()           | ( )        | ()               | ()             |             |
| Direct target · coverage    | (0.985)        |              |            |                  |                |             |
|                             | (0.285)        |              |            |                  |                |             |
| Target asset $*$ coverage   | 0.514          |              |            |                  |                |             |
|                             | (0.185)        |              |            |                  |                |             |
| Other * coverage            |                | 0.032        |            |                  |                |             |
| 6                           |                | (0.150)      |            |                  |                |             |
|                             |                |              |            |                  |                |             |
| Observations                | 59.597         | 134.778      | 60.654     | 121.502          | 60.125         | 142.599     |
| Target firms                | 50             | 50           | 51         | N/A              | 23             | 53          |
| Non-target firms            | 86             | 86           | 86         | N/A              | 110            | 268         |
| Total number of firms       | 136            | 306          | 137        | 279              | 133            | 321         |

Table A13: Alternative Portfolio Definitions – Positive Negotiations Dummy

This table displays robustness checks of the results in Table 4 column (7), displaying estimated effects on returns of various firm portfolios. The dependent variable is daily stock return in percent. The variable 'coverage' is a dummy for episodes where progress in direct international negotiations is apparent from media articles on relevant events identified in the Factiva (Panel A) or GDELT (Panel B) data, as discussed in Section 5.2.1. Column (1) separates the target portfolio into two parts: firms identified directly from smart sanctions documents ('direct target') and firms in which targeted entities have a direct ownership stake ('target asset'). There are six direct target firms and 44 target asset firms in these regressions. Column (2) includes firms dropped from the baseline sample, excluding firms involved in the nuclear programme, as a separate portfolio ('other'); 170 of these other firms are included in these regressions. Column (3) defines the target portfolio as the set of firms identified as IRGC or Setad assets in smart sanctions documents, Alfoneh (2010) or Reuters (2013). This adds 20 additional target firms to the regressions, while dropping 19 firms from the baseline target portfolio. In column (4), the variable 'target' is the observed share of a firm that is owned by firms identified as IRGC or Setad assets in smart sanctions documents, rather than a dummy variable for portfolio membership. In column (5), the sample of firms is selected using coarsened exact matching on industry, market capitalisation, turnover, assets and employees, among firms for which this data is available. In column (6), the sample of firms is widened to include all firms listed on the TSE as of April 14, 2012, and all firms not satisfying the baseline target definition are classified into the non-target portfolio. This also adds three target firms that had been dropped due to involvement in Iran's nuclear programme. The sample period is from April 14, 2012 to July 15, 2015 (excluding February to August 2013 in Panel B). All columns include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. Standard errors, clustered by firm, are in parentheses.

|                   | (1)     | (2)          | (3)         |
|-------------------|---------|--------------|-------------|
|                   | Full    | Before Setad | After Setad |
|                   | sample  | sanctions    | sanctions   |
| Panel A - Factiva | measure |              |             |
| a                 | 0.077   | 0.100        | 0.000       |
| Coverage          | 0.077   | 0.138        | 0.066       |
|                   | (0.013) | (0.038)      | (0.014)     |
| IRGC * coverage   | 0.149   | 0.115        | 0.145       |
|                   | (0.044) | (0.071)      | (0.055)     |
| Setad * coverage  | 0.085   | -0.075       | 0.106       |
|                   | (0.019) | (0.053)      | (0.021)     |
|                   | · · · · |              |             |
| Observations      | 74,775  | 23,357       | 51,322      |
| Number of firms   | 136     | 134          | 132         |
| Panel B - GDELT   | measure |              |             |
|                   |         |              |             |
| Coverage          | 0.065   | 0.042        | 0.067       |
| -                 | (0.013) | (0.039)      | (0.013)     |
| IRGC * coverage   | 0.077   | 0.126        | 0.072       |
|                   | (0.041) | (0.072)      | (0.045)     |
| Setad * coverage  | 0.065   | 0.015        | 0.070       |
| 0                 | (0.018) | (0.054)      | (0.019)     |
|                   |         | × /          | × /         |
| Observations      | 61.843  | 16.078       | 45.765      |
| Number of firms   | 136     | 133          | 131         |
|                   | =       |              |             |

Table A14: Heterogeneity by Conglomerate – IRGC and Setad Assets

This table displays estimated effects on returns of target firms (divided into those that are IRGC assets and those that are Setad assets) and non-target firms from specifications that include a daily measure of news coverage related to diplomatic progress between Iran and the P5+1 countries. The dependent variable is daily stock return in percent. The variable 'coverage' is a standardised count of the number of articles on a relevant event identified in the Factiva (Panel A) or GDELT (Panel B) data. In Panel A, the sample period in column (1) is from April 14, 2012 to July 15, 2015, in column (2) it is from April 14, 2012 to June 3, 2013 and in column (3) it is from June 8, 2013 to July 15, 2015. In Panel B, the sample period in all columns excludes February to August 2013. All columns include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. Standard errors, clustered by firm, are in parentheses.

|                               | (1)         | (2)         | (3)         | (4)         | (5)              |
|-------------------------------|-------------|-------------|-------------|-------------|------------------|
|                               | Geneva deal | Continuo    | us measure  | Positive n  | egot. dummy      |
|                               |             | Factiva     | GDELT       | Factiva     | GDELT            |
|                               |             |             |             |             |                  |
| Geneva                        | 0.116       |             |             |             |                  |
|                               | $\{0.722\}$ |             |             |             |                  |
| Industry sanctions * Geneva   | 1 140       |             |             |             |                  |
| industry sametions denova     | $\{0.174\}$ |             |             |             |                  |
| Covorago                      | ( )         | 0.056       | 0.045       | 0.969       | 0 399            |
| Coverage                      |             | 10 033J     | 10.043      | 10.202      | 0.322<br>J0 1991 |
|                               |             | 10.0391     | 10.094      | 10.001      | 10.1225          |
| Industry sanctions * coverage |             | 0.046       | 0.042       | 0.877       | 0.757            |
|                               |             | $\{0.143\}$ | $\{0.169\}$ | $\{0.008\}$ | $\{0.022\}$      |
| Observations                  | 3,909       | 44,092      | 36,360      | 42,968      | 35,017           |
| Number of industries          | 14          | 14          | 14          | 14          | 14               |

## Table A15: Heterogeneity – Non-Target Firms in Industries Subject to Sanctions

This table displays estimated effects of industry-specific sanctions on returns of non-target firms. The dependent variable is daily stock return in percent. The variable 'industry sanctions' is a dummy equal to one for firms in Iranian industries subject to sanctions, according to the list of sanctions to be removed in the final deal between Iran and the P5+1 countries. In column (1), 'Geneva' is defined as the two days Saturday November 23 and Sunday November 24, 2013. In columns (2) and (3), the variable 'coverage' is a standardised count of the number of articles on a relevant event identified in the Factiva (column (2)) or GDELT (column (3)) data, as discussed in Section 4.3. In columns (4) and (5), the variable 'coverage' is a dummy for episodes where progress in direct international negotiations is apparent from media articles on relevant events identified in the Factiva (column (4)) or GDELT (column (5)) data, as discussed in Section 5.2.1. Column (1) includes firm fixed effects, and columns (2) to (5) include firm-quarter-day-of-week fixed effects. Here, 'quarter' refers to a unique quarter and year. In column (1), the sample period is Geneva and the previous sixty trading days. In columns (2) to (5), the sample period is from April 14, 2012 to July 15, 2015 (excluding February to August 2013 in columns (3) and (5)). The p-values in curly brackets are based on clustering by industry, using the wild bootstrap approach of Cameron *et al.* (2008) due to the small number of clusters, calculated with the boottest Stata package of Roodman *et al.* (2019).

|                        | (1)                              | (2)                              | (3)                              | (4)                              |
|------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                        | US election<br>Nov 2016          | Factiva measure<br>post-election | GDELT<br>post-el                 | measure<br>lection               |
| Election               | -1.667<br>[0.000]<br>$\{0.001\}$ |                                  |                                  |                                  |
| Target * election      | -1.296<br>[0.003]<br>$\{0.020\}$ |                                  |                                  |                                  |
| Coverage               |                                  | $0.040 \\ [0.022] \\ \{0.099\}$  | $0.051 \\ [0.002] \\ \{0.030\}$  |                                  |
| Target * coverage      |                                  | -0.031<br>[0.152]<br>$\{0.130\}$ | -0.036<br>[0.117]<br>$\{0.129\}$ |                                  |
| US coverage            |                                  |                                  |                                  | $0.015 \\ [0.350] \\ \{0.485\}$  |
| Target * US coverage   |                                  |                                  |                                  | -0.007<br>[0.747]<br>$\{0.660\}$ |
| P4+1 coverage          |                                  |                                  |                                  | 0.044<br>[0.024]<br>$\{0.047\}$  |
| Target * P4+1 coverage |                                  |                                  |                                  | $-0.035 \\ [0.204] \\ \{0.127\}$ |
| Observations           | 6,346                            | $36,\!484$                       | 36,484                           | 36,484                           |
| Number of firms        | 120                              | 123                              | 123                              | 123                              |
| Number of industries   | 15                               | 15                               | 15                               | 15                               |

Table A16: Clustering by Industry – Post-Deal Events

This table reproduces the point estimates from Table 5, along with p-values based on two different clustering strategies. The p-values in square brackets are based on clustering by firm. The p-values in curly brackets are based on clustering by industry, using the wild bootstrap approach of Cameron *et al.* (2008) due to the small number of clusters, calculated with the boottest Stata package of Roodman *et al.* (2019). See the notes for Table 5 for other information on these specifications.

|                                 | (1)  | (2)                       | (3)               | (4)               | (5)               |
|---------------------------------|--|---------------------------|-------------------|-------------------|-------------------|
|                                 | Firm-day-                                  | Industry                  | Market cap        | Size data         | All size          |
|                                 | of-week FEs                                | $\operatorname{controls}$ | controls          | subsample         | controls          |
| Election                        | -1.705<br>(0.319)                          |                           | -1.642<br>(0.297) | -1.653<br>(0.344) | -1.742<br>(0.376) |
| Target * election               | -1.236<br>(0.434)                          | -1.499<br>(0.462)         | -1.479<br>(0.430) | -1.133<br>(0.564) | -1.136<br>(0.618) |
| Observations<br>Number of firms | $\begin{array}{c} 6,344\\ 120 \end{array}$ | $6,199 \\ 118$            | $6,346 \\ 120$    | $3,\!851 \\ 74$   | $3,851 \\ 74$     |

Table A17: Robustness Checks – Election Event

This table displays robustness checks of the results in Table 5 column (1). The dependent variable is daily stock return in percent. 'Election' is defined as the event day Wednesday November 9, 2016. All columns except column (1) include firm fixed effects. Column (1) includes firm-day-of-week fixed effects. Column (2) includes interactions of industry dummies with dummies for each day of the sample period. Column (3) includes interactions of de-meaned log market capitalisation as of March 10, 2014 with dummies for each day of the sample period. Column (4) reproduces the baseline estimate in Table 5 column (1) for the subsample of firms (those with available data on turnover, assets and employees in 2012) used in column (5), for purposes of comparison. Column (5) includes interactions of log market capitalisation as of March 10, 2014, and log turnover, log assets and log employees from 2012 (if this data is available from Orbis), all de-meaned, with dummies for each day of the sample period. The sample period is the election event day and the previous sixty trading days. Standard errors, clustered by firm, are in parentheses.

|                          | (1)            | (2)          | (3)       | (4)        | (5)       | (6)        |
|--------------------------|----------------|--------------|-----------|------------|-----------|------------|
|                          | Direct targets | Portfolio of | Other     | Ownership  | Matched   | All        |
|                          | and assets     | other firms  | sources   | shares     | sample    | firms      |
|                          |                |              |           |            |           |            |
| Election                 | -1.667         | -1.730       | -1.667    | -1.808     | -1.710    | -1.639     |
|                          | (0.305)        | (0.304)      | (0.305)   | (0.186)    | (0.348)   | (0.183)    |
| Target * election        |                | -1.293       | -0.434    | -1.021     | -1.159    | -1.290     |
| 141800 010001011         |                | (0.430)      | (0.472)   | (0.690)    | (0.608)   | (0.359)    |
| Direct target * election | 0 330          | ()           | ()        | ()         | ()        | ()         |
| Direct target election   | (0.767)        |              |           |            |           |            |
|                          | (0.101)        |              |           |            |           |            |
| Target asset * election  | -1.490         |              |           |            |           |            |
|                          | (0.449)        |              |           |            |           |            |
| Other * election         |                | 0.122        |           |            |           |            |
|                          |                | (0.387)      |           |            |           |            |
|                          |                |              |           |            |           |            |
| Observations             | 6,346          | $14,\!128$   | $6,\!432$ | $12,\!848$ | $6,\!403$ | $14,\!676$ |
| Target firms             | 48             | 48           | 50        | N/A        | 23        | 51         |
| Non-target firms         | 72             | 72           | 72        | N/A        | 105       | 234        |
| Total number of firms    | 120            | 274          | 122       | 248        | 128       | 285        |

Table A18: Alternative Portfolio Definitions – Election Event

This table displays estimated effects of the election event on returns of various firm portfolios. The dependent variable is daily stock return in percent. 'Election' is defined as the event day Wednesday November 9, 2016. Column (1) separates the target portfolio into two parts: firms identified directly from smart sanctions documents ('direct target') and firms in which targeted entities have a direct ownership stake ('target asset'). There are six direct target firms and 42 target asset firms in this regression. Column (2) includes firms dropped from the baseline sample, excluding firms involved in the nuclear programme, as a separate portfolio ('other'); 154 of these other firms are included in this regression. Column (3) defines the target portfolio as the set of firms identified as IRGC or Setad assets in smart sanctions documents, Alfoneh (2010) or Reuters (2013). This adds 19 additional target firms to the regression, while dropping 17 firms from the baseline target portfolio. In column (4), the variable 'target' is the observed share of a firm that is owned by firms identified as IRGC or Setad assets in smart sanctions documents, rather than a dummy variable for portfolio membership. In column (5), the sample of firms is selected using coarsened exact matching on industry, market capitalisation, turnover, assets and employees, among firms for which this data is available. In column (6), the sample of firms is widened to include all firms listed on the TSE as of April 14, 2012, and all firms not satisfying the baseline target definition are classified into the non-target portfolio. This also adds three target firms that had been dropped due to involvement in Iran's nuclear programme. The sample period is the election event day and the previous sixty trading days. All columns include firm fixed effects. Standard errors, clustered by firm, are in parentheses.

|                                 | (1)                | (2)                | (3)               | (4)               | (5)  |
|---------------------------------|--------------------|--------------------|-------------------|-------------------|--|
|                                 |                    | US withdrawal      |                   |                   |  |
|                                 | May 2017           | Sept 2017          | Jan 2018          | All three         | May 2018                                       |
| Renewal                         | $1.590 \\ (0.243)$ | $0.330 \\ (0.256)$ | 0.487<br>(0.243)  | 0.807<br>(0.163)  |  |
| Target * renewal                | -0.187<br>(0.388)  | -0.194<br>(0.319)  | -0.156<br>(0.284) | -0.272<br>(0.210) |  |
| Withdrawal                      |                    |                    |                   |                   | -0.633<br>(0.240)                              |
| Target * withdrawal             |                    |                    |                   |                   | $\begin{array}{c} 0.071 \ (0.336) \end{array}$ |
| Observations<br>Number of firms | $6,115 \\ 120$     | $6,119 \\ 122$     | $6,554 \\ 121$    | 18,789<br>123     | $\substack{6,485\\121}$                        |

## Table A19: Post-Deal Events – Additional Specifications

This table displays estimated effects of sanctions-related events after the 2016 US election on returns of target and non-target firms. 'Renewal' represents an event day when US sanctions waivers were renewed: May 20, 2017, September 16, 2017 and/or January 13, 2018. Each renewal event is studied separately in columns (1) to (3), while column (4) jointly considers all three renewal events. 'Withdrawal' represents the US withdrawal from the sanctions deal on May 9, 2018. The dependent variable is daily stock return in percent. In columns (1), (2), (3) and (5), the sample period is the event day and the sixty preceding trading days. In column (4), the sample period consists of the three renewal event days and the sixty trading days prior to each of these event days. All columns include firm fixed effects. Standard errors, clustered by firm, are in parentheses.

Table A20: Top Fifteen Peaks in News Coverage Measures – 2016-2018 Sample Period

| Date             | Value   | Event   |
|------------------|---------|---|
| Panel A - Factiv | a measu | re  |
| May 9 2018       | 8.89    | US withdraws from agreement on previous day             |
| May 8 2018       | 6.68    | US withdraws from agreement                             |
| Oct 14 2017*     | 4.83    | US decertifies agreement                                |
| Feb 4 2017*      | 4.71    | US imposes sanctions after missile test                 |
| May 5 2018*      | 4.04    | US set to withdraw from agreement                       |
| Jul 29 2017*     | 3.97    | US-Iran confrontation at sea                            |
| Apr 28 $2018^*$  | 3.95    | US Secretary of State calls for new sanctions           |
| Jan 13 2018*     | 3.36    | US renews sanctions waiver                              |
| Dec 3 $2016^{*}$ | 2.87    | US extends Iran Sanctions Act                           |
| Aug 6 2017*      | 2.68    | Some P5+1 members attend Iran presidential inauguration |
| Mar 25 2018 $*$  | 2.63    | US imposes sanctions after hacking episode              |
| Jan 6 2018*      | 2.34    | Demonstrations take place across Iran                   |
| Sep 23 2017*     | 2.17    | Iran tests missile, some P5+1 members support deal      |
| May 7 2018       | 1.84    | US set to withdraw from agreement                       |
| Jul 26 2017      | 1.63    | Iran imposes sanctions on US firms                      |
| Panel B - GDEL   | T measu | ıre   |
| Oct 14 2017*     | 7.54    | US decertifies agreement                                |
| May 9 2018       | 5.40    | US withdraws from agreement on previous day             |
| May 8 2018       | 4.97    | US withdraws from agreement                             |
| Jan 30 2017      | 4.00    | Iran tests missile on previous day                      |
| Jan 13 2018*     | 3.87    | US renews sanctions waiver                              |
| Jul 29 2017*     | 3.67    | US-Iran confrontation at sea                            |
| Feb 4 2017*      | 3.54    | US imposes sanctions after missile test                 |
| Sep 23 2017*     | 3.17    | Iran tests missile, some P5+1 members support deal      |
| May 6 2017*      | 3.13    | Agreement discussed at Iranian presidential debate      |
| Jan 31 2017      | 2.80    | Iran tests missile two days earlier                     |
| Dec 18 $2016^*$  | 2.70    | US confirms extension of Iran Sanctions Act             |
| Jan 29 2017      | 2.52    | Iran tests missile                                      |
| May 5 2018*      | 2.40    | US set to withdraw from agreement                       |
| Dec 20 2016      | 2.31    | Iran meets Russia to discuss Syria                      |
| May 1 2018       | 2.23    | Israel claims existence of Iran nuclear programme       |

This table displays the top fifteen observations, within the sample period November 12, 2016 to May 9, 2018, of a standardised count of the number of articles on relevant events identified in the Factiva (Panel A) and GDELT (Panel B) datasets, as discussed in Section 5.3. For each of these observations, the table shows the relevant date, the value of the variable, and an event of that day that is relevant to relations between countries of the P5+1 and Iran. Entries that are among the top fifteen observations for both of the two measures are highlighted in bold. Dates are marked with stars when the observation also includes events from prior days because of weekends or holidays on the TSE.

| Panel A - Geneva and election event studies |           |            |               |          |  |  |
|---|-----------|------------|---------------|----------|--|--|
|   | (1)       | (2)        | (3)           | (4)      |  |  |
|   | Genev     | a event    | Electic       | on event |  |  |
|   |           |            |               |          |  |  |
| Event                                       | -0.003    | -0.067     | 1.221         | 1.646    |  |  |
|   | (0.138)   | (0.282)    | (0.421)       | (0.859)  |  |  |
| Sensitivity rank                            |           | 0.002      |               | -0.012   |  |  |
| * event                                     |           | (0.008)    |               | (0.023)  |  |  |
|   |           |            |               |          |  |  |
| Observations                                | 3,788     | 3,788      | 3,752         | 3,752    |  |  |
| Number of firms                             | 66        | 66         | 64            | 64       |  |  |
|   |           |            |               |          |  |  |
| Panel B - Post-ele                          | ction new | s coverage |               |          |  |  |
|   | (1)       | (2)        | (3)           | (4)      |  |  |
|   | Factiva   | measure    | GDELT measure |          |  |  |
|   |           |            |               |          |  |  |
| Coverage                                    | 0.029     | 0.002      | -0.024        | -0.062   |  |  |
|   | (0.009)   | (0.018)    | (0.010)       | (0.019)  |  |  |
| Sensitivity rank                            |           | 0.0008     |               | 0.0011   |  |  |
| * coverage                                  |           | (0.0005)   |               | (0.0005) |  |  |
|   |           | ()         |               | ()       |  |  |
| Observations                                | 22.516    | 22.516     | 22.516        | 22.516   |  |  |
| Number of firms                             | 64        | 64         | 64            | 64       |  |  |

Table A21: Conflict Risk – Additional Specifications

This table displays estimated effects from specifications based on returns of non-Iranian firms in the arms industry. The dependent variable in both panels is daily stock return in percent. 'Event' is defined as Monday November 25, 2013 in columns (1) and (2) and Wednesday November 9, 2016 in columns (3) and (4). 'Coverage' is a standardised count of the number of articles on a relevant event identified in the Factiva (columns (1) and (2)) or GDELT (columns (3) and (4)) data. 'Sensitivity rank' is the rank of each firm based on the responsiveness of its stock return to the daily change in the airstrike arrival probability in the first quarter of 2012, as discussed in Section 6.2. All columns in Panel A include firm fixed effects, and all columns in Panel B include firm-quarter-day-of-week fixed effects, where 'quarter' refers to a unique quarter and year. In Panel A, the sample period is the event day (for the Geneva deal in columns (1) and (2) and for the 2016 US election in columns (3) and (4)) and the sixty previous trading days, and in Panel B, the sample period is from November 12, 2016 to May 9, 2018. Standard errors, clustered by firm, are in parentheses.