Supplementary Materials

Contents

A. List of Extractive-Related Firms **1**

B. Additional Descriptive Statistics **3**

B1. Summary Statistics 3

B2. Balance Measures 3

C. Robustness Check **5**

D. Interaction Effects of 2014 Sanctions **14**

E. Deviant Cases **17**

A. List of Extractive-Related Firms

Name	Industry_Sector
Air Liquide	Materials
Air Products	Materials
Alcoa	Materials
Baker Hughes	Energy
Bharat Petroleum (BPCL)	Energy
BP	Energy
Brenntag	Materials
Calfrac Well Services	Energy
Chevron	Energy
China National Petroleum Corporation	Energy
Coal India	Energy
DuPont	Materials
Eesti Gaas	Energy
ElvalHalcor	Materials
ENEOS	Energy
Eni	Energy
Equinor	Energy
Glencore	Materials
Halliburton	Energy
Hellenic Petroleum	Energy
Hengli Group	Energy
Hindalco	Materials
Huntsman Corporation	Materials
Idemitsu Kosan	Energy
Indian Oil Corporation	Energy
Julipedra	Materials
KCA Deutag	Energy
KGHM	Materials
Kinross Gold	Materials
Lanxess	Materials
Linde	Materials
Lotos	Energy
Metsa	Materials
Mitsui	Materials
MOLGroup	Energy
Monroe Energy	Energy
Norsk Hydro	Materials
OMV	Energy
ONGC	Energy
Orano	Energy
Orlen Lietuva	Energy
Par Pacific	Energy

Name	Industry Sector
PKN Orlen SA	Energy
Polskie Górnictwo Naftowe i Gazownictwo SA	Energy
Preem AB	Energy
Prio	Energy
Reliance	Energy
Rio Tinto	Materials
Schlumberger	Energy
Shell	Energy
Stora Enso	Materials
Sylvamo	Materials
The China Coal Transportation and Distribution Association	Energy
Total Energies	Energy
Toyota Tsusho	Materials
Trafigura	Energy
Valero Energy	Energy
Vitol	Energy
Viva	Energy
Wintershall Dea AG	Energy

B. Additional Descriptive Statistics

B1. Summary Statistics

Table 2: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
extractive	1,301	0.046	0.210	0	1
Russia_Subsidiaries	1,301	2.533	6.139	0	66
US_allies_Subsidiaries	1,301	223.990	510.210	0	4,606
US_allies	1,301	0.489	0.500	0	1
ln_market_cap	1,301	7.002	1.749	−2.617	12.292
ln_employee	1,301	9.074	2.291	0.693	14.291
year_in_Russia	1,301	16.698	4.286	0	19

B2. Balance Measures

Table 3: Full Matching Summary

	Type	Diff.Adj
distance	Distance	0.0004
US_allies	Binary	0.0095
ln_employee	Contin.	0.0407
US_allies_Subsidiaries	Contin.	0.0716
ln_market_cap	Contin.	0.1470
year_in_Russia	Contin.	0.1167
All		608 (Control) 693 (Treated)
Matched (ESS)		82.69 (Control) 693 (Treated)
Matched (Unweighted)		608 (Control) 693 (Treated)

Table 4: Matching Equation

	Dependent variable:
	treatment
US_allies	0.584***
	(0.130)
ln_employee	0.155***
	(0.033)
US_allies_Subsidiaries	0.006***
	(0.001)
year_in_Russia	−0.079***
	(0.016)
ln_market_cap	−0.130***
	(0.040)
Constant	−0.078
	(0.443)
Observations	1,301
Log Likelihood	−703.294
Note:	*p<0.1; **p<0.05; ***p<0.01

C. Robustness Check

I run several robustness tests for my model, and all are robust compared to my baseline model. First, I run the entropy matching model with country-clustered standard errors to see whether my results are robust relative to a different method of matching. The entropy balancing model matches observations by creating a set of matching weights and then forcing certain balance metrics to hold, thus keeping as many observations as possible (Hainmueller 2012). Second, retaining the baseline model, I add a state-level control variable, which is a dummy variable of *BIT*, indicating whether the country of a firm's origin has a bilateral investment treaty with Russia. Once a BIT is in force, regulations are put in place to protect a firm's businesss activities from the state's negative interventions, and so both parties' governments and companies are more likely to invest in each other (Kerner 2009; Ramamurti 2001; Simmons 2014). Next, I run an ordered logit model on the original categories of my outcome variables with full matching to see whether my coding scheme is consistent, with standard errors clustered at the country and matching subclasses. Following this, I rerun my baseline model using full matching with the same set of matching variables except a dummy variable *US_firm* instead of *US_allies*, which is 1 when a firm is from the US, and 0 otherwise. As American firms are under strict control of sanction regimes implemented by Office of Foreign Asset Control (OFAC), they are, on average, more likely to suspend their business with Russia than firms from other countries (Early and Peterson 2022). If the results hold, that provides even stronger evidence for my theoretical mechanisms. Additionally, I add one more variable in the full-matching model and the main analysis: whether a firm is a state-owned enterprise, as SOEs are more subordinated to states' policy and are usually able to get access to government

sources of finance (Stone, Wang, and Yu 2022; Libman, Stone, and Vinokurov 2022) , with the same two-way clustered standard errors as my baseline analysis. To show that propensity score matching works better, I re-run my baseline models and the ordered-logit ones without using matching. If the baseline results are either insignificant or significant at a lower level, that means matching is a good approach to adjust imbalances among my covariates.

Table 5: Entropy Balancing and BIT Control

	Dependent variable:			
	Withdraw			
	(1)	(2)	(3)	(4)
Russia_Subsidiaries	-0.103^{***}		-0.081^{***}	
	(0.015)		(0.016)	
extractive		-0.903^{***}		-0.723^{***}
		(0.267)		(0.279)
US_allies	0.065	-0.026	0.644^{***}	0.765^{***}
	(0.127)	(0.117)	(0.172)	(0.164)
ln_employee	0.010	0.012	-0.008	-0.012
	(0.034)	(0.032)	(0.036)	(0.034)
US_allies_Subsidiaries	0.001^{***}	0.0004^{***}	0.001^{***}	0.0003^{***}
	(0.0002)	(0.0001)	(0.0002)	(0.0001)
ln_market_cap	0.022	0.015	0.055	0.030
	(0.040)	(0.037)	(0.041)	(0.039)
year_in_Russia	0.066^{***}	0.072^{***}	0.057^{***}	0.061^{***}
	(0.013)	(0.012)	(0.013)	(0.012)
BIT			-0.985^{***}	-1.240^{***}
			(0.179)	(0.170)
Constant	0.047	-1.003^{**}	0.215	-0.333
	(0.536)	(0.399)	(0.514)	(0.410)
Observations	1301	1301	1301	1301
Industry FEs	Yes	No	Yes	No
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 6: Ordered Logit

	Dependent variable:	
	Grade	
	(1)	(2)
Russia_Subsidiaries	-0.065^{***}	
	(0.011)	
extractive		-0.425^{*}
		(0.229)
US_allies	-0.024	-0.103
	(0.109)	(0.103)
ln_employee	0.019	-0.001
	(0.030)	(0.030)
US_allies_Subsidiaries	0.0004^{***}	0.0001
	(0.0001)	(0.0001)
ln_market_cap	0.068^{**}	0.051
	(0.034)	(0.033)
year_in_Russia	0.051^{***}	0.055^{***}
	(0.011)	(0.011)
Digging In|Buying Time	-1.623^{***}	-0.399
	(0.331)	(0.347)
Buying Time|Scaling Back	-0.957^{***}	0.227
	(0.332)	(0.347)
Scaling Back|Suspension	-0.373	0.761^{**}
	(0.334)	(0.348)
Suspension|Withdrawal	1.253^{***}	2.261^{***}
	(0.339)	(0.352)
Observations	1301	1301
Industry FEs	Yes	No
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 7: Full matching with US firm

	Dependent variable:	
	Withdraw	
	(1)	(2)
Russia_Subsidiaries	-0.100^{***}	
	(0.015)	
extractive_firm		-1.045^{***}
		(0.247)
US_firm	0.391^{**}	0.673^{***}
	(0.165)	(0.144)
ln_employee	0.002	-0.003
	(0.036)	(0.033)
US_allies_Subsidiaries	0.001^{***}	0.0003^{**}
	(0.0002)	(0.0001)
ln_market_cap	0.016	-0.009
	(0.042)	(0.039)
year_in_Russia	0.064^{***}	0.078^{***}
	(0.013)	(0.012)
Constant	-0.062	-0.963^{**}
	(0.515)	(0.385)
Observations	1301	1301
Industry FEs	Yes	No
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 8: Full matching with state-owned enterprises

	Dependent variable:	
	Withdraw	
	(1)	(2)
Russia	-0.089^{***}	
	(0.016)	
extractive_firm		-0.531^{**}
		(0.261)
US_allies	-0.113	-0.229^{*}
	(0.130)	(0.120)
ln_employee	0.031	0.035
	(0.036)	(0.033)
Sub_US_allies	0.001^{***}	0.0005^{***}
	(0.0002)	(0.0001)
ln_market_cap	0.036	0.009
	(0.041)	(0.038)
year_in_Russia	0.052^{***}	0.059^{***}
	(0.013)	(0.012)
SOE	-1.371^{**}	-2.651^{***}
	(0.561)	(0.573)
Constant	0.333	-0.854^{**}
	(0.523)	(0.395)
Observations	1301	1301
Industry FEs	Yes	No
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 9: Baseline Models Without Matching

	Dependent variable:	
	Withdraw	
	(1)	(2)
Russia_Subsidiaries	-0.066^{***}	
	(0.016)	
extractive		-0.661^{**}
		(0.269)
US_allies	0.004	-0.068
	(0.121)	(0.114)
ln_employee	-0.024	-0.027
	(0.028)	(0.027)
US_allies_Subsidiaries	0.001^{***}	-0.0001
	(0.0002)	(0.0001)
ln_market_cap	0.032	0.032
	(0.037)	(0.035)
year_in_Russia	0.044^{***}	0.056^{***}
	(0.014)	(0.013)
Constant	0.280	-0.499
	(0.496)	(0.386)
Observations	1301	1301
Industry FEs	Yes	No
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 10: Ordered Logit Without Matching

	Dependent variable:	
	Withdraw	
	(1)	(2)
Russia_Subsidiaries	-0.051^{***}	
	(0.013)	
extractive		-0.356
		(0.239)
US_allies	-0.018	-0.075
	(0.102)	(0.100)
ln_employee	-0.021	-0.030
	(0.025)	(0.025)
US_allies_Subsidiaries	0.0004^{*}	-0.0001
	(0.0002)	(0.0001)
ln_market_cap	0.024	0.025
	(0.031)	(0.031)
year_in_Russia	0.029^{**}	0.045^{***}
	(0.012)	(0.012)
Digging In|Buying Time	-1.848^{***}	-0.934^{***}
	(0.422)	(0.345)
Buying Time|Scaling Back	-1.139^{***}	-0.253
	(0.421)	(0.345)
Scaling Back|Suspension	-0.592	0.262
	(0.421)	(0.346)
Suspension|Withdrawal	0.949^{**}	1.749^{***}
	(0.420)	(0.348)
Observations	1301	1301
Industry FEs	Yes	No
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 11: Alternative Measurement for Economic Footprint

	Dependent variable:
	Withdraw
ln_capital_expenditure	−0.011
	(0.046)
US_allies	0.147
	(0.184)
ln_employee	0.058
	(0.057)
US_allies_Subsidiaries	0.0001
	(0.0002)
ln_market_cap	0.006
	(0.064)
year_in_Russia	0.068***
	(0.018)
Constant	0.710
	(0.738)
Observation	502
Industry FEs	Yes
Note:	*p<0.1; **p<0.05; ***p<0.01

D. Interaction Effects of 2014 Sanctions

When examining the sanctions on Russia, the 2014 wave is indispensable, given its consequential effects on the relationship between the United States/NATO and Russia. As a result, foreign firms are also expected to be affected by this wave of Western sanctions on Russia, thus can respond differently to the 2022 sanctions. To further examine the dynamics of withdrawal in 2022, I interact my first independent variable with a dummy one, taking the value of 1 if a firm made its first investment in Russia after 2014, and 0 otherwise[1]. My expectation is, following the 2022 sanctions, firms that invested in Russia after 2014 will be less likely to withdraw compared to those entered before that. I got the data for investment timing from the fDiMarket.

As shown below, the interaction term is not statistically significant, meaning there is no differentiation in the tendency of withdrawal between firms that entered Russia before and after 2014. A speculative explanation is, the 2014 regimes are not as stringent as the 2022 ones, and more importantly, the 2014 mainly targeted Russian firms but do not have various secondary sanctions like the 2022 (albeit loosely enforced), and the public pressure following the Ukrainian War on firms in Russia is much larger (Ashford 2016; Schott 2023; Alexseev and Hale 2020; Preble and Early 2024). Moreover, since the 2022 invasion of Ukraine has an unprecedented scale, the 2022 sanction waves from Western countries have been much more robust and comprehensive compared to 2014. Given these differences between the two sanction regimes, whether a firm entered Russia after 2014 or its general response to the 2014 sanctions might not perfectly predict its reaction to

1. For firms involving in extractive activities, I expect most, if not all of them have been in Russia before 2014, given the nature of their business and Russia's abundant natural resources. Because of this, there is almost no meaningful variation for an interaction model

the 2022 sanctions.

Beside the changing strategic environment, another potential reason for the insignificance of my interaction term is that, due to the less stringent measures against violating foreign firms, the 2014 regimes enabled these companies to have time to reassess the cost and benefit of staying or leaving Russia. Therefore, firms that ended up making investment in Russia after 2014 or those did not leave Russia following the sanctions are typically better informed of the market, thus able to evade sanctions and ensure their profits afterward. From this logic, to further evaluate how the 2014 sanctions impacted firms' decision in 2022, there needs more fine-grained data on firms activities in Russia up to 2014 and their response to sanctions at that point. With this data, we can estimate the counterfactual, here is whether the absence of 2014 sanctions would lead these firms react differently to the 2022 wave, to get the true effects of the 2014 wave of sanctions. However, this is beyond the capabilities of this paper, given the data availability.

Table 12: Interaction Model (With Full Matching)

	Dependent variable:
	Withdraw
Russia_Subsidiaries	-0.102^{***}
	(0.016)
after_2014	-1.084^{***}
	(0.223)
US_allies	0.069
	(0.131)
ln_employee	-0.017
	(0.036)
US_allies_Subsidiaries	0.001^{***}
	(0.0002)
ln_market_cap	0.054
	(0.040)
Russia_Subsidiaries*after_2014	0.014
	(0.034)
Constant	1.146^{**}
	(0.464)
Observation	1301
Industry FEs	Yes
Note:	*p<0.1; **p<0.05; ***p<0.01

E. Deviant Cases

As the response of foreign firms to sanctions is very multifaceted and idiosyncratic, it is possible that there will be some firms that are economically vulnerable but still withdraw from Russia, and there will also be firms that are not vulnerable but retain the business in Russia. In other words, there must be some outliers in my data. I will look at two cases that should have stayed in Russia, according to my theory: Sinopec and Procter & Gamble (P&G). On the case of Sinopec, regardless of the exorbitant cost of leaving and the expected long-run benefits from retaining business in Russia, it has suspended a remarkable part of their operation there, and it is unknown what it would do next under the intensifying conflict between Russia and the West. The reverse happened in the case of P&G: despite its insignificant operations in Russia, it is still digging in the market, regardless of the punishment risks.

Sinopec

Sinopec is a Chinese state-owned company, and the world largest oil-refining conglomerate up to 2024. It has a strong business ties with Russian companies, and their joint activities are not limited to oil mining/refining but also to other areas of energy production. In 2006, it set up a $3,5 billion mining joint venture, Udmurtneft, with Rosneft - a giant Russian state-owned oil firm. In the venture, Rosneft has 51% holding and Sinopec holds 49%. According to Sinopec's report in 2021, this joint venture contributes approximately 14% to the local fiscal budget each year since its launching. Recently, in June 2019, Sinopec established another joint venture with Novatek to produce natural gas to end-

customers in China [2].

Combined with strong state-level relationship with China and Russia and its status as a major SOE, Sinopec should have the ability to remain business-as-usual in Russia without having to worry about the cost of punishment by any sanctions regimes. However, the company's reaction has been more complicated than my theoretical expectations. In March 2022, Sinopec suspended its planned $500 million investment in a petrochemical factory in Russia, though it had claimed to see no immediate risk for the firm's assets in Russia amid the crisis. Even more remarkable, despite not having a clear stance towards the Western sanctions on Russia, the Chinese government also warned its SOEs to be wary of the sanctions, pressing them to handle their investments carefully in Russia. Although Sinopec is still maintaining some business there, its initial "unfriendly" response to the sanctions is divergent from many large Chinese SOEs following the outbreak of the war [3]. With further expansion of punishment regimes imposed on Russia from the United States and its allies , the future of Sinopec's business in Russia is thus uncertain. This makes Sinopec fall outside of the "regression line" for my theory.

Procter & Gamble (P&G)

The case of P&G is also worth exploring as an outlier for my framework. Ranked 55th in the Forbes Global 2000 in 2023, it is one of the largest consumer goods companies in the world. In America, P&G is always among top five largest brands in the same industry. Notwithstanding its global presence, P&G does not earn a significant portion of its revenue from the Russian market. Operating in the Russia since 1991, up to 2022,

2. https://www.novatek.ru/en/press/releases/index.php?id$_4$ = 3232

3. Notably, another major oil company, China National Petroleum Corporation, is still operating in Russia.

the company just has approximately 1 percent of its annual profit from Russia. In 2024, it has 10 subsidiaries in Russia, according to data from Orbis, Bureau van Dijk, which is significantly less than its subsidiaries in the United States or Europe.

Given its minimal presence in Russia and its potential to be under stricter scrutiny as an American firm, P&G should have been among the first to leave Russia. This is far from the case, however. In 2022, the company announced to divest from Russia, suspending its selling and advertisement there and just maintaining some essential goods. Until 2024, it has not stopped doing business in Russia yet as promised. There is no evidence showing that the company has closed its plants or its subsidiaries in Russia, and it was included in list of international war sponsors issued by the Ukrainian National Agency for Prevention of Corruption. With such pressure and its low level of integration in the Russian market, the staying of P&G is deviant from my theoretical framework. This reaction is even more puzzling, considering the firm is well-recognized for its trustworthy in the United States, ranked as the most trusted American consumer goods producer [4].

4. https://www.newsweek.com/21-consumer-goods-companies-that-are-earning-more-americans-trust-1888683

References

Alexseev, Mikhail A, and Henry E Hale. 2020. "Crimea come what may: Do economic sanctions backfire politically?" *Journal of peace research* 57 (2): 344–359.

Ashford, Emma. 2016. "Not-so-smart sanctions: the failure of western restrictions against Russia." *Foreign Affairs* 95 (1): 114–123.

Early, Bryan R, and Timothy M Peterson. 2022. "Does punishing sanctions busters work? Sanctions enforcement and US trade with sanctioned states." *Political Research Quarterly* 75 (3): 782–796.

Hainmueller, Jens. 2012. "Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies." *Political Analysis* 20 (1): 25–46.

Kerner, Andrew. 2009. "Why should I believe you? The costs and consequences of bilateral investment treaties." *International Studies Quarterly* 53 (1): 73–102.

Libman, Alexander, Randall W Stone, and Evgeny Vinokurov. 2022. "Russian power and the state-owned enterprise." *European Journal of Political Economy* 73:102122.

Preble, Keith A, and Bryan R Early. 2024. "Enforcing economic sanctions by tarnishing corporate reputations." *Business and Politics* 26 (1): 102–123.

Ramamurti, Ravi. 2001. "The obsolescing 'bargaining model'? MNC-host developing country relations revisited." *Journal of International Business Studies* 32:23–39.

Schott, Jeffrey J. 2023. "Economic sanctions against Russia: How effective? How durable?" *Peterson Institute for International Economics Policy Brief,* nos. 23-3.

Simmons, Beth A. 2014. "Bargaining over BITs, arbitrating awards: The regime for protection and promotion of international investment." *World Politics* 66 (1): 12–46.

Stone, Randall W, Yu Wang, and Shu Yu. 2022. "Chinese power and the state-owned enterprise." *International Organization* 76 (1): 229–250.