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RIETI BBL Seminar Handout

"The Sword and the Shield: The economics of targeted sanctions"

July 21, 2022

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(Global Fellow, Wilson Center)

The Sword and the Shield

Measuring the Impact of Targeted Sanctions

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The views and opinions expressed are those of the author(s) and do not necessarily represent the official positions or policy of the U.S. Department of State or the U.S. Government.

Executive Summary

- Firm/individual micro-data provides forensic statistical estimates of the impact of targeted sanctions on firm performance, using U.S.-EU sanctions against Russia from 2014-16 as a "natural experiment"
- Operating revenue falls by one-quarter, asset values by one-half, and employment by one-third for sanctioned firms. (Findings are robust to size, other firm characteristics)
- Data shows some "de-risking"/spillover onto non-targets, e.g. subsidiaries below 50 percent ownership threshold
- The harm is greatly magnified in those business sectors dependent on Western service inputs, despite small value-added
- Sanctions will remain effective insofar as Western services private sector (e.g. finance, insurance, technology) remain necessary, competitive, and ubiquitous

Executive Summary, Cont'd

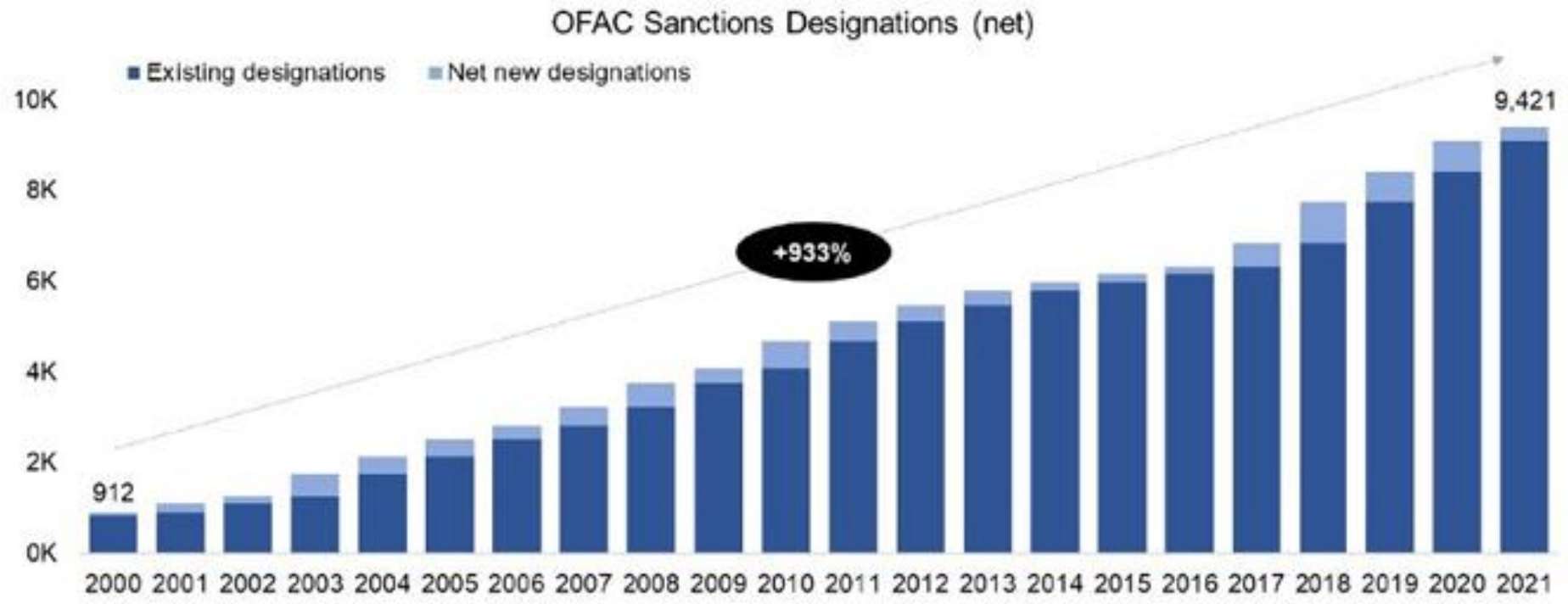
- Strategic targets sensitive to the regime (e.g. defense companies, cronies) are shielded by government with subsidies/bailouts
- Shielding makes sanctions appear misleadingly ineffective for some targets; this ignores the transfer of the economic harm from the target to the regime
- For Russia, hidden cost of shielding is about 45 percent of the overall harm of sanctions, growing cumulative impact from 4.2 to 7.5 percent of Russia's 2013 pre-sanctions GDP
- An authoritarian regime can shift the harm at will to the general public, making final economic impact of targeted vs. broad sanctions less obvious
- Soft power must emphasize the active choice of the target regime to move the harm onto its own citizens

Introduction

- Broad economic sanctions and trade embargoes have long been used as instruments of foreign policy.
  - Athens issued Megarian Decree banning Megarians from harbors and marketplaces of the Athenian Empire in 432 BC.
  - More recent examples: the UN embargo against Iraq in 1990, North Korea since 2006; the U.S. embargo against Cuba in 1960, Iran in 1979
- However, **targeted sanctions** (aka smart sanctions) focusing on sanctioning specific individuals, entities, and transactions have exploded in popularity since 2000 but are still less understood.
- Their nature requires new statistical approaches involving micro-economic rather than macro-economic data for proper forensic assessment.
- We study the US-EU targeted sanctions program against (primarily) Russia in response to the annexation of Crimea and the conflict in Ukraine in 2014 as a “natural experiment.”

US Sanctions since 2000

Office of the Chief Economist

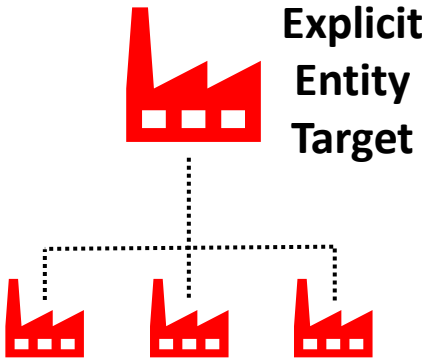


Source: U.S. Treasury OFAC, Gibson Dunn

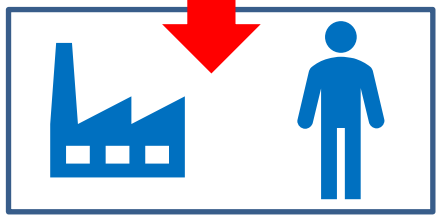
Types of Sanctions

Office of the Chief Economist

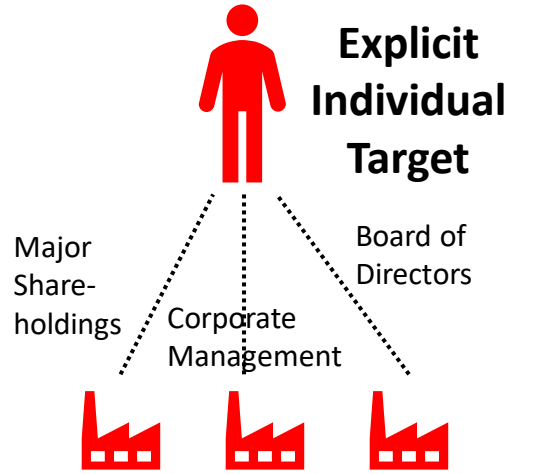
Blocking/Restrictive Sanctions on Entities



No transactions allowed



Blocking/Restrictive Sanctions on Individuals



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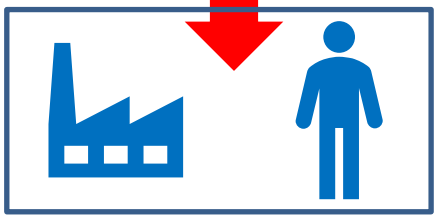
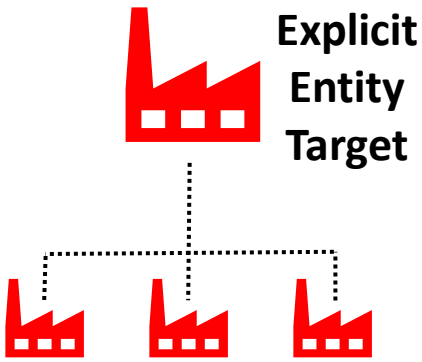
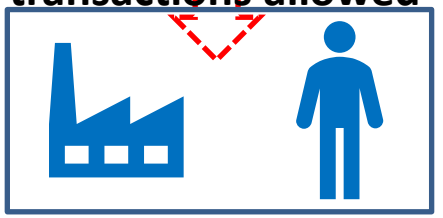


Sectoral Sanctions on Entities



Only *some* transactions allowed



Western "Persons" i.e. Companies and Individuals

Measuring Impact

- In the past, sanctions were broad or comprehensive trade embargoes against an entire economy. Hence, macroeconomic data was often sufficient to estimate its impact.
- Previously, common measures of the economic impact (e.g. Hufbauer, Schott, Elliott, Oegg (2009), TIES database by Morgan, Bapat, Kobayashi (2014)) develop *ex ante* subjective estimates of costs, using macroeconomic and trade statistics.
- But targeted sanctions are, by definition, against micro-targets (not the macroeconomy), requiring using firm/individual "big data" to measure the *ex post* economic impact.
- The U.S.-EU sanctions program against Russia starting in 2014-2016 is a rare example of a purely targeted sanctions program with a reasonably advanced economy with relatively higher quality data.

Measuring Impact, Cont'd

- Even so, economists/policymakers attempting to empirically measure Russia sanctions impact face the challenge of disentangling from the confounding effects of other macroeconomic shocks:
  - The dramatic fall in the price of oil since 3Q14, roughly contemporaneous with the onset of sanctions
  - Related depreciation of the ruble
  - Broader political uncertainty deterring investment

- Most studies (e.g. IMF (2015), World Bank (2015)) are done at macroeconomic level and largely conclude that oil had a greater impact than sanctions.

- But targeted sanctions are (by definition) against specific targets, not the macroeconomy, requiring a very different "micro" approach to assessing the economic impact.

Micro-Approach

- Our study is (to our knowledge) the first to use detailed firm/individual-level "big data" to study the impact on the real performance of the targets at the micro-level.
  - This includes privately-held firms, firms linked to sanctioned individuals, and subsidiaries of explicitly targeted firms that also face implicit sanctions.

- Bureau van Dijk's (BvD) Orbis database, a comprehensive sample of over 400 million firms worldwide, including 18 million firms in Russia alone.

- This is linked to another database of 140 million individuals in LexisNexis's WorldCompliance, tracking the web of relationships between firms and individuals.[1]

1 We use Bayesian fuzzy-logic/machine-learning techniques to match names for individuals and entities between the sanctions blacklists and the WorldCompliance database.

Restricted Entities

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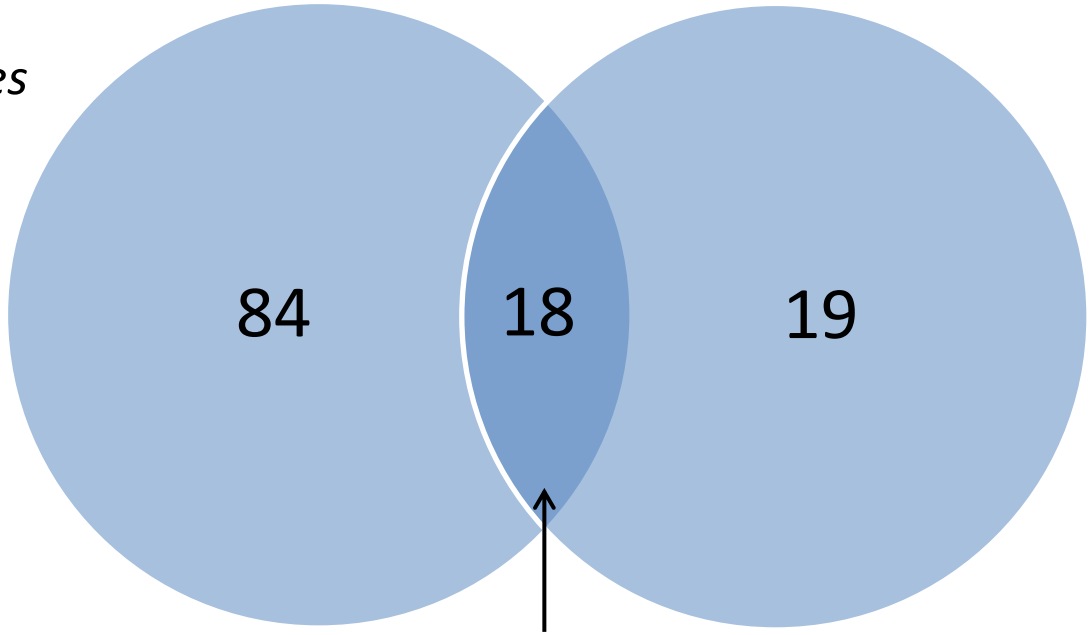
Aggregate
Total: 121

U.S. SDN Entities

Total: 102



EU Restricted Entities

Total: 37

Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations

Restricted Individuals

Office of the Chief Economist

Political Total: 180

U.S. SDN Individuals (Political)
Total: 104

37

67

76

EU Restricted Individuals (Political)
Total: 143

U.S. SDN Individuals (Business)
Total: 24

20

4

2

EU Restricted Individuals (Business)
Total: 6

Business Total: 26

U.S. and EU
Political + Business
Total = 206

U.S. and EU sanctioned individuals were classified into political figures (e.g. politicians, government officials, etc.) and those with business interests, as recognized in the BvD Orbis database, (e.g. corporate officers, board members, shareholders).

Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations

Associated Companies

Office of the Chief Economist

Aggregate Total: 268

Associated Companies to U.S. SDN Individuals

Total: 242

Associated Companies to EU Restricted Individuals

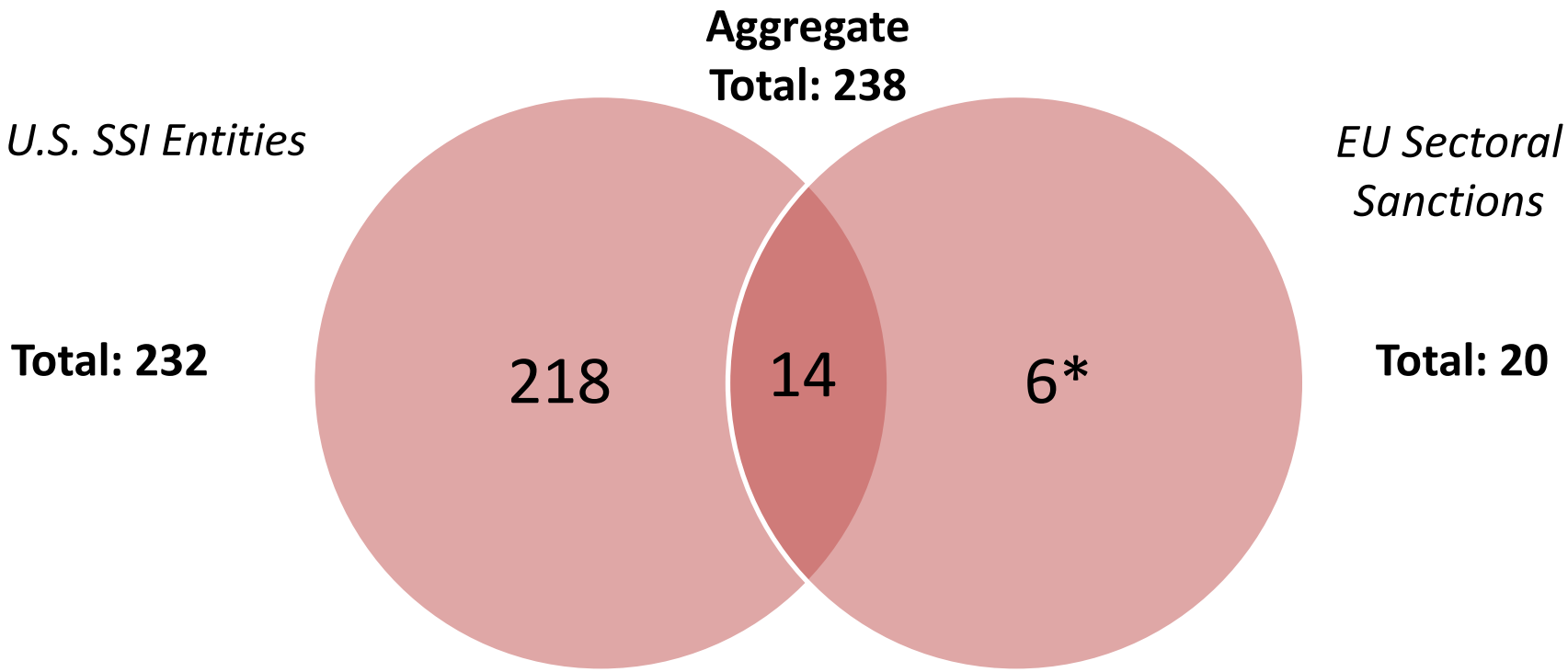
Total: 123

Then, for those individuals classified as business figures, we collected all firms to which the individuals have or have had a business "association", e.g. a corporate officer, a director, a board member, shareholders, etc., according to the BvD Orbis database.

Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations

Sectoral Sanctions

Office of the Chief Economist

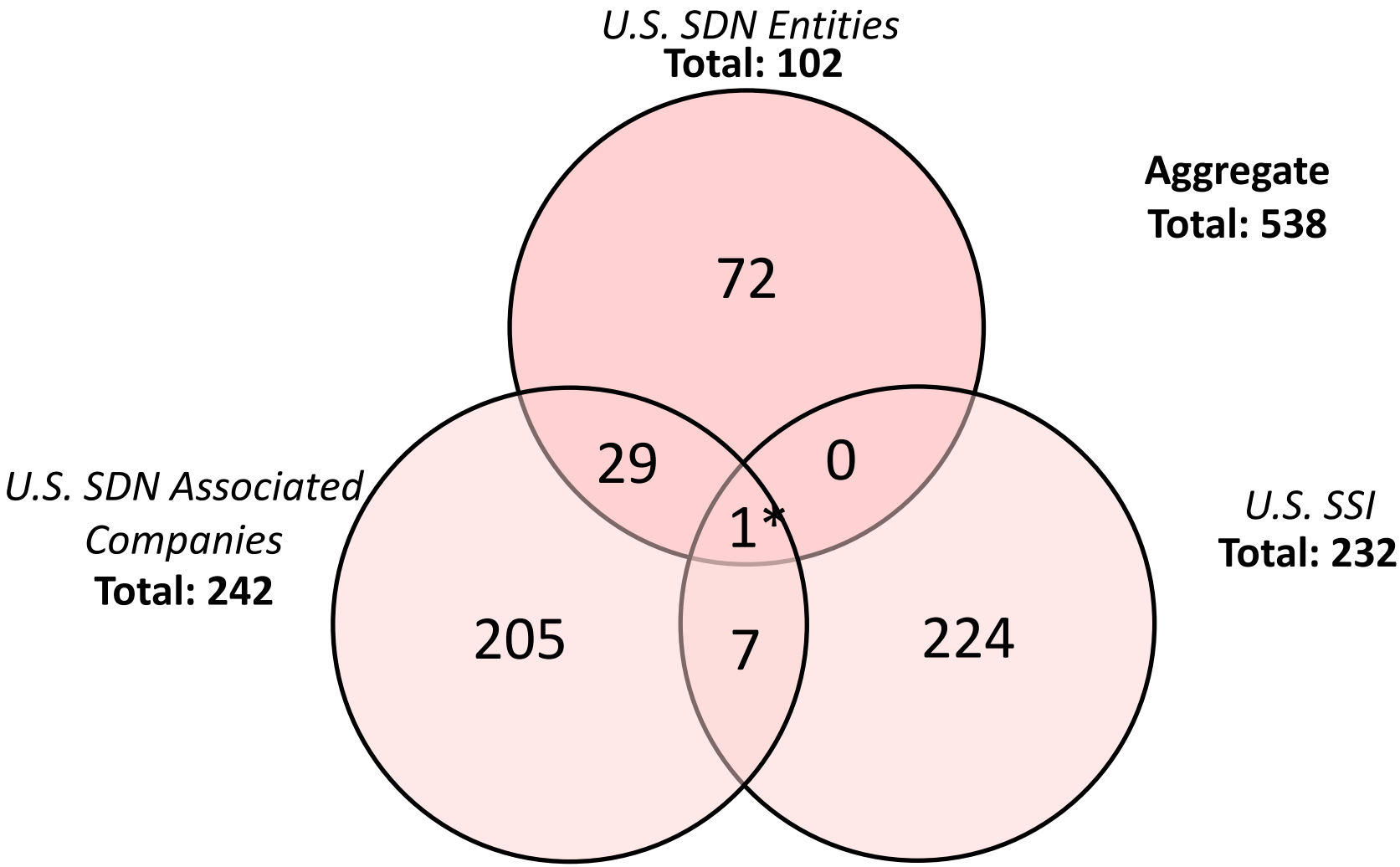


This chart displays the overlap between those entities explicitly listed by the U.S. and EU governments as facing sectoral restrictions on certain transactions and technology transfers. However, both the U.S. and EU follow a 50% ownership rule whereby those subsidiaries 50% or more owned, directly or indirectly, by an explicitly sanctioned entity, also face the same sanctions.

Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations
*4 of 6 EU sectorally sanctioned entities are not in U.S. SSI List, but are in U.S. SDN List

U.S. Targeted Sanctions

Office of the Chief Economist

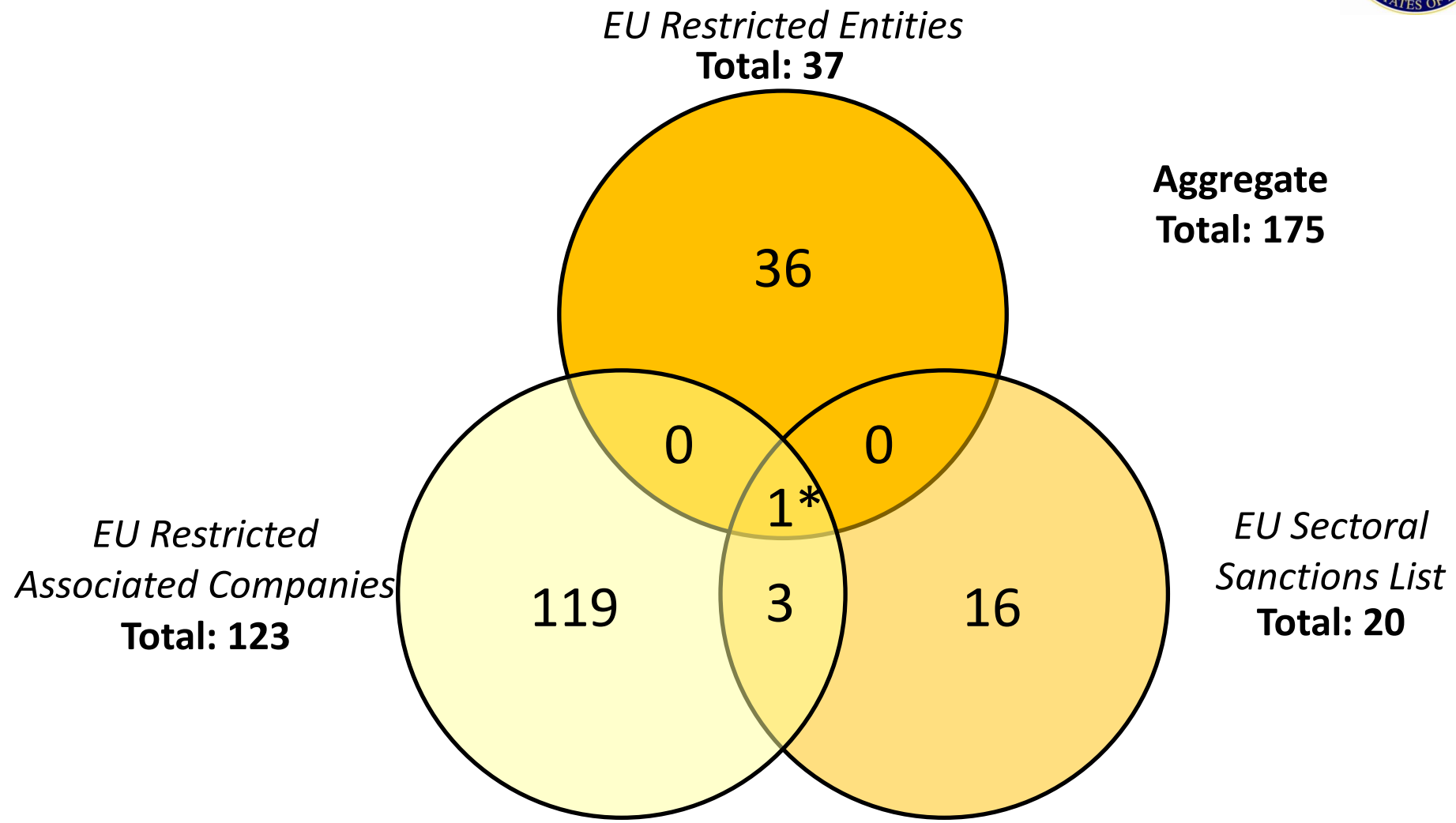


Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations

* This intersection includes a company Technopromexport that was designated on the U.S. SSI List (3/20/14) and the U.S. SDN List (12/19/14)

EU Targeted Sanctions

Office of the Chief Economist



Source: U.S. Treasury OFAC, Council of the European Union, Bureau van Dijk, LexisNexis, Authors' Calculations

*This intersection includes a company Almaz-Antey that was designated on the EU Restrictive Measures List (7/30/14), the EU Sectoral Sanctions List (9/8/14), and is associated with Sergei Chemezov who is a sanctioned individual.

The Shield

- Numerous anecdotes documenting how the target government (in this case, the Government of the Russian Federation) may be providing various forms of state largess to these targeted firms, including:
  - Granting of government contracts and monopolies
  - State-backed loans guarantees
  - Capital participation by the state
  - Tax breaks

- This endogenous response may be systemically shielding targets from the full effect of sanctions and needs to be controlled for and understood.

Shielding: VTB Bank

Office of the Chief Economist

Russia's VTB Wants $5.4 Billion in State Aid to Offset Sanctions Losses

Nov. 20 2014 — 12:34

By The Moscow Times

FINANCIALS | Mon May 23, 2016 | 6:18am EDT

Russia to sell US dollar bonds through VTB Capital

* Russia eyes first US dollar bond since 2013

* VTB Capital is sole lead manager

* Proceeds won't go to sanctioned entities

By Sudip Roy

Source: The Moscow Times

Shielding: Bank Rossiya

Office of the Chief Economist

The Moscow Times

Sanctioned Bank Rossiya to Service $36Bln Domestic Electricity Market

April 14, 2014 — 18:10

By Peter Hobson

The Moscow Times

Sanctioned Bank Rossiya Becomes First Major Russian Bank to Expand in Crimea

April 15, 2014 — 19:40

By Peter Hobson

Source: The Moscow Times

Shielding: Almaz-Antey

MH17 shot down by Buk missile brought from Russia, say investigators

By Tim Hume and Claudia Rebaza, CNN
Updated 2:16 PM ET, Wed September 28, 2016

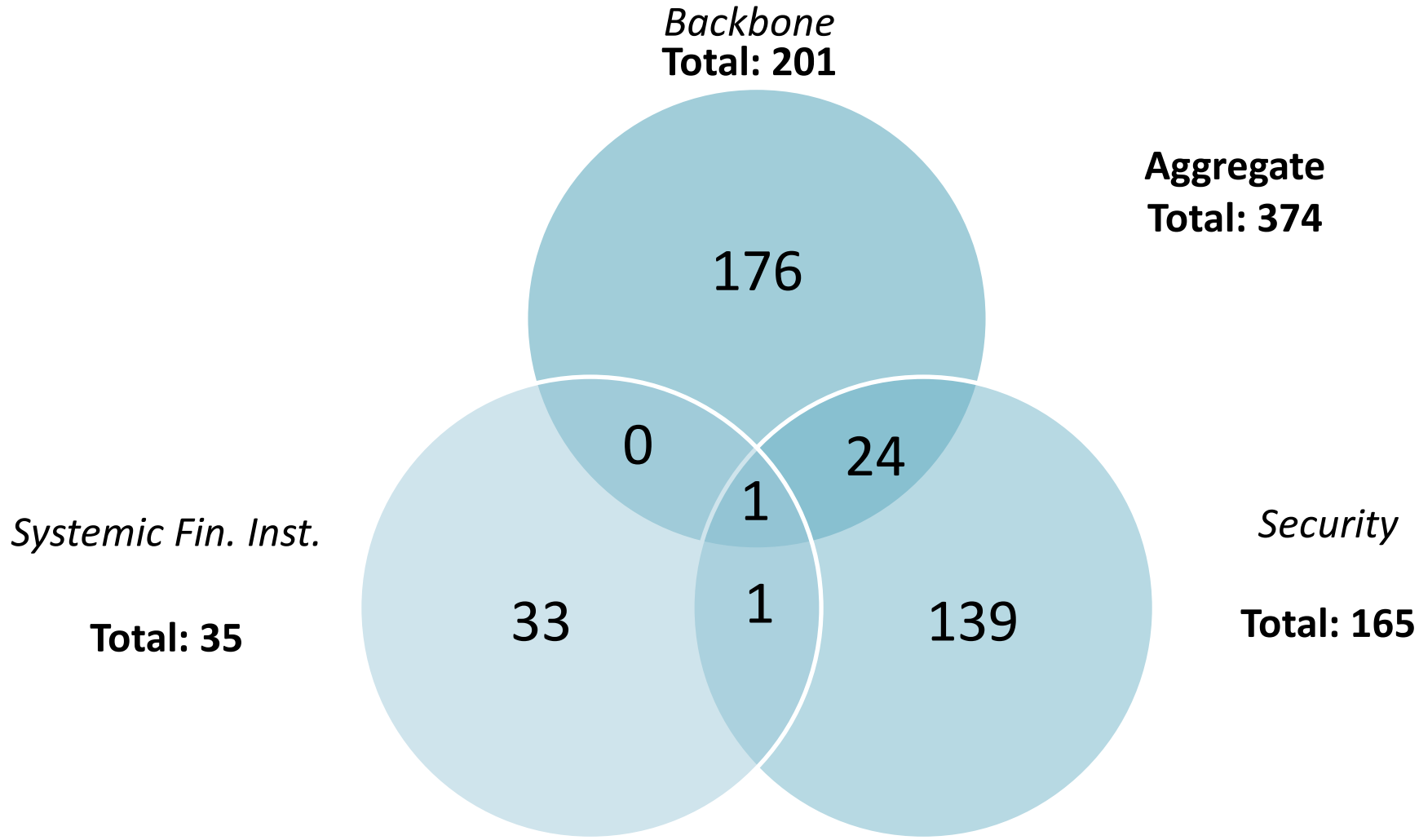
Source: Wikipedia/Ajvol, Dutch Safety Board

Strategic Firms

- We need some **ex ante** objective way of determining which firms may be sensitive to the regime.
- We construct a list of strategic firms which GoR may motivated to shield, by merging three official lists:
  - Firms the GoR deems of "strategic importance for national defense and state security, protection of morality, health, rights, and lawful interests of Russian citizens." (Original: Presidential Decree, August 4, 2004 No. 1009, Updated Version: March 28, 2015.)
  - "Backbone“ or “Systemic” (sistemoobrazuyushchikh) firms which have a "significant effect on the formation of the GDP, employment and social stability.“ (Commission on Economic Development, February 5, 2015 No. 1.)
  - A list of systemically important financial institutions required to have improved capitalization measures. (Deposit Insurance Agency, February 2, 2015 and Central Bank of Russia, Ordinance No. 3737, July 22, 2015.
- Many (though not all) of the firms that are anecdotally reported to have been shielded by the state appear on one or more of our strategic lists.

Strategic Firms

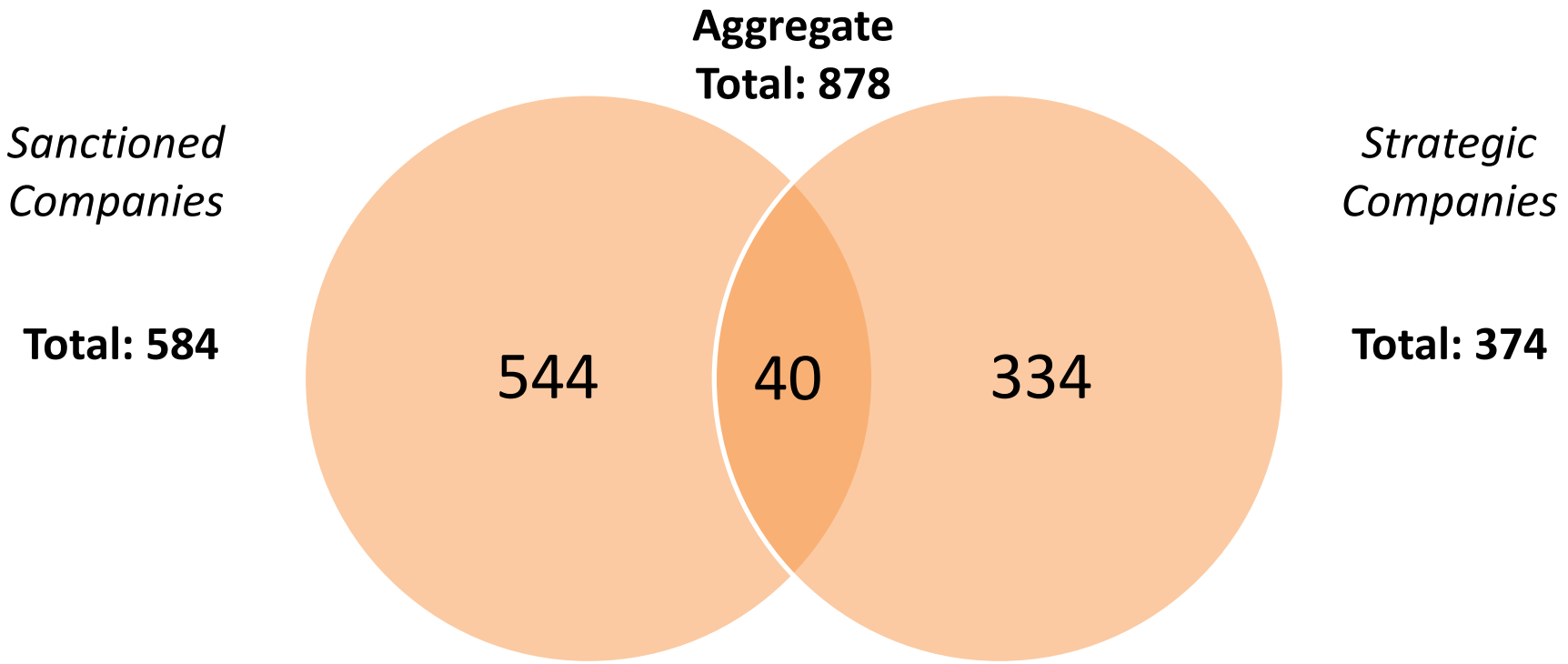
Office of the Chief Economist



Source: Government of the Russian Federation, Authors' Calculations

Sanctioned vs. Shielded

Office of the Chief Economist



Source: U.S. Treasury OFAC, Council of the European Union, Government of the Russian Federation, Authors' Calculations

Data Sample

- From this larger database, we isolate a universe of **80,902** companies, including:

- **545** of the 584 firms identified as being sanctioned that also appear in the BvD/LexisNexis databases

- **2,392** firms that BvD identified as being subsidiaries of the 545 explicitly sanctions firms

- The remainder is a control group constructed by taking all firms that share the same home country and sector of business operation as sanctioned firms in the global BvD database

Data Description

- For each firm, the database tracks:
- **Financial Performance:** Operating Revenue, Total Assets, and Number of Employees at the end of the years 2012-2016
- **Firm Status:** i.e. whether it remains active or whether it has become bankrupt, liquidated or dissolved, or other non-active status.
- **Country** of Home Location (77 countries, only three-quarters in Russia)
- **Sector** of business operation, according to the 4-digit NACE Rev. 2 code specification

Diff-in-Diff Explained

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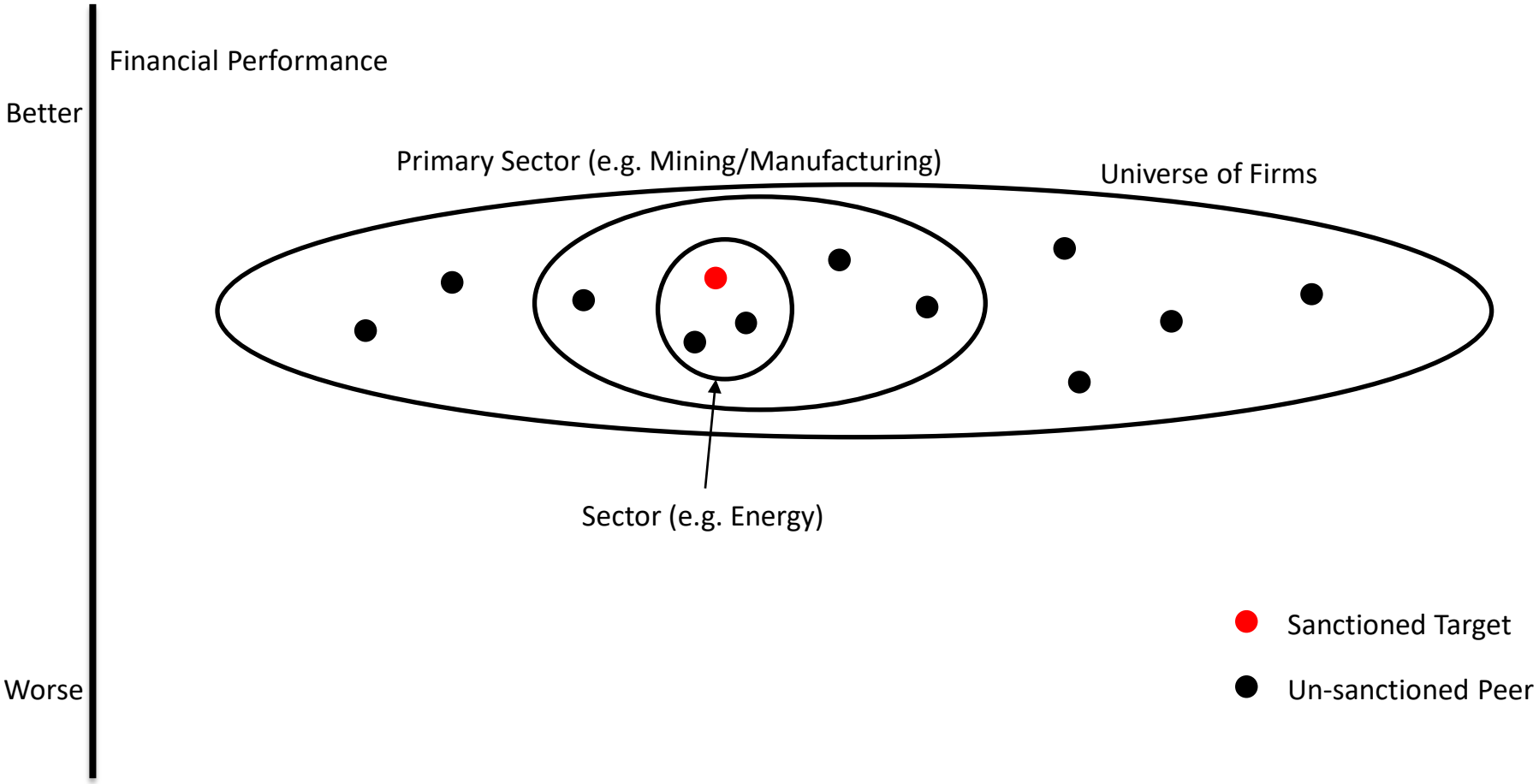
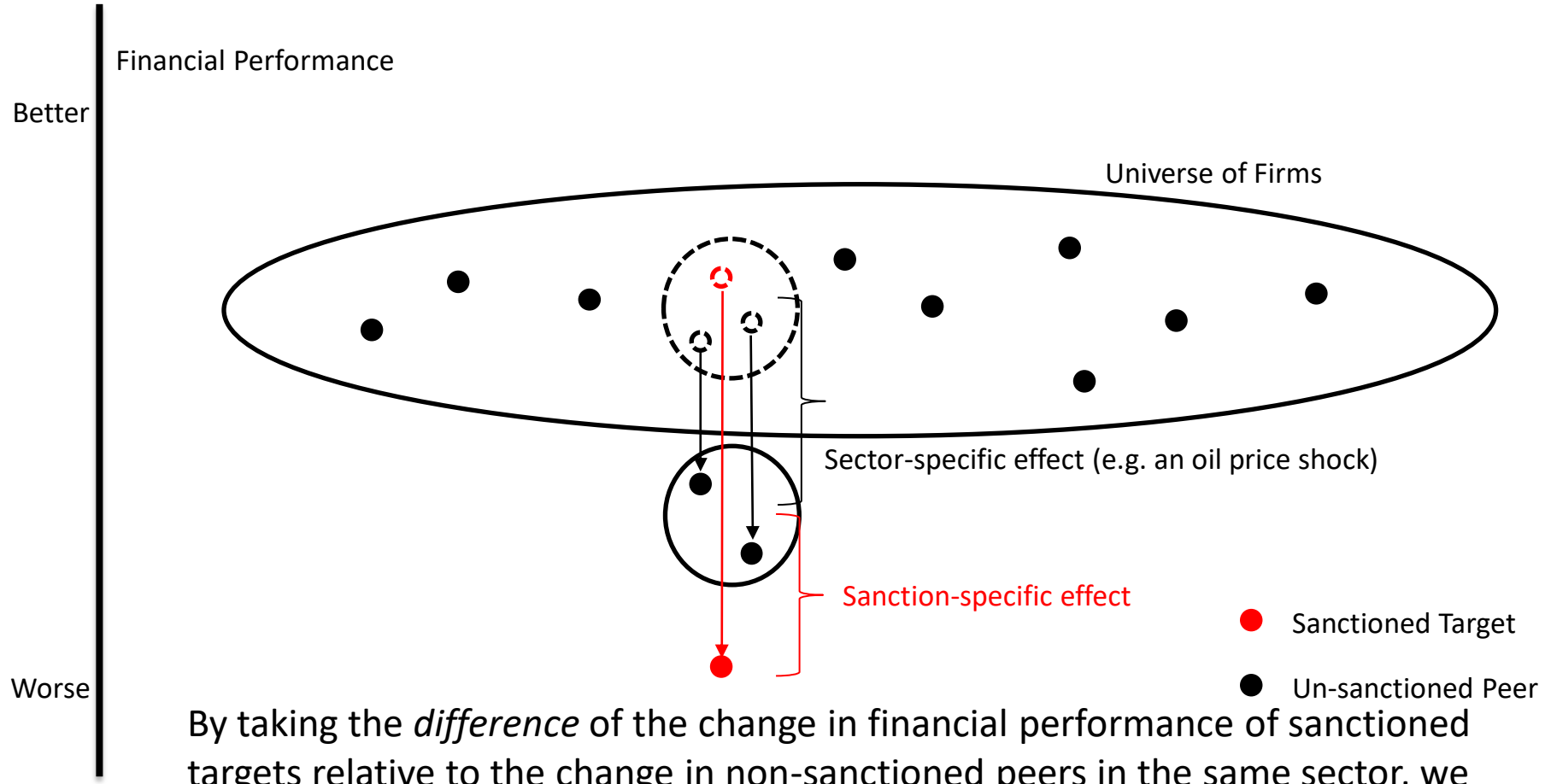


Controlling for Sector



By taking the *difference* of the change in financial performance of sanctioned targets relative to the change in non-sanctioned peers in the same sector, we can isolate the sanction-specific effect. Hence, “difference-in-differences.”

Headline Impact

- Our headline results find that targeted sanctions do appear to have a negative and statistically significant impact on the sanctioned firms relative to their non-sanctioned peers. Hence, “smart sanctions” do appear to live up to their name.

- After facing targeted sanctions, a firm, on average, faces:
  - A **3 percent** increased likelihood of bankruptcy
  - Operating Revenue falls by **one-quarter**.
  - Total Asset valuation fall by **one-half**.
  - Number of Employees fall by **one-third**.

- Sector-country-time fixed effects controls for oil price, currency, or other confounding factors

- Naively extrapolating the cost aggregates to roughly $95 billion, or 4.2 percent of Russia’s pre-sanction 2013 GDP.

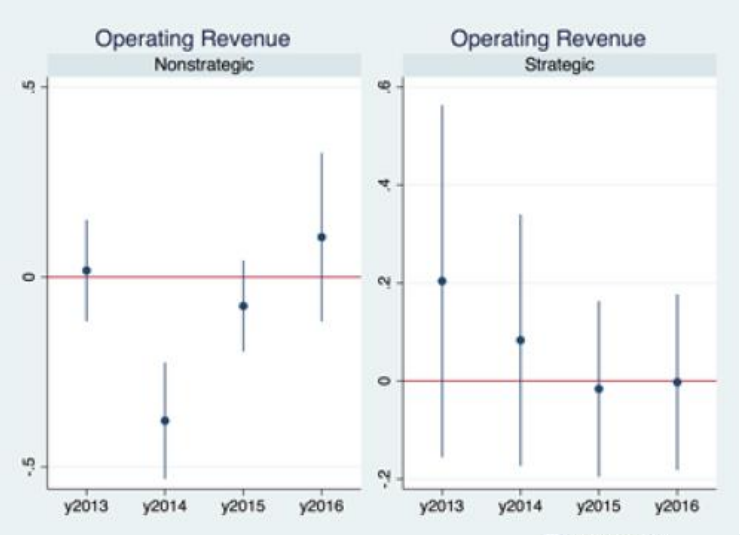
Headline Results

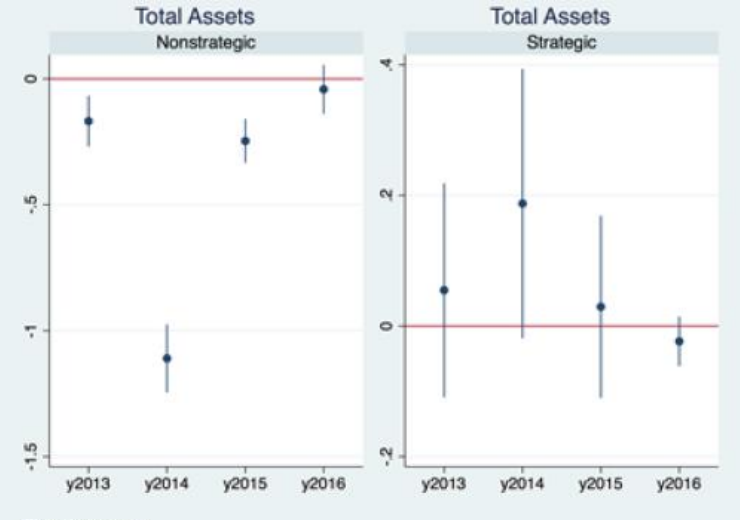
VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0282***	-0.2998***	-0.6982***	-0.4210***
	(0.005)	(0.059)	(0.104)	(0.042)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

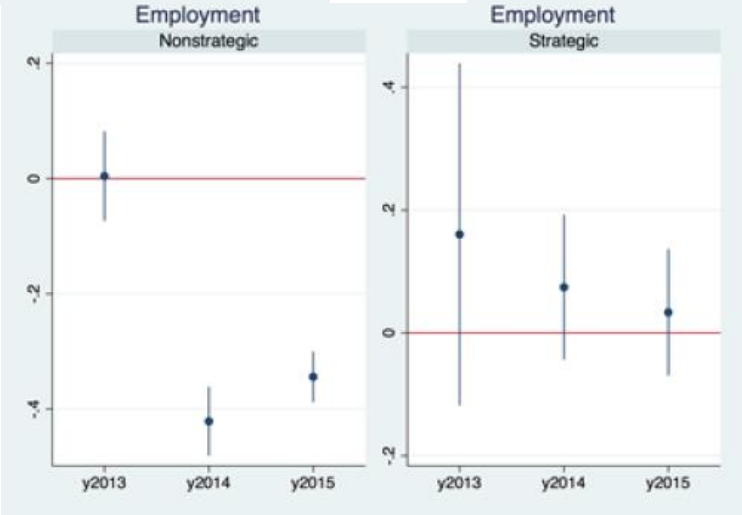
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Sanctioned vs. Control







Source: Authors' Calculations

Headline Impact, Cont'd

- Some words of caution on interpretation:
- Although magnitudes are large, these capture the average effect. But firm-specific characteristics and the type of sanction may matter in terms of impact.
- Also, the results capture differential performance of the targets relative to their non-targeted peers, and do not capture factors that might affect all firms equally in a sector/country.
  - E.g. if targeted sanctions deter counter-parties from engaging in trade with any firm in a suspect sector (e.g. firms may "de-risk" and stop trade with all arms manufacturers) and not just the targeted ones, this would bias our coefficients toward zero.
  - On the other hand, if counter-parties switch their business from targeted to non-targeted peers, then our estimates do not reflect the absolute drop in performance but relative drop.

Sword vs. Shield Results

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp	(5) d_Active	(6) lOpRev	(7) lAsset	(8) lEmp
d_Sanc	-0.0282***	-0.2998***	-0.6982***	-0.4210***	-0.0288***	-0.3077***	-0.7052***	-0.4233***
	(0.005)	(0.059)	(0.104)	(0.042)	(0.005)	(0.060)	(0.105)	(0.042)
d_Sanc_Strat					0.0347***	0.2945**	0.3208**	0.2019*
					(0.012)	(0.149)	(0.134)	(0.106)
Observations	401,120	93,999	147,190	136,859	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863	0.675	0.900	0.887	0.863

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Controlling for Shielding

- However, once we control for whether a firm is strategic or not, we see quite different impacts:
- The interaction term is positive and statistically significant for firm active Status and Operating Revenue, and is sufficient to **nullify** the entire estimated impact from sanctions.
- The interaction term is also positive and statistically significant for Total Assets and for Employment (barely), and mitigates about **half** of the estimated impact from sanctions.
- Sanctioned but *strategic* targets appear to systemically outperform non-strategic sanctioned targets.
- Without shielding, the economic impact on strategic firms should have been an additional $77 billion.
- Adding this cost of shielding brings the total sanctions + shielding cost to $173 billion (or 7.5 percent of Russia's 2013 GDP). Ignoring shielding underestimates the overall cost of sanctions by at least 45 percent.

Sanctions Impact Channel

- Using Gross Value-Added Input-Output data from IDE-JETRO, we can also explore the specific trade channels by which cutting off Western intermediate inputs are impacting the targets.

- An interaction term with the ratio of all Western intermediate inputs to Russian gross-value added output is not significant, but the ratio of Western service inputs is.

- A 1 percentage point increase in Western service inputs causes a four-fold increase in the sanctions impact on Operating Revenue and a six-fold increase in the impact on Total Assets.

- Likely, Western service inputs (such as technology and financing) are difficult to substitute for and cutting off access has a disproportionate economic impact. (Also reason why GFC had such widespread impact on real activity).

Value-Added

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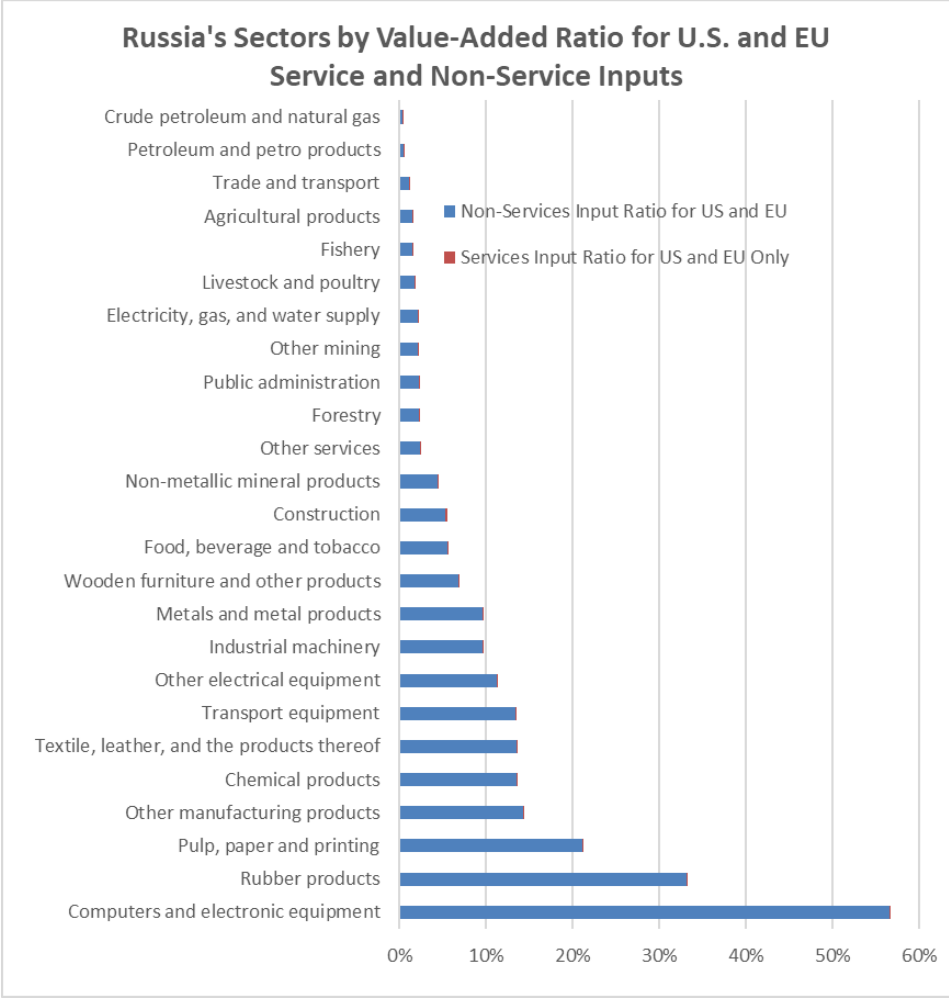

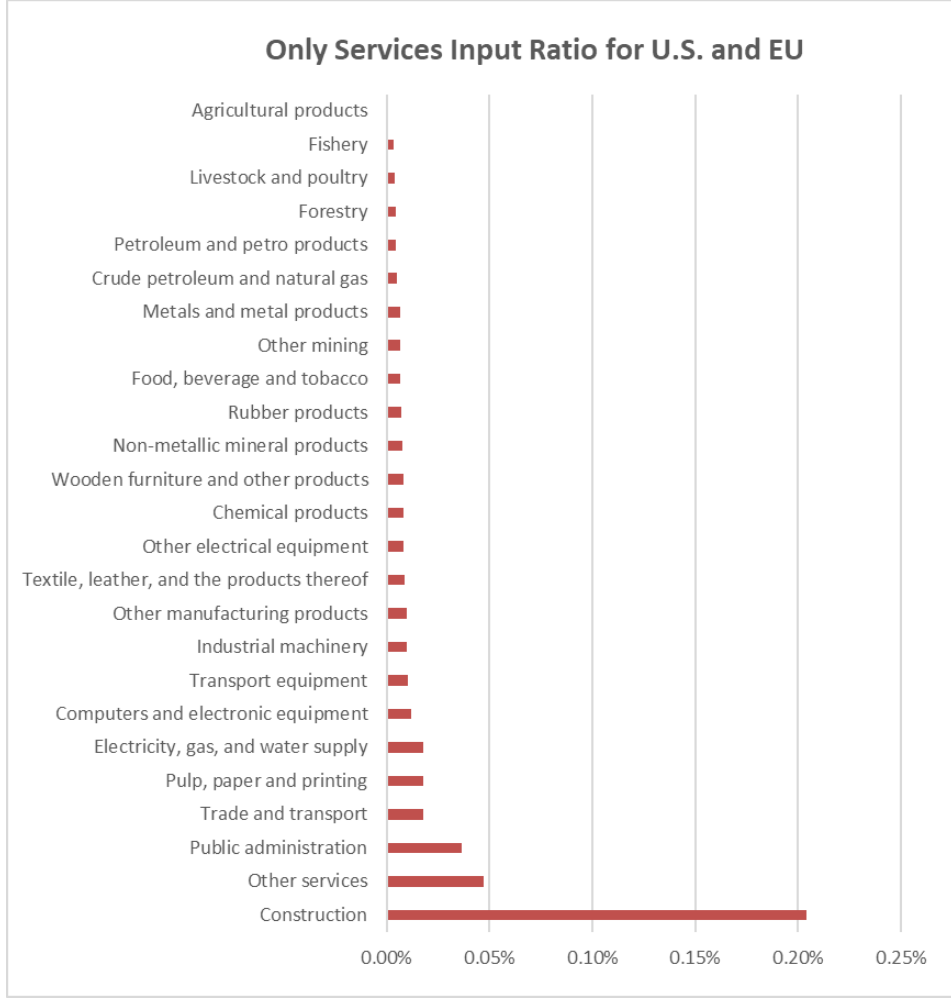

Source: IDE-JETRO, Authors' Calculations

Sanctions Impact Channel

Office of the Chief Economist

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0272***	-0.3078***	-0.7281***	-0.4198***
	(0.005)	(0.064)	(0.108)	(0.046)
d_Sanc_AllInput	-0.0003	0.0021	0.0081*	-0.0004
	(0.036)	(0.276)	(0.484)	(0.479)
d_Sanc_ServicesInput	-0.1866	-4.2431***	-6.6530**	-0.5796
	(0.181)	(0.807)	(3.168)	(1.313)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

Sword vs. Shielding Arms-Race

DMITRY ROGOZIN IS FORMING AN ANTI-SANCTION HEADQUARTERS

Alexey Nikolsky Vedomosti, January 9, 2018, p. 3

THE RUSSIAN MIC IS PREPARING TO THE US SANCTIONS BEING STRENGTHENED

Russia creating coordination center to facilitate work of military industry under Western sanctions

Tuesday, January 9, 2018 3:00:00 PM

"Kommersant" (https://kommersant.ru/archive/online/57) from10.25.2018 09:26

The Ministry of Finance published a draft government decree allowing, from May 2019, upon notification to the Bank of Russia, not to disclose insider information without fail, the disclosure of which may facilitate the application of foreign sanctions to anyone in the Russian Federation. Formally, this is a technical act in pursuance of the "anti-sanctional" laws of 2017, but in the case of insider, the very construction of the insider law creates potential problems for the entire market: in fact, the authority to determine such information is left to the insiders and the Central Bank.

Source: Wikipedia, UAWIRE, Kommersant

Schelling (1967)

The relevant question is whether my adversary should buy a bullet knowing that I can nullify his investment with a bullet-proof vest. He has wasted his money if the vest is cheap, made a splendid investment if my vest is expensive, and if asked what he accomplished by buying his bullet should have the good sense to say that he imposed a cost on me, not that he hoped to kill me and was frustrated.

– Thomas Schelling, The Strategy of Inflicting Costs (1967)

Policy Implications (1/5)

- **Targeted aka 'smart' sanctions are smart and impactful**
  - Targeted sanctions do appear to concentrate economic harm on targets relative to non-targeted peers
  - Impacts are large and statistically significant
- **But they could be smarter**
  - Spillover onto non-sanctioned firms, including onto subsidiaries.
- **Costs to both sender and target economies**
  - Surveys suggest that the burden of developing sophisticated AML/KYC systems has cost U.S. and European banks over $25 billion and $83 billion annually
- **Knock-on effects on third-parties**
  - IMF notes drop in correspondent banking relationships (CBR) in already under-financed countries, especially fragile states in Africa, Caribbean, and Pacific
- **Sanctions stickiness impact weakens incentive to change behavior**
  - E.g. if stickiness meant little economic benefits accrued to Pyongyang regime despite de-nuclearization, no reason to change behavior in first place

Policy Implications (2/5)

- **Sanctions potent so long as Western services remain dominant**
  - Unique ecosystem of technically competent firms, skilled workforce, transparent rule of law, and market credibility make West dominant suppliers of critical services
  - Denying access to these hurt a sanctioned firm because of lack of substitutes
- **But sanctions also lessen Western services competitiveness!**
  - For now, Western private sector have largely absorbed the burden of compliance
  - But should not drive complacency as every additional sanction policy adds to compliance cost
- **Future sanctions policy must embrace new tools/methodologies**
  - Lessen administrative burden through more transparent, data-driven, and rules-based sanctions policy
  - Regulatory support for technological solutions (e.g. AI/machine-learning and DLT/blockchain)
  - Embrace an empirical rather than emotive approach using economists, statisticians, and data scientists as well as lawyers and foreign policy experts to run economic equivalent of war simulations/planning
    - Track degree of substitutability of Western inputs

Policy Implications (3/5)

- **Sanctions potency not about U.S. dollar per se**
  - Nothing stopping adversaries from using U.S. dollars for illicit or sanctionable activity
  - USD usage just symptomatic of U.S. financial sector competitiveness
- **Relative dependence matters**
  - E.g. Napoleon's Continental System and the US 1807 Embargo Act hurt the economies of the sanctioning country (France + its satellites, and the USA) more than the target (Great Britain) due to higher British productivity and ability to find alternate trade routes + substitutes
  - Thus far, adversarial counter-sanctions against West likely toothless
- **Multilateral not unilateral**
  - Despite inevitable compromises and higher investment of political capital needed to ensure coordination, multi-lateral approach reduces incentives by allies to create substitutes to U.S. financial system and other services

Policy Implications (4/5)

- **The target government can shield strategic targets**
  - Some targeted firms deemed to be strategic appear to be systemically shielded from the full brunt of sanctions by target state.
- **But this is not a free lunch!**
  - By shielding, merely transmuting the economic pain from a *tactical* target to a *strategic* target, i.e. the target government.
  - As Schelling (1967) admonishes, don't be disappointed if shielding protects the original target.
- **Shielding changes the measurement of sanctions "success"**
  - Just focusing on observed impact on tactical targets underestimates the ultimate cost of sanctions.
  - If the ultimate goal is a change in strategic behavior, then always difficult to measure how much state behavior changed (what is the counter-factual?)
  - But by forcing the target regime to shield some targets, targeted sanctions are hurting *something* sensitive to the regime.

Policy Implications (5/5)

- **To maximize strategic impact, target strategic targets!**
  - If the goal of sanctions is to hurt the underlying regime (not tactically harm the targets or just signal displeasure), then focus on strategic targets, especially in services-dependent sectors
- **But with shielding, authoritarian regimes can "un-smart" smart sanctions**
  - Authoritarian regimes under sanctions can always deflect harm from strategic targets through shielding at the ultimate expense of "innocent bystanders" such as the general public
- **Soft power needed to complement sanctions soft power**
  - Critics might argue then no point to smart sanctions, since ultimately the public suffer anyways
  - But this is the result of deliberate agency of the sanctioned regime
  - Use soft power (Voice of America, RadioFree Europe, social media) messaging to highlight how regime leadership and cronies shielded at the expense of their own citizens, NOT the West

of sanctions, 2014 vs 2022

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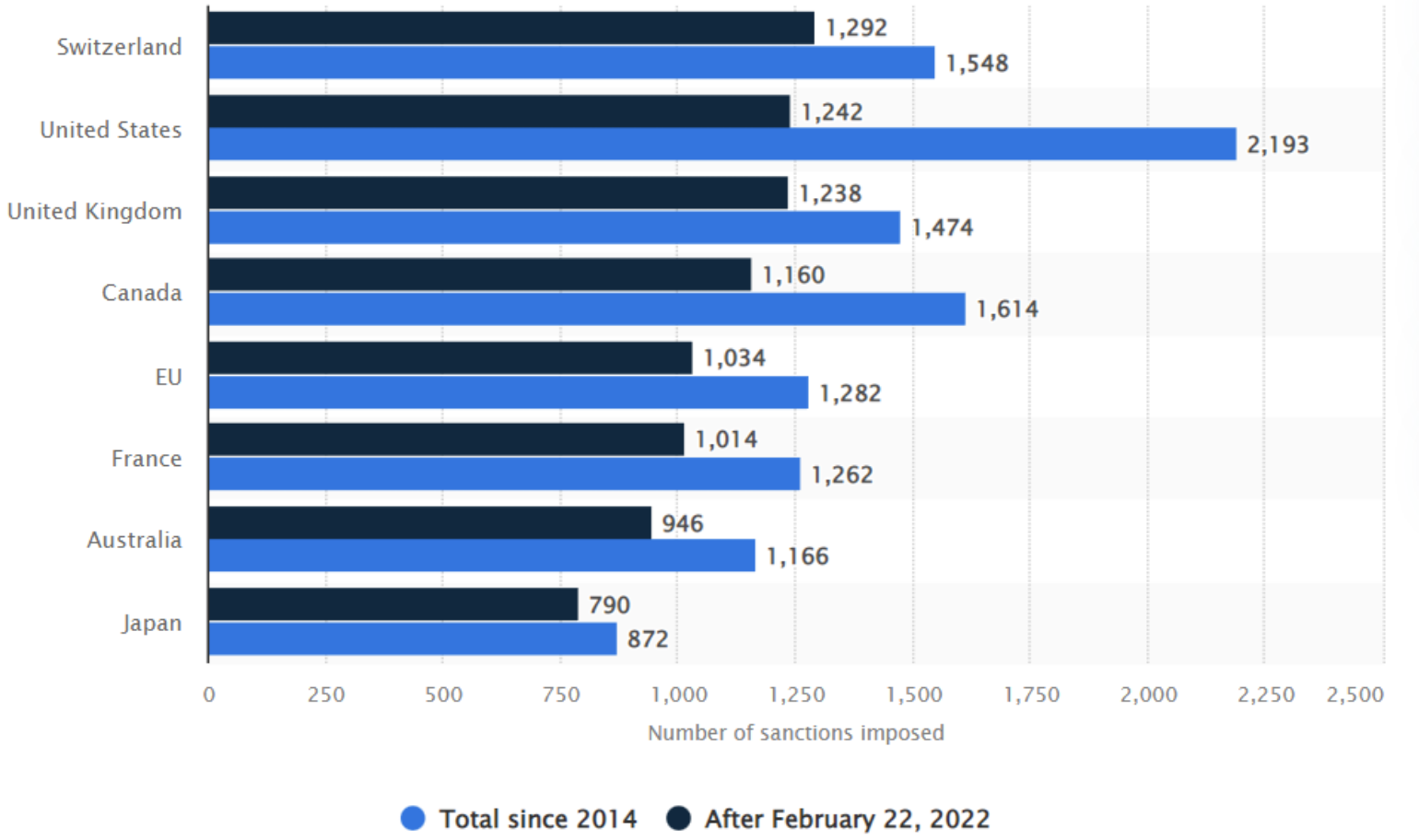

Source: Statista

Thoughts on 2022

- Increasingly blurry line between targeted sanctions and country-wide embargo -
- Self-sanctioning by private companies have expanded sanctions impact beyond policy lists
- Energy sanctions against Russia largely futile in short-run
  - Petroleum fungible and globally integrated markets, any sanctions only redivert flows
  - Tariffs better at driving wedge between market price and Russian revenue, incentivizing Western supply and demand destruction
  - Medium-term, loss of technology and investments will damage Russian supply
- Preserving monopolistic position on key technology and financing services key to maintaining sanctions efficacy
- Seizing of central bank reserves seemingly blind spot in Russian policy coordination
- But ultimately complete cut-off makes new sanctions impotent

Further Work

- The new era of targeted sanctions requires radically new data analytic techniques for policymakers to understand impact.

- In ongoing research, we are exploring evidence on changing ownership structures into less-transparent jurisdictions such as Panama and the British Virgin Islands.

- An emerging policy linkage between the efficacy of targeted sanctions and terrorist financing and broader efforts at AML/tax evasion/financial transparency.

Thank you for listening.

Any questions?

Reference Slides

Sanctioned Firms by Year

Table 1: Sanctioned Firms by Year

	2014	2015	2016
Blocked	45	70	89
Sectoral	26	137	230
Associated	219	267	267
Majority-Owned Subsidiary	598	1,035	1,193
Minority-Owned Subsidiary	626	944	1,094
Total	1,487	2,411	2,832
Of which, Strategic	34	38	39

Summary Statistics

Table 2: Summary Statistics for Sanctioned, Non-Sanctioned, and Strategic Firms

Variable	Obs	Mean	Std. Dev.	Min	Max
			Sanctioned		
d_Active	14,160	.911	.285	0	1
OpRev	6,995	695,624	6,009,979	0	1.61e+08
Asset	7,078	1,341,157	1.42e+07	0	5.56e+08
Emp	6,738	1,349	13,428	0	450,000
			Non-Sanctioned		
d_Active	389,975	.982	.132	0	1
OpRev	146,056	10,708	258,043	0	3.43e+07
Asset	155,054	35,638	1,280,498	0	2.68e+08
Emp	144,105	48	2,012	0	330,447
			Strategic		
d_Active	1,835	.958	.201	0	1
OpRev	1,224	2,871,849	1.25e+07	0	1.61e+08
Asset	1,220	7,307,084	3.51e+07	9.515	5.56e+08
Emp	937	8,720	42,119	1	450,000

Empirical Specification

- Our econometric specification is a standard difference-in-differences approach as follows:

$$\ln y_{isct} = \alpha_i + \lambda_{cst} + \beta d_{it} + \epsilon_{isct}$$

  - i is company identification, s is sector, c is country, and t is time period
  - α_i = company fixed-effects
  - λ_{cst} = country-sector-time fixed effects
  - d_{it} = sanction treatment dummies
- For our dependent variable y_{isct}, we consider Operating Revenue, Total Asset, Employee Count, as well as a dummy capturing whether the firm is active or not.
- Our sanctions dummies d_{it} capture when the firm faces any of our three categories of targeted sanctions, and which type of sanction it faces – restrictive sanctions as an entity, an association with a sanctioned individual, or sectoral sanctions.

Diff-in-Diff Explained

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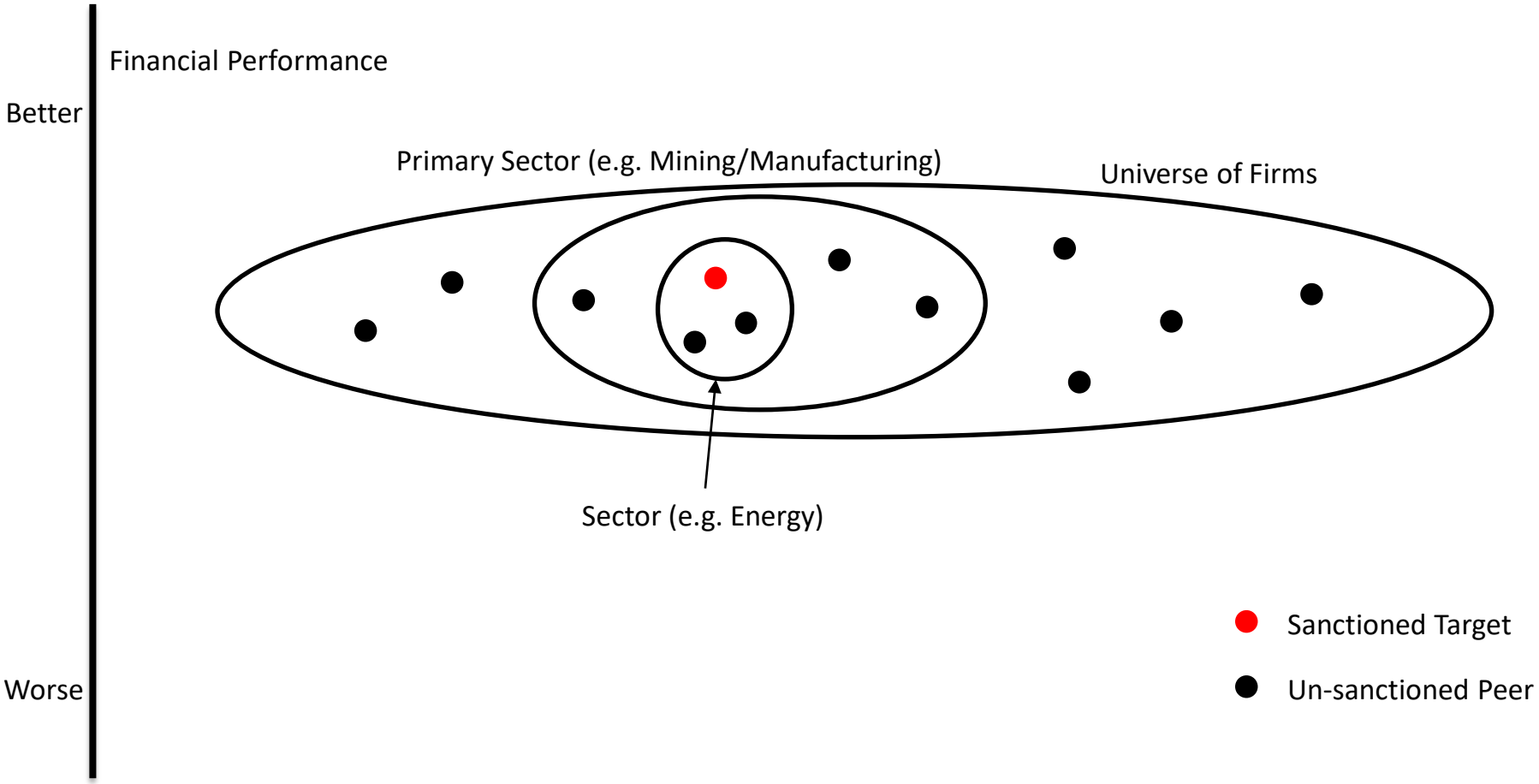
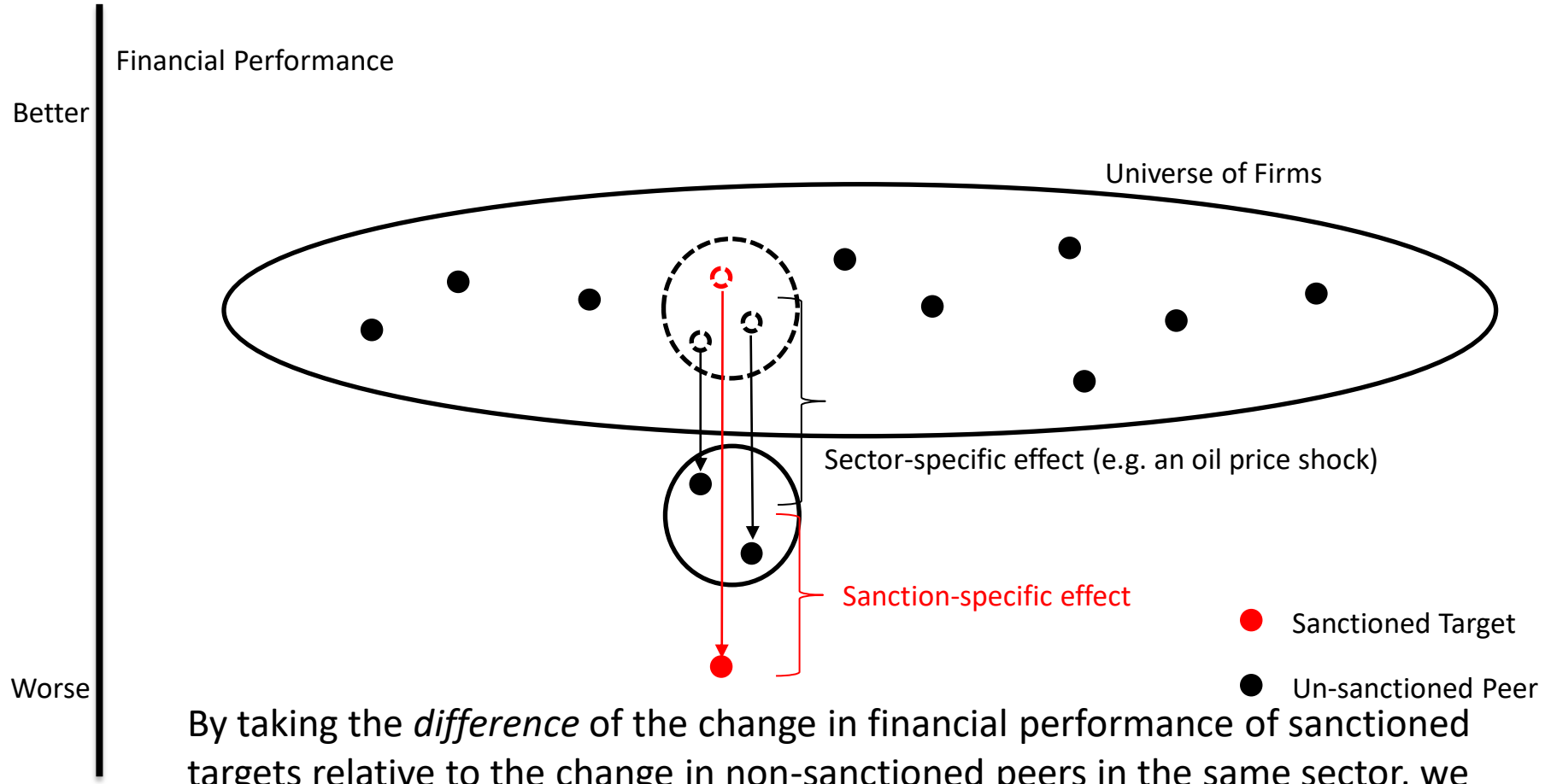


Controlling for Sector



By taking the *difference* of the change in financial performance of sanctioned targets relative to the change in non-sanctioned peers in the same sector, we can isolate the sanction-specific effect. Hence, “difference-in-differences.”

Headline Results

Table 3: Primary Regression Results on Sanctions Impact without Controls

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0283***	-0.2989***	-0.6955***	-0.4211***
	(0.005)	(0.059)	(0.104)	(0.042)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. d_Active and d_Sanc are dummies capturing when firms are active and sanctioned respectively. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*

Channel Results

Table 4: Sanctions controlling for Western intermediate inputs

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0182**	-0.1199*	-0.4132***	-0.3922***
	(0.008)	(0.073)	(0.157)	(0.073)
d_Sanc_Services	-0.1908	-4.2328***	-6.6109**	-0.5813
	(0.182)	(0.813)	(3.187)	(1.315)
d_Sanc_NonServices	-0.0003	0.0009	0.0069	-0.0004
	(0.000)	(0.003)	(0.005)	(0.005)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. d_Active and d_Sanc are dummies capturing when firms are active and sanctioned respectively. d_Sanc_Services is an interaction term by multiplying d_Sanc with the ratio of all Western Services intermediate inputs with the gross value added of Russian output. Similarly, d_Sanc_NonServices is an interaction term by multiplying d_Sanc with the ratio of all Western intermediate inputs other than services with the gross value added of Russian output. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*

Shielding Results

Table 5: Sanctions on Strategic and Non-Strategic Firms

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0288***	-0.3067***	-0.7025***	-0.4233***
	(0.005)	(0.060)	(0.105)	(0.042)
d_Sanc_Strat	0.0337***	0.2939**	0.3191***	0.2020*
	(0.012)	(0.149)	(0.134)	(0.106)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. d_Active and d_Sanc are dummies capturing when firms are active and sanctioned respectively. d_Sanc_Strat is an interaction term capturing when a firm is both sanctioned and strategic. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*

Impact by Type

- We split the sanctions treatment into its type:
  - **Blocking** or Restrictive sanctions on an **Individual** who is economically associated with the target firm
  - **Blocking** or Restrictive sanctions on the **Entity** itself
  - **Sectoral** sanctions that only limit some transactions on firms in certain sectors
- Interestingly, the largest channel of the effect appears to be via association with sanctioned individuals.
- Difficult to argue that economic performance of firms associated with sanctioned individuals involved in undermining Ukraine geopolitically should a priori be systemically underperforming.
- Sectoral sanctions are also negative and statistically significant, but generally at a smaller impact than via association with sanctioned individuals.

Impact by Type Results

Table 7: Impact by Type of Sanction

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Assoc	-0.0400***	-0.4113***	-0.7637***	-0.3871***
	(0.011)	(0.107)	(0.139)	(0.079)
d_Rest	-0.0221**	0.1242	0.0777	-0.0188
	(0.010)	(0.118)	(0.123)	(0.072)
d_Sect	-0.0202***	-0.3082***	-0.6659***	-0.4330***
	(0.004)	(0.066)	(0.101)	(0.042)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

*Notes: Robust standard errors in parenthese. *** p<0.01, ** p<0.05, * p<0.1. d_Assoc, d_Rest, and d_Sect are dummies capturing when a firm faces sanctions via association with a sanctioned individual, blocking/restrictive sanctions, or sectoral sanctions respectively. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*

Impact by Type, Cont'd

- Interestingly, the effect via a sanction explicitly on a target firm itself, does not seem to be negative and statistically significant except on Status (possibly due to fewer observations).
- It is possible that "de-risking" may be impacting all firms in that sector, and not just targeted ones.
  - We found the set of firms explicitly targeted via blocking/restrictive sanctions are clustered in the weapons manufacturing and credit allocation sectors
  - Meanwhile, the set of firms associated with sanctioned individuals appear to cover a much wider set of business sectors.
- Again, this would bias the coefficient on the restrictive sanction treatment toward zero.

Origin Country

- Splitting the sanctions treatment by the origin country of the sanction (i.e. U.S. vs. EU), we find:
  - The impact on the target's financial metrics, such as operating revenue, asset valuation, and number of employees, appears to be largely driven by **U.S. rather than EU sanctions**.
  - **Only** on the firms' status does EU sanctions have a significant effect.

- Given the relatively high degree of overlap and policy coordination in the U.S. and EU sanctions lists and the relative paucity of targets that are sanctioned only by the EU and not by the United States, this result should be treated with some caution.

- On the other hand, private interlocutors are reporting a difference in investigation/enforcement of sanctions policy, and might bear further investigation.

Origin Country

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_US	-0.0209***	-0.3305***	-0.7288***	-0.4437***
	(0.005)	(0.060)	(0.109)	(0.046)
d_EU	-0.0159**	0.0343	0.0558	0.0412
	(0.007)	(0.088)	(0.085)	(0.047)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

De-Risking

- One way to test for whether "de-risking" may be occurring is to consider coarser granularity on sectors. Defining sectors by NACE's high-level aggregation (12 groups) instead of at the 4-digit level, we run the headline regression again.

- Not only do coefficients remain negative and statistically significant, but magnitudes strengthen, indirectly suggesting “de-risking” and spill-over onto technically non-sanctioned targets may be occurring.

Spillover into Control

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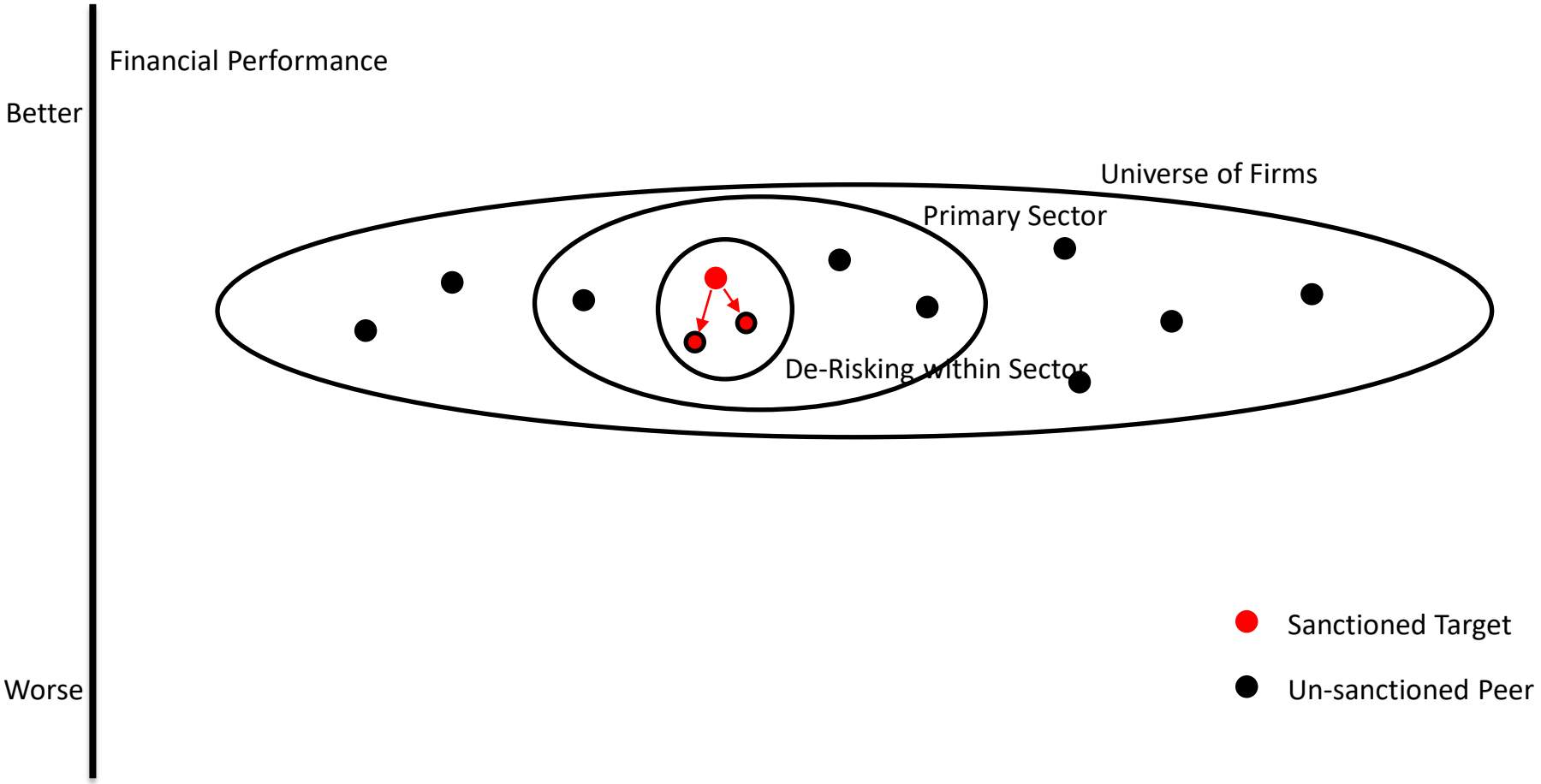

Coefficients Biased to Zero

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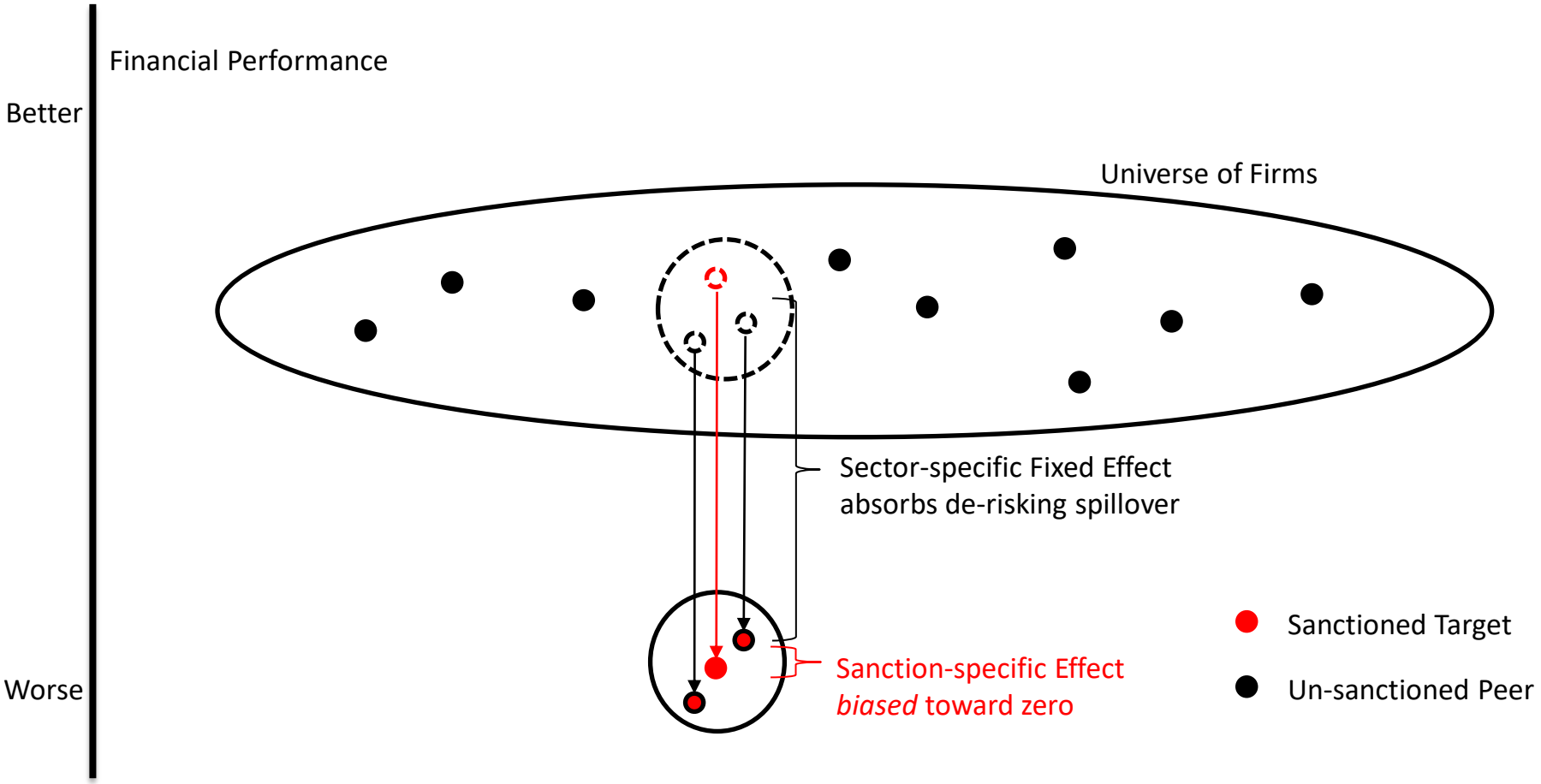
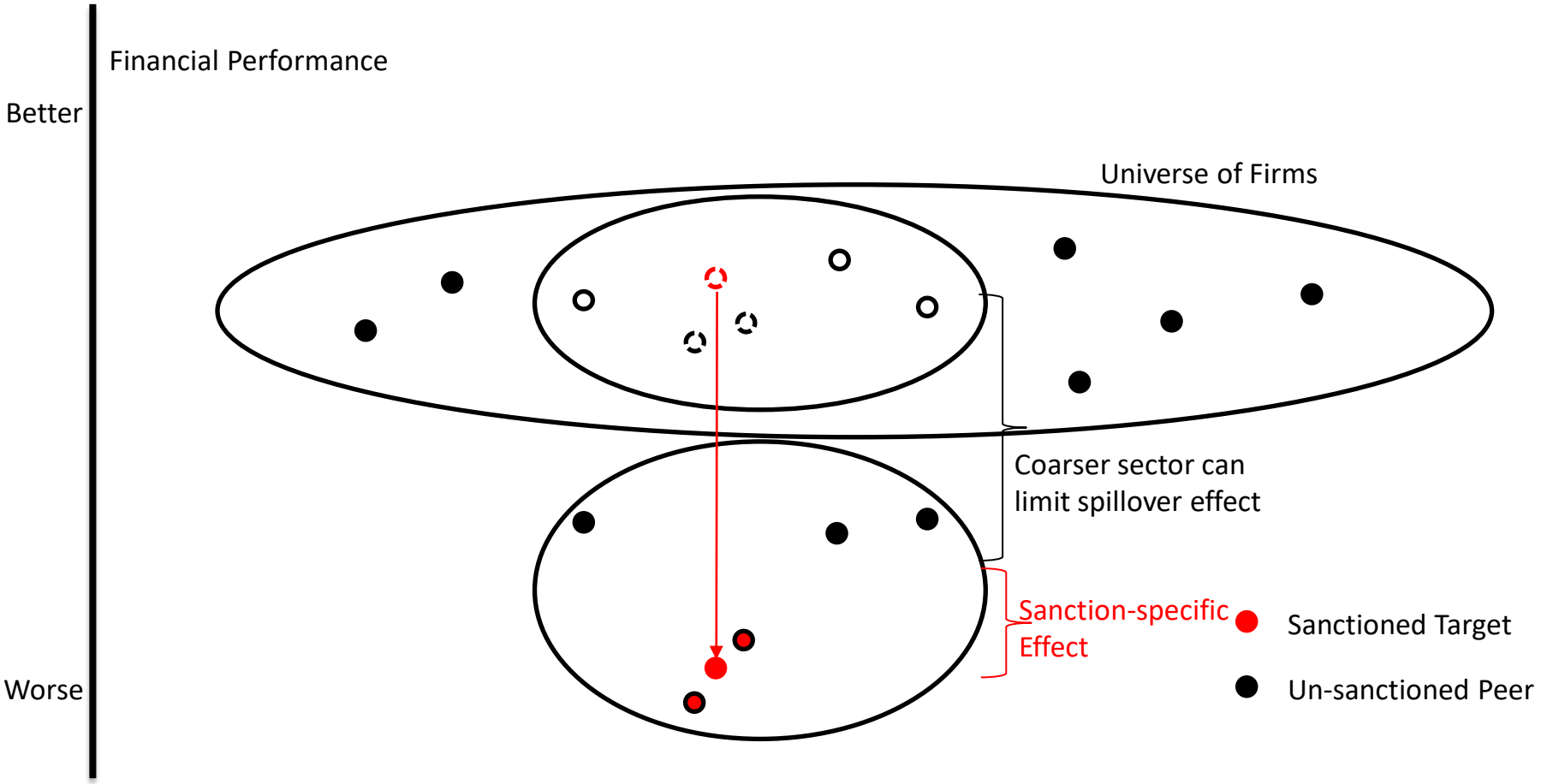


Coarser Controls



With Primary Sector Groups

Table 9: Impact using Primary Sector Groups

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc	-0.0272***	-0.4479***	-1.0118***	-0.6224***
	(0.003)	(0.047)	(0.040)	(0.025)
Observations	403,605	94,744	148,022	137,596
R-squared	0.678	0.901	0.888	0.862

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. d_Active and d_Sanc are dummies capturing when firms are active and sanctioned respectively. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*

Ownership Impact

- Using BvD ownership data, we split the impact of sanctions on explicitly named firms/individuals vs. on the subsidiaries of those targets that are implicitly sanctioned via the 50 percent rule.
- Also, any subsidiaries that are minority (less than 50 percent) owned by the sanctioned firm/individual and are therefore technically **not** sanctioned.
- Sanctions appear to hit implicitly sanctioned targets and even minority-owned subsidiaries with negative and statistically significant impacts with magnitudes comparable to that of explicit targets! This is further evidence of de-risking.
- Counter-parties may be finding it challenging to distinguish between subsidiaries that are implicitly sanctioned vs. not.

Ownership Level Results

Table 8: Impact by Ownership Level

VARIABLES	(1) d_Active	(2) lOpRev	(3) lAsset	(4) lEmp
d_Sanc_Exp	-0.0298***	-0.3125***	-0.7259***	-0.3811***
	(0.007)	(0.109)	(0.156)	(0.079)
d_Sanc_Imp	-0.0393***	-0.3463***	-0.6982***	-0.4661***
	(0.007)	(0.075)	(0.111)	(0.046)
d_Sanc_Min	-0.0146***	-0.2108**	-0.6729***	-0.3768***
	(0.005)	(0.082)	(0.109)	(0.051)
Observations	401,120	93,999	147,190	136,859
R-squared	0.675	0.900	0.887	0.863

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. d_Active is a dummy variable capturing if the firm is active or not. d_Sanc_Exp, d_Sanc_Imp, and d_Sanc_Min are dummies that capture if the firm has been explicitly sanctioned, a majority-owned subsidiary that implicitly faces the same sanction according to the 50% Rule, or a minority-owned (or unknown) subsidiary of a sanctioned firm. lOpRev stands for log Operating Revenue, Assets log Total Asset Holdings, and Emp log Total Number of Employees.*