Unmasking Covert Control in Global Corporate Governance

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Extended Abstract

The 2022 international sanctions against Russian oligarchs following the invasion of Ukraine raised a critical question: were they truly effective? Answering this is challenging, as targeted individuals often use complex, cross-border ownership chains to obscure their control, rendering conventional analysis based on static ownership thresholds (e.g., 50%) ineffective [1,2]. This study addresses this challenge by using a network-based approach to quantify the real impact of these sanctions. Our primary contribution to network science is a framework that uses a network influence metric not only to measure latent power but also to systematically detect anomalies where de facto control is exerted through unobserved mechanisms.

To pierce the veil of these complex structures, we introduce the Network Power Index (*NPI*), a network-based power index that extends the Shapley-Shubik power index to measure indirect influence propagated through network pathways [3,4]. The *NPI* quantifies an owner's "probabilistic control" by computing their probability of being the "pivotal voter" in a random ordering of all direct and indirect ultimate shareholders. For a game with a set of players N, the Shapley-Shubik power index ϕ_i for player i is:

$$\phi_i(v) = \sum_{S \subseteq N \setminus \{i\}} \frac{|S|! \, (|N| - |S| - 1)!}{|N|!}.$$

Applying this metric to the Moody's ORBIS database (~100 million companies, ~500 million shareholders), we treated the 2022 sanctions as a "network stress test." The results reveal a story of heterogeneous resilience. At an aggregate level, the sanctions appeared effective; the total *NPI* of Russian oligarchs on foreign assets was halved. However, this masks a critical divergence: oligarchs with simple ownership structures saw their influence collapse (>80% *NPI* reduction), while those with complex, sub-threshold networks, like V. F. Vekselberg, demonstrated remarkable robustness, with his *NPI* declining by only 14%.

Actor/Entity	*NPI* on Foreign Assets (2021)	*NPI* on Foreign Assets (2023)	% Change	Adaptive Strategy
Oligarch A	19,389 M $	1,431 M $	- 93%	Simple, direct ownership structures
Oligarch B	7,703 M $	1,745 M $	- 87%	Simple, direct ownership structures
V.F. Vekselberg	**11,501 M $**	**9,921 M $**	**- 14%**	**Sub-threshold pathway diversification**
All of oligarchs	46,306 M $	20,912 M$	- 55%	-

Table 1. Heterogeneous Resilience of Control Networks to Sanctions. The table contrasts the catastrophic decline in *NPI* for actors with simple ownership structures against the relative stability of V. F. Vekselberg's complex network, highlighting topology-driven resilience.
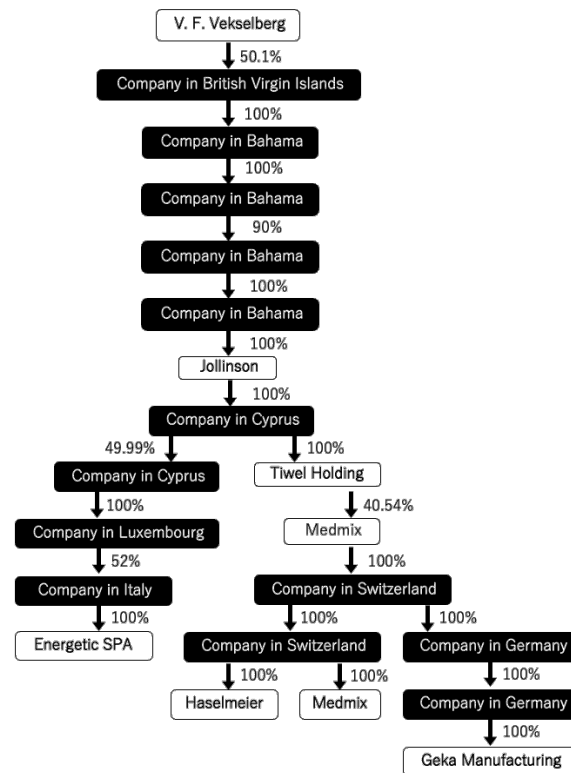
Figure 1. An Illustrative Example of V. F. Vekselberg's Ownership Network. This diagram shows a multi-layered, cross-border ownership structure. It highlights how a series of minority shareholdings (e.g., 49.99% and 40.54%), when combined in a deep network, can confer effective control in a broader voting context, circumventing traditional detection methods.

The key to this resilience lies in a fundamental shift from deterministic to probabilistic concepts of control. Traditional threshold-based methods are deterministic, focusing exclusively on guaranteed control. In contrast, the *NPI* is designed to detect probabilistic control. This enables a new screening methodology where high-probability control is flagged as an anomaly. Crucially, this connection is not merely anecdotal; in a logistic regression model predicting the presence of interlocking directorates, the *NPI* emerges as a highly significant predictor. This provides statistical validation for using our network-based power index as a screening tool to systematically identify inconsistencies that reveal the influence of unobserved network structures, transforming ad-hoc investigation into a data-driven search.

The analysis relies on the Moody's ORBIS database, a commercial dataset from public records, and uses no non-public personal information. We acknowledge the dual-use potential of our methods but contend the ethical imperative is to enhance financial transparency. By exposing regulatory vulnerabilities, this work equips policymakers to combat illicit financial activities, a societal benefit we judge to outweigh the risk of misuse.

References

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