

# Accounting as Strategic Information: Analysis of the Reliability of Russian Military Industry Data

Lucie HAMPELOVÁ<sup>1\*</sup>, David HAMPEL<sup>2</sup>

<sup>1</sup>Department of Quantitative Methods, Faculty of Military Leadership, University of Defence, Kounicova 65, 66210, Brno, Czech Republic

<sup>2</sup>Department of Statistics and Operation Analysis, Faculty of Business and Economics, Mendel University in Brno, Zemedelska 1, 61300, Brno, Czech Republic

Correspondence: \*[lucie.hampelova@unob.cz](mailto:lucie.hampelova@unob.cz)

## Abstract

This study examines the reliability of financial reporting in the Russian defence industry amidst the ongoing conflict in Ukraine and the resulting Western sanctions. Using Benford's Law, the authors analyse accounting data (Total Assets, Turnover, and Profit/Loss) from selected strategic sectors (NACE 2540, 3030, and 3040) between 2015 and 2024. The results reveal a significant and growing deviation from the theoretical distribution of leading digits, particularly following the 2022 invasion. Specific anomalies—such as the anomalous excess of the digit 1 in Total Assets and the concentration of digits 2 and 9 in Profit/Loss—point to systematic asset padding, creative margin management, and the use of accounting as a tool for strategic disinformation. The analysis suggests that while Russian authorities attempt to maintain a facade of economic stability through “controlled fiction”, statistical testing uncovers underlying institutional stress, asset degradation, and the shift towards a closed-loop war economy. The study concludes that Benford's Law is a vital tool for detecting operational paralysis and information manipulation when primary data are classified or unreliable.

**KEY WORDS:** *accounting data, Benford law, manipulated information, military production, Russian companies*

**Citation:** Hampelová, L.; Hampel, D. Accounting as Strategic Information: Analysis of the Reliability of Russian Military Industry Data. In Proceedings of the Challenges to National Defence in Contemporary Geopolitical Situation, Brno, Czech Republic, 7-10 September 2026. ISSN 2538-8959, <https://doi.org/10.47459/cndcgs.2026.31>

## 1. Introduction

In a state of war, an adversary's accounting and financial data hold high strategic value, as they enable the targeted weakening of its economic, logistical, and technological capabilities. Accounting data help identify which companies are critical to war production, which businesses are financially vulnerable, and where bottlenecks exist, such as reliance on a single supplier or high levels of debt. Knowledge of such information allows for the targeting of sanctions, cyberattacks, or physical strikes with maximum impact. Accounting data are essential for the effective application of economic sanctions. Accounting helps reveal actual war-fighting capabilities by showing material consumption, machinery depreciation, the rate of equipment wear and tear, and the adversary's ability to finance a long-term conflict.

In the context of Russia's war against Ukraine, accounting and financial information underpins the targeting of economic sanctions, the investigation of sanctions evasion, and the assessment of Russia's economic resilience. Following Russia's invasion in February 2022, the EU and other Western countries established a comprehensive sanctions regime targeting the Russian economy, individual companies, and oligarchs. These sanctions are designed to limit the ability to finance military operations and to weaken strategic sectors such as energy, the defence industry, and banking [1]. Financial data (profits, revenue, cash flow, investments, etc.) help identify the most significant entities in Russia's defence and energy sectors and track how sanctions affect their financial performance and solvency [2]. This is essential for adjusting sanctions regimes so that they not only dampen GDP growth but also limit Russia's ability to finance and develop military products.

Since 2022, defence industry companies in Russia have operated under a highly specific accounting, financial, and institutional regime that differs fundamentally from that of civilian enterprises. These characteristics make their accounting data exceptionally valuable—and at the same time difficult to interpret. Prices for their products are often set administratively

by the state, margins are artificially maintained (sometimes negative), and losses are compensated ex post through subsidies or state loans. More important than financial performance is production volume and the ability to deliver products. To obtain a realistic picture of the situation of military industry firms, it is necessary to evaluate not absolute volumes but rather disparities in the available accounting data—such as a sharp rise in revenue without a corresponding increase in investment and skilled labour, or an extreme increase in work in progress and write-offs of outdated technology. These indicators may signal ongoing cannibalisation of inventory and production operating at the limits of technological capabilities. Personnel and wage data can serve as an indicator of a company’s exhaustion. If a defence contractor’s inventories and work in progress are growing rapidly, but investments and capacity are not, this is a classic signal that, while the state can provide the company with funds, it is no longer able to convert economic inputs into actual military strength. Many companies report profits on paper thanks to advance payments from the Ministry of Defence, but in reality, they face secondary insolvency due to fixed contract prices and rising input inflation. The accounting of Russian arms companies also potentially carries political and power-related information: financial statements can reveal connections to the FSB, the military, and regional elites; accounting shows who is favoured by the regime; and differences in access to financing reveal internal power struggles.

Data on Russia's defence industry has been strictly classified since 2022. The Russian government (through Government Decree No. 395 of 2022) has allowed strategic enterprises to withhold their financial statements, making it significantly more difficult to assess their actual performance. Since March 2022, the Federal State Statistics Service (Rosstat) has ceased publishing detailed data on foreign trade and production in Segment "S" (other), which includes arms production. However, there are several rational reasons why Russian arms manufacturers (or their governing bodies) prefer controlled fiction to complete information silence. A complete halt to financial reporting could be perceived as an admission of crisis. If a company reports at least some data, even if it is manipulated, it signals stability to the market, employees, and subcontractors. Published data can serve as a signal to geopolitical rivals (the term “maskirovka” is often used). If an arms manufacturer reports massive investments in research and development, even if these funds are actually diverted, for example, to repair damage from attacks, it forces Western analysts to reassess future threats. False-positive financial data from companies aims to undermine the West’s confidence in the effectiveness of sanctions.

Companies’ motivation to publish falsified data is also driven by the Russian bureaucratic system. Russian banks (including state-owned ones) must have at least some data in their records to formally approve loans in accordance with central bank regulations. Company management is evaluated based on the fulfilment of state contracts. If, for example, a drone attack destroys a production line, the manager has an incentive to mask the resulting loss in the accounts as “ongoing modernisation” to avoid criminal prosecution for failing to meet the plan. Missing data also increases the risk that the state will cut the company’s subsidies next year. Falsified data on “nearly completed projects” motivates the Russian government to continue subsidising the company in anticipation of deploying new, more efficient technologies. Accounting at Russian companies is often manipulated to conceal illegal outflows of funds. Companies may report the purchase of extremely expensive “domestic” components, which are in fact cheap Chinese chips with a label stuck over them. The financial statement then serves as a valid document for disbursing these funds to affiliated companies.

Table 1.

Differences between a situation caused by an information vacuum and one created by controlled fiction

Indicator	No data	Falsified data
Market reaction	Panic, speculation about collapse.	Uncertainty, but formal continuity.
Relationship with banks	Impossibility of standard lending.	Possibility of “procedural” financing.
Use in propaganda	Cannot be used.	Serves as evidence of “failed sanctions”.
Scientific analysis	The necessity of using satellite imagery.	Necessity of anomaly detection.

In the current Russian defence sector, the lack of data is not the only analytical obstacle; an equally critical problem is the publication of data that appears to be strategically manipulated. Given this, it is essential to subject the available numerical data to credibility tests. One of the most effective tools in this context is Benford’s Law. This statistical law describes the expected frequency distribution of leading digits in naturally occurring datasets. Deviations from this distribution in reports from Russian arms manufacturers can serve as an indicator of manipulative interference in accounting. If an analysis of the leading digits of a dataset reveals a significant deviation from the theoretical distribution according to Benford’s Law, it is not sufficient merely to point to data manipulation; rather, the origin and purpose of this anomaly must be explained. Among other things, the following patterns of behaviour may explain potential deviations from Benford’s Law:

- Psychological thresholds. If an excessive number of 9s appear as the leading digit in the data, this may indicate an effort by management to keep reports just below the threshold that would trigger an additional audit or approval from higher levels. It may also indicate an attempt to mask the actual costs of damage remediation following attacks.
- Data Fabrication. When inventing numbers, the human brain tends to favour the digits 5 and 7 and to avoid extremes. If the digits 5 and 7 occur more frequently than Benford’s Law predicts, this may indicate manual “padding” of datasets to make them appear realistic. It can be argued that this data was not generated by actual economic activity but by an administrative decision to report progress even when production was demonstrably halted, for example, following a drone strike.

- Correlation with crisis events. If a deviation from Benford's Law appears in a company's data in the months following a confirmed attack, this is strong circumstantial evidence that the company is manipulating information about its repair capabilities and financial stability. Using this tool requires higher-frequency data. However, financial data is typically published annually, which makes this type of analysis difficult.

The application possibilities are discussed in detail in [3]. It explains how to interpret specific anomalies (e.g., an excessive occurrence of high digits as an indicator of artificial cost inflation). Motivations and empirical evidence on how governments or firms manipulate data under political pressure are presented in [4]. The detection of systemic failures is documented in [5], which used Benford's Law to uncover discrepancies in Greek economic data prior to the crisis. In [6], the authors examine how dictatorships overstate GDP growth, which may reflect political pressure to manipulate data. The study [7] explains that the degree of deviation from Benford's Law in corporate financial statements increases during times of crisis and uncertainty, when management feels the need to embellish the data.

The aim of this study is to assess the reliability of financial data published by selected Russian defence contractors between 2015 and 2024 using Benford's Law. This approach will be used to test the hypothesis that current financial reporting in the Russian defence sector serves as a tool for strategic disinformation, and to determine the extent to which this is the case.

## 2. Materials and Methods

Accounting data on Russian companies were drawn from the Orbis database. Industry sectors with NACE 254 - Manufacture of weapons and ammunition, 303 - Manufacture of air and spacecraft and related machinery, and 304 - Manufacture of military fighting vehicles were primarily selected for the analysis. For comparison, sectors with production usable in military conflict, including NACE 061, 091, 20, 24, 27, and 29, are also taken into account. Accounting data on turnover, profit/loss before tax, cash flow, and total assets, all expressed in rubles, were analysed. The years from 2015 to 2024 were selected for analysis. Benford's law, which describes the distribution of leading digits in numerical data, was used to assess potential data manipulation. This law is used to detect accounting fraud; its distribution and application are described, for example, in [8]. We say that the distribution of a set of numbers follows Benford's law if the leading digit  $d$ ,  $d \in \{1, \dots, 9\}$ , occurs with probability

$$P(d) = \log_{10} \left( 1 + \frac{1}{d} \right) = p_d.$$

To test the conformity of the distribution of the first digits in the data set with Benford's law, a chi-squared goodness-of-fit test was performed on the empirical distribution. The test statistics is given as

$$\chi^2 = N \sum_{d=1}^9 \frac{(O_d/N - p_d)^2}{p_d},$$

where  $N$  means the total number of observations and  $O_d$  means the count of numbers with leading digit  $d$ . The condition for use of the test statistics is that theoretical frequencies  $Np_d > 5$  for all  $d$ . The MATLAB R2025b computing system was used for the analysis.

## 3. Results

Total assets are distributed in violation of Benford's law throughout the period under review, and the deviation from it increases over time (see Fig. 1). Turnover shows greater deviations from Benford's law since 2020. Cash flow deviates significantly from Benford's law in 2024, while the profit/loss test statistic fluctuates over time. For military-focused sectors, Fig. 2 shows a significant deviation from Benford's law for sector 2540 regarding turnover in 2022–2024. In terms of profit/loss, companies significantly reduced their reporting of this data in 2022, and in 2023 and 2024, there is a significant deviation from Benford's law. For the combined sectors 3030 and 3040, significant deviations are evident: a rising trend in total assets and, from 2022 onwards, a markedly different distribution of profit/loss before tax. We will now focus on the differences between the individual leading digits.

If an analysis of the Total Assets metric for the entire Russian defence sector in 2023 and 2024—across all sectors and specifically for the sensitive sectors 3030 and 3040—shows an anomalous excess of the digit 1, while the other digits (2–9) are below their theoretical proportions, see Fig. 3, this has very specific implications in the context of a war economy. Benford's Law is usually very accurate for total assets, as this figure results from thousands of individual transactions, depreciation, and revaluations. Any significant deviation is therefore a clear sign of data manipulation.

This likely involves massive asset padding, for example, because companies must report a strong balance sheet in order to qualify for government subsidies or loans from state-controlled banks (VTB, Sberbank). This involves applying a psychological threshold when rounding up figures by an order of magnitude, where people tend to increase the reported figure only as much as necessary, ending with a leading digit of 1. Furthermore, the following can be inferred: In 2023 and 2024, there were intensive asset transfers between companies. When falsifying data within a centrally managed holding company, people often do not use a random number generator but choose "safe-looking" amounts. The digit 1 is subconsciously perceived by the human brain as the least conspicuous and most common, so fraudsters overuse it when inventing fictitious numbers for Total Assets.



Fig. 1. Test statistics for the Benford's law goodness-of-fit test across all selected sectors. A higher value indicates a greater difference from Benford's law; values marked with a dot indicate a statistically significant difference.

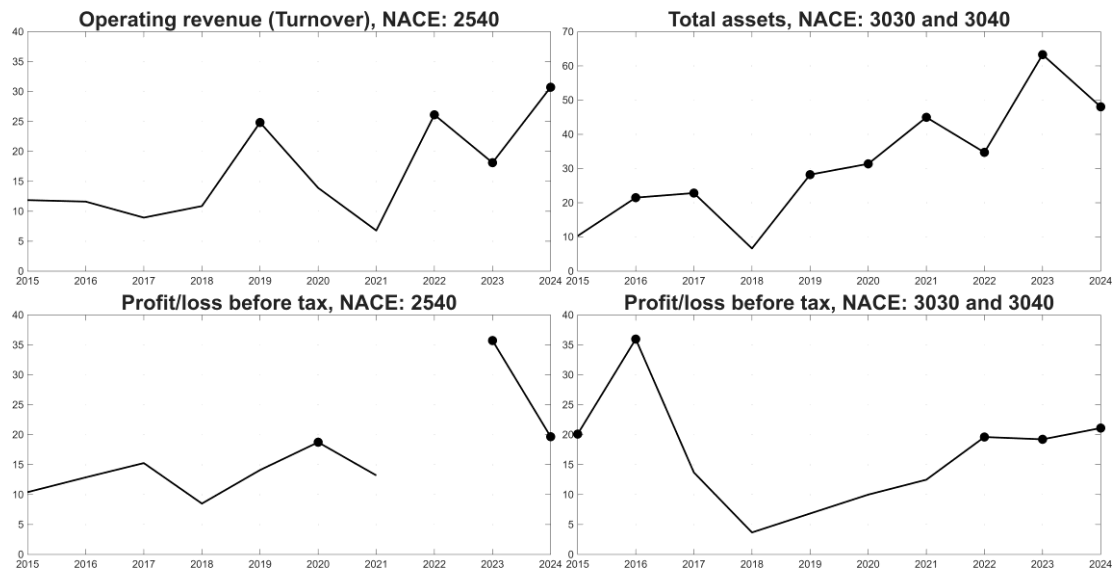


Fig. 2. Test statistics for the Benford's law goodness-of-fit test across the NACE 2540 sector on the left and NACE 3030 and 3040 on the right. A higher value indicates a greater difference from Benford's law; values marked with a dot indicate a statistically significant difference.

In 2024, sectors 3030 and 3040 show a visible “shift” from the digit 2 to the digit 1. If, in a capital-intensive industry, we observe a massive increase in the digit 1 at the expense of the digit 2 in Benford’s law, this suggests systemic undervaluation or asset degradation. The reason may be the write-off of Western machinery and technologies that cannot be serviced. In 2024, the Russian state may have ordered measures in these sectors, resulting in artificial write-offs on balance sheets. If there was a widespread write-off of assets to make companies appear “leaner” and more efficient for war production, many of them saw their asset values drop from ranges starting with 2 to those starting with 1. This is a manifestation of managed poverty—companies have just enough to survive, but nothing more. While propaganda may speak of the production of new fighter jets, Benford’s Law applied to total assets suggests that the real value of the aerospace industry’s production base is declining in 2024. In forensic accounting, this shift from 2 to 1 often indicates that an entity (in this case, the entire sector) can no longer maintain its previous value and is “slipping” down a tier. In the context of 2024, this is likely statistical evidence of the impact of long-term sanctions on the high-tech equipment of Russian aircraft manufacturers.

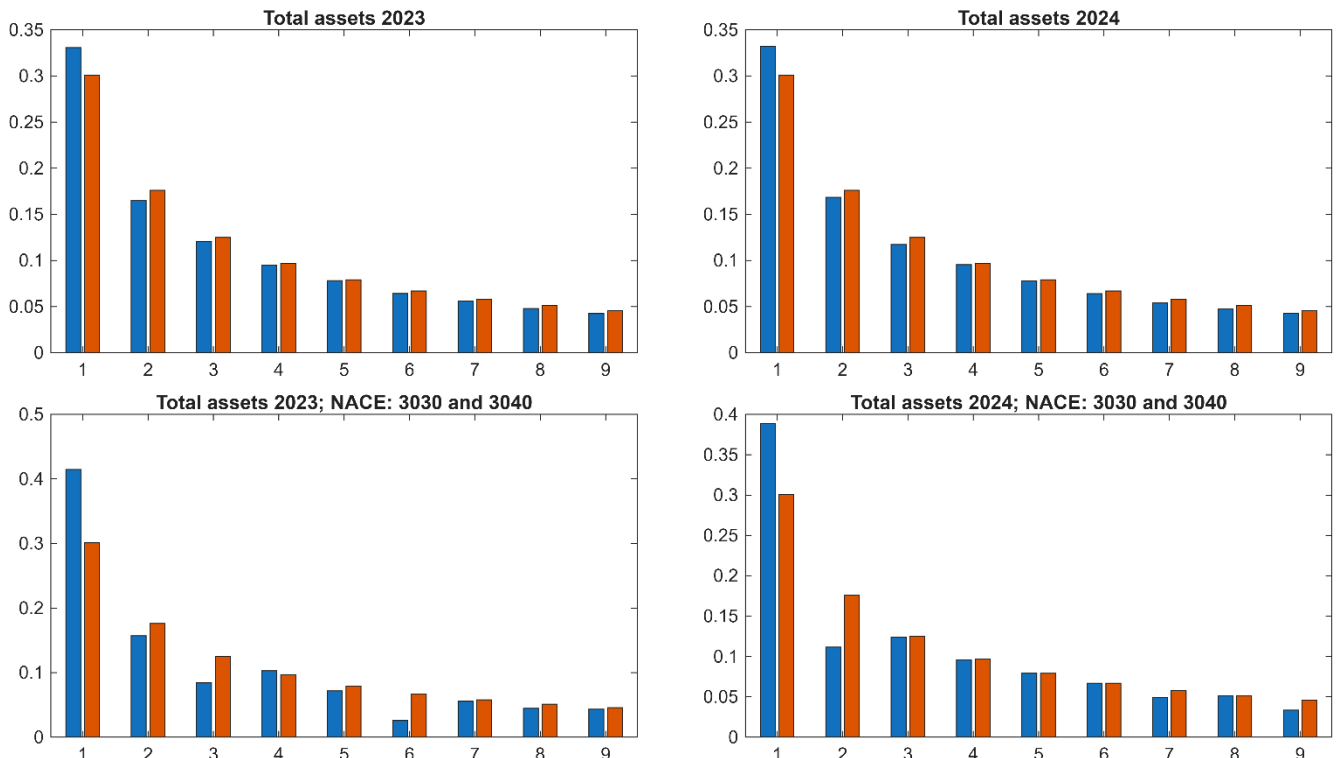


Fig. 3. Deviations of empirical frequencies (blue) from Benford's law (red) for individual leading digits. Total assets for 2023 and 2024; all sectors at the top, sectors 3030 and 3040 at the bottom. The y-axis shows relative frequencies.

The Profit/Loss indicator for sectors 3030 and 3040 shows a different pattern, namely a higher relative frequency of the leading digits 2 and 9 (see Fig. 4). In sector 2540, this is accompanied by an even higher relative frequency of the leading digit 1, as noted above in the discussion of Total Assets. While the number 1 dominated as a symbol of asset expansion, the anomaly involving the digits 2 and 9 in the profit/loss figure suggests pressure to report specific targets and “creative” margin manipulation. In the Russian defence industry, profit margins on state contracts (GOZ) are often regulated by law or decree. For example, if the state has informally mandated that a “healthy” arms manufacturer must report a profit of around 20% of revenue, or if there is a specific tax or subsidy threshold, accountants will manipulate the results so that they begin with a 2 in order to meet the standard of a “successful enterprise.”

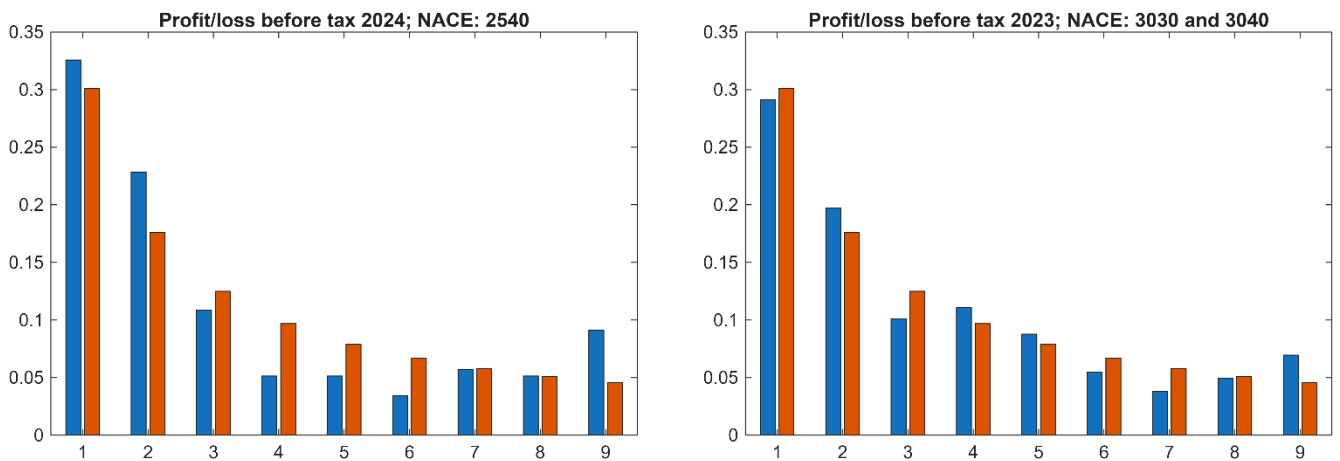


Fig. 4. Deviations of empirical frequencies (blue) from Benford's law (red) for individual leading digits. Profit/loss before tax for the year 2024, sector 2540 (left graph) and the year 2023, sectors 3030 and 3040 (right graph). The y-axis shows relative frequencies.

When it comes to the number 9, its interpretation in the context of profit or loss is often linked to psychological thresholds. If a company actually ended up with a loss (negative numbers) but management fears penalties, they try to “squeeze” the loss as close to zero as possible, or at least report a minimal profit. An amount starting with a nine appears in financial statements as the result of “maximum effort to salvage the financial performance.” In the case of losses, the opposite phenomenon may occur—an effort to report a loss starting with a nine to make it appear that the loss did not exceed a psychological threshold, such as one million. Sectors 2540, 3030, and 3040 are under enormous pressure regarding production volume. There is a massive use of transfer pricing. The final ammunition manufacturer purchases components

from subcontractors at prices that are not market-based but dictated by the holding company. If these prices are set so that the final manufacturer is left with only minimal room for manoeuvre (e.g., a margin starting at 9% or a fixed profit starting with 2%), the Benford distribution collapses. These sectors can therefore be characterised as follows: An excess of twos and nines indicates that the financial results here are not the result of business operations but rather of political directives and accounting engineering. While assets are being inflated across the board (ones), profits in 2023 had to be “micromanaged” so that companies would appear neither too poor (risk of receivership) nor too rich (risk of “war taxation” or suspicion of embezzlement).

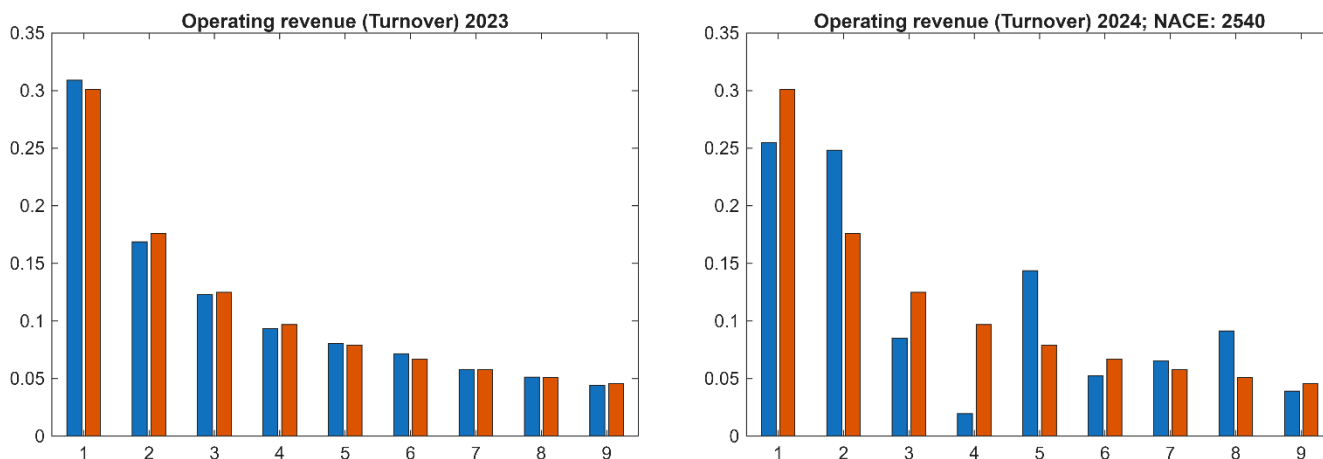


Fig. 5. Deviations of empirical frequencies (blue) from Benford’s law (red) for individual leading digits. Turnover for the year 2023, all sectors (left graph) and the year 2024, sector 2540 (right graph). The y-axis shows relative frequencies.

In 2023, turnover across all sectors shows a similar pattern to that seen in Total Assets. A different pattern can be observed in 2024 for sector 2540, see Fig. 5. The relative frequencies of the leading digits 2, 5, 7, and 8 have increased, suggesting a fragmentation of orders and politically dictated prices. The digit 5 in accounting data very often indicates an estimate or a lump-sum payment. When falsifying data or doing rough planning, the human brain tends toward “halves.” The increased occurrence of 7s or 8s is often considered a “signature” of the human factor in Benford’s analyses. In the Russian administrative environment, it is commonly believed that numbers beginning or ending with 7 or 8 appear “more random” and “more precise” than rounded numbers (such as 5 or 0). It can be assumed that Sector 2540 is already fully in war-planning mode. Revenues do not correspond to market sales but are generated by a combination of physical constraints, subsidy schemes, and efforts to report “precise” plan fulfilment. The observed pattern is essentially statistical evidence that, in 2024, the Russian arms industry operates as a closed simulation loop, in which money circulates between the state and companies according to predetermined algorithms rather than economic logic.

#### 4. Discussion

The results of our work are subject to certain limitations. Among the limitations of this analysis are the large number of missing accounting data points distributed across years and variables, and consequently, the varying number of values within a given industry for a specific indicator and year. Although the statistical test used accounts for this situation, comparability would be better with complete data. On the other hand, the Orbis database contains all financial data published by companies; it is the best official source. Another limitation is the need to work with entire sectors. The Orbis database contains financial statements for the fiscal year, not individual accounting items, so the amount of data available for a single company would be insufficient; furthermore, it is not desirable to analyse different variables together.

If data from financial statements (balance sheets and income statements) are unavailable, the scientific analysis must rely on proxy indicators. The following variables can be considered indirect indicators of financial and operational distress in defence companies:

1. Debt and insolvency. According to Ukraine’s Foreign Intelligence Service, by early 2026, Russian companies’ debt had reached its highest level since the 2008 crisis. There has been a noticeable rise in overdue receivables, as the Russian government (Ministry of Defence) often fails to pay on time. Local reports indicate that subcontractors of a certain arms manufacturer (e.g., cable or plastic manufacturers) are suing the main plant in arbitration, a clear sign that the company lacks liquidity. In the archives of arbitration courts, one can occasionally read about “production stoppages due to extraordinary events,” which may be a euphemism for the effects of Ukrainian attacks.
2. Labour Market Stress. The Russian defence sector is facing an extreme labour shortage in 2024–2026, which paradoxically drives rising wage costs, financially draining companies. Arms manufacturers are forced to offer abnormal recruitment bonuses—and when such an offer appears, it signals a critical production shortfall that the company is trying to make up for at the cost of unsustainable labour costs.
3. Government contracts. Even though contracts are classified, payments to subcontractors ([zakupki.gov.ru](http://zakupki.gov.ru)) who are not on the direct list of classified companies can sometimes be traced, allowing an estimate of production volume.

4. Energy consumption data. For large plants (such as metallurgical complexes), regional electricity consumption statistics can be used to infer activity levels before and after an attack on a production facility.
5. Insurance. In 2025 and 2026, insurance premiums for industrial facilities in the European part of Russia rose sharply. This is a clear, quantifiable cost of Ukrainian attacks.
6. Satellite images of damage. High-resolution satellite images can reveal damage to specific plant buildings or to work-in-progress products.

It is not always worthwhile to verify the reliability of all the alternative data on the performance of Russian defence companies presented here; however, such verification is particularly appropriate when working not with primary data but with summary data taken from other sources. A methodology for studying Russian military capabilities under conditions of information blackout after 2022 is presented in [9], which defines new sources and methods for data compilation during wartime. The study is published by the Swedish Defence Research Agency, where additional information sources on this topic can be found. In [10], the author uses alternative data to examine the impact of sanctions and war on the modernisation of the Russian arms industry and concludes that, despite the growth in Russian arms production, its technological level and quality are declining. Study [11] conducts a quantitative analysis of low-cost drone warfare. The study includes regression models where the value of the target (arms factory/refinery) and the type of drone are the main predictors of economic damage. Data obtained from satellite imagery is incorporated. The accuracy of similar analyses can be improved by using a sophisticated production facility model derived from direct and indirect valuation methods (see, e.g., [12]).

## 5. Conclusions

Based on the results, it can be concluded that there is a temporal correlation between violations of Benford's law, or increasing deviations from it, and Russia's ongoing invasion of Ukraine in 2022. Violation of Benford's law is not direct evidence of manipulation of accounting data but rather an impetus for more detailed examination of data at individual companies and for cross-sector comparisons. In examining the state of Russian production capacity amid Ukrainian attacks, it can be concluded that statistical anomalies in the financial data of affected enterprises provide quantitative confirmation of their operational paralysis. While satellite imagery provides visual evidence of physical damage, the Benford test's failure reveals institutional efforts to conceal the economic consequences of that damage.

**Acknowledgements.** This work was supported by the Czech Ministry of Defence from the project LANDOPS (grant number DZRO-FVL22-LANDOPS).

## References

1. **European Council.** Russia's war against Ukraine: EU sanctions. European Council (2026). Available online: <https://www.consilium.europa.eu/en/policies/sanctions-against-russia/> (accessed on 29. 4. 2026).
2. **Lee H.S., Kumo K.** The impact of sanctions on firms' financial performance in Russia. *Eurasian Business Review*, 2026.
3. **Nigrini M.J.** Benford's Law: Applications for Forensic Accounting, Auditing, and Fraud Detection. John Wiley & Sons, 2012.
4. **Michalski J.J., Stoltz G.** Do countries falsify economic data strategically? Some evidence that they do. *Journal of International Money and Finance*, 2013, 33, p.312-326.
5. **Rauch B., Götttsche M., Brähler G., Engel S.** Fact and Fiction in EU-Governmental Economic Data. *German Economic Review*, 2011, 12(3), p.243-255.
6. **Magee C.S., Doces J.A.** It Takes Two to Tango: Dictatorship, High Growth and the Vitality of Fraud. *International Studies Quarterly*, 2015, 59(3), p.446-458.
7. **Amiram D., Bozanic Z., Rouen E.** Financial Information Reliability and Consumer Confidence. *Journal of Accounting Research*, 2015, 53(4), 653-693.
8. **Durtschi C., Hillison W., Pacini, C.** The effective use of Benford's Law to assist in detecting fraud in accounting data. *Journal of Forensic Accounting*, 2004, 5, p.17-34.
9. **Engqvist M., Vendil Pallin C., Wannheden E., Melin K., Malmlöf T., Kjellén J., Norberg J.** Russian Military Capabilities at War: Reflections on Methodology and Sources Post-2022. FOI, 2024. Available online: <https://www.foi.se/en/foi/reports/report-summary.html?reportNo=FOI-R--5502--SE> (accessed on 29. 4. 2026).
10. **Boulègue M.** Russia's struggle to modernize its military industry: How sanctions, war and 'innovation stagnation' are weakening Moscow's capabilities, Research Paper, London: Royal Institute of International Affairs, 2025.
11. **Pokorny L.** The Economics of Asymmetric Attrition: A Quantitative Analysis of Low-Cost Drone Warfare in the Ukraine and Iranian Shahed Programs (2022-2026). ICL Institute (ICL), New Jersey, USA 08638. ICL Institute, 2026.
12. **Rossi R., Hampel D.** Indirect Cost in Should Cost Calculations – How Carmaker's Cost Engineers See It. *European Journal of Business Science and Technology*, 2024, 10(1), p.96-106.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of CNDCGS 2026 and/or the editor(s). CNDCGS 2026 and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.