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# THE PRESENT STATUS OF MARKET INSTITUTIONS AS A FACTOR IN UKRAINE'S NATIONAL SECURITY AND COMPETITIVENESS

## ABSTRACT

**Purpose:** This study explores the impact of market institutions on Ukraine's national security and competitiveness. Specifically, it presents the role of the stock market and banking sector in shaping economic stability and defense capabilities.

**Methodology/approach:** Drawing on insights from institutional economics, this research employs a comparative analysis of market institutions in Ukraine and other Central and Eastern European (CEE) countries. The study is based on data from the stock market and banking sector to assess their performance and implications for national security. Additionally, the Axelrod tournament framework is applied to analyze strategic behavior within these institutions. This analysis incorporates the utilization of various Python packages to delve into the complexities of the situation. The market of arms manufacturers is selected as an illustration of missed opportunities. Optimization of portfolios was carried out based on the maximization of the Sharpe ratio. At the same time, indicators Sortino, Max Drawdown, Calmar were used for testing alternative approaches.

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**Findings:** The analysis reveals significant shortcomings in Ukraine's market institutions, particularly in the stock market and banking sector. Weaknesses such as underrepresentation of defense companies and other sectors in the stock market and high levels of nonperforming loans in the banking sector pose serious challenges to national security. Comparative analysis of such countries like Poland and Czech Republic highlights the importance of robust institutional frameworks. Analysis of WIG Ukraine and WIG CEE supports this conclusion. Institutional weakness does not allow Ukraine to maintain a stable proactive position in interaction with other states.

**Originality/value:** This study contributes to the scientific discourse on institutional economics and national security by providing a comprehensive analysis of market institutions in Ukraine. By identifying key weaknesses and comparing them with successful institutional models in other CEE countries, the research underscores the urgency of institutional reforms to safeguard Ukraine's interests and enhance its competitiveness on the global stage.

**Keywords:** market institutions, optimization, Axelrod tournament, banking sector, stock market, national security

## 1. INTRODUCTION

The analysis of national security involves evaluating the strategies of major demographic groups, institutions, primary economic policies, and the overall state structure. The latter is influenced by all preceding aspects. Conversely, the initial option is extensively researched and falls under the purview of values research or fundamental heuristic determination. Various compelling approaches exist concerning the state and principal social institutions, notably in Ukraine, emphasizing the importance of examining market institutions. An institution is a sophisticated system designed to address a particular issue, encompassing both formal and informal regulations and specific organizational frameworks required for successful implementation. When an entrepreneur conceives a business idea, securing financing becomes imperative. This financial support may be obtained from either the stock market or the banking sector, as the state or local budget options, as well as the shadow market, assume more specialized roles within an oligarchic economy.

Institutions play a vital role in ensuring state security for various reasons. Political institutions, including self-governance, judicial systems, and law enforcement agencies, are crucial because without them the state becomes vulnerable to internal and external threats. Challenges such as a rise in criminal activities, poverty, or the presence of aggressive neighboring regimes can undermine the very foundation of a nation.

On the other hand, market institutions are essential as they enable a country to engage in the production process through agreements between equal, informed, and motivated parties. This fosters the creation of fair economic values. When external sources of capital, like the banking sector and stock market, fail, businesses may resort to seeking funding from the state budget or the shadow market. However, these alternatives often lack adequate oversight mechanisms and sufficient resources. This can lead to widespread corruption, economic disarray, and ultimately result in a loss of sovereignty, including territorial integrity.

Consequently, underfunding of the military and security services, technological lag in defense capabilities, and the weakening of state authority can follow suit, highlighting the critical importance of strong and functional institutions in preserving a nation's security and stability.

## 2. THE OVERVIEW OF THE RESEARCH PROBLEM

Today, one can find a whole range of opinions and judgments about the incompleteness of the proposals of the Washington Consensus. Practically, it meant the standard reform package promoted for crisis-wracked developing countries. On the one hand, the importance of incomplete compliance with its principles and approaches is evident. On the other hand, there is a clear imbalance when it comes to allowing states the ability to experiment and explore alternatives. There is, above all, a need to strengthen institutions and to measure efficiency not solely through GDP but also by considering fairness in distribution, as well as social and environmental sustainability (Williamson, 2002; Stiglitz, 2008).

While it could be argued that EU regulations have been ineffective and have failed to genuinely liberalize the European defense market (Fiott, 2023), Lavery and Schmid (2021) posit that the shift from market liberalization to industrial policy reflects structural changes in the global order, including increasing geopolitical competition. The authors contend that the expansion of industrial policy in the defense sector is indicative of a broader geoeconomic shift within the EU. The Union is currently contending with the rise of China, intensifying industrial competition with the United States, a growing trend of economic interdependencies being 'weaponized,' and increased competition over technologies and critical raw materials (Herranz-Surrallés et al., 2024).

Geoeconomics emphasizes the non-military aspects of international conflict, where control over technology and resources and the setting of standards are as pivotal to political power as territorial control and military capabilities (Wigell et al., 2020). However, geoeconomics is still relevant to military power, as economic security is essential for achieving military power, which, in turn, protects a country's technological and industrial base (Baru, 2012). Thus, there is a symbiotic, rather than binary, relationship between economic and military power, driven by industrial and technological processes (Bellais, 2023; Csurgai, 2017). This aligns closely with the practical realities of the European defense market, where the production of military capabilities heavily relies on technological, commodity, and resource inputs from the general economy (see Smith & Fontanel, 2008). Kleczka et al. (2023) demonstrate how the participation of non-EU firms in the European defense sector underscores Europe's dependence on supply and technology imports.

Therefore, a lot of scholarly attention has been on the 'geoeconomic turn' in EU trade policy (Adriaensen & Postnikov, 2022; Meunier & Nicolaidis, 2019). Indeed, the European defense market has become a key element of the Union's efforts to bolster its 'strategic autonomy' or 'sovereignty' in defense, technology, and industrial policy.

The defense market does not operate in 'proper' terms due to various intervening variables that raise concerns for governments (Martí Sempere, 2019). For instance, governments and militaries might be reluctant to share technologies with partners and rival countries, and dependency on a technology or critical raw material can pose strategic vulnerabilities in times of war. Neo-functionalism suggests that the European Commission has expanded its role in

EU defense industrial policy by being innovative with new policy tools like the European Defence Fund (Håkansson, 2021; Haroche, 2020; Sabatino, 2022). However, even neo-functionalist entities recognize that the Commission's role as a policy entrepreneur is limited due to its "internal tension between strategic and economic objectives" (Haroche, 2022, p. 14). Meanwhile, liberal intergovernmentalism argues that EU member states retain control over EU defense industrial policy because these initiatives pose significant national security and economic interests (Calcara, 2019; Calcara & Simón, 2022; Fiott, 2019; Hoefler, 2023).

Although scholarly contributions show that liberalization at the EU level can conceal a strategy of advancing national interests (Hoefler, 2012; Schilde, 2017), the focus on relative rather than absolute gains also presumes that states and organizations become more aware of the vulnerabilities inherent in economic interdependence. Additionally, geoeconomic strategies assume that individual states and international organizations will develop and implement specific strategies to manage their relative positions in global affairs (Wigell, 2016). For any account of EU defense industrial cooperation, it is perhaps most critical to recognize that relative gains are widely perceived as a source of competition rather than cooperation (Calcara, 2018; Simón, 2017; Snidal, 1991).

As North (1987: 419) summarized: "Institutions exist due to the uncertainties involved in human interaction; they are the constraints devised to structure that interaction. They vary widely in their consequences for economic performance; some economies develop institutions that produce growth and development, while others develop institutions that produce stagnation." He explained how institutional development may lead to "a path-dependent pattern of development."

As part of transaction costs, Wallis and North (1986) identified the market component, referring to the portion of these expenses that receives a clear valuation in the market as transactional services. Based on this concept, they calculated the dynamics of the transaction sector in the US economy. This approach logically allows for monitoring the role of individual norms and organizations, or institutions as a whole. According to McManus (1975), organizations of any kind consist of behaviour constraints which serve to direct individual behaviour towards the mutual interest of the relevant group.

Coase's (1960: 2) subsequent paper addresses the actions of firms "which have harmful effects on others." Traditional economic analysis has led most economists to conclude that it would be desirable to make some sort of pollutant liable for the damage caused to those injured, or alternatively, to place a tax on the pollutant that varies with the amount of damage produced. Coase suggested that such courses of action are inappropriate because they do not necessarily lead to desirable results. According to him, "we are dealing with a problem of a reciprocal nature."

Hoffman and Spitzer (1982: 77) discuss the conditions under which the Coase Theorem holds true, based on their experimental findings on bargaining behavior: "agents will bargain to a joint-profit-maximizing outcome when it exists in two- and three-party bargaining situations under full information and when one party has the right to make the decision unilaterally under limited information." Eggertsson T. (1990: 284) states that "it seeks to determine the conditions likely to foster rule violations, and to understand the various consequences of noncompliance with institutional rules. The greater is the expected net benefit from noncompliance, the higher is its expected incidence." As a part of their discussion on the limitations of neoclassical economic theory and the importance of considering institutional factors in creating efficient markets, Hoffman & Spitzer (1982: 73) stated that "neo-

classical economic theory overlooks the institutions required to create efficient markets with low monitoring and transaction costs."

Considering stock market, political instability has a significant impact on it, as well as the competitiveness of national economy (see: Mai et al., 2023; Margalit & Shayo, 2020). All the more, all the surrounding countries acutely feel this influence in case of war in the region (Hudson & Urquhart, 2005; Frey & Waldenström, 2004; Shaker et al., 2022). Even in the CEE region, the stock market is a fairly effective tool for investigating the impact of war in the region on the functioning of the economies of neighboring countries.

If earlier the predominance of systems based on the capital market was considered a higher level compared to the bank-centric system based on internal investors and control, today a certain hybrid model is gaining more and more popularity. If in the case of the stock market we are dealing with larger volumes, then in the case of classic banking systems there is greater proximity between the borrower and the bank, and therefore less risk. The latter especially applies to small or communal banks (Hackethal et al., 2005; Hackethal et al., 2006).

From the Polish experience of the 1920s, several points are particularly relevant to the modern Ukrainian history. Firstly, in January 1924, the Polish government obtained full authority to enact fiscal reform. This included halting the financing of public expenditures by the Polish Loan Bank, implementing a property tax, and raising transport tariffs for the Polish state railways to achieve financial self-sufficiency. Secondly, the stability of the Polish zloty was upheld by modest yet expanding gold reserves. These reserves were acquired partly through the liquidation of assets from the Austro-Hungarian Bank, compensations received from Russia as stipulated by the Treaty of Riga, and through a loan from Italy, alongside voluntary contributions from Polish society.

Simultaneously, the subscription for shares of the Polish National Bank commenced. Established as a joint-stock company as per its charter (Bień, 2018), its capital reached 100 million Polish zlotys. Initially, subscription encountered challenges, with landlords and affluent peasants, who were subject to an advance tax at the time, showing reluctance to participate. Conversely, officials and soldiers demonstrated greater willingness to subscribe. Industrial enterprise owners secured 38.2 percent of Polish National Bank shares, while private banks acquired 13.7 percent. Civil servants and military officers accounted for 12.7 percent, state officials for 8 percent, and the remainder was distributed among cities, rural communities, cooperatives, municipal savings banks, and similar entities. Notably, the government managed to decrease its equity capital share to merely 1 percent.

In contrast, the Ukrainian National Bank (NBU) operates as state property, as delineated by legislation stating that its authorized capital is set at 10 million hryvnias, with provisions allowing for potential increases subject to decisions made by the National Bank Council (Verkhovna Rada, 1999). This configuration prompts inquiry into which central bank, the contemporary Ukrainian NBU or the Polish National Bank from a century ago, was more immune to governmental influence.

Logically, an emphasis on broad public participation in capital engenders greater prerequisites for sustainability. In this context, the Polish National Bank's structure, characterized by its establishment as a joint-stock company with diverse ownership spanning industrial enterprises, private banks, civil servants, and other societal sectors, suggests a more robust framework for independence from direct government influence. Conversely, the NBU's status as state property may potentially subject it to greater governmental control and influence over its operational and decision-making processes. Therefore, considering the historical and

structural contexts, the Polish National Bank of a century ago may be perceived as having possessed a comparatively higher degree of autonomy.

## 3. DATA AND METHODS

Axelrod's tournament has revealed the potential for myriad strategies to interact across various games, including Harmony, Chicken, and Investment. In scenarios involving significant risk, employing a game of chicken becomes a logical choice. This interaction of institutions can be analogously represented as the interaction of strategies within the framework of Axelrod's competition (Axelrod, 1980).

Among the fundamental economic institutions, the stock market and the banking sector have been selected for analysis, focusing on leading companies within each sector. The vulnerability of markets occasionally necessitates the inclusion of all available companies in the analysis. To illustrate missed opportunities, the market of arms manufacturers has been chosen.

Portfolio optimization is conducted based on the maximization of the Sharpe ratio. Additionally, alternative approaches are tested using indicators such as Sortino, Max Drawdown, and Calmar. For portfolio analysis, Python packages including EfficientFrontier, pypfopt, numpy, pandas_datareader, matplotlib.pyplot, and yahoo_fin are employed as instruments.

## 4. RESEARCH RESULTS

### 4.1. STOCK MARKET

As a consequence of the war and prolonged oligarchic stagnation, the functionality of the Ukrainian stock market has significantly diminished. It is pertinent to scrutinize not only the new volumes of government borrowing based on treasury bonds as a tangible indicator but also, at the very least, minimal external evaluations. The Warsaw Stock Exchange WIG Ukraine index can be regarded as an assessment of national companies under prevailing conditions (Fig. 1). A cursory examination reveals the protracted ineffectiveness of utilizing stock exchange tools by Ukrainian companies. The recent departure of Kernel from the Polish stock market aptly illustrates this situation. By divesting its land bank and acquiring ships, the company determined that it presently does not require the stock market as a financial tool.

Simultaneously, upon analyzing the optimal portfolio for participants of the WIG CEE, the inclusion of Ukrainian companies therein emerges as a remarkable strategy. It is noteworthy that Polish companies are excluded, with only Central and Eastern European (CEE) companies represented on the Warsaw Stock Exchange (*weights assigned to each company are indicated in brackets*):

('AGT.WA', 0.0), ('AST.WA', 0.0), ('CEZ.WA', 0.17028), ('CLE.WA', 0.01509), ('CTS.WA', 0.0), ('EHG.WA', 0.0), ('EST.WA', 0.0), ('IMC.WA', 0.0), ('KSG.WA', 0.02207), ('MLK.WA', 0.07511), ('MOL.WA', 0.0), ('NTU.WA', 0.0), ('PEN.WA', 0.19114), ('SPH.WA', 0.07496), ('TMR.WA', 0.0), ('KRK.WA', 0.45135), ('OVO.WA', 0.0); expected annual return: 34.3%; annual volatility: 32.4%; Sharpe Ratio: 1.00.

**Figure 1**
*WIG Ukraine: expected stagnation*

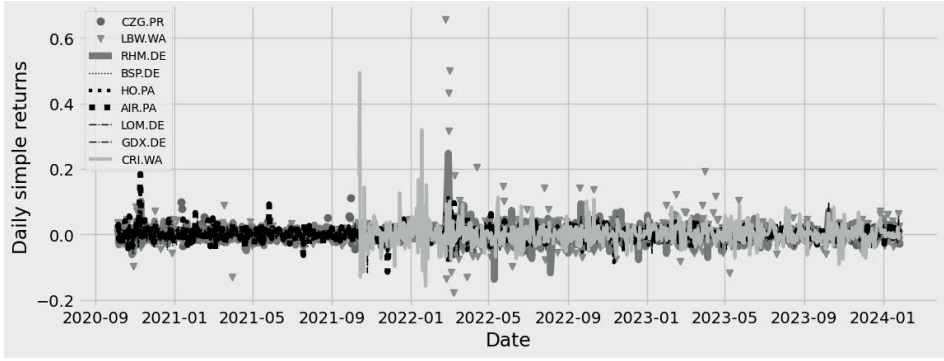

*Source:* investing.com

If the agricultural sector (MLK Foods Public Company, KSG Agro, and others), along with one energy company (Coal Energy), can withstand CEE regional competition even amidst war conditions, then it is reasonable to anticipate the presence of Ukrainian IT and military companies in the stock market. However, their absence is conspicuous.

Let us focus on the current state of the defense sector in the EU market, an industry undoubtedly significantly impacted by the Russian-Ukrainian war. From Fig. 2, we observe a notable increase in market risk following Russia's large-scale aggression against Ukraine. However, this spike in risk, particularly evident for companies like Lubawa S.A., was swiftly normalized. Concurrently, the investment attractiveness of such shares, indicated by cumulative return growth, escalated by 3–5 times. Notably, the performance of Rheinmetall AG, as depicted in Fig. 3, is especially remarkable.

It is noteworthy that in September 2023, Polish Creotech and Rheinmetall were nearly at par. This achievement underscores the strength of representation from the CEE region.

**Figure 2**
*Risk in defense sector*




*Source:* own elaboration based on data from yahoo.finance.

Czech and Polish companies demonstrate a notable comfort level among established German and French counterparts. The absence of promising Ukrainian businesses, particularly in this sector, seems to be a significant oversight. However, there is potential for this situation to be rectified through technologically sound initiatives.

Achieving this requires a profound understanding of instruments on the part of both the government and businesses. Below, we present the evident success of Czech Colt CZ Group, Lubawa S.A., and Creotech Instruments S.A. through their substantial weight coefficients in the investment optimal portfolio, indicative of a surge in interest:

StockStart Date = '2023-2-24'

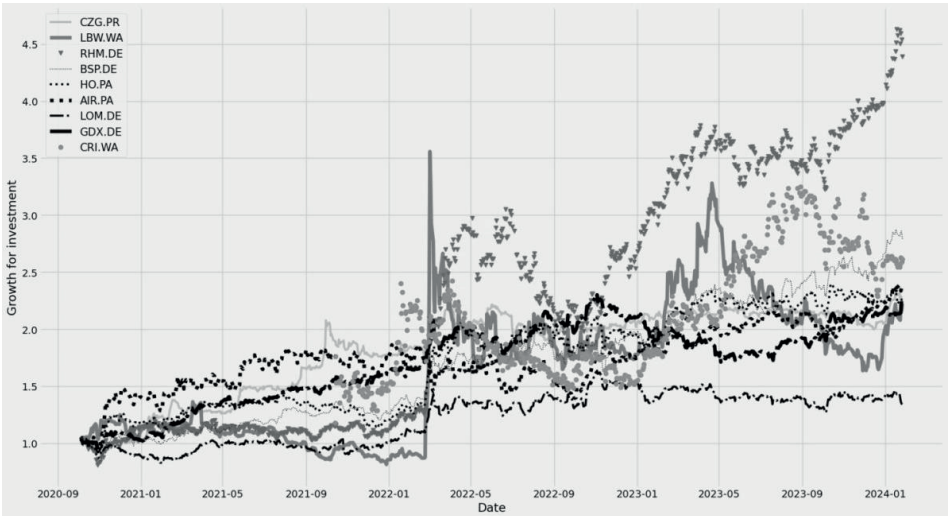
Stock End Date = '2024-2-20'

[('CZG.PR', 0.08467), ('LBW.WA', 0.02892), ('CRI.WA', 0.11301), ('RHM.DE', 0.12333), ('BSP.DE', 0.1276), ('HO.PA', 0.0), ('AM.PA', 0.0), ('SAF.PA', 0.05574), ('AIR.PA', 0.0), ('LOM.DE', 0.0), ('GDX.DE', 0.02646), ('MTX.DE', 0.0), ('Y73.F', 0.21856), ('OHB.DE', 0.10141), ('SAAB-B.ST', 0.0594), ('EY7.F', 0.06091)]

Expected annual return: 173.3%; annual volatility: 23.0%; Sharpe Ratio: 7.45

**Figure 3**

*Investment growth in defense sector*




*Source:* own elaboration based on data from yahoo.finance.

The mechanism of the optimal portfolio reveals a clear positive trend for selected public companies in the Central and Eastern European (CEE) region over the past year. It is worth noting that in Ukraine, there are currently over 400 privately-owned companies in the defense sector. With successful management, these companies could potentially leverage the mechanisms of the CEE stock markets.

Greater attention to risk necessitates a larger list of possible ratios for such types of analysis (see Table 1). Even in this scenario, the effective presence of CEE companies is evident across the majority of indicators, highlighting their viability as investment choices.

**Table 1**
*Investment choice in cases of increased risk*[*]

| | Sortino | Sharpe | Maxdd | Calmar |
|---|---|---|---|---|
| CZG.PR | 1.53 | 1.02 | **-0.06** | 2.72 |
| LBW.WA | **3.82** | 1.88 | -0.28 | 3.32 |
| CRI.WA | -1.33 | -0.98 | -0.3 | -1.3 |
| RHM.DE | **7.64** | **3.86** | -0.12 | **9.15** |
| BSP.DE | 3.24 | 2.0 | -0.09 | 5.56 |
| NO.PA | 0.27 | 0.18 | -0.08 | 0.91 |
| AM.PA | 0.4 | 0.29 | -0.1 | 1.01 |
| SAF.RA | 5.23 | **3.1** | **-0.06** | **9.92** |
| AIR.PA | 1.97 | 1.27 | -0.11 | 2.56 |
| LOM.DE | -0.62 | -0.41 | -0.1 | -0.52 |
| GDX.DE | 3.29 | 1.83 | **-0.05** | **9.88** |
| MTX.DE | 0.38 | 0.37 | -0.25 | 0.61 |
| Y73.F | **5.28** | **2.76** | -0.25 | **11.62** |
| OHB.DE | 0.28 | 0.17 | **-0.05** | 1.07 |
| SAAB-B.ST | **3.56** | **2.34** | -0.15 | 4.64 |
| EY7.F | 1.74 | 1.05 | -0.13 | 4.12 |

*Source:* own elaboration based on data from yahoo.finance.

### 4.2. BANKING SECTOR

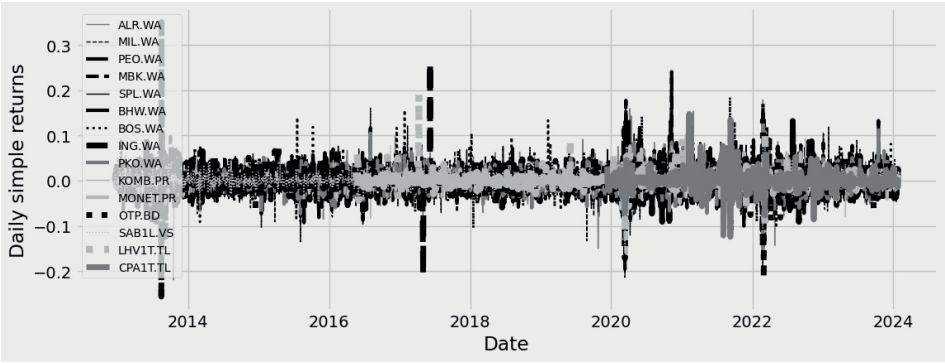
In analysis of the banking mechanism in its entirety, the focus primarily lies on the comprehensive diversified model encompassing communal (savings), cooperative, and private banks. Unfortunately, a pure German or Austrian model no longer exists. Under the influence of various events, this diversification has progressively diminished. The consolidation of businesses absorbed smaller structures, consequently rendering banks less flexible in catering to

[*] The top 4 companies have been highlighted for analysis. A standard of 252 trading days per year and a risk-free rate of 3.86% have been selected as the foundation for calculations. In computing the Sortino ratio, only adverse variance (deterioration) is taken into consideration. The Max drawdown serves to quantify the most significant decline from peak to trough. For the Calmar ratio, the max drawdown is utilized in the denominator instead of the standard deviation, as is the case with the Sharpe ratio. The analysis will encompass the period from '2023-2-24' to '2024-2-24'.

societal needs. Therefore, for the analysis of this mechanism, it is imperative to select alternative factors and indicators that are significantly contingent upon the dynamics of other sectors within the economy.

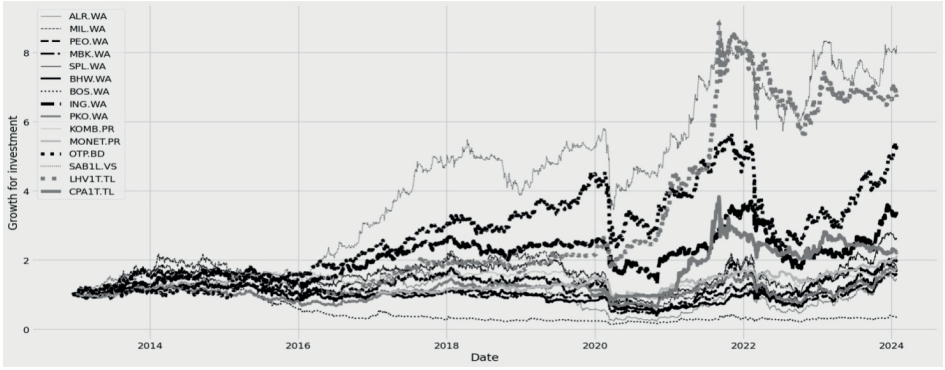
The Central and Eastern European (CEE) banking sector did not encounter notable challenges either during the pandemic or in the aftermath of Russia's war in Europe. Certain market participants, exemplified by OTP (Hungary), currently operate under a "special status", facilitating operations in both Russia and Ukraine. Hungary's strategic maneuvers within the EU political landscape contribute to sustaining this arrangement. While this situation introduces a slight increase in risk, it also fosters a resurgence in investment growth (Fig. 4, Fig. 5).

**Figure 4**
*CEE banking sector risk in turbulence of 2020–2024*




*Source:* own elaboration based on data from yahoo.finance.

**Figure 5**
*CEE banking growth recovery in 2020–2024*




*Source:* own elaboration based on data from yahoo.finance.

The situation in Ukraine contrasts significantly, where the transformation of the banking sector has been notably ineffective. A focus on the interests of co-founders has resulted in minimal lending to small and medium-sized enterprises (SMEs). Furthermore, it is crucial to highlight the significant Central Bank policy rate, which has been looming large even before the onset of the pandemic. Under these circumstances, Ukraine persists as a pseudo-leader globally in terms of non-performing loans (NPLs) as illustrated in Fig. 6. A cursory comparison underscores the severity of this issue, positioning it among the foremost national security challenges. Given the current conditions, the prospect of Ukrainian commercial banks accessing European stock markets appears practically unattainable. Additionally, the weakened status of the national bank poses another challenge, prompting a consideration of the Polish experience from the 1920s.

The institutional excellence, particularly the timely support from northern neighbors, plays a pivotal role in enabling the commercial banks of the Baltic States to maintain their status as an investment priority on the domestic stock markets today (see Fig. 5).

### 4.3. STATE STRATEGY WEAKNESS BASED ON INSTITUTIONAL PROBLEMS

In the subsequent segment of our research, we delve into the interaction of Ukrainian institutions (see Table 2). It is reasonable to hypothesize that political and market institutions, through their extensive operational history, develop distinct strategies of behavior. This phenomenon is readily observed in the functioning of the American stock market, the banking system of Switzerland, trade union-based societies, or Asian paternalistic structures.

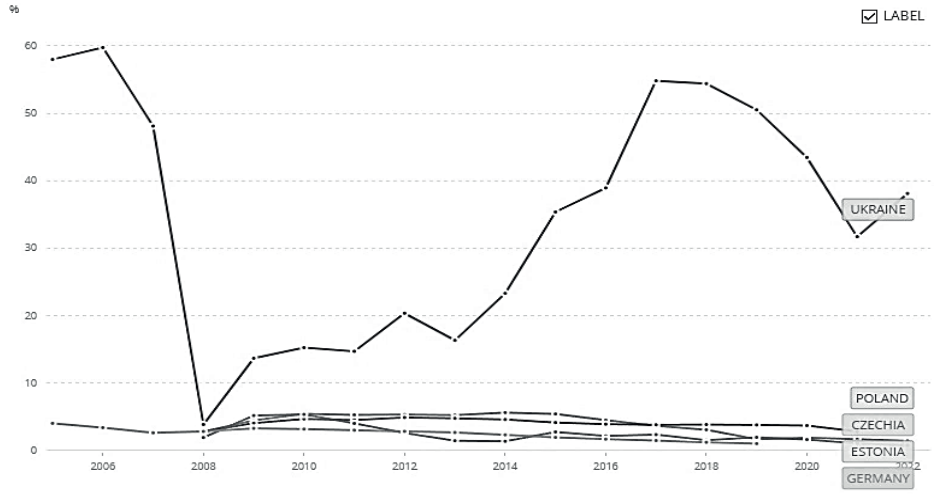
**Table 2**
*The institutions strategies interaction*

| | |
|---|---|
| Strategies:<br>judiciary – *Short Memory*, election system – *Resurrection*,<br>self-governance – *Gambler*, business functioning – *Backstabber*, law enforcement – *Grumpy*, war allies – *Punisher*, oligarchy – *Retaliate*,<br>post-military and volunteer individuals – *Grudger and LookerUp*<br>tournament (players, game=*chicken*, turns = 365, noise = 0.1) | Ranking of winners:<br>'**Grumpy**', 'LookerUp',<br>'Gambler', 'ShortMem',<br>'Resurrection', 'Punisher',<br>'BackStabber: (D, D)',<br>'Retaliate: 0.1',<br>'Grudger' |

*Source of strategies list and examples of code*: https://axelrod.readthedocs.io

It is plausible to anticipate that the dysfunctionality of the stock and banking markets may prompt businesses to adopt a strategy akin to "even my patience has limits," reminiscent of Axelrod's Backstabber strategy. However, in other scenarios, there are also valid rationales guiding the selection of a particular strategy.

**Figure 6**
*Bank nonperforming loans to total gross loans (%) – the case of Ukraine, Poland, Czechia, Germany, Estonia*




*Source:* World Bank data. https://data.worldbank.org/

In our assessment, without institutional transformations, as indicated by the Axelrod tournament model (see Table 1), adopting the Grumpy strategy as the victor leads to no discernible positive changes. It is important to note that the Grumpy strategy entails a growing inclination to disregard potential principles and agreements with each step, moving progressively closer to defection.

## 5. CONCLUSIONS AND DISCUSSION

The integrity and efficiency of political and market institutions are fundamental to national security. Political institutions, such as the judiciary, law enforcement, and local self-governance, ensure stability and legal order, mitigating both internal and external threats. Market institutions, by facilitating economic activity through fair and transparent agreements, are crucial for a resilient economy.

The question of whether we can compare companies listed on different CEE stock markets remains open. In developed countries, such comparisons are feasible due to limited mutual market penetration. However, in the CEE region, there exists a developed market like Poland alongside the developing markets of other countries. This differentiation is largely formal at present, though some level of mutual penetration among CEE companies is observed, albeit to a lesser extent.

Our analysis, which considers the combination of rules, regulations, and organizational capabilities, confirms the unsatisfactory state of the mechanisms that ensure the operation of Ukraine's stock market and banking sector. This situation results not only in initial finan-

cial losses but also in significant unrealized opportunities. As these institutions are critical for business operations, Axelrod's tournament model indicates that institutional changes are imperative. Even with the potential emergence of new post-war institutions, the prevailing inefficient system continues to hinder progress.

We used the CEE banking services market, the Warsaw Stock Exchange, and the CEE defense sector as case studies. According to our findings, Ukraine's current institutional framework exhibits significant vulnerabilities. Reliance on shadow markets and state budgets for business financing, due to weaknesses in the banking and stock markets, exacerbates corruption and economic instability. Inadequate funding for security services and technological delays compromise national security. Prolonged oligarchic control and the impacts of war have severely undermined the functionality of Ukraine's stock market.

The analysis of the Warsaw Stock Exchange's WIG Ukraine index reveals that Ukrainian companies struggle to utilize stock market tools effectively. Additionally, the absence of Ukrainian IT and military companies in regional markets indicates missed opportunities for economic and strategic growth.

Without substantial institutional changes, including the re-establishment of certain institutions, Ukraine's ability to realize its own interests appears unattainable. The feasibility of such implementation hinges on the presence of a long-term effective Ukrainian strategy in relations with other states. However, given the current weaknesses in domestic market institutions, achieving this goal seems unlikely. Insufficient attention to issues plaguing the stock market and banking sector remains one of the most significant challenges to national security.

Therefore, main recommendations based on study results include:

- Enhance the autonomy and effectiveness of political institutions to provide a stable legal framework. Promote transparency and accountability in market institutions to foster fair economic practices and reduce reliance on shadow markets.
- Draw lessons from Poland's historical reforms to diversify ownership and reduce government control in key financial institutions. Encourage broad public participation in capital markets to enhance stability and resilience.
- Address barriers preventing Ukrainian companies, particularly in the IT and defense sectors, from participating in regional stock markets. Foster an environment conducive to investment and innovation.
- Implement policies for reducing NPLs and promoting lending to SMEs. Enhance regulatory frameworks to support the growth and stability of the banking sector, drawing on successful models from neighboring CEE countries.
- Encourage institutions adopting cooperative strategies that prioritize long-term stability and mutual benefit. Address systemic issues that lead to non-cooperative behaviors, using insights from game theory to guide policy decisions.

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